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HYGROSCOPIC SEEDING OF COIWECTIVE CLOUDS

by
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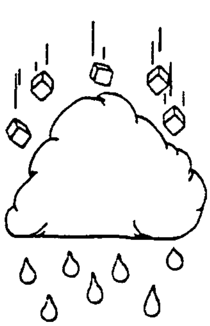

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This report summarizes the results of over 10,000 separate computer runs investigating the possible effects of hygroscopic seeding on the time or location of the initial development of precipitation in convective clouds. This study suggests that hygroscopic seeding is a "brute force" technique, requiring massive quantities of seeding material to force any significant changes in rain initiation.

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PREFACE

Although most modern efforts in weather modification have focused on dry ice or silver iodide seeding, salt seeding is an interesting alternative which has periodically moved in and out of fashion. As early as 1954 this technique achieved dubious prominence on Broadway when Starbuck, con man, charlatan, and title character in N. Richard Nash's romantic comedy "The Rainmaker," explained how to make it rain:

> "How?" [with a flourish of his stick] "Sodium chloride!
> Pitch it up high -- right up to the clouds ..."

Looking back on the history of cloud physics and weather modification, and ignoring the Starbucks of the field, there seem to be two separate streams of thought which interweave to produce the current rationale for seeding clouds with hygroscopic particles.

The first train of thought began in the early decades of the century with the speculation that large particles of sea-salt might produce cloud droplets of sufficient size to collect smaller cloud droplets by gravitational coagulation. These drops, if they continued to grow, could develop into raindrops by an all-water process. This idea stayed in the mainstream of cloud physics for many years and led to numerous studies. Eventually, these studies established that maritime areas have significant concentrations of giant sea-salt particles in the air entering cloud base, and that these particles could account for the initial large drops necessary for "warm" rain development. Although ever increasing evidence was found to support the importance of these same all-water processes in continental clouds, no comparable sources of hygroscopic nuclei were found and the origin of the first large drops in continental clouds has remained unresolved.

The second train of thought involved in the development of the current salt seeding rationale grew out of the inspiring discoveries of Schafer and Vonnegut that supercooled clouds could be seeded to alleviate a natural shortage of ice nuclei and that such seeding could significantly alter cloud development. These discoveries did not apply to warm clouds, but seemed to encourage scientists to discover correspondingly powerful treatments for non-supercooled clouds. The idea that artificially adding large salt particles or water drops to a growing cloud might increase the number of raindrops was already implicit in earlier work. The new concept that gradually developed, however, went far beyond these earlier thoughts. The failure to find significant quantities of giant salt particles in continental areas came to be interpreted as evidence for a natural deficiency of nuclei capable of initiating the collisions and coalescences required for warm rain development. Alleviating this shortage by salt seeding could be expected to suddenly release the colloidal instability of continental clouds and change naturally inefficient processes into efficient ones. What this conjecture ignores, however, is the original motivation to search for inland evidence of giant salt particles. In large measure, the goal of these studies was to explain the observed production of large liquid drops and active coalescence processes in continental clouds. To be sure, maritime clouds do seem to rain easier than continental clouds, but it should always be remembered that continental clouds do rain. The failure to find the necessary concentration of salt particles does not mean that there is a critical deficiency of giant salt nuclei, but rather that there must be another source for the large water drops.

It is clear that hygroscopic seeding has the potential to modify the rate of precipitation development or the total amount of rain produced. The rationale that is often invoked to explain this modification, however, is likely to overestimate the magnitude of the seeding effect. This study attempts to develop a more accurate assessment of the likely effects of hygroscopic seeding of convective clouds.

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INTRODUCTION

In general, there have been two major approaches to hygroscopic seeding: first, attempting to increase the number of raindrops in clouds that are already capable of producing rain and second, trying to form rain earlier or faster than would have occurred naturally. The second approach has been particularly enticing since it seems to offer the possibility of making clouds rain that would not have rained by themselves. Furthermore, the earlier development of rain might be expected to modify both the dynamic structure of the developing storm and the nature of the subsequent microphysical processes that would continue to produce precipitation. Although it is not clear under what circumstances this sort of modification would result in increases in total rainfall rather than in decreases, the idea does seem to offer hope for larger scale effects than are usually envisioned with hygroscopic seeding. Computer modelling studies in particular (e.g., Rokicki and Young, 1978; Klazura and Todd, 1978) have seemed to show a promising future for this type of seeding by predicting major changes in precipitation formation through the addition of modest amounts of seeding material. The validity of these calculations, however, is critically dependent on the accuracy of the predictions for the natural, or unseeded, case. Recent measurements of the atmospheric aerosol have shown that, contrary to most previous expectations, the size distribution of natural aerosol particles does not have a sharp cut-off at ten microns, but rather exhibits potentially significant concentrations of particles out to much larger sizes (see Nelson and Gokhale, 1968; Hindman, 1975;

Johnson, 1976; Hobbs et al, 1977; and Hobbs et al, 1978). These particles, even if insoluble, can play an important role in initiating precipitation (Johnson, 1978; 1979), and the exclusion of this natural background of giant and ultragiant particles from model calculations makes these calculations unrealistically sensitive to salt particle or large drop seeding. This study reexamines the potential of hygroscopic particle seeding to modify the initial development of precipitation in light of these new aerosol discoveries.

The point of departure of this study from all previous investigations is the wide-ranging size distribution of background aerosol particles. In all, this distribution extends from <0.02 µm radius to 100 µm radius, simultaneously spanning more than ten orders of magnitude in number concentration. This distribution, along wi)th several different salt distributions, is placed in a condensation model which calculates the initial particle growth, both natural and seeded. Results from a limited number of runs of this condensation model are then used to initialize two different continuous collection models which are employed for the bulk of the study. Although deceptively simple, these continuous collection models are surprisingly powerful and, if properly initialized, can accurately reproduce many results from more sophisticated models employing a full "stochastic" treatment of drop coalescence (see Johnson, 1979). In addition, the speed and efficiency of these models allow a much wider range of investigations than would be possible with a more complicated model. In this study, for example, more than 10,000 runs of the continuous collection models were used to investigate the effect of different seeding strategies, locations, and environmental conditions.

INITIAL CONDITIONS

Salt Distributions

In most studies of salt seeding, finely ground salt is used to maximize the growth potential of each individual particle. After grinding, the salt is normally centrifuged or treated to remove small sub-micron particles that are thought to limit the effectiveness of the larger particles.

In this study, three different size distributions of salt particles were investigated. In each case the complete size distribution was defined by specifying the mass fraction of salt in each of thirty logarithmically spaced size categories. Each of the mass distributions is approximately log-normal, peaking around 35, 55, and 90 µm diameter for distributions "2", "3", and "4" respectively.[1] These three distributions are illustrated in Figure 1 and, in tabular form, in Table 1. With each increase in mean size, the number of salt particles in a given quantity of seeding material must decrease. For a given mass of salt, distributions "3" and "4" respectively will only have 22% and 12% of the total number of nuclei in distribution "2". While all three distributions are relatively arbitrary, distribution "3" was loosely based on the reported size distribution of sodium chloride salt (MRI H3AX) used in the Bureau of Reclamation's San Angelo Cumulus Project [MRI Report 74 FR-1244, October 1974].

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[1] Distribution "1" was an unrealistically simple distribution which was only used to test the modifications to the computer models to simulate hygroscopic seeding.

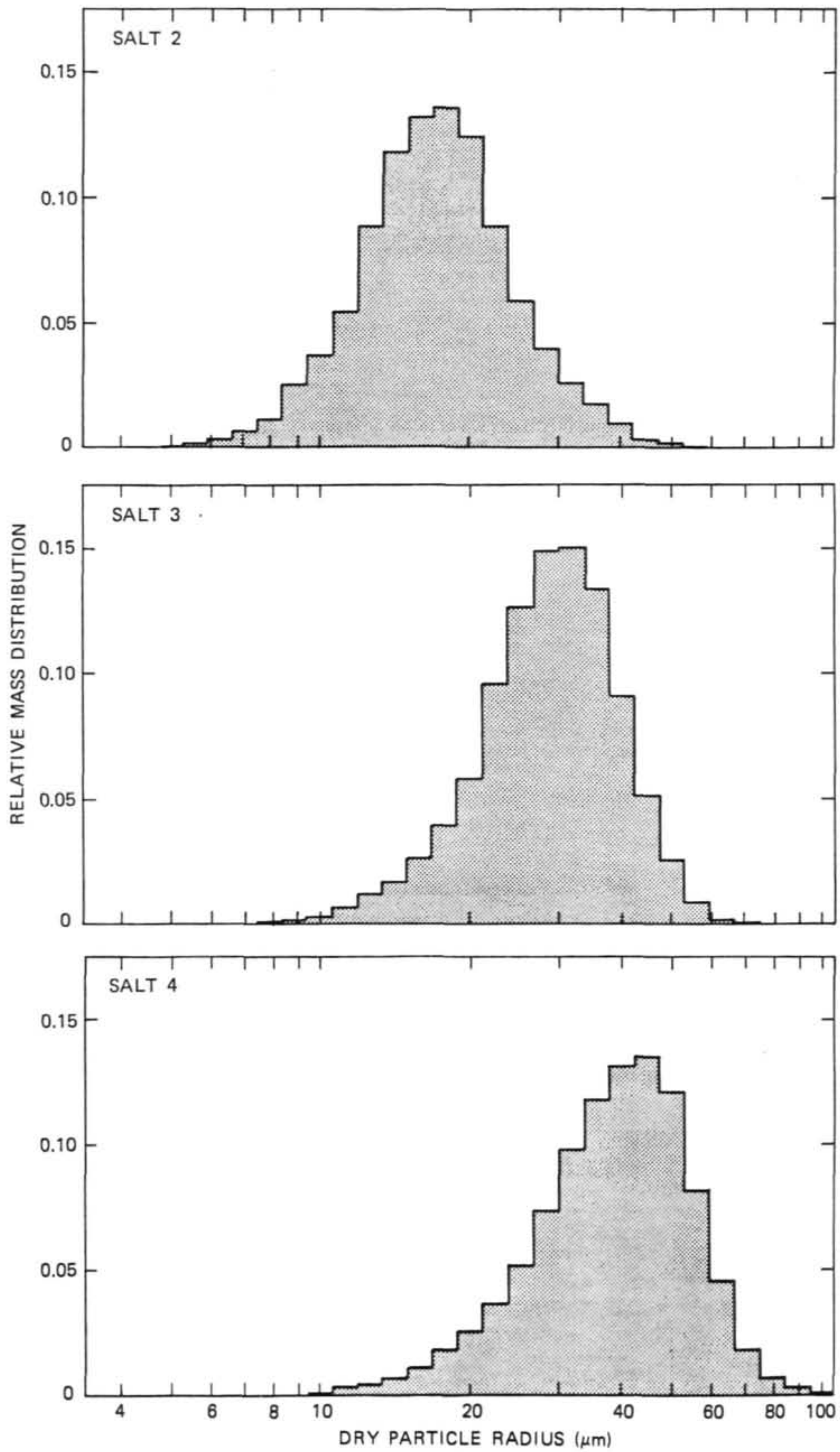

Figure 1. Relative mass distributions for three different hygroscopic treatments.

TABLE 1

Hygroscopic Treatment Size

Dry Radius (μm)	Relative Number	Relative Mass
DISTRIBUTION "2"		
3.55	8.57E-04	1.48E-05
3.98	1.21E-02	2.96E-04
4.47	3.01E-02	1.04E-03
5.01	3.04E-02	1.48E-03
5.62	3.24E-02	2.22E-03
6.31	3.81E-02	3.70E-03
7.08	5.40E-02	7.41E-03
7.94	6.12E-02	1.19E-02
8.91	9.20E-02	2.52E-02
10.00	9.58E-02	3.70E-02
11.22	1.00E-01	5.48E-02
12.59	1.15E-01	8.89E-02
14.12	1.09E-01	1.19E-01
15.85	8.65E-02	1.33E-01
17.78	6.31E-02	1.37E-01
19.95	4.05E-02	1.24E-01
22.39	2.05E-02	8.89E-02
25.12	9.67E-03	5.93E-02
28.18	4.62E-03	4.00E-02
31.62	2.18E-03	2.66E-02
35.48	1.03E-03	1.77E-02
39.81	4.26E-04	1.04E-02
44.67	1.07E-04	3.70E-03
50.12	5.31E-05	2.59E-03
56.23	2.15E-05	1.48E-03
63.10	1.07E-05	1.04E-03
70.79	5.40E-06	7.41E-04
79.43	1.53E-06	2.96E-04
89.13	3.79E-07	1.04E-04
100.00	3.83E-09	1.48E-06
DISTRIBUTION "3"		
3.55	2.25E-03	8.55E-06
3.98	3.19E-03	1.71E-05
4.47	4.52E-03	3.42E-05
5.01	8.00E-03	8.55E-05
5.62	1.13E-02	1.71E-04
6.31	2.40E-02	5.13E-04
7.08	2.84E-02	8.55E-04
7.94	2.82E-02	1.20E-03
8.91	2.84E-02	1.71E-03
10.00	4.03E-02	3.42E-03
11.22	4.28E-02	5.13E-03
12.59	7.08E-02	1.20E-02
14.12	7.20E-02	1.72E-02
15.85	7.60E-02	2.57E-02
17.78	8.24E-02	3.93E-02
19.95	8.63E-02	5.82E-02
22.39	1.01E-01	9.58E-02
25.12	9.44E-02	1.27E-01
28.18	7.84E-02	1.49E-01
31.62	5.59E-02	1.50E-01
35.48	3.51E-02	1.33E-01
39.81	1.69E-02	9.06E-02
44.67	6.78E-03	5.13E-02
50.12	2.41E-03	2.58E-02
56.23	5.66E-04	8.55E-03
63.10	8.02E-05	1.71E-03
70.79	3.42E-05	1.03E-03
79.43	1.21E-05	5.13E-04
89.13	2.56E-06	1.54E-04
100.00	4.03E-07	3.42E-05
DISTRIBUTION "4"		
3.55	7.40E-04	1.55E-06
3.98	2.63E-03	7.77E-06
4.47	3.71E-03	1.55E-05
5.01	5.27E-03	3.11E-05
5.62	1.49E-02	1.24E-04
6.31	2.64E-02	3.11E-04
7.08	3.74E-02	6.22E-04
7.94	3.97E-02	9.33E-04
8.91	3.70E-02	1.23E-03
10.00	3.31E-02	1.55E-03
11.22	4.70E-02	3.11E-03
12.59	4.98E-02	4.66E-03
14.12	5.89E-02	7.77E-03
15.85	5.84E-02	1.09E-02
17.78	7.13E-02	1.88E-02
19.95	7.09E-02	2.64E-02
22.39	6.80E-02	3.58E-02
25.12	6.90E-02	5.13E-02
28.18	7.11E-02	7.46E-02
31.62	6.60E-02	9.79E-02
35.48	5.63E-02	1.18E-01
39.81	4.43E-02	1.31E-01
44.67	3.23E-02	1.35E-01
50.12	2.05E-02	1.21E-01
56.23	9.90E-03	8.25E-02
63.10	3.96E-03	4.66E-02
70.79	1.13E-03	1.88E-02
79.43	3.31E-04	7.77E-03
89.13	9.37E-05	3.11E-03
100.00	3.31E-06	1.55E-04

Condensation Model

Immediately after seeding, hygroscopic nuclei will grow rapidly by condensation. As they continue to grow, however, their hygroscopicity dilutes and their condensational growth eventually approaches that of comparable diameter drops of pure water. This initial phase of droplet growth after seeding was simulated with the same model of cloud droplet activation and growth that was used to model the initial growth of the natural nuclei. This condensation model is described in detail in Johnson (1979), and in slightly more general terms in Johnson (1980). Basically it is a Lagrangian model of condensational growth and activation of aerosol particles of the type developed by Howell (1949), Mordy (1959), Fitzgerald (1972) and others. In this study the background aerosol distribution used was based on the University of Washington airborne aerosol measurements from the Great Plains of the United States which had been obtained as part of background studies for HIPLEX (see Hobbs et al., 1977; and Johnson, 1979). The HIPLEX aerosol distribution was divided into 70 different size classes and each size class was subdivided into 5 different solubility classes (350 classes of natural nuclei in all). The seeding material filled 30 additional size categories, each of which was likewise divided into 5 different solubility classes (150 classes of seeded nuclei). For the seeding material, the introduction of different solubility categories was of minor importance since all five categories were almost completely soluble with only minor differences between classes. In all cases the soluble component of the aerosol particles, either natural or seeded, was assumed to be ammonium sulfate $(NH_4)_2SO_4$. The results, however, should not be dependent on the choice of the soluble material.

For each run, the calculations began approximately 400 m below cloud base (80% relative humidity) with only natural nuclei. To simulate cloud base seeding, the salt nuclei were introduced about 40 m below cloud base (98% relative humidity) and their growth, along with that of the natural nuclei, followed to 100 m above cloud base. At this point, both the total number of activated droplets and the size distribution of large ($r > 10$ µm) were recorded. To simulate cloud top or mid-cloud seeding the introduction of the salt nuclei could be delayed until the natural cloud base droplet distribution was determined.

For the large number of runs anticipated, it was not feasible to repeat the full set of condensation calculations for each new seeding rate, location, or change in the ambient conditions. Forty-two condensation runs were completed to provide the necessary starting conditions for all subsequent calculations. These runs uniformly assumed seeding with 10^{-5} g m^{-3} of salt and a 2 m s^{-1} updraft. Separate runs were conducted for each of the three salt distributions, for cloud base and mid-cloud seeding, and for seven different cloud base temperatures. Seeding with all but the highest concentrations of salt will not significantly affect the number or size of cloud droplets growing on natural nuclei. Seeding with different concentrations of salt can thus be modelled by merely increasing the number of drops grown on seed particles without adjusting the natural droplet distribution. Changes in updraft velocity will affect both the number and size of activated natural droplets as well as the size of the seed particles. In general, however, the effect on the size of the largest drops ($r > 10$ µm) will be somewhat restricted since, following an initial spurt, their radial growth is rather limited and will not be dramatically affected by changes in updraft velocity. The total drop concentration, on the other hand, can be strongly affected by the updraft. This effect can be considered by adjusting the drop concentration using either Twomey's (1959) or Squires' (1958) analytical solution for drop concentration as a function of updraft velocity and CCN spectral parameters. Comparing the predicted number of droplets activated for one cloud base temperature, but two different updrafts, both Squires' and Twomey's solutions lead to a rather simple relation.

$$\frac{N_1}{N_2} = \left(\frac{V_1}{V_2}\right)^{3k/2(k+2)}$$

Combining condensation model results for two different updraft velocities allows estimation of an "effective" slope parameter k (~0.7 in this case) which can then be used to correct the drop concentration for other updrafts velocities. Table 2 shows the total droplet concentrations resulting from the condensation model as a function of cloud base temperature and (via the above relation) updraft velocity. All cases are based on identical starting concentrations of aerosol particles per cubic centimeter.

In addition to calculating the total number of activated droplets, the condensation model also partitions the large drops into 26 logarithmically spaced size categories covering the radius range from 10-100 µm. Tables 3-8 show these results for all 42 runs of the condensation model. The results for cloud base seeding represent the spectra at 100 m above cloud base following seeding with 10^{-5} g m^{-3} of salt immediately below cloud base at the 98% relative humidity level. The mid-cloud seeding runs combine the natural tail of large drops observed 100 m above cloud base with the seeded tail observed an additional 100 m higher, following seeding with 10^{-5} g m^{-3} of salt at the 100 m level.

TABLE 2

Cloud Droplet Concentration (cm^{-3}) as a function of
Updraft Velocity and Cloud Base Temperature.

Cloud Base Temperature (°C)	Updraft Velocity ($m\ s^{-1}$) 1	2	3	4	6	8	10
25	316.8	417.1	489.9	549.2	645.1	723.1	790.1
20	337.1	443.8	521.3	584.4	686.4	769.4	840.7
15	364.2	479.5	563.2	631.4	741.6	831.3	908.3
10	399.5	526.0	617.8	692.6	813.6	911.9	996.4
5	437.5	576.1	676.7	758.6	891 1	998.8	1091.3
0	478.3	629.7	739.6	829.2	974.0	1091.7	1192.8
-5	527.3	695.0	816.3	915.1	1074.9	1204.9	1316.5

TABLE 3

Natural and Seeded Large Drop Concentrations (cm^{-3})

(Salt Distribution "2", 10^{-5} g m^{-3}, Base Seeding)

	Radius (μm)	Cloud Base Temperature (°C) -5	0	5	10	15	20	25
NATURAL	10.0	7.77E-04	1.39E-03	8.45E-04	6.13E-04	6.29E-04	3.90E-04	4.37E-04
	11.0	6.39E-04	5.40E-05	4.24E-04	5.46E-04	4.20E-04	5.47E-04	1.21E-04
	12.0	4.65E-04	7.37E-04	4.63E-04	3.57E-04	1.17E-04	2.51E-04	2.56E-04
	13.2	3.39E-04	1.11E-04	2.38E-04	2.42E-04	2.47E-04	1.77E-04	3.59E-04
	14.5	3.91E-04	3.97E-04	2.79E-04	3.40E-04	3.46E-04	2.95E-04	1.21E-04
	15.9	1.62E-04	1.65E-04	1.68E-04	1.15E-04	1.17E-04	1.19E-04	1.79E-04
	17.4	2.16E-04	2.20E-04	1.11E-04	2.83E-04	2.88E-04	1.76E-04	1.79E-04
	19.1	1.71E-04	1.74E-04	1.77E-04	1.09E-05	1.83E-04	1.87E-04	1.31E-04
	20.9	1.61E-04	1.63E-04	1.66E-04	1.69E-04	1.15E-04	1.29E-04	1.31E-04
	22.9	1.03E-05	1.20E-04	1.33E-04	1.35E-04	2.22E-05	1.13E-05	1.15E-05
	25.1	1.21E-04	1.38E-05	3.34E-06	1.43E-05	1.46E-05	1.48E-05	2.66E-05
	27.5	1.03E-05	1.05E-05	1.07E-05	1.09E-05	1.11E-05	1.13E-05	3.60E-06
	30.2	1.36E-05	1.38E-05	1.40E-05	6.81E-06	6.94E-06	7.07E-06	3.60E-06
	33.1	3.23E-06	3.29E-06	3.34E-06	3.41E-06	3.47E-06	3.53E-06	7.20E-06
	36.3	3.73E-06	3.79E-06	7.20E-06	3.93E-06	4.00E-06	4.08E-06	5.54E-07
	39.8	3.73E-06	3.79E-06	5.14E-07	5.24E-07	1.07E-06	1.09E-06	1.11E-06
	43.7	4.96E-07	5.05E-07	5.14E-07	1.05E-06	5.33E-07	5.43E-07	5.54E-07
	47.9	4.96E-07	5.05E-07	1.03E-06	5.24E-07	5.33E-07	5.43E-07	5.54E-07
	52.5	5.71E-07	5.81E-07	7.72E-08	7.86E-08	1.60E-07	1.63E-07	1.66E-07
	57.5	1.49E-07	1.52E-07	1.54E-07	1.57E-07	8.00E-08	1.63E-07	1.66E-07
	63.1	7.45E-08	7.58E-08	7.72E-08	1.57E-07	1.60E-07	8.16E-08	8.31E-08
	69.2	8.55E-08	8.71E-08	8.86E-08	1.17E-08	1.19E-08	1.21E-08	1.23E-08
	75.9	1.11E-09	1.13E-08	2.29E-08	2.33E-08	2.38E-08	2.42E-08	2.47E-08
	83.2	2.21E-08	2.25E-08	1.15E-08	1.17E-08	1.19E-08	2.42E-08	2.47E-08
	91.2	1.11E-09	1.13E-08	1.15E-08	1.17E-08	1.19E-08	0.	0.
	100.0	1.71E-09	1.74E-09	1.77E-09	1.80E-09	1.83E-09	1.87E-09	3.81E-09
SEEDED	10.0	0.	0.	0.	0.	0.	0.	0.
	11.0	0.	0.	0.	0.	0.	0.	0.
	12.0	0.	0.	0.	0.	0.	0.	0.
	13.2	0.	0.	0.	0.	0.	3.11E-07	1.52E-06
	14.5	0.	0.	0.	3.00E-07	3.82E-07	5.58E-06	1.84E-05
	15.9	2.84E-07	3.61E-07	2.45E-06	5.38E-06	1.88E-05	1.37E-05	1.41E-05
	17.4	5.10E-06	7.66E-06	1.61E-05	1.58E-05	1.35E-05	2.85E-05	2.56E-05
	19.1	1.50E-05	2.30E-05	1.31E-05	2.48E-05	1.78E-05	1.73E-05	3.20E-05
	20.9	2.35E-05	1.37E-05	3.03E-05	1.67E-05	3.76E-05	3.01E-05	2.83E-05
	22.9	1.58E-05	2.98E-05	2.32E-05	3.43E-05	2.73E-05	6.40E-05	4.25E-05
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	30.2	3.97E-05	6.58E-05	4.31E-05	4.39E-05	5.13E-05	6.22E-05	5.04E-05
	33.1	5.11E-05	6.55E-05	4.95E-05	9.80E-05	4.85E-05	7.88E-05	4.00E-05
	36.3	8.34E-05	4.60E-05	5.42E-05	3.78E-05	3.85E-05	2.86E-05	2.92E-05
	39.8	3.59E-05	3.65E-05	5.68E-05	2.76E-05	3.17E-05	1.84E-05	1.88E-05
	43.7	2.62E-05	3.35E-05	1.74E-05	1.77E-05	1.99E-05	9.29E-06	9.47E-06
	47.9	1.68E-05	1.89E-05	8.79E-06	8.95E-06	7.96E-06	4.39E-06	4.47E-06
	52.5	1.09E-05	4.08E-06	4.15E-06	4.23E-06	2.06E-06	2.10E-06	2.14E-06
	57.5	3.52E-06	1.95E-06	1.99E-06	2.21E-06	9.71E-07	9.89E-07	1.01E-06
	63.1	9.04E-07	9.20E-07	9.36E-07	9.42E-07	4.57E-07	4.66E-07	4.75E-07
	69.2	4.25E-07	4.33E-07	4.41E-07	3.44E-07	1.90E-07	1.93E-07	1.97E-07
	75.9	1.77E-07	1.80E-07	1.83E-07	1.31E-07	4.79E-08	4.88E-08	4.97E-08
	83.2	4.45E-08	4.53E-08	4.61E-08	3.29E-08	2.37E-08	2.41E-08	2.46E-08
	91.2	2.20E-08	2.24E-08	2.28E-08	1.86E-08	9.58E-09	9.77E-09	9.96E-09
	100.0	8.92E-09	9.09E-09	9.24E-09	9.41E-09	2.86E-09	4.85E-09	4.95E-09

TABLE 4

Natural and Seeded Large Drop Concentrations (cm^{-3})

(Salt Distribution "2", 10^{-5} g m^{-3}, Mid-cloud Seeding)

	Radius (μm)	Cloud Base Temperature (°C) -5	0	5	10	15	20	25
NATURAL	10.0	7.77E-04	1.39E-03	8.45E-04	6.13E-04	6.29E-04	3.90E-04	4.37E-04
	11.0	6.39E-04	5.40E-05	4.24E-04	5.46E-04	4.20E-04	5.47E-04	1.21E-04
	12.0	4.65E-04	7.07E-04	4.53E-04	3.57E-04	1.17E-04	2.51E-04	2.55E-04
	13.2	3.35E-04	1.11E-04	2.33E-04	2.42E-04	2.47E-04	1.77E-04	3.59E-04
	14.5	3.90E-04	3.97E-04	2.79E-04	3.40E-04	3.46E-04	2.95E-04	1.21E-04
	15.9	1.67E-04	1.65E-04	1.68E-04	1.15E-04	1.17E-04	1.18E-04	1.79E-04
	17.4	2.16E-04	2.20E-04	1.11E-04	2.33E-04	2.88E-04	1.76E-04	1.79E-04
	19.1	1.71E-04	1.74E-04	1.77E-04	1.09E-05	1.83E-04	1.87E-04	1.31E-04
	20.9	1.61E-04	1.63E-04	1.66E-04	1.69E-04	1.15E-04	1.29E-04	1.31E-04
	22.9	1.03E-05	1.20E-04	1.33E-04	1.35E-04	2.22E-05	1.13E-05	1.15E-05
	25.1	1.21E-04	1.38E-05	3.34E-06	1.43E-05	1.46E-05	1.48E-05	2.66E-05
	27.5	1.03E-05	1.05E-05	1.07E-05	1.09E-05	1.11E-05	1.13E-05	3.60E-06
	30.2	1.36E-05	1.38E-05	1.40E-05	6.81E-06	6.94E-06	7.07E-06	3.60E-06
	33.1	3.23E-06	3.29E-06	3.34E-06	3.41E-06	3.47E-06	3.53E-06	7.20E-06
	36.3	3.73E-06	3.79E-06	7.20E-06	3.93E-06	4.00E-06	4.08E-06	5.54E-07
	39.8	3.73E-06	3.79E-06	5.14E-07	5.24E-07	1.07E-06	1.09E-06	1.11E-06
	43.7	4.96E-07	5.05E-07	5.14E-07	1.05E-06	5.33E-07	5.43E-07	5.54E-07
	47.9	4.95E-07	5.05E-07	1.03E-06	5.24E-07	5.33E-07	5.43E-07	5.54E-07
	52.5	5.71E-07	5.81E-07	7.72E-08	7.86E-08	1.60E-07	1.63E-07	1.66E-07
	57.5	1.49E-07	1.52E-07	1.54E-07	1.57E-07	8.00E-08	1.63E-07	1.65E-07
	63.1	7.45E-08	7.58E-08	7.72E-08	1.57E-07	1.60E-07	8.16E-08	8.31E-08
	69.2	8.56E-08	8.71E-08	8.86E-08	1.17E-08	1.19E-08	1.21E-08	1.23E-08
	75.9	1.11E-08	1.13E-08	2.29E-08	2.33E-08	2.38E-08	2.42E-08	2.47E-08
	83.2	2.21E-08	2.25E-08	1.15E-08	1.17E-09	1.19E-08	2.42E-08	2.47E-09
	91.2	1.11E-09	1.13E-09	1.15E-08	1.17E-09	1.19E-08	0.	0.
	100.0	1.71E-09	1.74E-09	1.77E-09	1.80E-09	1.83E-09	1.87E-09	3.81E-09
SEEDED	10.0	0.	0.	0.	0.	0.	0.	0.
	11.0	0.	0.	0.	0.	0.	0.	0.
	12.0	0.	0.	0.	0.	0.	3.85E-07	3.72E-06
	13.2	0.	0.	0.	3.71E-07	3.78E-07	5.45E-06	1.60E-05
	14.5	1.41E-07	3.58E-07	1.40E-06	5.25E-06	1.86E-05	1.35E-05	1.39E-05
	15.9	5.19E-06	5.07E-06	1.69E-05	1.30E-05	1.34E-05	2.82E-05	1.83E-05
	17.4	1.24E-05	2.53E-05	1.29E-05	2.72E-05	1.43E-05	1.71E-05	3.87E-05
	19.1	2.31E-05	1.35E-05	2.02E-05	1.65E-05	3.59E-05	2.41E-05	2.80E-05
	20.9	1.83E-05	1.59E-05	3.27E-05	2.34E-05	3.17E-05	3.57E-05	4.21E-05
	22.9	2.22E-05	4.81E-05	2.60E-05	5.83E-05	4.05E-05	7.61E-05	4.39E-05
	25.1	5.53E-05	3.84E-05	3.91E-05	4.94E-05	4.22E-05	4.50E-05	5.65E-05
	27.5	4.69E-05	4.00E-05	8.33E-05	4.34E-05	7.47E-05	5.17E-05	8.21E-05
	30.2	4.12E-05	6.11E-05	4.90E-05	4.98E-05	6.83E-05	4.89E-05	4.96E-05
	33.1	5.62E-05	7.43E-05	4.63E-05	6.21E-05	3.82E-05	3.89E-05	2.89E-05
	36.3	7.13E-05	3.61E-05	3.68E-05	4.98E-05	2.78E-05	2.84E-05	1.86E-05
	39.8	2.59E-05	2.64E-05	3.03E-05	1.75E-05	1.79E-05	2.00E-05	9.38E-06
	43.7	1.66E-05	1.69E-05	1.90E-05	8.86E-06	9.03E-06	9.10E-06	4.43E-06
	47.9	8.41E-06	8.55E-06	7.59E-06	4.19E-06	4.26E-06	3.44E-06	2.12E-06
	52.5	3.97E-06	4.81E-06	1.96E-06	2.00E-06	2.04E-06	1.64E-06	9.99E-07
	57.5	1.90E-06	1.70E-06	9.27E-07	9.43E-07	9.61E-07	6.80E-07	4.70E-07
	63.1	6.95E-07	7.07E-07	4.37E-07	4.44E-07	4.53E-07	3.69E-07	1.56E-07
	69.2	4.22E-07	2.28E-07	1.81E-07	1.84E-07	1.88E-07	1.91E-07	5.87E-08
	75.9	1.04E-07	7.15E-08	4.57E-08	4.65E-08	4.74E-08	4.83E-08	2.95E-08
	83.2	3.53E-08	2.23E-08	2.26E-08	2.30E-08	2.34E-08	2.39E-08	2.43E-08
	91.2	2.18E-08	1.43E-08	9.15E-09	9.31E-09	9.49E-09	9.67E-09	9.85E-09
	100.0	8.83E-09	4.49E-09	3.64E-09	4.51E-09	4.71E-09	4.80E-09	4.90E-09

TABLE 5

Natural and Seeded Large Drop Concentrations (cm^{-3})

(Salt Distribution "3", 10^{-5} g m^{-3}, Base Seeding)

	Radius (μm)	Cloud Base Temperature (°C) -5	0	5	10	15	20	25
NATURAL	10.0	7.77E-04	1.39E-03	8.45E-04	6.18E-04	6.29E-04	3.90E-04	4.37E-04
	11.0	6.39E-04	5.40E-05	4.24E-04	5.46E-04	4.20E-04	5.47E-04	1.21E-04
	12.0	4.65E-04	7.07E-04	4.63E-04	3.57E-04	1.17E-04	2.51E-04	2.56E-04
	13.2	3.38E-04	1.11E-04	2.38E-04	2.42E-04	2.47E-04	1.77E-04	3.59E-04
	14.5	3.90E-04	3.97E-04	2.79E-04	3.40E-04	3.46E-04	2.95E-04	1.21E-04
	15.9	1.62E-04	1.65E-04	1.68E-04	1.15E-04	1.17E-04	1.18E-04	1.79E-04
	17.4	2.16E-04	2.20E-04	1.11E-04	2.83E-04	2.88E-04	1.76E-04	1.79E-04
	19.1	1.71E-04	1.74E-04	1.77E-04	1.09E-05	1.83E-04	1.87E-04	1.31E-04
	20.9	1.61E-04	1.63E-04	1.66E-04	1.69E-04	1.15E-04	1.29E-04	1.31E-04
	22.9	1.03E-05	1.20E-04	1.33E-04	1.35E-04	2.22E-05	1.13E-05	1.15E-05
	25.1	1.21E-04	1.38E-05	3.34E-06	1.43E-05	1.46E-05	1.48E-05	2.66E-05
	27.5	1.03E-05	1.05L-05	1.07E-05	1.09E-05	1.11E-05	1.13E-05	3.60E-06
	30.2	1.36E-05	1.38E-05	1.40E-05	6.81E-06	6.94E-06	7.07E-06	3.60E-06
	33.1	3.23E-06	3.29E-06	3.34E-06	3.41E-06	3.47E-06	3.53E-06	7.20E-06
	36.3	3.73E-06	3.79E-06	7.20E-06	3.93E-06	4.00E-06	4.08E-06	5.54E-07
	39.8	3.73E-06	3.79E-06	5.14E-07	5.24E-07	1.07E-06	1.09E-06	1.11E-06
	43.7	4.96E-07	5.05E-07	5.14E-07	1.05E-06	5.33E-07	5.43E-07	5.54E-07
	47.9	4.96E-07	5.05E-07	1.03E-06	5.24E-07	5.33E-07	5.43E-07	5.54E-07
	52.5	5.71E-07	5.81E-07	7.72E-08	7.86E-08	1.60E-07	1.63E-07	1.66E-07
	57.5	1.49E-07	1.52E-07	1.54E-07	1.57E-07	8.00E-08	1.63E-07	1.66E-07
	63.1	7.45E-08	7.58E-08	7.72E-08	1.57E-07	1.60E-07	8.16E-08	8.31E-08
	69.2	8.56E-08	8.71E-08	8.86E-08	1.17E-08	1.19E-08	1.21E-08	1.23E-08
	75.9	1.11E-08	1.13E-08	2.29E-08	2.33E-08	2.38E-08	2.42E-08	2.47E-08
	83.2	2.21E-08	2.25E-08	1.15E-08	1.17E-08	1.19E-08	2.42E-08	2.47E-08
	91.2	1.11E-08	1.13E-08	1.15E-08	1.17E-08	1.19E-08	0.	0.
	100.0	1.71E-09	1.74E-09	1.77E-09	1.80E-09	1.83E-09	1.87E-09	3.81E-09
SEEDED	10.0	0.	0.	0.	0.	0.	0.	0.
	11.0	0.	0.	0.	0.	0.	0.	0.
	12.0	0.	0.	0.	0.	0.	0.	0.
	13.2	0.	0.	0.	0.	0.	1.76E-07	2.88E-07
	14.5	0.	0.	0.	1.70E-07	2.16E-07	3.56E-07	7.04E-07
	15.9	1.61E-07	2.05E-07	3.26E-07	3.43E-07	7.39E-07	4.41E-07	7.96E-07
	17.4	3.25E-07	3.72E-07	5.94E-07	5.76E-07	7.66E-07	1.89E-06	2.56E-06
	19.1	5.46E-07	1.05E-06	7.39E-07	1.67E-06	1.55E-06	2.35E-06	3.78E-06
	20.9	1.58E-06	1.03E-06	3.27E-06	2.26E-06	4.56E-06	3.32E-06	2.81E-06
	22.9	2.15E-06	3.73E-06	2.62E-06	3.73E-06	2.70E-06	4.98E-06	2.83E-06
	25.1	3.54E-06	3.59E-06	2.61E-06	4.27E-06	2.73E-06	3.93E-06	8.27E-06
	27.5	4.05E-06	2.58E-06	6.35E-06	3.79E-06	7.96E-06	4.18E-06	7.05E-06
	30.2	3.59E-06	5.99E-06	3.95E-06	4.02E-06	6.79E-06	8.32E-06	7.16E-06
	33.1	5.08E-06	7.98E-06	6.54E-06	1.34E-05	6.90E-06	1.30E-05	7.57E-06
	36.3	1.15E-05	6.53E-06	8.05E-06	7.15E-06	7.28E-06	8.04E-06	8.20E-06
	39.8	6.78E-06	6.90E-06	1.32E-05	7.75E-06	9.55E-06	8.43E-06	8.59E-06
	43.7	7.35E-06	1.06E-05	7.98E-06	8.12E-06	1.24E-05	9.81E-06	1.00E-05
	47.9	7.70E-06	1.38E-05	9.29E-06	9.46E-06	1.29E-05	9.21E-06	9.39E-06
	52.5	1.40E-05	8.57E-06	8.72E-06	8.88E-06	7.51E-06	7.66E-06	7.80E-06
	57.5	1.04E-05	7.12E-06	7.25E-06	8.43E-06	5.35E-06	5.46E-06	5.56E-06
	63.1	4.99E-06	5.07E-06	5.16E-06	5.53E-06	3.36E-06	3.42E-06	3.49E-06
	69.2	3.13E-06	3.18E-06	3.24E-06	2.62E-06	1.62E-06	1.65E-06	1.68E-06
	75.9	1.51E-06	1.54E-06	1.56E-06	1.21E-06	6.50E-07	6.62E-07	6.75E-07
	83.2	6.05E-07	6.15E-07	6.26E-07	4.28E-07	2.31E-07	2.36E-07	2.40E-07
	91.2	2.15E-07	2.19E-07	2.23E-07	1.92E-07	5.43E-08	5.53E-08	5.64E-08
	100.0	5.05E-09	5.14E-08	5.23E-08	5.33E-08	4.61E-09	7.83E-09	7.98E-09

TABLE 6

Natural and Seeded Large Drop Concentrations (cm^{-3})

(Salt Distribution "3", 10^{-5} g m^{-3}, Mid-cloud Seeding)

	Radius (μm)	Cloud Base Temperature (°C) -5	0	5	10	15	20	25
NATURAL	10.0	7.77E-04	1.30E-03	4.45E-04	6.19E-04	6.29E-04	3.90E-04	4.37E-04
	11.0	6.39E-04	5.40E-05	4.24E-04	5.46E-04	4.20E-04	5.47E-04	1.21E-04
	12.0	4.65E-04	7.07E-04	4.63E-04	3.57E-04	1.17E-04	2.51E-04	2.56E-04
	13.2	3.38E-04	1.11E-04	2.39E-04	2.42E-04	2.47E-04	1.77E-04	3.59E-04
	14.5	3.99E-04	3.97E-04	2.79E-04	3.40E-04	3.46E-04	2.95E-04	1.21E-04
	15.9	1.62E-04	1.65E-04	1.68E-04	1.15E-04	1.17E-04	1.19E-04	1.79E-04
	17.4	2.16E-04	2.20E-04	1.11E-04	2.83E-04	2.88E-04	1.76E-04	1.79E-04
	19.1	1.71E-04	1.74E-04	1.77E-04	1.09E-05	1.83E-04	1.87E-04	1.31E-04
	20.9	1.61E-04	1.63E-04	1.66E-04	1.69E-04	1.15E-04	1.29E-04	1.31E-04
	22.9	1.03E-05	1.20E-04	1.33E-04	1.35E-04	2.22E-05	1.13E-05	1.15E-05
	25.1	1.21E-04	1.38E-05	3.34E-06	1.43E-05	1.46E-05	1.48E-05	2.66E-05
	27.5	1.33E-05	1.05E-05	1.07E-05	1.09E-05	1.11E-05	1.13E-05	3.60E-06
	30.2	1.36E-05	1.38E-05	1.40E-05	6.81E-06	6.94E-06	7.07E-06	3.60E-06
	33.1	3.23E-06	3.29E-06	3.34E-06	3.41E-06	3.47E-06	3.53E-06	7.20E-06
	36.3	3.73E-06	3.79E-06	7.20E-06	3.93E-06	4.00E-06	4.08E-06	5.54E-07
	39.8	3.73E-06	3.79E-06	5.14E-07	5.24E-07	1.07E-06	1.09E-06	1.11E-06
	43.7	4.96E-07	5.05E-07	5.14E-07	1.05E-06	5.33E-07	5.43E-07	5.54E-07
	47.9	4.96E-07	5.05E-07	1.03E-06	5.24E-07	5.33E-07	5.43E-07	5.54E-07
	52.5	5.71E-07	5.81E-07	7.72E-08	7.86E-08	1.60E-07	1.63E-07	1.66E-07
	57.5	1.49E-07	1.52E-07	1.54E-07	1.57E-07	8.00E-08	1.63E-07	1.66E-07
	63.1	7.45E-08	7.58E-08	7.72E-08	1.57E-07	1.60E-07	8.16E-08	8.31E-08
	69.2	8.56E-09	8.71E-08	8.86E-08	1.17E-08	1.19E-08	1.21E-08	1.23E-08
	75.9	1.11E-08	1.13E-08	2.29E-08	2.33E-08	2.38E-08	2.42E-08	2.47E-08
	83.2	2.21E-09	2.25E-08	1.15E-08	1.17E-08	1.19E-08	2.42E-08	2.47E-08
	91.2	1.11E-08	1.13E-08	1.15E-08	1.17E-08	1.19E-08	0.	0.
	100.0	1.71E-09	1.74E-09	1.77E-09	1.80E-09	1.83E-09	1.87E-09	3.81E-09
SEEDED	10.0	0.	0.	0.	0.	0.	0.	0.
	11.0	0.	0.	0.	0.	0.	0.	0.
	12.0	0.	0.	0.	0.	0.	2.18E-07	4.11E-07
	13.2	0.	0.	0.	2.10E-07	2.14E-07	3.09E-07	5.71E-07
	14.5	7.96E-08	2.03E-07	2.65E-07	2.97E-07	7.31E-07	4.37E-07	7.88E-07
	15.9	4.01E-07	2.87E-07	6.47E-07	4.21E-07	7.59E-07	1.87E-06	1.59E-06
	17.4	3.99E-07	1.13E-06	7.31E-07	1.80E-06	1.07E-06	2.32E-06	4.69E-06
	19.1	1.51E-06	1.02E-06	1.92E-06	2.24E-06	4.43E-06	2.74E-06	2.78E-06
	20.9	2.32E-05	2.16E-06	3.92E-06	2.64E-06	3.21E-06	3.28E-06	2.80E-06
	22.9	2.51E-06	5.08E-06	2.59E-06	4.74E-06	2.70E-06	6.09E-06	3.97E-06
	25.1	4.50E-06	2.56E-06	2.60E-06	4.28E-06	3.82E-06	4.13E-06	5.61E-06
	27.5	4.06E-06	3.62E-06	7.60E-06	3.98E-06	8.09E-06	6.84E-06	1.13E-05
	30.2	3.78E-06	6.39E-06	6.48E-06	6.59E-06	9.51E-06	6.95E-06	8.91E-06
	33.1	7.53E-06	1.03E-05	6.58E-06	9.53E-06	7.21E-06	7.35E-06	8.11E-06
	36.3	1.18E-05	6.83E-06	6.95E-06	1.19E-05	7.81E-06	7.96E-06	8.50E-06
	39.8	7.27E-06	7.40E-06	9.11E-06	8.04E-06	8.19E-06	1.03E-05	9.90E-06
	43.7	7.62E-06	7.76E-06	1.18E-05	9.36E-06	9.53E-06	1.14E-05	9.30E-06
	47.9	8.88E-06	9.03E-06	1.23E-05	8.79E-06	8.95E-06	8.50E-06	7.73E-06
	52.5	9.33E-06	1.13E-05	7.17E-06	7.30E-06	7.44E-06	6.71E-06	5.50E-06
	57.5	6.93E-06	7.24E-06	5.11E-06	5.20E-06	5.30E-06	3.92E-06	3.46E-06
	63.1	4.94E-06	4.53E-06	3.21E-06	3.27E-06	3.33E-06	2.71E-06	1.33E-06
	69.2	3.10E-06	1.85E-06	1.55E-06	1.58E-06	1.60E-06	1.63E-06	6.00E-07
	75.9	1.61E-06	7.91E-07	6.20E-07	6.31E-07	6.43E-07	6.55E-07	4.01E-07
	83.2	4.79E-07	2.52E-07	2.21E-07	2.25E-07	2.29E-07	2.33E-07	2.38E-07
	91.2	2.13E-07	1.17E-07	5.18E-08	5.27E-08	5.37E-08	5.47E-08	5.58E-08
	100.0	5.00E-09	2.18E-09	5.86E-09	7.46E-09	7.60E-09	7.75E-09	7.90E-09

TABLE 7

Natural and Seeded Large Drop Concentrations (cm^{-3})

(Salt Distribution "4", 10^{-5} g m~^{3}, Base Seeding)

	Radius (μm)	Cloud Base Temperature (°C) -5	0	5	10	15	20	25
NATURAL	10.0	7.77E-04	1.39E-03	8.45E-04	6.14E-04	6.29E-04	3.90E-04	4.37E-04
	11.0	6.39E-04	5.40E-05	4.24E-04	5.46E-04	4.20E-04	5.47E-04	1.21E-04
	12.0	4.55E-04	7.07E-04	4.63E-04	3.57E-04	1.17E-04	2.51E-04	2.56E-04
	13.2	3.38E-04	1.11E-04	2.38E-04	2.42E-04	2.47E-04	1.77E-04	3.59E-04
	14.5	3.90E-04	3.97E-04	2.79E-04	3.40E-04	3.46E-04	2.95E-04	1.21E-04
	15.9	1.62E-04	1.65E-04	1.69E-04	1.15E-04	1.17E-04	1.18E-04	1.79E-04
	17.4	2.16E-04	2.20E-04	1.11E-04	2.83E-04	2.88E-04	1.76E-04	1.79E-04
	19.1	1.71E-04	1.74E-04	1.77E-04	1.09E-05	1.83E-04	1.87E-04	1.31E-04
	20.9	1.61E-04	1.63E-04	1.66E-04	1.69E-04	1.15E-04	1.29E-04	1.31E-04
	22.9	1.03E-05	1.20E-04	1.33E-04	1.35E-04	2.22E-05	1.13E-05	1.15E-05
	25.1	1.21E-04	1.38E-05	3.34E-06	1.43E-05	1.46E-05	1.48E-05	2.66E-05
	27.5	1.03E-05	1.05E-05	1.07E-05	1.09E-05	1.11E-05	1.13E-05	3.60E-06
	30.2	1.36E-05	1.38E-05	1.40E-05	6.81E-06	6.94E-06	7.07E-06	3.60E-06
	33.1	3.23E-06	3.29E-06	3.34E-06	3.41E-06	3.47E-06	3.53E-06	7.20E-06
	36.3	3.73E-06	3.79E-06	7.20E-06	3.93E-06	4.00E-06	4.08E-06	5.54E-07
	39.8	3.73E-06	3.79E-06	5.14E-07	5.24E-07	1.07E-06	1.09E-06	1.11E-06
	43.7	4.96E-07	5.05E-07	5.14E-07	1.05E-06	5.33E-07	5.43E-07	5.54E-07
	47.9	4.96E-07	5.05E-07	1.03E-06	5.24E-07	5.33E-07	5.43E-07	5.54E-07
	52.5	5.71E-07	5.81E-07	7.72E-09	7.86E-08	1.60E-07	1.63E-07	1.66E-07
	57.5	1.49E-07	1.52E-07	1.54E-07	1.57E-07	8.00E-08	1.63E-07	1.66E-07
	63.1	7.45E-08	7.58E-08	7.72E-08	1.57E-07	1.60E-07	8.16E-08	8.31E-08
	69.2	8.56E-08	8.71E-08	8.86E-08	1.17E-08	1.19E-08	1.21E-08	1.23E-08
	75.9	1.11E-08	1.13E-08	2.29E-08	2.33E-08	2.38E-08	2.42E-08	2.47E-08
	83.2	2.21E-09	2.25E-08	1.15E-08	1.17E-08	1.19E-08	2.42E-08	2.47E-08
	91.2	1.11E-08	1.13E-08	1.15E-08	1.17E-08	1.19E-08	0.	0.
	100.0	1.71E-09	1.74E-09	1.77E-09	1.80E-09	1.83E-09	1.87E-09	3.81E-09
SEEDED	10.0	0.	0.	0.	0.	0.	0.	0.
	11.0	0.	0.	0.	0.	0.	0.	0.
	12.0	0.	0.	0.	0.	0.	0.	0.
	13.2	0.	0.	0.	0.	0.	3.19E-08	6.95E-08
	14.5	0.	0.	0.	3.08E-09	3.92E-08	1.50E-07	3.19E-07
	15.9	2.92E-08	3.71E-08	9.14E-09	1.44E-07	3.35E-07	2.00E-07	2.90E-07
	17.4	1.37E-07	1.69E-07	2.70E-07	2.47E-07	2.79E-07	1.09E-06	1.69E-06
	19.1	2.35E-07	4.13E-07	2.69E-07	9.92E-07	1.07E-06	1.42E-06	2.64E-06
	20.9	9.41E-07	7.46E-07	2.11E-06	1.37E-06	3.10E-06	2.44E-06	2.18E-06
	22.9	1.30E-06	2.45E-06	1.91E-06	2.77E-06	2.10E-06	3.71E-06	2.04E-06
	25.1	2.63E-06	2.74E-06	2.03E-06	3.16E-06	1.96E-06	1.78E-06	4.40E-06
	27.5	3.00E-06	1.86E-06	3.58E-06	1.72E-06	4.23E-06	2.53E-06	2.74E-06
	30.2	1.63E-06	3.07E-06	2.40E-06	2.44E-06	2.64E-06	3.32E-06	3.24E-06
	33.1	2.80E-06	3.44E-06	2.54E-06	5.65E-06	3.12E-06	5.69E-06	3.21E-06
	36.3	4.86E-06	2.95E-06	3.60E-06	3.03E-06	3.09E-06	3.85E-06	3.92E-06
	39.8	2.88E-06	2.93E-06	6.02E-06	3.71E-06	4.53E-06	3.82E-06	3.90E-06
	43.7	3.51E-06	5.00E-06	3.62E-06	3.68E-06	5.16E-06	3.67E-06	3.74E-06
	47.9	3.49E-06	5.54E-06	3.47E-06	3.53E-06	5.09E-06	3.72E-06	3.79E-06
	52.5	5.39E-06	3.46E-06	3.52E-06	3.59E-06	3.76E-06	3.83E-06	3.91E-06
	57.5	4.86E-06	3.56E-06	3.63E-06	4.38E-06	3.50E-06	3.56E-06	3.63E-06
	63.1	3.25E-06	3.31E-06	3.37E-06	3.92E-06	2.98E-06	3.04E-06	3.10E-06
	69.2	2.78E-06	2.82E-06	2.88E-06	2.68E-06	2.34E-06	2.39E-06	2.43E-06
	75.9	2.18E-06	2.22E-06	2.26E-06	2.05E-06	1.71E-06	1.74E-06	1.78E-06
	83.2	1.59E-06	1.62E-06	1.65E-06	1.22E-06	1.09E-06	1.11E-06	1.13E-06
	91.2	1.01E-06	1.03E-06	1.05E-06	8.52E-07	5.24E-07	5.34E-07	5.44E-07
	100.0	4.88E-07	4.96E-07	5.05E-07	5.14E-07	1.26E-07	2.13E-07	2.17E-07

TABLE 8

Natural and Seeded Large Drop Concentrations (cm^{-3})

(Salt Distribution "4", 10^{-5} g m^{-3}, Mid-cloud Seeding)

	Radius (μm)	Cloud Base Temperature (°C) -5	0	5	10	15	20	25
NATURAL	10.0	7.77E-04	1.39E-03	8.45E-04	6.19E-04	6.29E-04	3.90E-04	4.37E-04
	11.0	6.39E-04	5.40E-05	4.24E-04	5.46E-04	4.20E-04	5.47E-04	1.21E-04
	12.0	4.65E-04	7.07E-04	4.63E-04	3.57E-04	1.17E-04	2.51E-04	2.56E-04
	13.2	3.38E-04	1.11E-04	2.38E-04	2.42E-04	2.47E-04	1.77E-04	3.59E-04
	14.5	3.90E-04	3.97E-04	2.79E-04	3.40E-04	3.46E-04	2.95E-04	1.21E-04
	15.9	1.62E-04	1.65E-04	1.68E-04	1.15E-04	1.17E-04	1.19E-04	1.79E-04
	17.4	2.16E-04	2.20E-04	1.11E-04	2.53E-04	2.88E-04	1.76E-04	1.79E-04
	19.1	1.71E-04	1.74E-04	1.77E-04	1.09E-05	1.83E-04	1.87E-04	1.31E-04
	20.9	1.51E-04	1.63E-04	1.66E-04	1.69E-04	1.15E-04	1.29E-04	1.31E-04
	22.9	1.03E-05	1.20E-04	1.33E-04	1.35E-04	2.22E-05	1.13E-05	1.15E-05
	25.1	1.21E-04	1.38E-05	3.34E-06	1.43E-05	1.46E-05	1.48E-05	2.66E-05
	27.5	1.03E-05	1.05E-05	1.07E-05	1.09E-05	1.11E-05	1.13E-05	3.60E-06
	30.2	1.36E-05	1.39E-05	1.40E-05	6.81E-06	6.94E-06	7.07E-06	3.60E-06
	33.1	3.23E-06	3.29E-06	3.34E-06	3.41E-06	3.47E-06	3.53E-06	7.20E-06
	36.3	3.73E-06	3.79E-06	7.20E-06	3.93E-06	4.00E-06	4.08E-06	5.54E-07
	39.8	3.73E-06	3.79E-06	5.14E-07	5.24E-07	1.07E-06	1.09E-06	1.11E-06
	43.7	4.96E-07	5.05E-07	5.14E-07	1.05E-06	5.33E-07	5.43E-07	5.54E-07
	47.9	4.96E-07	5.05E-07	1.03E-06	5.24E-07	5.33E-07	5.43E-07	5.54E-07
	52.5	5.71E-07	5.81E-07	7.77E-08	7.86E-08	1.60E-07	1.63E-07	1.66E-07
	57.5	1.49E-07	1.52E-07	1.54E-07	1.57E-07	8.00E-08	1.63E-07	1.66E-07
	63.1	7.45E-08	7.58E-08	7.72E-08	1.57E-07	1.60E-07	8.16E-08	8.31E-08
	69.2	8.56E-08	8.71E-08	8.86E-08	1.17E-08	1.19E-08	1.21E-08	1.23E-08
	75.9	1.11E-08	1.13E-08	2.29E-08	2.33E-08	2.38E-08	2.42E-08	2.47E-08
	83.2	2.21E-08	2.25E-08	1.15E-08	1.17E-08	1.19E-08	2.42E-08	2.47E-08
	91.2	1.11E-08	1.13E-08	1.15E-08	1.17E-08	1.19E-08	0.	0.
	100.0	1.71E-09	1.74E-09	1.77E-09	1.80E-09	1.83E-09	1.87E-09	3.81E-09

	Radius (μm)	-5	0	5	10	15	20	25
SEEDED	10.0	0.	0.	0.	0.	0.	0.	0.
	11.0	0.	0.	0.	0.	0.	0.	0.
	12.0	0.	0.	0.	0.	0.	3.95E-08	1.26E-07
	13.2	0.	0.	0.	3.81E-08	3.88E-08	1.40E-07	2.59E-07
	14.5	1.44E-08	3.67E-08	6.39E-08	1.35E-07	3.32E-07	1.98E-07	2.87E-07
	15.9	1.50E-07	1.30E-07	2.93E-07	1.91E-07	2.76E-07	1.08E-06	1.10E-06
	17.4	1.81E-07	4.45E-07	2.66E-07	1.04E-06	7.79E-07	1.41E-06	3.18E-06
	19.1	8.37E-07	7.38E-07	1.28E-06	1.36E-06	2.95E-06	2.00E-06	2.16E-06
	20.9	1.43E-06	1.31E-06	2.69E-06	1.92E-06	2.47E-06	2.51E-06	2.02E-06
	22.9	1.82E-06	3.83E-06	2.01E-06	3.57E-06	1.94E-06	3.35E-06	1.80E-06
	25.1	3.38E-06	1.84E-06	1.87E-06	2.08E-06	1.73E-06	2.51E-06	3.10E-06
	27.5	1.97E-06	1.64E-06	4.04E-06	2.41E-06	4.02E-06	2.66E-06	4.73E-06
	30.2	2.29E-06	3.32E-06	2.52E-06	2.56E-06	4.13E-06	3.14E-06	3.82E-06
	33.1	3.00E-06	4.40E-06	2.97E-06	4.23E-06	3.06E-06	3.12E-06	3.88E-06
	36.3	5.14E-06	2.90E-06	2.95E-06	5.47E-06	3.74E-06	3.81E-06	3.86E-06
	39.8	3.48E-06	3.54E-06	4.32E-06	3.65E-06	3.71E-06	4.51E-06	3.70E-06
	43.7	3.46E-06	3.52E-06	4.93E-06	3.50E-06	3.56E-06	4.38E-06	3.76E-06
	47.9	3.32E-06	3.38E-06	4.86E-06	3.55E-06	3.62E-06	3.73E-06	3.87E-06
	52.5	3.37E-06	4.84E-06	3.59E-06	3.66E-06	3.72E-06	3.69E-06	3.59E-06
	57.5	3.47E-06	4.08E-06	3.34E-06	3.40E-06	3.46E-06	2.72E-06	3.07E-06
	63.1	3.22E-06	3.55E-06	2.85E-06	2.90E-06	2.95E-06	2.41E-06	1.93E-06
	69.2	2.75E-06	2.32E-06	2.24E-06	2.28E-06	2.32E-06	2.36E-06	1.19E-06
	75.9	2.48E-06	1.72E-06	1.63E-06	1.66E-06	1.69E-06	1.72E-06	1.05E-06
	83.2	1.26E-06	9.31E-07	1.04E-06	1.05E-06	1.07E-06	1.09E-06	1.12E-06
	91.2	1.00E-06	7.01E-07	5.00E-07	5.09E-07	5.18E-07	5.28E-07	5.38E-07
	100.0	4.83E-07	2.36E-07	1.60E-07	2.03E-07	2.07E-07	2.11E-07	2.15E-07

Since the distributions shown in Tables 3-8 were generated by rigorously partitioning drops from a finite number of categories of nuclei into discrete size intervals, the distributions are not particularly smooth. There is, however, a systematic pattern in each of the three distributions for the number of large drops created by salt seeding relative to the number of comparable-sized drops from the background aerosol. This pattern is illustrated in Figure 2, which shows a smoothed presentation of the relative large drop concentration in a typical case (10^{-5} g m^{-3} of salt introduced at cloud base for a 5°C cloud base temperature). Since, in this study, increases or decreases in the seeding rate are modelled by directly changing the number of large drops created by the seeding, the effect of changing the seeding rate on the relative number of seeded and natural drops can be estimated by simply translating the curve in Figure 2 up or down by an appropiate amount. In all, seven different seeding rates were investigated, ranging from 10^{-8} g m^{-3}(more natural large drops than seeded drops) to 10^{-2} g m^{-3} (vastly larger numbers of seeded drops than natural drops).

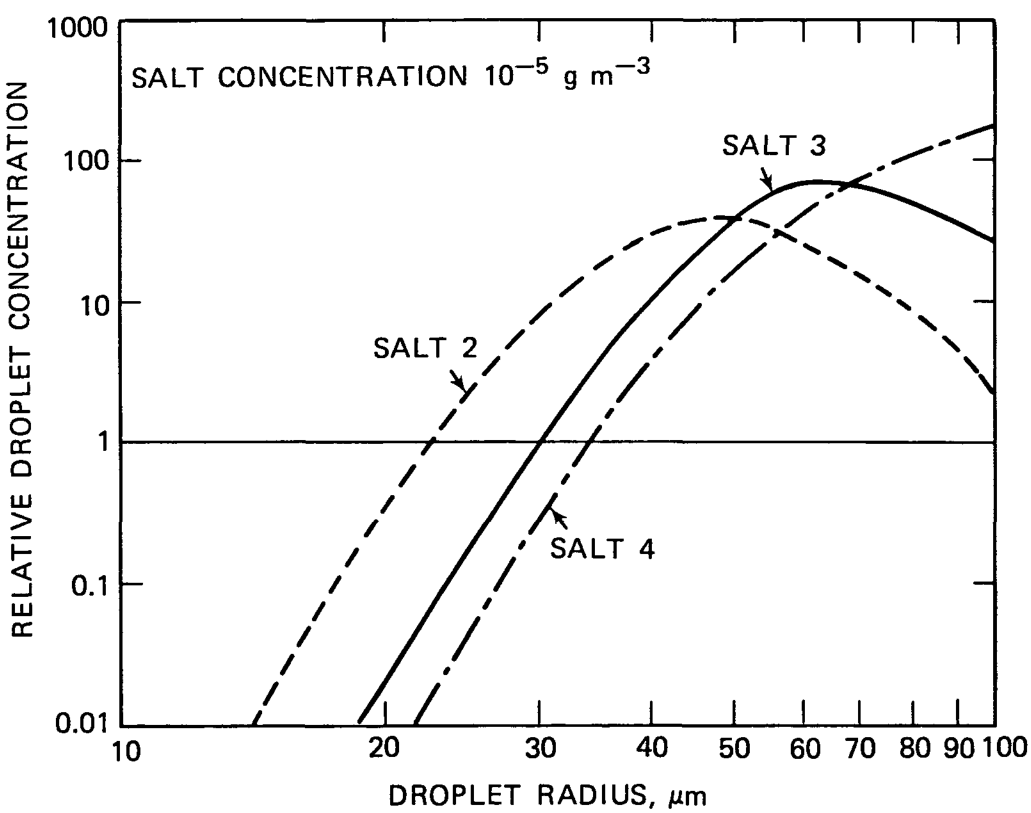

Figure 2. Number of large drops formed by seeding with 10^{-5} g m^{-3} of salt relative to the number of natural large drops (5°C cloud base temperature).

RESULTS

Two different models were used for the bulk of this study. Both are continuous collection models. Both are used to predict the onset of precipitation as signaled by the development of radar reflectivity factors exceeding 10 dBZ. Both models are described in detail in Appendix C. The first model neglects sedimentation of the growing drops and predicts the evolution of the radar reflectivity in a closed parcel rising at constant velocity. The second model follows the individual trajectories of the drops as they are carried aloft, grow, and eventually fall out of the rising current of air. In both cases, 52 separate categories of large drops (26 natural and 26 seeded) were used to define the evolution of the reflectivity. With this many separate classes of drops, and with the assumption of a steady state introduction of these particles into the base of the cloud, it is possible to go beyond illustration of sample trajectories to produce estimates of the complete time-height cross sections of radar reflectivity in the cloud as a whole (see Johnson, 1979).

Parcel Model

With the parcel model, the most basic result is the time or height necessary to produce a 10 dBZ first echo. In this part of the study, runs were performed to encompass seven different seeding rates (plus unseeded), seven different cloud base temperatures, and seven different updraft velocities. In each case, all seeding calculations were repeated using all three assumed salt distributions and for seeding at 0.5 and 1.0 km above cloud base as well as at cloud base. In these calculations (3126 separate computer runs) only adiabatic water contents were condisered. To test the possible effect of subadiabatic water contents, all runs for one of the salt distributions (distribution "3") were repeated with the water contents arbitrarily restricted to half their adiabatic values. Counting the unseeded control cases, this required 1078 additional computer runs. The results of these seeding runs, both adiabatic and half adiabatic, are presented in Appendix P.

Figure 3 illustrates the general pattern of reflectivity with height in the rising parcel. The right-most (unseeded) curve follows the traditional parcel model reflectivity pattern. At first, there are so few large drops that the main contribution to the reflectivity factor comes from the smaller, but vastly more numerous, cloud droplets. As these drops grow by condensation, the reflectivity first increases and then levels off around -15 dBZ as the steady reduction in droplet concentration per unit volume due to the continued expansion of the rising parcel balances droplet growth. Since most radars can only begin to detect atmospheric water drops when their collective reflectivity totals 10 dBZ or more, this early rise in reflectivity remains unobserved. Eventually a few large drops begin to grow toward precipitation sizes and the reflectivity rises to observable levels. Seeding with small quantities of salt (for example 10^{-6} g m^{-3}) will add large particles capable of growing into precipitation-sized drops and will speed the development of 10 dBZ reflectivities. The early pattern of reflectivity evolution due to cloud droplet condensational growth, however, will not be affected. If large quantities of salt are introduced in the rising parcel (for example 10^{-2} g m^{-3}), then the water drops forming on the seed nuclei will be numerous enough to immediately dominate the reflectivity (in this case, representing an initial reflectivity of almost

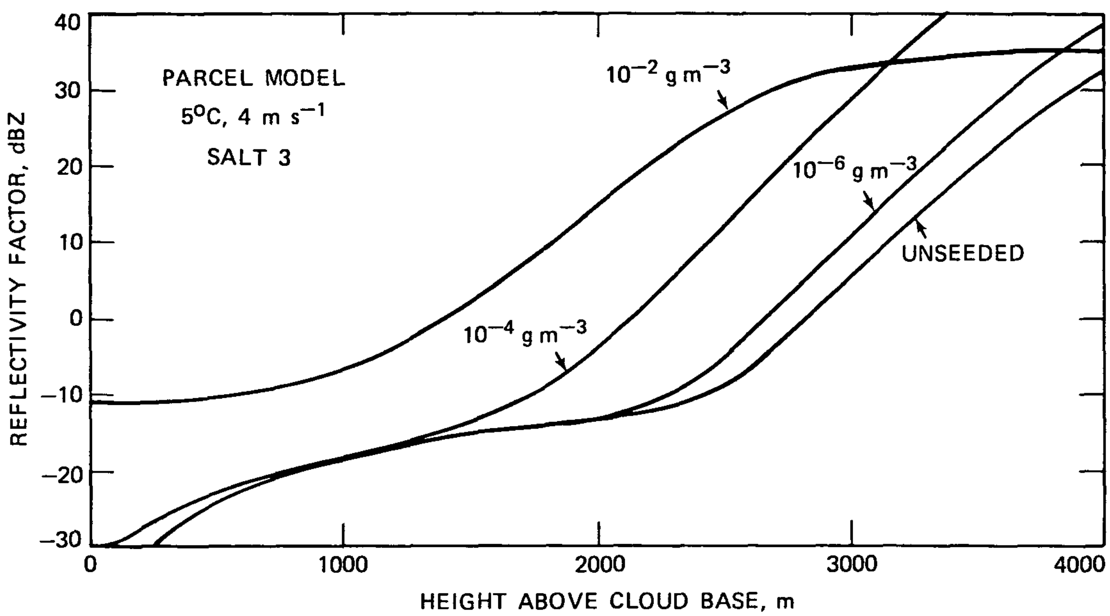

Figure 3. Evolution of reflectivity with height above cloud base predicted by the continuous collection parcel model for three different seeding rates (plus unseeded).

-10 dBZ), but will still show little additional growth until they start to grow into raindrops. In this case, however, there are so many growing drops that they rapidly deplete the supply of smaller cloud droplets, limiting their own growth and restricting the subsequent rise in the reflectivity factor.

The height at which the reflectivity first exceeds 10 dBZ is strongly dependent on both cloud base temperature and updraft velocity. Table 9 shows the height required to reach 10 dBZ for the natural (unseeded) cases.[2] In reality, of course, not all of these predictions would be realized since ice-phase processes, not modelled in this study, will often become active before coalescence rain has a chance to develop. Table 10 shows the effect of seeding with a wide range of salt concentrations for a single cloud base temperature (5°C) and updraft velocity (4 m s^{-1}). The smaller seeding rates have little effect. Once salt concentrations greater than 10^{-5} g m^{-3} are introduced, however, rather dramatic effects are predicted. By the standards used in previous studies, this is a *Very* high concentration of salt. For the same general conditions, for example, Rokicki and Young (1978) predicted a lowering of the first echo by about 1700 m for a seeding rate of 100 grams per square kilometer per minute (~4 x 10^{-7} g m^{-3}).

Table 11 shows the percentage change in the predicted height of the 10 dBZ first echo for various cloud base temperatures and updraft velocities. In each case, the rising parcel was seeded with a hefty 10^{-4} g m^{-3} of salt. Although there are large differences in the predicted heights of the 10 dBZ first echoes (see Table 9), the seeding effect, in

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[2] In all cases, model computations were terminated at 8.0 km above cloud base whether or not 10 dBZ had been reached.

TABLE 9

Height (m) of 10 dBZ First Echo
(Adiabatic Parcel Model, Unseeded)

Cloud Base Temperature (°C)	Updraft Velocity ($m\ s^{-1}$) 1	2	3	4	6	8	10
25	1121	1576	1927	2225	2734	3175	3573
20	1124	1597	1968	2288	2843	3332	3782
15	1180	1692	2100	2457	3088	3658	4195
10	1280	1854	2321	2737	3492	4198	4890
5	1420	2084	2640	3148	4105	5056	6053
0	1626	2431	3132	3801	5153	6656	>8000
-5	1897	2913	3857	4823	7063	>8000	>8000

TABLE 10

Height (m) of 10 dBZ First Echo for a 5°C Cloud Base and a 4 m s^{-1} Updraft (Adiabatic Parcel Model).

	Concentration of Salt (g m^{-3})	Distribution "2"	Distribution "3"	Distribution "4"
	UNSEEDED	3148	3148	3148
SEED AT CLOUD BASE	10^{-8}	3147 (0%)	3144 (0%)	3141 (0%)
	10^{-7}	3141 (0%)	3115 (-1%)	3091 (-2%)
	10^{-6}	3093 (-2%)	2975 (-5%)	2898 (-8%)
	10^{-5}	2921 (-7%)	2722 (-14%)	2617 (-17%)
	10^{-4}	2663 (-15%)	2442 (-22%)	2324 (-26%)
	10^{-3}	2384 (-24%)	2149 (-32%)	2019 (-36%)
	10^{-2}	2098 (-33%)	1842 (-42%)	1681 (-47%)
SEED AT 1.0 KM	10^{-8}	3148 (0%)	3147 (0%)	3146 (0%)
	10^{-7}	3146 (0%)	3138 (0%)	3129 (-1%)
	10^{-6}	3132 (-1%)	3076 (-2%)	3028 (-4%)
	10^{-5}	3045 (-3%)	2889 (-8%)	2797 (-11%)
	10^{-4}	2838 (-10%)	2632 (-16%)	2524 (-20%)
	10^{-3}	2578 (-18%)	2356 (-25%)	2236 (-29%)
	10^{-2}	2303 (-27%)	2061 (-35%)	1926 (-39%)

TABLE 11

Parcel Model Seeding Effect (% change in height of 10 dBZ first echo) for a Salt Concentration of 10^{-4} g m^{-3} (Salt Distribution "3").

	Cloud Base Temperature (°C)	Updraft Velocity ($m\ s^{-1}$) 1	2	3	4	6	8	10
SEED AT CLOUD BASE	25	-21%	-21%	-21%	-22%	-22%	-22%	-23%
	20	-21%	-21%	-22%	-22%	-23%	-23%	-24%
	15	-22%	-22%	-23%	-23%	-24%	-24%	-25%
	10	-22%	-23%	-23%	-24%	-25%	-26%	-27%
	5	-20%	-21%	-22%	-22%	-24%	-26%	-28%
	0	-21%	-22%	-23%	-24%	-27%	-30%	**
	-5	-21%	-23%	-25%	-27%	-32%	**	**
SEED AT 1.0 KM	25	0%	-3%	-8%	-12%	-15%	-17%	-19%
	20	0%	-3%	-8%	-11%	-14%	-17%	-18%
	15	0%	-3%	-8%	-12%	-15%	-17%	-19%
	10	0%	-6%	-11%	-14%	-17%	-20%	-22%
	5	-1%	-9%	-13%	-16%	-20%	-23%	-25%
	0	-3%	-12%	-16%	-19%	-23%	-27%	**
	-5	-5%	-13%	-17%	-21%	-26%	**	**

terms of the percentage change in the predicted height, is amazingly uniform. Delaying seeding until the parcel reaches some significant height above cloud base gives the natural nuclei a head start that reduces the net seeding effectiveness. This is particularly true for those cases in which the unseeded runs predict precipitation development in relatively thin clouds (warm cloud base temperatures and slow updrafts).

In general, cloud water contents are seldom adiabatic. To test the possible effect of subadiabatic water contents, a number of runs were repeated with the water contents arbitrarily restricted to half their adiabatic values. Table 12 shows the height required to reach 10 dBZ for the natural (unseeded) cases.[3] Table 13 shows the effect of seven different seeding rates for a single cloud base temperature (5°C) and updraft velocity (4 m s^{-1}). Table 14 shows the percentage change in the predicted height of the 10 dBZ first echo for various cloud base temperatures and updraft velocities for a single seeding rate (10^{-4} g m^{-3}). In spite of the change in water contents and greater depth of cloud needed to reach 10 dBZ, the pattern of the results and the magnitude of the seeding effects (expressed in percentages) is relatively unchanged.

While these runs have looked at a wide variety of initial conditions, the same background aerosol was used in each case. In order to test the sensitivity of the results to this particular aerosol distribution 32 additional runs of the parcel model were performed in which either (a) the total number of cloud droplets was greatly reduced without changing the number of natural large drops or (b) both the total number of cloud droplets and the number of natural large drops were reduced by the same amount (see Table 15). Reducing the total number of cloud droplets

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[3] As before, model computations were terminated at 8.0 km above cloud base whether or not 10 dBZ had been reached.

TABLE 12

Height (m) of 10 dBZ First Echo

(Parcel Model, Unseeded, Half Adiabatic Water Contents)

Cloud Base Temperature (°C)	Updraft Velocity (m s^{-1}) 1	2	3	4	6	8	10
25	1627	2287	2802	3245	4019	4711	5360
20	1654	2361	2927	3424	4315	5140	5945
15	1757	2547	3197	3785	4880	5957	7085
10	1931	2851	3639	4380	5856	7476	>8000
5	2176	3294	4308	5326	7623	>8000	>8000
0	2543	3998	5458	7124	>8000	>8000	>8000
-5	3050	5102	7617	>8000	>8000	>8000	>8000

TABLE 13

Height (m) of 10 dBZ First Echo for a 5°C Cloud Base and a 4 m s^{-1} Updraft (Half Adiabatic Water Contents).

Concentration of Salt ($g\ m^{-3}$)	Salt Distribution "3" SEED AT CLOUD BASE	SEED AT 1.0 KM
UNSEEDED	5325	5325
10^{-8}	5319 (0%)	5322 (0%)
10^{-7}	5260 (-1%)	5285 (-1%)
10^{-6}	4981 (-6%)	5074 (-5%)
10^{-5}	4494 (-16%)	4626 (-13%)
10^{-4}	3981 (-25%)	4122 (-23%)
10^{-3}	3470 (-35%)	3617 (-32%)
10^{-2}	2947 (-45%)	3103 (-42%)

TABLE 14

Parcel Model Seeding Effect for a Salt Concentration of 10^{-4} g m^{-3}
(Salt Distribution "3", Half Adiabatic Water Contents)

	Cloud Base Temperature (°C)	Updraft Velocity ($m\ s^{-1}$) 1	2	3	4	6	8	10
SEED AT CLOUD BASE	25	-21%	-21%	-21%	-21%	-22%	-23%	-24%
	20	-21%	-21%	-22%	-22%	-23%	-24%	-26%
	15	-22%	-23%	-23%	-24%	-26%	-27%	-29%
	10	-22%	-23%	-24%	-25%	-28%	-31%	**
	5	-20%	-22%	-23%	-25%	-30%	**	**
	0	-21%	-24%	-27%	-30%	**	**	**
	-5	-22%	-26%	-32%	**	**	**	**
SEED AT 1.0 KM	25	-4%	-12%	-15%	-17%	-19%	-21%	-22%
	20	-4%	-12%	-15%	-17%	-19%	-21%	-22%
	15	-5%	-12%	-15%	-17%	-20%	-22%	-25%
	10	-7%	-14%	-18%	-20%	-23%	-27%	**
	5	-9%	-16%	-20%	-23%	-28%	**	**
	0	-12%	-19%	-23%	-28%	**	**	**
	-5	-13%	-20%	-27%	**	**	**	**

TABLE 15

Height (m) of 10 dBZ First Echo

(Adiabatic Parcel Model, Cloud Base Seeding with Salt "3")

Concentration of Salt ($g\ m^{-3}$)	5°C Cloud Base, 4 m s^{-1} Updraft			15°C Cloud Base, 4 m s^{-1} Updraft		
	759 cm^{-3}	(a) 150 cm^{-3}	(b) 150 cm^{-3}	631 cm^{-3}	(a) 100 cm^{-3}	(b) 100 cm^{-3}
UNSEEDED	3148	2746	2972	2457	2191	2335
10^{-8}	3144 (0%)	2743 (0%)	2954 (-1%)	2453 (0%)	2188 (0%)	2323 (-1%)
10^{-7}	3115 (-1%)	2719 (-1%)	2856 (-4%)	2424 (-1%)	2167 (-1%)	2254 (-3%)
10^{-6}	2975 (-5%)	2599 (-5%)	2632 (-11%)	2301 (-6%)	2065 (-6%)	2084 (-11%)
10^{-5}	2722 (-14%)	2370 (-14%)	2374 (-20%)	2106 (-14%)	1882 (-14%)	1884 (-19%)
10-"	2442 (-22%)	2112 (-23%)	2112 (-29%)	1891 (-23%)	1675 (-24%)	1675 (-28%)
10^{-3}	2149 (-32%)	1836 (-33%)	1836 (-38%)	1659 (-32%)	1450 (-34%)	1450 (-38%)
10^{-2}	1832 (-42%)	1539 (-44%)	1539 (-48%)	1396 (-43%)	1199 (-45%)	1199 (-49%)

(a) Normal tail of large drops.

(b) Large drop tail reduced to match reduction in total droplet concentration.

accelerates the rise in reflectivity, but only to a limited degree. When only the total number of cloud droplets is changed, as in (a), the magnitude of the seeding effect (in %) is virtually unchanged. This lack of sensitivity to variations in the total number of cloud droplets is one of the surprising results of including the natural "tail" of large drops and has been discussed by both Ochs and Semonin (1979) and Johnson (1979). One interesting implication of this finding is the possibility that special care to remove the submicron portion of hygroscopic treatments may not be necessary. On the other hand, when the natural tail of large drops is modified, as in (b), the relative drop concentration (see Figure 3) is directly affected and this in turn will change the magnitude of the seeding effect.

Trajectory Model

The time-height cross sections of radar reflectivity generated with the trajectory model results allow testing a much wider range of seeding strategies than possible in a parcel model. Seeding can be performed at any location and at any time during the life of the cloud. In this portion of the study, runs were performed for seven different seeding rates (plus unseeded), six different cloud base temperatures, and six different updraft velocities. In each case, all seeding calculations were repeated with each of the three salt distributions and for six different times for seeding to start or locations for seeding. In these calculations (4572 separate computer runs) only adiabatic water contents were considered. In each of these runs, it was assumed that, once initiated, seeding continued at a steady uniform rate. Since this is a bit unrealistic, modifications were made to the trajectory model to allow "turning off" the seeding after a specified length of time. Five different lengths of seeding pulses (ranging from 15 seconds to two minutes) were investigated for one salt distribution (distribution "3") and seeding strategy (seed at 0.5 km above cloud base). The results from these additional runs (1260 runs in all), however, showed little difference from the earlier results with continuous seeding. The results of these seeding runs, both continuous and pulsed, are presented in Appendix T.

Figure 4 illustrates the type of time-height cross sections obtained with the trajectory model. The shaded regions represent those portions of the cloud having radar reflectivities >10 dBZ. In each case, the cross sections end abruptly with a straight vertical line when the reflectivity, at any level, reaches 30 dBZ, and the calculations are terminated. Since it is unlikely that ground-based or area-seeding techniques will produce concentrations of salt entering cloud base much in excess of 10^{-7} g m^{-3} (see Fournier d'Albe, 1976), it is necessary to consider seeding individual clouds by specially equipped aircraft. Since the cloud must already exist before it can be identified and marked for treatment, the seeding must start at some time after the initial development of the cloud. In the examples shown in Figure 4, all seeding was delayed until the cloud reached a depth of 0.5 km. In 4(a), the seeding was then applied continuously at 0.5 km above cloud base, while in 4(b) it was applied at cloud base. A close look at this figure suggests that base seeding may allow the echo to form a bit lower in the cloud, but sharply reduces the magnitude of the seeding effect as measured in the reduction in time to echo formation. This is the natural result of

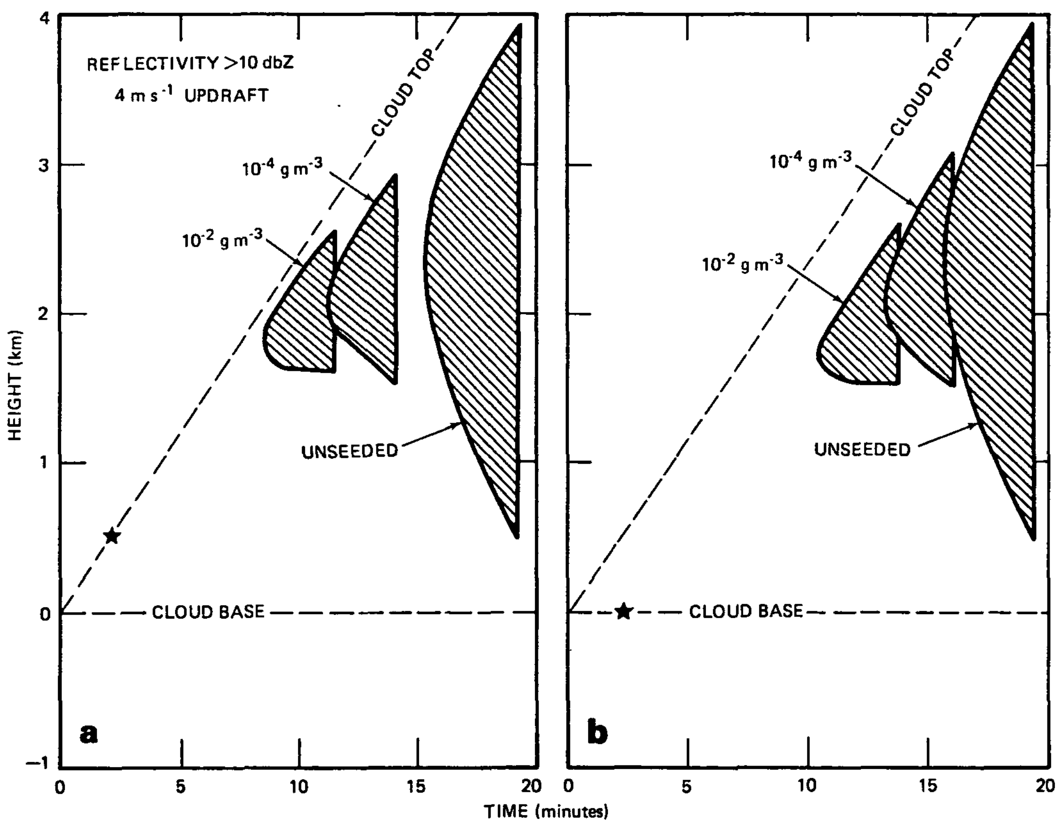

Figure 4. Reflectivity cross sections obtained with the continuous collection trajectory model (salt distribution "3", 5°C cloud base, and a 4 m s^{-1} updraft). In (a), the seeding material is introduced at 0.5 km above cloud base, while in (b) the seeding takes place at cloud base.

delaying the start of seeding until the cloud reaches some finite size. In this case, seeding at cloud top can effectively limit the significance of the head start this gives the natural nuclei by placing the seeding material directly in the higher liquid water portions of the cloud, in areas that could not be reached by seeding at cloud base unless seeding could somehow be timed to start at the same instant the cloud begins to form.

While the trajectory cross sections give a more realistic view of seeding than possible with the parcel model, the results are not nearly as precise. The height of the echo formation is particularly difficult to estimate accurately. The time of echo formation is a bit easier to estimate, and is the property of the echo that will be used to evaluate seeding effectiveness. Table 16 shows the time (to the nearest half minute) required to produce a 10 dBZ radar echo for the natural (unseeded) conditions. Tables 17 and 18 illustrate typical seeding effects. While the echoes are significantly lower and slower to form than predicted by the parcel model, the effects of seeding are very similar. Small quantities of treatment have little effect. When large quantities of salt are employed, however, rather dramatic changes can be effected. In all cases, however, the magnitude of these changes is increased when the coarser ground salts are used in preference to the finer ground salts. The only major difference between the trajectory model results and the parcel model results is the suggestion that cloud top seeding should be preferred to cloud base seeding. This result is clearly illustrated in Table 18.

TABLE 16

Time (min) to 10 dBZ First Echo
(Adiabatic Trajectory Model, Unseeded)

Cloud Base Temperature (°C)	Updraft Velocity ($m\ s^{-1}$) 1	2	3	4	6	8
25	26.5	17.0	13.0	11.0	9.0	8.0
20	27.5	17.5	13.0	11.5	9.0	8.0
15	29.5	18.5	14.0	12.0	10.0	9.0
10	32.5	20.5	16.0	13.5	11.0	10.0
5	37.0	23.0	18.5	15.5	12.5	11.5
0	42.5	27.5	21.5	18.5	15.5	14.5

TABLE 17

Time (min) to 10 dBZ First Echo for a 5°C Cloud Base
and a 4 m s^{-1} Updraft (Trajectory Model).

	Concentration of Salt ($g\ m^{-3}$)	BASE SEEDING Salt "2"	BASE SEEDING Salt "3"	BASE SEEDING Salt "4"	TOP SEEDING Salt "2"	TOP SEEDING Salt "3"	TOP SEEDING Salt "4"
	UNSEEDED	15.5	15.5	15.5	15.5	15.5	15.5
START SEEDING WHEN CLOUD IS 0.5 KM THICK	10^{-8}	15.5	15.5	15.5	15.5	15.5	15.5
	10^{-7}	15.5	15.5	15.5	15.5	15.5	15.5
	10^{-6}	15.5	15.5	15.5	15.0	14.0	14.0
	10^{-5}	15.5	15.0	15.0	14.0	13.0	12.5
	10--	14.5	13.5	13.5	12.5	11.5	11.0
	10^{-3}	13.5	12.5	12.0	11.5	10.5	10.0
	10^{-2}	12.5	11.0	10.5	10.0	9.0	8.0
START SEEDING WHEN CLOUD IS 1.0 KM THICK	10^{-8}	15.5	15.5	15.5	15.5	15.5	15.5
	10^{-7}	15.5	15.5	15.5	15.5	15.5	15.5
	10^{-6}	15.5	15.5	15.5	15.0	14.5	14.5
	10^{-5}	15.5	15.5	15.5	14.5	13.0	13.0
	10^{-4}	15.5	15.5	15.5	13.0	12.0	11.5
	10^{-3}	15.5	14.5	14.5	12.0	11.0	10.0
	10^{-2}	14.5	13.0	12.5	10.5	9.5	9.0

TABLE 18

Trajectory Model Seeding Effect (% change in time to 10 dBZ first echo) for a Salt Concentration of 10^{-4} g m^{-3} (Salt Distribution "3").

	Cloud Base Temperature (°C)	Updraft Velocity (m s^{-1}) 1	2	3	4	6	8
SEED AT CLOUD BASE WHEN CLOUD IS 0.5 KM THICK	25	0%	0%	0%	0%	-6%	-13%
	20	0%	-3%	0%	-4%	-6%	-6%
	15	0%	-5%	-4%	-4%	-10%	-11%
	10	0%	-7%	-9%	-11%	-9%	-15%
	5	-3%	-9%	-14%	-13%	-8%	-13%
	0	-1%	-15%	-14%	-16%	-16%	-17%
SEED AT CLOUD TOP WHEN CLOUD IS 0.5 KM THICK	25	-15%	-26%	-23%	-23%	-22%	-25%
	20	-18%	-29%	-19%	-22%	-17%	-19%
	15	-20%	-27%	-21%	-21%	-20%	-22%
	10	-22%	-29%	-28%	-22%	-18%	-20%
	5	-23%	-26%	-27%	-26%	-20%	-22%
	0	-22%	-29%	-28%	-27%	-23%	-24%
SEED AT CLOUD BASE WHEN CLOUD IS 1.0 KM THICK	25	0%	0%	0%	0%	0%	0%
	20	0%	0%	0%	0%	0%	0%
	15	0%	0%	0%	0%	0%	0%
	10	0%	0%	0%	0%	0%	-5%
	5	0%	0%	0%	0%	0%	-4%
	0	0%	0%	-5%	-5%	-6%	-10%
SEED AT CLOUD TOP WHEN CLOUD IS 1.0 KM THICK	25	-8%	-21%	-19%	-18%	-17%	-19%
	20	-11%	-20%	-15%	-17%	-17%	-19%
	15	-14%	-19%	-18%	-17%	-15%	-22%
	10	-17%	-24%	-22%	-19%	-18%	-20%
	5	-22%	-26%	-27%	-23%	-20%	-22%
	0	-24%	-27%	-26%	-24%	-23%	-24%

DISCUSSION

Virtually all studies of warm cloud seeding have started with the implicit assumption that, with the exception of maritime environments, there is a natural deficiency in the number of aerosol particles capable of initiating coalescence rainfall. Recent aerosol measurements, however, do not support this assumption. This means that adding nuclei by hygroscopic seeding will not strike the cloud in a sensitive area, and should not be expected to produce spectacular changes. To be sure, if enough seeding material is dumped into a growing cloud, changes will take place. The quantities of salt required, however, may be excessive. While a salt concentration of 10^{-3} g m^{-3} can be obtained in the wake of a moderate-sized aircraft through the release of only 50 grams of salt per second, the wake volume is only a small fraction of the total volume of a cloud. To achieve this same salt concentration in a small updraft core 2 km in diameter with a 4 m s^{-1} updraft, for example, would require the release of more than 13 kilograms of salt a second. Seeding this large an area with such large quantities of salt would be exceedingly difficult. Seeding with less salt, or restricting the treatment to a smaller area, would be unlikely to produce the dramatic effects that are usually desired.

Earlier studies of hygroscopic seeding have usually emphasized cloud base seeding with finely ground salt to maximize the growth potential for each individual nuclei. If the goal of seeding is to accelerate the initial production of precipitation (as evidenced by the development of a radar echo, for example), then the most successful strategy should be seeding at cloud top with as much coarsely ground salt as possible as early in the cloud's life as possible.

While this study has concentrated on the massive amounts of seeding material that would be required to significantly accelerate precipitation development, this isn't the whole story. Artificially introduced salt nuclei, even if they don't significantly change the overall evolution of the cloud, will still increase the number of raindrops and have the potential of producing modest increases in precipitation. Therefore, although previous estimates of seeding effects on precipitation initiation appear to have been overly optimistic, this type of seeding may still produce beneficial increases in rainfall, if enough salt can be properly positioned in a developing cloud. This does not, however, seem to be an area in which cloud seeding is likely to produce dramatic changes in natural precipitation mechanisms or efficiency. Clouds with naturally inefficient warm rain processes will still be inefficient after seeding. Even in those cases in which heavy seeding results in major changes in the time or height of echo formation, the effect is not caused by changes in drop growth rates, but rather through direct increases in the number of incipient raindrops so the radar can see them sooner. Hygroscopic seeding is not a magic wand that will change the nature of the seeded cloud, but rather a crowbar that can force changes if applied with sufficient vigor.

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APPENDIX C

CONTINUOUS COLLECTION MODELS

Verbatim reprint from Johnson, D. B., 1979: The role of coalescence nuclei in warm rain initiation. Ph. D. thesis, The University of Chicago, 119 pp.

APPENDIX C

CONTINUOUS COLLECTION MODELS

Many aspects of cloud microstructure can be studied using relatively simple models. This appendix summarizes the essential features of two such models which have proved particularly useful in the course of these studies.

In each of these models the cloud droplet spectra is partitioned into two closses of drops: large and small. Specified numbers of the large drops are inserted in a constant updraft cloud where they grow by condensation and "continuous" collection of the smaller cloud drops. Cloud droplets grow only by condensation. Collisions between large drops are neglected. The most basic application of this work is a closed parcel model in which drop sedimentation relative to the rising parcel is ignored and all drops are assumed to stay with their inititiai volume of air.

Parcel Model (No Sedimentation)

In this model, growth of a large drop of radius R_i and mass M_i by collection of smaller cloud droplets of radius r is given by

$$\frac{dM_i}{dt} = \pi R_i^2 E \chi \rho_a [v(R_i) - v(r)] \tag{C-1}$$

where v(R) and v(r) are the terminal velocity of water drops of radii R_i and r, respectively, E is an appropriately defined collection efficiency, X is the liquid water mixing ratio of the small drops of radius r, and ρ_a is the density of air. Collection efficiencies, $E(R_i,r)$, are obtained by 4-point interpolation from tables which were based on Young's (1973) compilation of collection efficiency data. The number concentration (N_i) and initial radius (R_i) of the large drops, and the number of cloud droplets (n) are initialized *at* the start of the computation. Within the model, all drop concentrations are stored as mixing ratios (number of drops per gram of dry air). Although several different categories of large drops may be used to specify a spectrum of large drops, the smaller cloud droplets are assumed to be of uniform size.

The terminal velocities of the liquid drops can be approximated by

$$v(a) = 1.202 \times 10^6\, a^2 \text{ for } a \leq 35.87 \times 10^{-4} \tag{C-2a}$$

$$v(a) = 8623.3\, a - 15.4661 \text{ for } 35.87 \times 10^{-4} < a \leq 0.03 \tag{C-2b}$$

$$v(a) = 961.8 - 1030.0 \exp(-12\, a) \text{ for } a > 0.03 \tag{C-2c}$$

where a represents the drop radius in centimeters. The terminal velocities (all positive) are given in centimeters per second. Although these equations neglect temperature and pressure changes on the terminal velocity, they do describe the variation of fall speed with size relatively well. In particular, it is important to note that both the velocity and its derivative with respect to radius are continuous at the transition points between equations (35.87/im and 300.0/im). In the smallest drop regime, the terminal velocity is just the Stokes fall velocity. The equation for the largest drops is adapted from Atlas et al (1971).

Neglecting curvature and solution effects, droplet growth by condensation is given by

$$\frac{dm}{dt} = r\,C\,(S-1) \qquad \text{(C-3a)}$$

$$\frac{dM_i}{dt} = R_i\,C(S-1) \qquad \text{(C-3b)}$$

where C Is temperature and pressure dependent, and S is the saturation ratio. If all vapor in excess of saturation is condensed on the growing water drops, then

$$-\frac{d\omega_s}{dt} = n\frac{dm}{dt} + \sum_i N_i \frac{dM_i}{dt} = C(S-1)(nr + \sum_i N_i R_i) \qquad \text{(C-4)}$$

where ω_s is the saturation mixing ratio. Condensation growth can then be expressed as

$$\frac{dm}{dt} = -\left(\frac{d\omega_s}{dt}\right)\frac{r}{(nr + \sum_i N_i R_i)} \qquad \text{(C-5a)}$$

$$\frac{dM_i}{dt} = -\left(\frac{d\omega_s}{dt}\right)\frac{R_i}{(nr + \sum_i N_i R_i)} \qquad \text{(C-5b)}$$

The change in saturation mixing ratio is given by

$$\frac{d\omega_s}{dt} = \frac{gU}{R_v T}\left[\frac{e_s}{P} + \frac{\gamma}{\rho_a g}\left(\frac{de_s}{dT}\right)\right] \qquad \text{(C-6)}$$

where T is the temperature, P is the pressure, ρ_a is the air density, g is the acceleration of gravity, γ is the lapse rate, R_v is the specific gas constant for water vapor, U is the vertical velocity, and e is the saturation vapor pressure. The saturation vapor pressure and its derivative with respect to temperature may be obtained from the Clausius-Clapeyron equation, or by appropriate polynomial expressions (e.g., Lowe, 1977). Inside the cloud, the lapse rate γ should be approximately pseudo-adiabatic. Examination of thermodynamic diagrams yields a simple approximation for γ as a function of cloud base temperature (T_b) and height above cloud base (H).

$$\gamma = -6.3\times 10^{-5} - 4.0\times 10^{-11}\, H + T_b(1.1\times 10^{-6} - 1.0\times 10^{-12}\, H) \tag{C-7}$$

where T_b is given in degrees Celsius, H in centimeters above cloud base, and γ in degrees per centimeter. The temperature at any height above cloud base is obtained by integrating (C-7)

$$T = T_b + H\,(1.1\times 10^{-6}\, T_b - 6.3\times 10^{-5} - H(2.0\times 10^{-11} + 5.0\times 10^{-13}\, T_b)) \tag{C-8}$$

where T_b and T are both given in degrees Celsius.

If a drop grows larger than a specified maximum size, it is assumed to break into a number of uniform-sized fragments. Since large drops are not allowed to collide with each other, breakup is the only way that the number of large drops can change. The number concentration of small cloud droplets, on the other hand, is continually being reduced by collisions with the larger drops.

<u>Trajectory Model</u>

The basic algorithms discussed in the previous section can be used to construct a model which includes drop sedimentation. As before, the drop spectrum is partitioned into large and small drops. Large drops grow by both condensation and coalescence, small drops grow only by condensation. The trajectory of a large drop in a constant updraft cloud can be calculated from

$$\frac{dH_i}{dt} = U - v(R_i) \tag{C-9}$$

where, in addition to terms previously defined, H. is the height of the " i " drop relative to cloud base. The smaller cloud droplets move with the rising air parcel. If the model is restricted to studying the initial development of precipitation, depletion of the small drops is minimal and may be neglected (see Fig. 22). Furthermore, since $n r \gg \sum_i N_i R_i$, the condensation equation for the large drops can be significant!) simplified.

$$\frac{dM_i}{dt} = -\left(\frac{d\omega_s}{dt}\right)\frac{R_i}{nr} \qquad \text{(C-10)}$$

These assumptions allow the cloud droplet radius at any altitude to be calculated directly from the liquid water mixing ratio *at* that height and the total cloud droplet concentration.

$$r = \left(\frac{3\chi\rho_a}{4\pi n}\right)^{1/3} \qquad \text{(C-11)}$$

Since this model neglects depletion of the small droplets, the number concentration of small drops (n) is constant. The liquid water mixing ratio is simply

$$\chi = \frac{1}{.622}\left[\frac{e_s(T_b)}{P_b} - \frac{e_s(T)}{P}\right] \qquad \text{(C-12)}$$

where, in addition to terms previously defined, P_b and $e_s(T_b)$ are the ambient and saturation vapor pressures at cloud base.

These relations, combined with the equations introduced in the previous section, allow calculation of the size and height of the large drops as a function of time. This data can, in turn, be used to construct time-height cross-sections of the rainfall rate, radar reflectivity factor, or other properties of the cloud. To do this, however, requires the additional assumption that the initial concentrations of large and small drops are continually replenished at cloud base. The concentration of particles of a given size will vary with height above cloud base.

$$N_i = N_{io} \left[\frac{U - v(R_{io})}{U - v(R_i)}\right] \qquad \text{(C-13)}$$

where R_{io} and N_{io} are the radius and number concentration of drops in a given category at cloud base. While (C-13) is necessary to accurately describe the evolution of the drop concentration, it introduces a problem at the balance point $(U = v(R_i))$, where $N_i \rightarrow \infty$. This numerical fiction is the result of introducing exactly N_{io} drops of a given size into the cloud at exactly one time. Srivastava and Atlas (1969) have shown that this problem can be eliminated by assuming a continuous distribution of large drops. In this simple model, however, this difficulty is handled by arbitrarily restricting N_i so that $N_i \leq 4N_{io}$. Since this restriction only applies in the immediate vicinity of the balance point, it does not greatly affect the overall results.

Calculations for both the "parcel" and "trajectory" models were performed at The University of Chicago Computation Center using a FORTRAN version of the relevant equations. A uniform time step of five seconds was used for all computations.

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APPENDIX P

PARCEL MODEL RESULTS

SEED WITH 1.00E-02 G/M3 OF SALT 2 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	5268.	4552.	3546.	2961.	2611.	2393.	2272.
8	5372.	3866.	3160.	2501.	2312.	2134.	2039.
6	4015.	3173.	2652.	2212.	1983.	1844.	1775.
4	3311.	2464.	2098.	1774.	1606.	1506.	1463.
3	2530.	2079.	1788.	1524.	1387.	1307.	1276.
2	1955.	1652.	1438.	1235.	1131.	1073.	1054.
1	1322.	1136.	1003.	870.	803.	769.	763.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	10.4	7.6	6.1	4.9	4.4	4.0	3.8
8	10.6	8.1	6.6	5.4	4.8	4.4	4.2
6	11.2	8.8	7.4	6.1	5.5	5.1	4.9
4	12.5	10.3	8.7	7.4	6.7	6.3	6.1
3	13.9	11.5	9.9	8.5	7.7	7.3	7.1
2	16.3	13.8	12.0	10.3	9.4	8.9	8.8
1	22.0	18.9	16.7	14.5	13.4	12.8	12.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2407.	1930.	1585.	1389.	1301.
8	******	2770.	1896.	1597.	1346.	1199.	1136.
6	3049.	1975.	1454.	1280.	1105.	999.	960.
4	1911.	1335.	1050.	963.	851.	782.	763.
3	1357.	1054.	952.	798.	713.	661.	650.
2	957.	779.	647.	619.	561.	524.	521.
1	575.	490.	418.	410.	377.	356.	358.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	4.0	3.2	2.6	2.3	2.2
8	******	5.8	4.0	3.3	2.8	2.5	2.4
6	8.5	5.5	4.0	3.6	3.1	2.8	2.7
4	7.5	5.6	4.4	4.0	3.5	3.3	3.2
3	7.5	5.9	4.7	4.4	4.0	3.7	3.6
2	8.0	6.5	5.4	5.2	4.7	4.4	4.3
1	9.6	8.2	7.0	6.8	6.3	5.9	6.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	40.	39.	38.	37.	36.
8	******	42.	38.	38.	37.	35.	35.
6	43.	38.	35.	37.	36.	35.	35.
4	38.	35.	33.	35.	35.	34.	34.
3	35.	34.	32.	34.	34.	34.	34.
2	33.	32.	31.	33.	33.	33.	33.
1	30.	30.	29.	32.	32.	32.	32.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	40.	39.	38.	37.	36.
8	******	42.	38.	38.	37.	36.	36.
6	43.	38.	35.	37.	36.	35.	35.
4	38.	35.	33.	35.	35.	34.	34.
3	35.	34.	32.	34.	34.	34.	34.
2	33.	32.	31.	33.	33.	33.	33.
1	30.	30.	29.	32.	32.	32.	32.

SEED WITH 1.00E-03 G/M3 OF SALT 2 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	7936.	5424.	4250.	3450.	3030.	2771.	2627.
8	6125.	4530.	3552.	3013.	2672.	2461.	2349.
6	4726.	3676.	3040.	2548.	2291.	2118.	2037.
4	3474.	2916.	2384.	2030.	1836.	1721.	1670.
3	2958.	2360.	2022.	1736.	1579.	1483.	1452.
2	2214.	1363.	1615.	1399.	1281.	1215.	1194.
1	1479.	1269.	1117.	977.	902.	862.	855.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	13.2	9.0	7.1	5.8	5.1	4.6	4.4
8	12.8	9.4	7.5	6.3	5.6	5.1	4.9
6	13.1	10.2	8.4	7.1	6.3	5.9	5.7
4	14.5	11.7	9.9	8.5	7.7	7.2	7.0
3	15.9	13.1	11.2	9.5	8.8	8.3	8.1
2	18.4	15.5	13.5	11.7	10.7	10.1	9.9
1	24.6	21.2	18.6	16.3	15.0	14.4	14.3

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		1903.	1440.	1165.	1012.	946.
8	******	2127.	1404.	1185.	986.	871.	826.
6	2337.	1477.	1065.	944.	807.	725.	697.
4	1349.	935.	764.	708.	621.	557.	555.
3	1300.	772.	618.	586.	520.	480.	474.
2	699.	568.	469.	455.	410.	382.	382.
1	418.	357.	304.	303.	278.	262.	266.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		3.0	2.4	1.9	1.7	1.6
8	******	4.4	2.9	2.5	2.1	1.8	1.7
6	6.5	4.1	3.0	2.6	2.2	2.0	1.9
4	5.6	4.1	3.2	2.9	2.6	2.4	2.3
3	5.6	4.3	3.4	3.3	2.9	2.7	2.6
2	5.8	4.7	3.9	3.8	3.4	3.2	3.2
1	7.0	6.0	5.1	5.0	4.6	4.4	4.4

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		30.	29.	28.	27.	26.
8	******	32.	28.	29.	27.	26.	26.
6	33.	29.	26.	27.	26.	25.	26.
4	28.	26.	24.	26.	25.	25.	25.
3	26.	25.	23.	25.	25.	24.	25.
2	24.	23.	22.	25.	24.	24.	24.
1	22.	22.	21.	24.	24.	23.	24.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		30.	29.	28.	27.	26.
8	******	32.	28.	28.	27.	26.	26.
6	33.	29.	26.	27.	26.	25.	26.
4	28.	26.	24.	26.	25.	25.	25.
3	26.	25.	23.	25.	25.	24.	25.
2	24.	23.	22.	25.	24.	24.	24.
1	22.	22.	21.	24.	24.	23.	24.

SEED WITH 1.00E-04 G/M3 OF SALT 2 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	6371.	4963.	3921.	3423.	3118.	2947.
8	7369.	5224.	4142.	3407.	3007.	2762.	2630.
6	5494.	4194.	3421.	2866.	2558.	2370.	2275.
4	3949.	3166.	2663.	2271.	2051.	1919.	1860.
3	3218.	2638.	2250.	1937.	1761.	1656.	1515.
2	2471.	2070.	1790.	1556.	1425.	1349.	1325.
1	1635.	1401.	1230.	1082.	999.	954.	946.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	10.6	8.1	6.5	5.7	5.2	4.9
8	15.3	10.9	8.6	7.1	6.3	5.8	5.5
6	15.3	11.6	9.5	8.0	7.1	6.6	6.3
4	16.5	13.2	11.1	9.5	8.5	8.0	7.7
3	17.9	14.7	12.5	10.8	9.8	9.2	9.0
2	20.5	17.3	14.9	13.0	11.9	11.2	11.0
1	27.3	23.4	20.5	18.0	16.6	15.9	15.8

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1191.	969.	773.	664.	626.
8	******	1428.	913.	791.	650.	570.	545.
6	1569.	970.	685.	626.	530.	473.	460.
4	874.	635.	485.	466.	406.	369.	365.
3	639.	494.	390.	385.	339.	312.	312.
2	442.	361.	295.	298.	267.	248.	251.
1	261.	225.	190.	198.	181.	170.	175.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2.0	1.6	1.3	1.1	1.0
8	******	3.0	1.9	1.6	1.4	1.2	1.1
6	4.4	2.7	1.9	1.7	1.5	1.3	1.3
4	3.6	2.6	2.0	1.9	1.7	1.5	1.5
3	3.6	2.7	2.2	2.1	1.9	1.7	1.7
2	3.7	3.0	2.5	2.5	2.2	2.1	2.1
1	4.4	3.8	3.2	3.3	3.0	2.8	2.9

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	20.	20.	18.	18.	18.
8	******	21.	18.	19.	18.	17.	17.
6	22.	19.	17.	18.	17.	17.	17.
4	18.	17.	15.	17.	17.	16.	16.
3	17.	16.	15.	17.	16.	16.	16.
2	15.	15.	14.	16.	16.	16.	16.
1	14.	14.	13.	15.	15.	15.	16.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	20.	20.	18.	18.	18.
8	******	21.	18.	19.	18.	17.	17.
6	22.	19.	17.	18.	17.	17.	17.
4	18.	17.	15.	17.	17.	16.	16.
3	17.	16.	15.	17.	16.	16.	16.
2	15.	15.	14.	16.	16.	16.	16.
1	14.	14.	13.	15.	15.	15.	16.

SEED WITH 1.00E-05 G/M3 OF SALT 2 AT 3.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	7404.	5457.	4376.	3792.	3438.	3239.
8	******	5950.	4514.	3782.	3320.	3037.	2884.
6	6299.	4686.	3780.	3166.	2815.	2600.	2490.
4	4415.	3501.	2921.	2496.	2249.	2099.	2032.
3	3564.	2902.	2459.	2123.	1927.	1809.	1762.
2	2713.	2264.	1949.	1701.	1556.	1471.	1443.
1	1780.	1523.	1334.	1179.	1088.	1039.	1029.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	12.3	9.1	7.3	6.3	5.7	5.4
8	******	12.4	9.6	7.9	6.9	6.3	6.0
6	17.5	13.0	10.5	8.8	7.8	7.2	6.9
4	18.4	14.6	12.2	10.4	9.4	8.7	8.5
3	19.3	16.1	13.7	11.8	10.7	10.0	9.8
2	22.6	18.9	16.2	14.2	13.0	12.3	12.0
1	29.7	25.4	22.2	19.6	18.1	17.3	17.2

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	595.	515.	404.	345.	334.
8	******	707.	441.	416.	338.	294.	290.
6	764.	467.	326.	326.	273.	243.	244.
4	407.	299.	227.	241.	208.	189.	194.
3	294.	231.	181.	198.	173.	159.	165.
2	200.	167.	136.	153.	136.	126.	133.
1	117.	103.	87.	101.	92.	86.	92.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.0	.9	.7	.6	.6
8	******	1.5	.9	.9	.7	.6	.6
6	2.1	1.3	.9	.9	.8	.7	.7
4	1.7	1.2	.9	1.0	.9	.8	.8
3	1.6	1.3	1.0	1.1	1.0	.9	.9
2	1.7	1.4	1.1	1.3	1.1	1.1	1.1
1	1.9	1.7	1.4	1.7	1.5	1.4	1.5

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	10.	11.	10.	9.	9.
8	******	11.	9.	10.	9.	9.	9.
6	11.	9.	8.	9.	9.	9.	9.
4	8.	8.	7.	9.	8.	8.	9.
3	8.	7.	7.	9.	8.	8.	9.
2	7.	7.	7.	8.	8.	8.	8.
1	6.	6.	5.	8.	8.	9.	8.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	10.	11.	10.	9.	9.
8	******	11.	9.	10.	9.	9.	9.
6	11.	9.	8.	9.	9.	9.	9.
4	8.	8.	7.	9.	8.	8.	9.
3	8.	7.	7.	9.	8.	8.	9.
2	7.	7.	7.	8.	8.	8.	8.
1	6.	6.	6.	8.	8.	8.	8.

SEED WITH 1.00E-06 G/M3 OF SALT 2 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	5904.	4735.	4076.	3683.	3457.
8	******	6431.	4945.	4074.	3559.	3245.	3083.
6	6390.	5040.	4025.	3396.	3008.	2772.	2657.
4	4729.	3729.	3093.	2667.	2397.	2233.	2164.
3	3791.	3073.	2597.	2264.	2050.	1922.	1875.
2	2368.	2392.	2052.	1810.	1653.	1561.	1534.
1	1371.	1603.	1400.	1251.	1154.	1100.	1092.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	9.8	7.9	6.8	6.1	5.9
8	******	13.5	10.3	8.5	7.4	6.8	6.4
6	19.1	14.0	11.2	9.4	8.4	7.7	7.4
4	19.7	15.5	12.9	11.1	10.0	9.3	9.0
3	21.1	17.1	14.4	12.6	11.4	10.7	10.4
2	23.9	19.9	17.1	15.1	13.8	13.0	12.8
1	31.2	26.7	23.3	20.8	19.2	18.3	18.2

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	150.	155.	119.	102.	107.
8	******	176.	111.	124.	99.	87.	92.
6	183.	113.	80.	96.	79.	71.	77.
4	93.	71.	55.	70.	60.	55.	61.
3	67.	54.	43.	57.	50.	46.	52.
2	45.	39.	32.	44.	39.	36.	41.
1	26.	24.	20.	29.	26.	24.	29.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	.2	.3	.2	.2	.2
8	******	.4	.2	.3	.2	.2	.2
6	.5	.3	.2	.3	.2	.2	.2
4	.4	.3	.2	.3	.2	.2	.3
3	.4	.3	.2	.3	.3	.3	.3
2	.4	.3	.3	.4	.3	.3	.3
1	.4	.4	.3	.5	.4	.4	.5

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.	3.	3.	3.	3.
8	******	3.	2.	3.	3.	3.	3.
6	3.	2.	2.	3.	3.	3.	3.
4	2.	2.	2.	3.	2.	2.	3.
3	2.	2.	2.	2.	2.	2.	3.
2	2.	2.	2.	2.	2.	2.	3.
1	1.	1.	1.	2.	2.	2.	3.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.	3.	3.	3.	3.
8	******	3.	2.	3.	3.	3.	3.
6	3.	2.	2.	3.	3.	3.	3.
4	2.	2.	2.	3.	2.	2.	3.
3	2.	2.	2.	2.	2.	2.	3.
2	2.	2.	2.	2.	2.	2.	3.
1	1.	1.	1.	2.	2.	2.	3.

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SEED WITH 1.00E-07 G/M3 OF SALT 2 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		6034.	4368.	4179.	3768.	3557.
8	******	6634.	5042.	4180.	3644.	3319.	3161.
6	7941.	5139.	4095.	3478.	3077.	2833.	2723.
4	4911.	3702.	3141.	2728.	2449.	2280.	2216.
3	3349.	3126.	2635.	2313.	2093.	1962.	1919.
2	2707.	2426.	2081.	1349.	1686.	1592.	1569.
1	1894.	1624.	1418.	1276.	1176.	1121.	1117.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.5	7.9	7.6
4	20.0	15.8	13.1	11.4	10.2	9.5	9.2
3	21.4	17.4	14.5	12.9	11.6	10.9	10.7
2	24.2	20.2	17.3	15.4	14.1	13.3	13.1
1	31.6	27.1	23.6	21.3	19.6	18.7	18.6

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		19.	22.	17.	14.	16.
8	******	22.	14.	15.	14.	12.	14.
6	22.	14.	10.	14.	11.	10.	12.
4	11.	9.	7.	10.	8.	8.	9.
3	8.	7.	5.	8.	7.	6.	8.
2	5.	5.	4.	6.	5.	5.	6.
1	3.	3.	3.	4.	4.	3.	4.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.1	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.1	.0	.0	.1
1	.0	.0	.0	.1	.1	.1	.1

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-04 G/M3 OF SALT 2 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	6051.	4433.	4194.	3781.	3571.
8	******	6654.	5054.	4196.	3555.	3330.	3173.
6	7061.	5152.	4104.	3491.	3087.	2842.	2733.
4	4321.	3800.	3147.	2736.	2456.	2287.	2224.
3	3355.	3132.	2540.	2320.	2099.	1967.	1926.
2	2912.	2430.	2084.	1853.	1691.	1596.	1575.
1	1396.	1626.	1420.	1279.	1180.	1124.	1120.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	10.1	8.1	7.0	5.3	6.0
8	******	13.9	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.5
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.3	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.	2.	2.	2.	2.
8	******	2.	1.	2.	1.	1.	2.
6	2.	1.	1.	1.	1.	1.	1.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	0.	1.	1.	1.	1.
1	0.	0.	0.	0.	0.	0.	1.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 2 AT .5 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	6551.	4640.	3599.	3153.	2777.	2502.	2365.
8	5151.	3937.	3212.	2773.	2465.	2238.	2129.
6	4218.	3241.	2701.	2362.	2121.	1941.	1859.
4	3159.	2522.	2147.	1905.	1730.	1599.	1544.
3	2629.	2140.	1843.	1649.	1508.	1402.	1363.
2	2067.	1717.	1499.	1355.	1250.	1172.	1147.
1	1429.	1222.	1090.	1003.	940.	894.	882.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	11.1	7.7	6.2	5.3	4.6	4.2	3.9
8	11.1	8.2	6.7	5.8	5.1	4.7	4.4
6	11.7	9.0	7.5	6.6	5.9	5.4	5.2
4	13.2	10.5	8.9	7.9	7.2	6.7	6.4
3	14.6	11.9	10.2	9.2	8.4	7.8	7.6
2	17.2	14.3	12.5	11.3	10.4	9.8	9.6
1	23.8	20.4	18.2	15.7	15.7	14.9	14.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2354.	1737.	1419.	1281.	1208.
8	******	2719.	1844.	1425.	1192.	1094.	1046.
6	2845.	1912.	1405.	1130.	967.	902.	875.
4	1664.	1273.	1001.	833.	728.	690.	681.
3	1228.	992.	797.	672.	592.	566.	564.
2	846.	714.	585.	498.	441.	425.	429.
1	468.	405.	331.	277.	241.	231.	239.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	3.9	2.9	2.4	2.1	2.0
8	******	5.7	3.8	3.0	2.5	2.3	2.2
6	7.9	5.3	3.9	3.1	2.7	2.5	2.4
4	6.9	5.3	4.2	3.5	3.0	2.9	2.8
3	6.8	5.5	4.4	3.7	3.3	3.1	3.1
2	7.1	6.0	4.9	4.2	3.7	3.5	3.6
1	7.8	6.7	5.5	4.6	4.0	3.8	4.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	39.	36.	34.	34.	34.
8	******	41.	36.	34.	33.	33.	33.
6	40.	37.	34.	32.	31.	32.	32.
4	34.	34.	32.	30.	30.	30.	31.
3	32.	32.	30.	29.	28.	29.	29.
2	29.	29.	28.	27.	26.	27.	27.
1	25.	25.	23.	22.	20.	21.	21.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	39.	36.	34.	34.	34.
8	******	41.	36.	34.	33.	33.	33.
6	40.	37.	34.	32.	31.	32.	32.
4	34.	34.	32.	30.	30.	30.	31.
3	32.	32.	30.	29.	28.	29.	29.
2	29.	29.	28.	27.	26.	27.	27.
1	25.	25.	23.	22.	20.	21.	21.

SEED WITH 1.00E-03 G/M3 OF SALT 2 AT .5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	5511.	4307.	3632.	3192.	2869.	2710.
8	6454.	4606.	3707.	3175.	2812.	2555.	2429.
6	4949.	3741.	3090.	2687.	2406.	2205.	2113.
4	3528.	2874.	2433.	2150.	1948.	1804.	1744.
3	2939.	2420.	2076.	1951.	1690.	1574.	1530.
2	2325.	1925.	1676.	1510.	1390.	1305.	1278.
1	1532.	1349.	1199.	1098.	1026.	977.	965.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	9.2	7.2	6.1	5.3	4.8	4.5
8	13.4	9.6	7.7	6.6	5.9	5.3	5.1
6	13.7	10.4	8.5	7.5	6.7	6.1	5.9
4	15.1	12.0	10.1	9.0	8.1	7.5	7.3
3	16.6	13.4	11.5	10.3	9.4	8.7	8.5
2	19.4	16.0	14.0	12.6	11.6	10.9	10.6
1	26.4	22.5	20.0	18.3	17.1	16.3	16.1

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1747.	1259.	1013.	914.	864.
8	******	2051.	1349.	1023.	946.	777.	745.
6	2114.	1412.	1015.	805.	682.	638.	622.
4	1195.	927.	715.	588.	509.	485.	482.
3	868.	712.	564.	470.	410.	394.	396.
2	588.	506.	409.	344.	302.	292.	298.
1	314.	277.	222.	181.	154.	148.	156.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.9	2.1	1.7	1.5	1.4
8	******	4.3	2.8	2.1	1.8	1.6	1.6
6	5.9	3.9	2.8	2.2	1.9	1.8	1.7
4	5.0	3.9	3.0	2.4	2.1	2.0	2.0
3	4.8	4.0	3.1	2.6	2.3	2.2	2.2
2	4.9	4.2	3.4	2.9	2.5	2.4	2.5
1	5.2	4.6	3.7	3.0	2.6	2.5	2.6

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	29.	26.	24.	24.	24.
8	******	31.	27.	24.	23.	23.	23.
6	30.	27.	25.	23.	22.	22.	23.
4	25.	24.	23.	21.	21.	21.	22.
3	23.	23.	21.	20.	20.	20.	21.
2	20.	21.	20.	19.	18.	18.	19.
1	17.	17.	16.	14.	13.	13.	14.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	29.	26.	24.	24.	24.
8	******	31.	27.	24.	23.	23.	23.
6	30.	27.	25.	23.	22.	22.	23.
4	25.	24.	23.	21.	21.	21.	22.
3	23.	23.	21.	20.	20.	20.	21.
2	20.	21.	20.	19.	18.	18.	19.
1	17.	17.	16.	14.	13.	13.	14.

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SEED WITH 1.00E-04 G/M3 OF SALT 2 AT .5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	6471.	4923.	4097.	3564.	3207.	3023.
8	7816.	5310.	4198.	3561.	3136.	2847.	2703.
6	5749.	4250.	3471.	2997.	2672.	2448.	2344.
4	4112.	3223.	2710.	2392.	2152.	1993.	1926.
3	3352.	2696.	2300.	2043.	1859.	1733.	1685.
2	2590.	2123.	1845.	1656.	1521.	1429.	1400.
1	1732.	1473.	1303.	1189.	1106.	1053.	1042.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	10.8	8.2	6.8	5.9	5.3	5.0
8	16.3	11.1	8.7	7.4	6.5	5.9	5.6
6	16.0	11.8	9.6	8.3	7.4	6.8	6.5
4	17.1	13.4	11.3	9.9	9.0	8.3	3.0
3	18.6	15.0	12.8	11.3	10.3	9.6	9.4
2	21.5	17.7	15.4	13.8	12.7	11.9	11.7
1	28.9	24.5	21.7	19.8	18.4	17.6	17.4

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1130.	794.	632.	575.	550.
8	******	1346.	858.	637.	522.	485.	472.
6	1314.	903.	635.	495.	416.	395.	391.
4	711.	573.	438.	355.	305.	295.	299.
3	505.	437.	340.	279.	241.	235.	242.
2	333.	303.	240.	198.	171.	168.	176.
1	165.	154.	117.	91.	74.	71.	79.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.9	1.3	1.1	1.0	.9
8	******	2.8	1.8	1.3	1.1	1.0	1.0
6	3.7	2.5	1.8	1.4	1.2	1.1	1.1
4	3.0	2.4	1.8	1.5	1.3	1.2	1.2
3	2.8	2.4	1.9	1.5	1.3	1.3	1.3
2	2.8	2.5	2.0	1.6	1.4	1.4	1.5
1	2.8	2.6	2.0	1.5	1.2	1.2	1.3

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	19.	16.	15.	15.	15.
8	******	20.	17.	15.	14.	15.	15.
6	19.	18.	15.	14.	13.	14.	14.
4	15.	15.	14.	13.	12.	13.	13.
3	13.	14.	13.	12.	11.	12.	13.
2	11.	12.	12.	11.	10.	11.	11.
1	9.	9.	8.	7.	6.	6.	7.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	19.	16.	15.	15.	15.
8	******	20.	17.	15.	14.	15.	15.
6	19.	18.	15.	14.	13.	14.	14.
4	15.	15.	14.	13.	12.	13.	13.
3	13.	14.	13.	12.	11.	12.	13.
2	11.	12.	12.	11.	10.	11.	11.
1	9.	9.	8.	7.	6.	6.	7.

SEED WITH 1.00E-05 G/M3 OF SALT 2 AT 0.5 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	7509.	5527.	4531.	3910.	3513.	3307.
8	******	6029.	4566.	3915.	3426.	3109.	2949.
6	5542.	4745.	3824.	3277.	2907.	2664.	2550.
4	4557.	3549.	2960.	2588.	2329.	2159.	2088.
3	3674.	2948.	2499.	2209.	2004.	1870.	1820.
2	2794.	2309.	1990.	1779.	1629.	1532.	1504.
1	1347.	1574.	1383.	1254.	1161.	1105.	1098.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	12.5	9.2	7.6	5.5	5.9	5.5
8	******	12.6	9.7	8.2	7.1	6.5	6.1
6	18.2	13.2	10.6	9.1	8.1	7.4	7.1
4	19.0	14.8	12.3	10.8	9.7	9.0	8.7
3	20.4	16.4	13.9	12.3	11.1	10.4	10.1
2	23.3	19.2	16.6	14.8	13.6	12.8	12.5
1	30.8	26.2	23.1	20.9	19.3	18.4	18.3

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	526.	359.	285.	269.	266.
8	******	523.	389.	283.	231.	223.	225.
6	522.	407.	281.	215.	181.	179.	184.
4	266.	251.	188.	149.	128.	129.	137.
3	183.	184.	141.	112.	96.	99.	106.
2	115.	122.	94.	75.	63.	65.	72.
1	49.	53.	37.	26.	20.	19.	23.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	.9	.6	.5	.4	.4
8	******	1.3	.8	.6	.5	.5	.5
6	1.4	1.1	.8	.6	.5	.5	.5
4	1.1	1.0	.8	.6	.5	.5	.6
3	1.0	1.0	.8	.6	.5	.5	.6
2	1.0	1.0	.8	.6	.5	.5	.6
1	.8	.9	.6	.4	.3	.3	.4

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	9.	7.	7.	7.	7.
8	******	9.	8.	7.	6.	7.	7.
6	7.	8.	7.	6.	6.	6.	7.
4	6.	7.	6.	5.	5.	6.	6.
3	5.	6.	5.	5.	5.	5.	6.
2	4.	5.	5.	4.	4.	4.	5.
1	3.	3.	3.	2.	2.	2.	2.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	9.	7.	7.	7.	7.
8	******	9.	8.	7.	6.	7.	7.
6	7.	8.	7.	6.	6.	6.	7.
4	6.	7.	6.	5.	5.	6.	6.
3	5.	6.	5.	5.	5.	5.	6.
2	4.	5.	5.	4.	4.	4.	5.
1	3.	3.	3.	2.	2.	2.	2.

SEED WITH 1.00E-05 G/M3 OF SALT 2 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	5933.	4910.	4131.	3717.	3504.
8	******	6515.	4969.	4136.	3606.	3279.	3118.
6	6973.	5065.	4044.	3446.	3049.	2802.	2689.
4	4777.	3748.	3109.	2707.	2431.	2260.	2193.
3	3927.	3095.	2612.	2299.	2081.	1948.	1903.
2	2395.	2408.	2067.	1941.	1681.	1595.	1561.
1	1890.	1618.	1415.	1276.	1177.	1122.	1118.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	9.9	8.0	6.9	6.2	5.8
8	******	13.6	10.4	8.6	7.5	6.8	6.5
6	19.4	14.1	11.2	9.6	8.5	7.8	7.5
4	19.9	15.6	13.0	11.3	10.1	9.4	9.1
3	21.3	17.2	14.5	12.8	11.6	10.8	10.6
2	24.1	20.1	17.2	15.3	14.0	13.2	13.0
1	31.5	27.0	23.6	21.3	19.6	18.7	18.6

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	121.	80.	65.	65.	69.
8	******	141.	97.	62.	51.	53.	57.
6	93.	89.	61.	46.	39.	41.	45.
4	45.	53.	39.	30.	26.	28.	32.
3	30.	37.	29.	22.	19.	20.	24.
2	18.	23.	18.	13.	11.	12.	14.
1	7.	8.	6.	4.	3.	3.	3.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	.2	.1	.1	.1	.1
8	******	.3	.2	.1	.1	.1	.1
6	.3	.2	.2	.1	.1	.1	.1
4	.2	.2	.2	.1	.1	.1	.1
3	.2	.2	.2	.1	.1	.1	.1
2	.2	.2	.1	.1	.1	.1	.1
1	.1	.1	.1	.1	.0	.0	.1

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2.	2.	2.	2.	2.
8	******	2.	2.	1.	1.	2.	2.
6	1.	2.	1.	1.	1.	1.	2.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	0.	1.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2.	2.	2.	2.	2.
8	******	2.	2.	1.	1.	2.	2.
6	1.	2.	1.	1.	1.	1.	2.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	0.	1.	0.	0.	0.	0.	0.

SEED WITH 1.00E-07 G/M3 OF SALT 2 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		6039.	4891.	4183.	3774.	3564.
8	******	6639.	5045.	4191.	3651.	3325.	3167.
6	7053.	5143.	4098.	3487.	3083.	2838.	2729.
4	4813.	3794.	3143.	2734.	2454.	2285.	2221.
3	3454.	3128.	2637.	2319.	2098.	1966.	1924.
2	2911.	2428.	2083.	1852.	1691.	1596.	1574.
1	1396.	1626.	1420.	1279.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.6	12.9	11.7	10.9	10.7
2	24.3	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		15.	10.	8.	8.	9.
8	******	17.	10.	7.	6.	7.	7.
6	10.	11.	7.	5.	5.	5.	6.
4	5.	6.	5.	4.	3.	3.	4.
3	3.	4.	3.	3.	2.	2.	3.
2	2.	3.	2.	2.	1.	1.	2.
1	1.	1.	1.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-08 G/M3 OF SALT 2 AT 0.5 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	6052.	4989.	4195.	3781.	3572.
8	******	6655.	5055.	4197.	3657.	3331.	3174.
6	7062.	5152.	4105.	3491.	3087.	2842.	2734.
4	4922.	3800.	3147.	2737.	2457.	2289.	2225.
3	3957.	3132.	2540.	2321.	2100.	1968.	1926.
2	2913.	2431.	2084.	1854.	1692.	1597.	1575.
1	1997.	1626.	1420.	1280.	1180.	1124.	1121.

CLOUD BASE TEMPERATURE (^{o}C)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	10.1	8.1	7.0	6.3	6.0
8	******	13.9	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.3	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	2.	1.	1.	1.	1.
8	******	2.	1.	1.	1.	1.	1.
6	1.	1.	1.	1.	1.	1.	1.
4	1.	1.	1.	0.	0.	0.	0.
3	0.	1.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	0.0	.0	.0	0.0	.0	0.0	.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEED WITH 1.00E-02 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	6322.	4750.	3304.	3261.	2981.	2609.	2472.
8	5497.	4056.	3326.	2899.	2580.	2358.	2248.
6	4367.	3378.	2438.	2505.	2265.	2093.	2011.
4	3309.	2573.	2303.	2071.	1902.	1781.	1727.
3	2792.	2309.	2022.	1842.	1710.	1615.	1575.
2	2254.	1917.	1714.	1587.	1493.	1427.	1401.
1	1669.	1492.	1361.	1265.	1177.	1123.	1119.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	11.4	7.9	6.3	5.4	4.8	4.3	4.1
8	11.5	8.5	6.9	6.0	5.4	4.9	4.7
6	12.1	9.4	7.9	7.0	6.3	5.8	5.6
4	13.8	11.1	9.6	8.6	7.9	7.4	7.2
3	15.5	12.8	11.2	10.2	9.5	9.0	8.8
2	18.8	16.0	14.3	13.2	12.4	11.9	11.7
1	27.8	24.7	22.7	21.1	19.6	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2245.	1530.	1315.	1173.	1101.
8	******	2630.	1730.	1309.	1078.	974.	927.
6	2596.	1775.	1269.	987.	823.	750.	723.
4	1514.	1128.	844.	566.	555.	507.	498.
3	1365.	823.	618.	480.	390.	353.	352.
2	659.	514.	370.	267.	198.	170.	175.
1	227.	145.	59.	15.	3.	1.	2.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	3.7	2.7	2.2	2.0	1.8
8	******	5.4	3.6	2.7	2.2	2.0	1.9
6	7.5	4.9	3.5	2.7	2.3	2.1	2.0
4	6.3	4.7	3.5	2.8	2.3	2.1	2.1
3	5.9	4.6	3.4	2.7	2.2	2.0	2.0
2	5.5	4.3	3.1	2.2	1.7	1.4	1.5
1	3.8	2.4	1.0	.2	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	37.	33.	31.	31.	31.
8	******	39.	34.	31.	29.	29.	29.
6	38.	34.	31.	28.	27.	26.	26.
4	31.	30.	27.	24.	23.	22.	22.
3	28.	26.	23.	21.	19.	18.	18.
2	23.	21.	18.	14.	12.	11.	11.
1	12.	9.	4.	1.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	37.	33.	31.	31.	31.
8	******	39.	34.	31.	29.	29.	29.
6	38.	34.	31.	28.	27.	26.	26.
4	31.	30.	27.	24.	23.	22.	22.
3	28.	26.	23.	21.	19.	18.	18.
2	23.	21.	18.	14.	12.	11.	11.
1	12.	9.	4.	1.	0.	0.	0.

SEED WITH 1.00E-03 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	5635.	4413.	3733.	3278.	2967.	2906.
8	6615.	4724.	3816.	3282.	2917.	2664.	2536.
6	5101.	3972.	3219.	2818.	2538.	2343.	2249.
4	3773.	3015.	2578.	2302.	2105.	1968.	1907.
3	3143.	2577.	2240.	2026.	1871.	1765.	1721.
2	2498.	2103.	1870.	1716.	1602.	1526.	1499.
1	1793.	1571.	1407.	1279.	1190.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	9.4	7.4	6.2	5.5	4.9	4.7
8	13.8	9.8	7.9	6.8	6.1	5.5	5.3
6	14.2	10.8	8.9	7.8	7.0	6.5	6.2
4	15.7	12.6	10.7	9.6	8.8	8.2	7.9
3	17.5	14.3	12.4	11.3	10.4	9.8	9.6
2	20.8	17.6	15.6	14.3	13.4	12.7	12.5
1	29.9	26.2	23.5	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1541.	1159.	917.	815.	769.
8	******	1933.	1240.	916.	741.	669.	639.
6	1962.	1291.	887.	674.	550.	500.	486.
4	1050.	786.	570.	435.	352.	320.	318.
3	714.	556.	400.	296.	229.	203.	206.
2	415.	323.	214.	138.	90.	71.	77.
1	104.	56.	13.	2.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.7	1.9	1.5	1.4	1.3
8	******	4.0	2.6	1.9	1.5	1.4	1.3
6	5.4	3.6	2.5	1.9	1.5	1.4	1.3
4	4.4	3.3	2.4	1.8	1.5	1.3	1.3
3	4.0	3.1	2.2	1.6	1.3	1.1	1.1
2	3.5	2.7	1.8	1.1	.7	.6	.6
1	1.7	.9	.2	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	27.	24.	22.	22.	21.
8	******	29.	25.	22.	20.	20.	20.
6	29.	25.	22.	19.	18.	18.	18.
4	22.	21.	19.	16.	14.	14.	14.
3	19.	18.	15.	13.	11.	10.	11.
2	14.	13.	10.	7.	5.	4.	5.
1	5.	3.	1.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	27.	24.	22.	22.	21.
8	******	29.	25.	22.	20.	20.	20.
6	28.	25.	22.	19.	18.	18.	18.
4	22.	21.	18.	16.	14.	14.	14.
3	19.	18.	15.	13.	11.	10.	11.
2	14.	13.	10.	7.	5.	4.	5.
1	5.	3.	1.	0.	0.	0.	0.

SEED WITH 1.00E-04 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	6599.	5024.	4190.	3651.	3296.	3109.
8	******	5426.	4300.	3658.	3230.	2944.	2799.
6	5398.	4374.	3588.	3114.	2788.	2570.	2464.
4	4245.	3351.	2939.	2514.	2296.	2135.	2069.
3	3493.	2935.	2442.	2189.	2003.	1890.	1843.
2	2726.	2283.	2002.	1812.	1670.	1582.	1558.
1	1372.	1616.	1419.	1279.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	11.0	8.4	7.0	6.1	5.5	5.2
8	******	11.3	9.0	7.6	6.7	6.1	5.8
6	16.4	12.1	10.0	8.6	7.7	7.1	6.8
4	17.7	14.0	11.8	10.5	9.5	8.9	8.6
3	19.4	15.7	13.6	12.2	11.2	10.5	10.2
2	22.7	19.0	16.7	15.1	13.9	13.2	13.0
1	31.2	26.9	23.6	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1029.	701.	545.	486.	464.
8	******	1230.	755.	540.	428.	387.	376.
6	1165.	779.	518.	379.	300.	273.	270.
4	573.	450.	310.	223.	171.	153.	157.
3	369.	298.	198.	132.	92.	79.	84.
2	187.	148.	83.	42.	21.	15.	17.
1	25.	10.	2.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1.7	1.2	.9	.8	.8
8	******	2.6	1.6	1.1	.9	.8	.9
6	3.2	2.2	1.4	1.1	.8	.8	.8
4	2.4	1.9	1.3	.9	.7	.6	.7
3	2.0	1.7	1.1	.7	.5	.4	.5
2	1.6	1.2	.7	.3	.2	.1	.1
1	.4	.2	.0	.0	.0	0.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	17.	14.	13.	13.	13.
8	******	19.	15.	13.	12.	12.	12.
6	16.	15.	13.	11.	10.	10.	10.
4	12.	12.	10.	8.	7.	7.	7.
3	10.	10.	8.	6.	4.	4.	4.
2	6.	6.	4.	2.	1.	1.	1.
1	1.	1.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	17.	14.	13.	13.	13.
8	******	18.	15.	13.	12.	12.	12.
6	16.	15.	13.	11.	10.	10.	10.
4	12.	12.	10.	8.	7.	7.	7.
3	10.	10.	8.	6.	4.	4.	4.
2	6.	6.	4.	2.	1.	1.	1.
1	1.	1.	0.	0.	0.	0.	0.

SEED WITH 1.00E-05 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	7621.	5607.	4602.	3975.	3581.	3374.
8	******	6122.	4743.	3986.	3494.	3181.	3022.
6	6646.	4839.	3908.	3358.	2986.	2750.	2638.
4	4539.	3639.	3045.	2672.	2411.	2249.	2181.
3	3752.	3038.	2585.	2291.	2081.	1953.	1910.
2	2870.	2396.	2069.	1849.	1689.	1595.	1573.
1	1894.	1625.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	12.7	9.3	7.7	6.6	6.0	5.6
8	******	12.8	9.9	8.3	7.3	6.6	6.3
6	18.5	13.4	10.9	9.3	8.3	7.6	7.3
4	19.3	15.2	12.7	11.1	10.0	9.4	9.1
3	20.8	16.9	14.4	12.7	11.6	10.9	10.6
2	23.9	20.0	17.2	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	446.	289.	220.	201.	199.
8	******	534.	312.	212.	164.	151.	153.
6	417.	314.	197.	134.	102.	93.	97.
4	183.	162.	103.	66.	46.	40.	44.
3	105.	94.	55.	31.	19.	15.	17.
2	43.	35.	16.	6.	3.	2.	2.
1	3.	1.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	.7	.5	.4	.3	.3
8	******	1.1	.7	.4	.3	.3	.3
6	1.2	.9	.5	.4	.3	.3	.3
4	.8	.7	.4	.3	.2	.2	.2
3	.6	.5	.3	.2	.1	.1	.1
2	.4	.3	.1	.1	.0	.0	.0
1	.0	.0	.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	7.	6.	5.	5.	6.
8	******	8.	6.	5.	4.	5.	5.
6	6.	6.	5.	4.	3.	3.	4.
4	4.	4.	3.	2.	2.	2.	2.
3	3.	3.	2.	1.	1.	1.	1.
2	1.	1.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	7.	6.	5.	5.	6.
8	******	8.	6.	5.	4.	5.	5.
6	6.	6.	5.	4.	3.	3.	4.
4	4.	4.	3.	2.	2.	2.	2.
3	3.	3.	2.	1.	1.	1.	1.
2	1.	1.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-06 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		5961.	4334.	4152.	3742.	3531.
8	******	6543.	4994.	4159.	3628.	3303.	3145.
6	6996.	5094.	4070.	3470.	3071.	2828.	2718.
4	4795.	3774.	3132.	2728.	2451.	2283.	2219.
3	3943.	3113.	2633.	2317.	2098.	1966.	1925.
2	2908.	2427.	2083.	1953.	1691.	1597.	1575.
1	1996.	1626.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		9.9	8.1	6.9	6.2	5.9
8	******	13.6	10.4	8.7	7.6	6.9	6.6
6	19.4	14.2	11.3	9.6	8.5	7.9	7.6
4	20.0	15.7	13.0	11.4	10.2	9.5	9.2
3	21.3	17.3	14.6	12.9	11.7	10.9	10.7
2	24.2	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		92.	57.	43.	41.	42.
8	******	109.	61.	39.	30.	28.	30.
6	67.	59.	35.	22.	16.	15.	16.
4	27.	27.	16.	9.	6.	5.	6.
3	14.	14.	7.	4.	2.	2.	2.
2	5.	4.	2.	1.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.2	.1	.1	.1	.1
8	******	.2	.1	.1	.1	.1	.1
6	.2	.2	.1	.1	.0	.0	.0
4	.1	.1	.1	.0	.0	.0	.0
3	.1	.1	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		2.	1.	1.	1.	1.
8	******	2.	1.	1.	1.	1.	1.
6	1.	1.	1.	1.	1.	1.	1.
4	1.	1.	1.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		2.	1.	1.	1.	1.
8	******	2.	1.	1.	1.	1.	1.
6	1.	1.	1.	1.	1.	1.	1.
4	1.	1.	1.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-07 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		6043.	4994.	4191.	3777.	3569.
8	******	6644.	5049.	4194.	3654.	3328.	3171.
6	7056.	5146.	4102.	3490.	3096.	2841.	2733.
4	4320.	3799.	3146.	2736.	2456.	2287.	2225.
3	3856.	3131.	2639.	2321.	2100.	1969.	1926.
2	2912.	2430.	2084.	1854.	1692.	1597.	1576.
1	1897.	1626.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.3	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		11.	7.	5.	5.	5.
8	******	13.	7.	4.	3.	3.	3.
6	7.	7.	4.	2.	2.	2.	2.
4	3.	3.	2.	1.	1.	1.	1.
3	2.	2.	1.	0.	0.	0.	0.
2	1.	1.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	0.0	.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-08 G/M3 OF SALT 2 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	6052.	4890.	4195.	3782.	3573.
8	******	6655.	5055.	4197.	3557.	3331.	3174.
6	7062.	5152.	4105.	3492.	3088.	2843.	2734.
4	4922.	3903.	3148.	2737.	2457.	2288.	2225.
3	3957.	3132.	2540.	2321.	2100.	1968.	1927.
2	2913.	2431.	2084.	1854.	1692.	1597.	1575.
1	1397.	1526.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	10.1	8.1	7.0	6.3	6.0
8	******	13.9	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.3	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1.	1.	1.	1.	1.
8	******	1.	1.	1.	0.	0.	0.
6	1.	1.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	0.0
3	.0	.0	0.0	0.0	0.0	0.0	0.0
2	.0	.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	5056.	3926.	3134.	2550.	2258.	2106.	2035.
8	4194.	3279.	2731.	2247.	2003.	1879.	1825.
6	3395.	2723.	2304.	1917.	1721.	1623.	1587.
4	2581.	2132.	1832.	1543.	1396.	1325.	1306.
3	2160.	1807.	1566.	1327.	1206.	1149.	1138.
2	1703.	1444.	1262.	1078.	984.	942.	938.
1	1162.	1000.	983.	761.	699.	673.	676.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	8.4	6.4	5.2	4.3	3.8	3.5	3.4
8	8.7	6.8	5.7	4.7	4.2	3.9	3.8
6	9.4	7.6	6.4	5.3	4.8	4.5	4.4
4	10.8	8.9	7.6	6.4	5.8	5.5	5.4
3	12.0	10.0	8.7	7.4	6.7	6.4	6.3
2	14.2	12.0	10.5	9.0	8.2	7.9	7.8
1	19.4	16.7	14.7	12.7	11.6	11.2	11.3

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2920.	2340.	1937.	1676.	1538.
8	******	3377.	2325.	1951.	1655.	1454.	1350.
6	3579.	2430.	1902.	1575.	1367.	1220.	1147.
4	2241.	1659.	1316.	1195.	1062.	963.	919.
3	1697.	1325.	1074.	994.	894.	819.	789.
2	1210.	987.	822.	776.	708.	655.	637.
1	734.	627.	537.	519.	481.	451.	445.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	4.9	3.9	3.2	2.8	2.6
8	******	7.0	4.8	4.1	3.4	3.0	2.8
6	10.2	6.7	5.0	4.4	3.8	3.4	3.2
4	9.3	7.0	5.5	5.0	4.4	4.0	3.8
3	9.4	7.4	6.0	5.5	5.0	4.5	4.4
2	10.1	8.2	6.9	6.5	5.9	5.5	5.3
1	12.2	10.4	9.0	8.6	8.0	7.5	7.4

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	48.	48.	46.	44.	43.
8	******	51.	46.	46.	45.	44.	43.
6	52.	47.	44.	45.	44.	43.	42.
4	46.	44.	42.	44.	43.	42.	41.
3	44.	42.	41.	43.	43.	42.	41.
2	42.	41.	39.	42.	42.	41.	40.
1	39.	39.	38.	41.	41.	40.	40.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	48.	48.	46.	44.	43.
8	******	51.	46.	46.	45.	44.	43.
6	52.	47.	44.	45.	44.	43.	42.
4	46.	44.	42.	44.	43.	42.	41.
3	44.	42.	41.	43.	43.	42.	41.
2	42.	41.	39.	42.	42.	41.	40.
1	39.	39.	38.	41.	41.	40.	40.

SEED WITH 1.00E-03 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	5449.	4684.	3768.	3083.	2723.	2524.	2426.
8	5199.	3961.	3257.	2701.	2405.	2244.	2170.
6	4102.	3249.	2726.	2291.	2057.	1933.	1982.
4	3067.	2512.	2149.	1830.	1659.	1571.	1542.
3	2543.	2115.	1827.	1568.	1428.	1358.	1341.
2	1984.	1677.	1464.	1266.	1159.	1108.	1101.
1	1335.	1143.	1015.	886.	817.	786.	787.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	10.7	7.8	6.3	5.1	4.5	4.2	4.0
8	10.8	8.3	6.8	5.6	5.0	4.7	4.5
6	11.4	9.0	7.6	6.4	5.7	5.4	5.2
4	12.8	10.5	9.0	7.6	6.9	6.5	6.4
3	14.1	11.8	10.1	8.7	7.9	7.5	7.4
2	16.5	14.0	12.2	10.5	9.7	9.2	9.2
1	22.3	19.1	16.9	14.8	13.6	13.1	13.1

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2285.	1808.	1473.	1258.	1147.
8	******	2595.	1799.	1497.	1252.	1088.	1005.
6	2951.	1904.	1380.	1201.	1031.	910.	853.
4	1755.	1239.	999.	907.	798.	718.	683.
3	1315.	1017.	813.	754.	672.	610.	586.
2	929.	754.	621.	588.	533.	489.	475.
1	561.	478.	406.	394.	364.	339.	334.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	3.8	3.0	2.5	2.1	1.9
8	******	5.6	3.7	3.1	2.6	2.3	2.1
6	8.2	5.3	3.8	3.3	2.9	2.5	2.4
4	7.3	5.4	4.2	3.8	3.3	3.0	2.8
3	7.3	5.7	4.5	4.2	3.7	3.4	3.3
2	7.7	6.3	5.2	4.9	4.4	4.1	4.0
1	9.3	8.0	6.8	6.6	6.1	5.6	5.6

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	38.	37.	35.	33.	32.
8	******	40.	36.	36.	34.	33.	32.
6	42.	37.	34.	34.	33.	32.	31.
4	36.	34.	32.	33.	32.	31.	31.
3	34.	32.	31.	32.	32.	31.	30.
2	32.	31.	30.	32.	31.	31.	30.
1	30.	29.	29.	31.	31.	30.	30.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	38.	37.	35.	33.	32.
8	******	40.	36.	36.	34.	33.	32.
6	42.	37.	34.	34.	33.	32.	31.
4	36.	34.	32.	33.	32.	31.	31.
3	34.	32.	31.	32.	32.	31.	30.
2	32.	31.	30.	32.	31.	31.	30.
1	30.	29.	29.	31.	31.	30.	30.

SEED WITH 1.00E-04 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	5571.	4384.	3573.	3139.	2893.	2767.
8	6288.	4640.	3758.	3115.	2763.	2565.	2469.
6	4832.	3757.	3121.	2628.	2355.	2203.	2136.
4	3341.	2971.	2442.	2089.	1991.	1785.	1747.
3	2909.	2404.	2063.	1784.	1624.	1541.	1516.
2	2250.	1995.	1649.	1435.	1315.	1255.	1243.
1	1500.	1288.	1137.	1000.	923.	887.	887.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	9.3	7.3	6.0	5.2	4.8	4.6
8	13.1	9.7	7.8	6.5	5.8	5.3	5.1
6	13.4	10.4	8.7	7.3	6.5	6.1	5.9
4	14.8	12.0	10.2	8.7	7.9	7.4	7.3
3	16.2	13.4	11.5	9.9	9.0	8.6	8.4
2	18.8	15.8	13.7	12.0	11.0	10.5	10.4
1	25.0	21.5	18.9	16.7	15.4	14.8	14.8

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1563.	1317.	1057.	889.	807.
8	******	2016.	1297.	1083.	895.	767.	706.
6	2231.	1396.	984.	864.	733.	640.	598.
4	1292.	929.	706.	648.	566.	503.	478.
3	949.	729.	572.	537.	476.	427.	410.
2	563.	536.	435.	419.	377.	342.	332.
1	396.	338.	284.	280.	257.	237.	234.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.8	2.2	1.8	1.5	1.3
8	******	4.2	2.7	2.3	1.9	1.6	1.5
6	6.2	3.9	2.7	2.4	2.0	1.8	1.7
4	5.3	3.9	2.9	2.7	2.4	2.1	2.0
3	5.3	4.0	3.2	3.0	2.6	2.4	2.3
2	5.5	4.5	3.6	3.5	3.1	2.8	2.8
1	6.6	5.6	4.7	4.7	4.3	4.0	3.9

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	28.	27.	25.	24.	23.
8	******	30.	26.	26.	24.	23.	22.
6	32.	27.	24.	25.	24.	23.	22.
4	27.	24.	22.	24.	23.	22.	22.
3	25.	23.	22.	23.	23.	22.	21.
2	23.	22.	21.	23.	22.	21.	21.
1	21.	21.	20.	22.	22.	21.	21.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	28.	27.	25.	24.	23.
8	******	30.	26.	26.	24.	23.	22.
6	32.	27.	24.	25.	24.	23.	22.
4	27.	24.	22.	24.	23.	22.	22.
3	25.	23.	22.	23.	23.	22.	21.
2	23.	22.	21.	23.	22.	21.	21.
1	21.	21.	20.	22.	22.	21.	21.

SEED WITH 1.00E-05 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	6543.	5008.	4049.	3531.	3237.	3079.
8	7576.	5352.	4255.	3511.	3097.	2862.	2743.
6	5612.	4271.	3506.	2949.	2631.	2452.	2369.
4	4019.	3224.	2722.	2331.	2106.	1981.	1933.
3	3270.	2684.	2297.	1986.	1805.	1708.	1676.
2	2509.	2103.	1825.	1593.	1459.	1389.	1373.
1	1657.	1421.	1252.	1105.	1021.	980.	978.

CLOUD BASE TEMPERATURE (^{o}C)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	10.9	8.3	6.7	5.9	5.4	5.1
8	15.8	11.1	8.9	7.3	6.5	6.0	5.7
6	15.6	11.9	9.7	8.2	7.3	6.8	6.6
4	16.7	13.4	11.3	9.7	8.8	8.3	8.1
3	18.2	14.9	12.8	11.0	10.0	9.5	9.3
2	20.9	17.5	15.2	13.3	12.2	11.6	11.4
1	27.6	23.7	20.9	18.4	17.0	16.3	16.3

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		1045.	842.	665.	546.	494.
8	******	1305.	800.	687.	560.	470.	431.
6	1451.	933.	600.	544.	457.	391.	365.
4	804.	577.	426.	406.	351.	307.	292.
3	587.	449.	343.	336.	295.	260.	251.
2	405.	329.	260.	261.	233.	209.	203.
1	240.	205.	169.	174.	159.	144.	143.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		1.7	1.4	1.1	.9	.8
8	******	2.7	1.7	1.4	1.2	1.0	.9
6	4.0	2.5	1.7	1.5	1.3	1.1	1.0
4	3.3	2.4	1.8	1.7	1.5	1.3	1.2
3	3.3	2.5	1.9	1.9	1.6	1.4	1.6
2	3.4	2.7	2.2	2.2	1.9	1.7	1.7
1	4.0	3.4	2.8	2.9	2.7	2.4	2.4

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		17.	17.	16.	14.	14.
8	******	20.	16.	16.	15.	14.	14.
6	21.	17.	15.	16.	15.	14.	13.
4	17.	15.	14.	15.	14.	13.	13.
3	15.	14.	13.	14.	14.	13.	13.
2	14.	13.	12.	14.	14.	13.	13.
1	13.	13.	12.	14.	13.	13.	13.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		17.	17.	16.	14.	14.
8	******	20.	16.	16.	15.	14.	14.
6	21.	17.	15.	16.	15.	14.	13.
4	17.	15.	14.	15.	14.	13.	13.
3	15.	14.	13.	14.	14.	13.	13.
2	14.	13.	12.	14.	14.	13.	13.
1	13.	13.	12.	14.	13.	13.	13.

CLOUD BASE TEMPERATURE (^{o}C)

SEED WITH 1.00E-06 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	7594.	5512.	4504.	3998.	3550.	3361.
8	******	6076.	4723.	3885.	3408.	3132.	2989.
6	5417.	4770.	3860.	3245.	2985.	2676.	2578.
4	4490.	3555.	2975.	2555.	2301.	2157.	2100.
3	3511.	2943.	2502.	2171.	1970.	1857.	1819.
2	2745.	2294.	1990.	1737.	1589.	1508.	1488.
1	1799.	1541.	1353.	1202.	1110.	1063.	1059.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	12.7	9.4	7.5	6.5	5.9	5.6
8	******	12.7	9.8	8.1	7.1	6.5	6.2
6	17.8	13.3	10.7	9.0	8.0	7.4	7.2
4	18.7	14.8	12.4	10.6	9.6	9.0	8.7
3	20.1	16.3	13.9	12.1	10.9	10.3	10.1
2	22.9	19.1	16.5	14.5	13.2	12.6	12.4
1	30.0	25.7	22.6	20.0	18.5	17.7	17.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	441.	386.	297.	232.	212.
8	******	580.	332.	313.	250.	200.	185.
6	547.	383.	246.	246.	203.	166.	157.
4	342.	245.	173.	183.	156.	131.	126.
3	245.	189.	138.	151.	130.	111.	108.
2	169.	137.	104.	117.	103.	89.	88.
1	98.	85.	67.	78.	70.	61.	62.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	.7	.6	.5	.4	.4
8	******	1.2	.7	.7	.5	.4	.4
6	1.8	1.1	.7	.7	.6	.5	.4
4	1.4	1.0	.7	.8	.6	.5	.5
3	1.4	1.1	.8	.8	.7	.6	.6
2	1.4	1.1	.9	1.0	.9	.7	.7
1	1.6	1.4	1.1	1.3	1.2	1.0	1.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	7.	8.	7.	6.	6.
8	******	9.	7.	7.	7.	6.	6.
6	9.	7.	6.	7.	7.	6.	6.
4	7.	6.	5.	7.	6.	6.	6.
3	6.	6.	5.	6.	6.	6.	6.
2	6.	6.	5.	6.	6.	6.	6.
1	5.	5.	5.	6.	6.	5.	6.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	7.	8.	7.	6.	6.
8	******	9.	7.	7.	7.	6.	6.
6	9.	7.	6.	7.	7.	6.	6.
4	7.	6.	5.	7.	6.	6.	6.
3	6.	6.	5.	6.	6.	6.	6.
2	6.	6.	5.	6.	6.	6.	6.
1	5.	5.	5.	6.	6.	5.	6.

SEED WITH 1.00E-07 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	5958.	4905.	4132.	3736.	3530.
8	******	6537.	4992.	4129.	3604.	3292.	3137.
6	5931.	5076.	4059.	3438.	3044.	2809.	2702.
4	4755.	3752.	3115.	2697.	2424.	2262.	2199.
3	3309.	3095.	2614.	2288.	2072.	1946.	1904.
2	2380.	2404.	2065.	1828.	1670.	1579.	1557.
1	1979.	1610.	1408.	1263.	1165.	1112.	1109.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	9.9	8.0	6.9	6.2	5.9
8	******	13.6	10.4	8.6	7.5	6.9	6.5
6	19.3	14.1	11.3	9.5	8.5	7.8	7.5
4	19.8	15.6	13.0	11.2	10.1	9.4	9.2
3	21.2	17.2	14.5	12.7	11.5	10.9	10.5
2	24.0	20.0	17.2	15.2	13.9	13.2	13.0
1	31.3	26.8	23.5	21.0	19.4	18.5	18.5

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	96.	86.	64.	47.	43.
8	******	119.	64.	69.	53.	40.	38.
6	133.	77.	47.	54.	43.	33.	32.
4	68.	49.	33.	40.	33.	26.	26.
3	49.	38.	26.	33.	28.	22.	22.
2	33.	27.	20.	26.	22.	18.	18.
1	19.	17.	13.	17.	15.	13.	13.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	.1	.1	.1	.1	.1
8	******	.2	.1	.1	.1	.1	.1
6	.4	.2	.1	.2	.1	.1	.1
4	.3	.2	.1	.2	.1	.1	.1
3	.3	.2	.1	.2	.2	.1	.1
2	.3	.2	.2	.2	.2	.2	.2
1	.3	.3	.2	.3	.3	.2	.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.	2.	2.	1.	1.
8	******	2.	1.	2.	1.	1.	1.
6	2.	1.	1.	2.	1.	1.	1.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	1.	1.	1.	1.	1.	1.	1.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.	2.	2.	1.	1.
8	******	2.	1.	2.	1.	1.	1.
6	2.	1.	1.	2.	1.	1.	1.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	1.	1.	1.	1.	1.	1.	1.

SEED WITH 1.00E-08 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		5044.	4490.	4188.	3777.	3568.
8	******	5643.	5048.	4190.	3651.	3327.	3170.
6	7049.	5144.	4100.	3486.	3083.	2839.	2731.
4	4315.	3795.	3144.	2733.	2453.	2285.	2222.
3	3852.	3129.	2637.	2317.	2097.	1965.	1924.
2	2909.	2428.	2092.	1851.	1689.	1595.	1573.
1	1995.	1625.	1419.	1273.	1178.	1123.	1119.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.6	10.9	10.7
2	24.2	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.6	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.	10.	7.	5.	5.
8	******	14.	7.	8.	6.	5.	4.
6	15.	9.	5.	6.	5.	4.	4.
4	8.	6.	4.	5.	4.	3.	3.
3	6.	4.	3.	4.	3.	3.	3.
2	4.	3.	2.	3.	3.	2.	2.
1	2.	2.	1.	2.	2.	1.	2.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	5183.	3495.	3172.	2737.	2454.	2225.	2086.
8	4449.	3346.	2774.	2419.	2185.	1995.	1882.
6	3590.	2735.	2349.	2071.	1886.	1735.	1648.
4	2731.	2192.	1992.	1680.	1545.	1434.	1374.
3	2294.	1973.	1626.	1463.	1354.	1265.	1218.
2	1922.	1516.	1333.	1211.	1130.	1064.	1032.
1	1279.	1096.	985.	911.	863.	825.	808.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	9.0	6.5	5.3	4.6	4.1	3.7	3.5
8	9.3	7.0	5.8	5.0	4.6	4.2	3.9
6	9.9	7.7	6.5	5.8	5.2	4.8	4.6
4	11.4	9.1	7.8	7.0	6.4	6.0	5.7
3	12.7	10.4	9.0	8.1	7.5	7.0	6.8
2	15.2	12.6	11.1	10.1	9.4	8.9	8.6
1	21.3	18.3	16.4	15.2	14.4	13.7	13.5

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2381.	2153.	1742.	1557.	1487.
8	******	3311.	2282.	1779.	1472.	1337.	1292.
6	3483.	2368.	1757.	1421.	1202.	1108.	1087.
4	2092.	1609.	1265.	1057.	912.	854.	851.
3	1563.	1259.	1014.	858.	746.	703.	709.
2	1091.	915.	752.	643.	562.	533.	544.
1	617.	530.	435.	368.	317.	300.	313.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	4.8	3.6	2.9	2.6	2.5
8	******	6.9	4.8	3.7	3.1	2.8	2.7
6	9.7	6.6	4.9	3.9	3.3	3.1	3.0
4	8.7	6.7	5.3	4.4	3.8	3.6	3.5
3	8.7	7.0	5.6	4.8	4.1	3.9	3.9
2	9.1	7.6	6.3	5.4	4.7	4.4	4.5
1	10.3	8.8	7.3	6.1	5.3	5.0	5.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	48.	44.	42.	41.	42.
8	******	50.	45.	42.	40.	40.	41.
6	49.	46.	43.	41.	39.	39.	40.
4	43.	42.	40.	39.	37.	37.	38.
3	41.	40.	38.	37.	36.	36.	37.
2	37.	38.	36.	35.	33.	33.	35.
1	33.	33.	31.	29.	27.	27.	28.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	48.	44.	42.	41.	42.
8	******	50.	45.	42.	40.	40.	41.
6	49.	46.	43.	41.	39.	39.	40.
4	43.	42.	40.	39.	37.	37.	38.
3	41.	40.	38.	37.	36.	36.	37.
2	37.	38.	36.	35.	33.	33.	35.
1	33.	33.	31.	29.	27.	27.	28.

SEED WITH 1.99E-03 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	5922.	4754.	3904.	3251.	2894.	2627.	2470.
8	5467.	4026.	3297.	2854.	2564.	2344.	2218.
6	4297.	3307.	2767.	2426.	2200.	2028.	1933.
4	3210.	2568.	2194.	1951.	1788.	1664.	1600.
3	2668.	2175.	1881.	1687.	1556.	1457.	1409.
2	2094.	1742.	1527.	1383.	1286.	1213.	1181.
1	1443.	1235.	1105.	1018.	961.	919.	903.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	11.4	7.9	6.3	5.4	4.8	4.4	4.1
8	11.4	8.4	6.9	5.9	5.3	4.9	4.6
6	11.9	9.2	7.7	6.7	6.1	5.6	5.4
4	13.4	10.7	9.1	8.1	7.4	6.9	6.7
3	14.8	12.1	10.4	9.4	8.6	8.1	7.8
2	17.4	14.5	12.7	11.5	10.7	10.1	9.8
1	24.1	20.6	18.4	17.0	16.0	15.3	15.0

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		2249.	1640.	1301.	1155.	1103.
8	******	2631.	1759.	1344.	1094.	987.	956.
6	2766.	1346.	1339.	1065.	888.	815.	802.
4	1613.	1233.	954.	787.	669.	624.	625.
3	1189.	957.	759.	635.	544.	511.	518.
2	819.	689.	558.	471.	406.	384.	394.
1	453.	391.	315.	261.	219.	206.	218.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		3.7	2.7	2.2	1.9	1.8
8	******	5.5	3.7	2.8	2.3	2.1	2.0
6	7.7	5.1	3.7	3.0	2.5	2.3	2.2
4	6.7	5.1	4.0	3.3	2.8	2.6	2.6
3	6.6	5.3	4.2	3.5	3.0	2.8	2.9
2	6.8	5.7	4.6	3.9	3.4	3.2	3.3
1	7.6	6.5	5.3	4.4	3.7	3.4	3.6

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		37.	34.	31.	31.	31.
8	******	40.	35.	32.	30.	30.	30.
6	39.	36.	33.	31.	29.	29.	29.
4	33.	32.	30.	29.	27.	27.	28.
3	31.	31.	29.	27.	26.	26.	27.
2	28.	28.	27.	25.	24.	24.	25.
1	24.	24.	22.	20.	19.	18.	19.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		37.	34.	31.	31.	31.
8	******	40.	35.	32.	30.	30.	30.
6	39.	36.	33.	31.	29.	29.	29.
4	33.	32.	30.	29.	27.	27.	28.
3	31.	31.	29.	27.	26.	26.	27.
2	28.	28.	27.	25.	24.	24.	25.
1	24.	24.	22.	20.	19.	18.	19.

SEED WITH 1.00E-04 G/M3 OF SALT 3 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	5545.	4420.	3731.	3295.	2986.	2806.
8	6596.	4706.	3797.	3257.	2907.	2655.	2513.
6	5039.	3914.	3160.	2752.	2483.	2288.	2182.
4	3594.	2924.	2484.	2193.	2007.	1867.	1798.
3	3332.	2460.	2117.	1991.	1739.	1628.	1576.
2	2355.	1954.	1707.	1540.	1428.	1348.	1314.
1	1600.	1367.	1219.	1118.	1051.	1004.	989.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	9.4	7.4	6.2	5.5	5.0	4.7
8	13.7	9.8	7.9	6.8	6.1	5.5	5.2
6	14.0	10.6	8.8	7.6	6.9	6.4	6.1
4	15.3	12.2	10.3	9.2	8.4	7.8	7.5
3	16.8	13.7	11.8	10.5	9.7	9.0	8.8
2	19.6	15.3	14.2	12.8	11.9	11.2	10.9
1	26.7	22.8	20.3	18.6	17.5	16.7	16.5

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	1534.	1160.	900.	796.	767.
8	******	1950.	1259.	941.	750.	677.	662.
6	2024.	1339.	945.	740.	604.	555.	553.
4	1139.	976.	664.	539.	450.	421.	428.
3	926.	672.	523.	430.	361.	340.	350.
2	559.	476.	378.	314.	264.	249.	262.
1	297.	259.	202.	161.	129.	120.	132.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	2.7	1.9	1.5	1.3	1.3
8	******	4.1	2.6	2.0	1.6	1.4	1.4
6	5.6	3.7	2.6	2.1	1.7	1.5	1.5
4	4.7	3.7	2.8	2.2	1.9	1.8	1.8
3	4.6	3.7	2.9	2.4	2.0	1.9	1.9
2	4.7	4.0	3.1	2.6	2.2	2.1	2.2
1	4.9	4.3	3.4	2.7	2.2	2.0	2.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	27.	24.	21.	21.	21.
8	******	29.	25.	22.	21.	20.	21.
6	29.	26.	23.	21.	20.	20.	20.
4	24.	23.	21.	20.	18.	18.	19.
3	21.	21.	20.	19.	17.	17.	18.
2	19.	20.	18.	17.	16.	16.	17.
1	16.	16.	14.	13.	11.	11.	12.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	27.	24.	21.	21.	21.
8	******	29.	25.	22.	21.	20.	21.
6	29.	26.	23.	21.	20.	20.	20.
4	24.	23.	21.	20.	18.	18.	19.
3	21.	21.	20.	19.	17.	17.	18.
2	19.	20.	18.	17.	16.	16.	17.
1	16.	16.	14.	13.	11.	11.	12.

SEED WITH 1.00E-05 G/M3 OF SALT 3 AT 0.5 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	6527.	5044.	4197.	3675.	3320.	3115.
8	7399.	5422.	4292.	3643.	3229.	2943.	2783.
6	5942.	4328.	3542.	3062.	2747.	2527.	2410.
4	4166.	3275.	2760.	2430.	2209.	2054.	1978.
3	3392.	2736.	2341.	2081.	1906.	1784.	1729.
2	2609.	2159.	1975.	1686.	1557.	1469.	1434.
1	1747.	1490.	1322.	1207.	1127.	1076.	1063.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	11.0	8.4	7.0	6.1	5.5	5.2
8	16.7	11.3	8.9	7.6	6.7	6.1	5.8
6	16.2	12.0	9.8	8.5	7.6	7.0	6.7
4	17.4	13.6	11.5	10.1	9.2	8.6	8.2
3	18.8	15.2	13.0	11.6	10.6	9.9	9.6
2	21.7	18.0	15.6	14.0	13.0	12.2	12.0
1	29.1	24.8	22.0	20.1	18.8	17.9	17.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1010.	693.	521.	462.	453.
8	******	1235.	763.	555.	429.	389.	392.
6	1221.	825.	564.	430.	341.	316.	325.
4	656.	526.	388.	308.	248.	234.	247.
3	465.	396.	299.	240.	194.	184.	198.
2	305.	273.	210.	168.	135.	128.	142.
1	149.	136.	99.	73.	53.	48.	58.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1.7	1.2	.9	.8	.8
8	******	2.6	1.6	1.2	.9	.8	.8
6	3.4	2.3	1.6	1.2	.9	.9	.9
4	2.7	2.2	1.6	1.3	1.0	1.0	1.0
3	2.6	2.2	1.7	1.3	1.1	1.0	1.1
2	2.5	2.3	1.7	1.4	1.1	1.1	1.2
1	2.5	2.3	1.6	1.2	.9	.8	1.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	17.	14.	12.	12.	13.
8	******	19.	15.	13.	12.	12.	12.
6	17.	16.	14.	12.	11.	11.	12.
4	14.	14.	12.	11.	10.	10.	11.
3	12.	13.	11.	10.	9.	9.	10.
2	10.	11.	10.	9.	8.	8.	9.
1	8.	8.	7.	6.	4.	4.	5.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	17.	14.	12.	12.	13.
8	******	19.	15.	13.	12.	12.	12.
6	17.	16.	14.	12.	11.	11.	12.
4	14.	14.	12.	11.	10.	10.	11.
3	12.	13.	11.	10.	9.	9.	10.
2	10.	11.	10.	9.	8.	8.	9.
1	8.	8.	7.	6.	4.	4.	5.

SEED WITH 1.00E-06 G/M3 OF SALT 3 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	7675.	5641.	4521.	4005.	3610.	3389.
8	******	6134.	4751.	3986.	3503.	3139.	3019.
6	6614.	4414.	3586.	3331.	2968.	2729.	2608.
4	4596.	3595.	3002.	2627.	2373.	2207.	2132.
3	3702.	2992.	2532.	2239.	2038.	1908.	1856.
2	2816.	2332.	2013.	1800.	1653.	1559.	1530.
1	1956.	1585.	1394.	1263.	1170.	1115.	1109.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	12.8	9.4	7.7	6.7	6.0	5.6
8	******	12.8	9.9	8.3	7.3	6.6	6.3
6	18.4	13.4	10.8	9.3	8.2	7.6	7.2
4	19.1	15.0	12.5	10.9	9.9	9.2	8.9
3	20.6	16.6	14.1	12.4	11.3	10.6	10.3
2	23.5	19.4	16.8	15.0	13.8	13.0	12.7
1	30.9	26.4	23.2	21.0	19.5	18.6	18.5

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	413.	270.	191.	173.	184.
8	******	519.	304.	212.	154.	143.	155.
6	443.	335.	219.	161.	120.	114.	126.
4	227.	206.	146.	111.	84.	81.	93.
3	155.	150.	108.	83.	62.	60.	71.
2	97.	99.	71.	54.	39.	38.	45.
1	41.	41.	26.	17.	11.	9.	13.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	.7	.4	.3	.3	.3
8	******	1.1	.6	.4	.3	.3	.3
6	1.2	.9	.6	.4	.3	.3	.4
4	.9	.9	.6	.5	.3	.3	.4
3	.9	.8	.6	.5	.3	.3	.4
2	.8	.8	.6	.4	.3	.3	.4
1	.7	.7	.4	.3	.2	.2	.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	7.	6.	5.	5.	5.
8	******	8.	6.	5.	4.	4.	5.
6	6.	7.	5.	5.	4.	4.	5.
4	5.	5.	5.	4.	3.	4.	4.
3	4.	5.	4.	4.	3.	3.	4.
2	3.	4.	3.	3.	2.	2.	3.
1	2.	3.	2.	1.	1.	1.	1.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	7.	6.	5.	5.	5.
8	******	8.	6.	5.	4.	4.	5.
6	6.	7.	5.	5.	4.	4.	5.
4	5.	5.	5.	4.	3.	4.	4.
3	4.	5.	4.	4.	3.	3.	4.
2	3.	4.	3.	3.	2.	2.	3.
1	2.	3.	2.	1.	1.	1.	1.

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SEED WITH 1.00E-07 G/M3 OF SALT 3 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	5976.	4842.	4164.	3753.	3539.
8	******	6558.	5000.	4161.	3632.	3309.	3146.
6	6990.	5091.	4366.	3464.	3068.	2824.	2712.
4	4737.	3764.	3123.	2719.	2444.	2275.	2209.
3	3833.	3106.	2672.	2308.	2091.	1959.	1915.
2	2899.	2415.	2073.	1846.	1686.	1592.	1569.
1	1891.	1621.	1417.	1278.	1179.	1123.	1119.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	10.0	8.1	6.9	6.3	5.9
8	******	13.7	10.4	8.7	7.6	6.9	6.6
6	19.4	14.1	11.3	9.6	8.5	7.8	7.5
4	19.9	15.7	13.0	11.3	10.2	9.5	9.2
3	21.3	17.3	14.5	12.8	11.6	10.9	10.6
2	24.2	20.1	17.3	15.4	14.1	13.3	13.1
1	31.5	27.0	23.6	21.3	19.6	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	77.	48.	32.	30.	34.
8	******	99.	56.	37.	25.	24.	28.
6	73.	62.	39.	28.	19.	19.	23.
4	36.	37.	25.	18.	13.	13.	16.
3	24.	26.	18.	13.	9.	9.	12.
2	14.	16.	11.	8.	5.	5.	7.
1	5.	6.	4.	2.	1.	1.	2.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	.1	.1	.1	.0	.1
8	******	.2	.1	.1	.1	.1	.1
6	.2	.2	.1	.1	.1	.1	.1
4	.1	.2	.1	.1	.1	.1	.1
3	.1	.1	.1	.1	.1	.1	.1
2	.1	.1	.1	.1	.0	.0	.1
1	.1	.1	.1	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.	1.	1.	1.	1.
8	******	1.	1.	1.	1.	1.	1.
6	1.	1.	1.	1.	1.	1.	1.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	0.	0.	1.
2	0.	1.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.	1.	1.	1.	1.
8	******	1.	1.	1.	1.	1.	1.
6	1.	1.	1.	1.	1.	1.	1.
4	1.	1.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	0.	0.	1.
2	0.	1.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-08 G/M3 OF SALT 3 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		6045.	4985.	4192.	3779.	3569.
8	******	6645.	5049.	4194.	3655.	3329.	3171.
6	7055.	5146.	4101.	3489.	3086.	2841.	2732.
4	4919.	3796.	3145.	2735.	2456.	2287.	2223.
3	3854.	3129.	2633.	2320.	2099.	1967.	1925.
2	2911.	2429.	2083.	1853.	1691.	1596.	1575.
1	1996.	1626.	1420.	1279.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		9.	5.	4.	3.	4.
8	******	11.	6.	4.	3.	3.	3.
6	8.	7.	4.	3.	2.	2.	3.
4	4.	4.	3.	2.	1.	1.	2.
3	3.	3.	2.	1.	1.	1.	1.
2	2.	2.	1.	1.	1.	1.	1.
1	1.	1.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	5533.	4019.	3293.	2961.	2581.	2356.	2217.
8	4589.	3473.	2902.	2553.	2324.	2140.	2027.
6	3730.	2934.	2504.	2236.	2059.	1915.	1829.
4	2987.	2359.	2061.	1872.	1748.	1647.	1588.
3	2466.	2061.	1829.	1682.	1586.	1508.	1462.
2	2022.	1739.	1574.	1472.	1405.	1350.	1319.
1	1541.	1395.	1295.	1230.	1166.	1118.	1113.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	9.2	6.7	5.5	4.8	4.3	3.9	3.7
8	9.6	7.2	6.0	5.3	4.8	4.5	4.2
6	10.4	8.1	7.0	6.2	5.7	5.3	5.1
4	12.0	9.8	8.6	7.8	7.3	6.9	6.6
3	13.7	11.4	10.2	9.3	8.8	8.4	8.1
2	16.9	14.5	13.1	12.3	11.7	11.2	11.0
1	25.7	23.1	21.6	20.5	19.4	18.6	18.5

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2761.	2029.	1615.	1426.	1356.
8	******	3184.	2154.	1645.	1333.	1192.	1148.
6	3333.	2220.	1501.	1256.	1029.	928.	905.
4	1935.	1442.	1087.	865.	709.	641.	637.
3	1391.	1072.	811.	639.	514.	461.	464.
2	891.	693.	510.	382.	287.	247.	256.
1	356.	241.	125.	50.	14.	6.	8.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	4.6	3.4	2.7	2.4	2.3
8	******	6.6	4.5	3.4	2.8	2.5	2.4
6	9.3	6.2	4.4	3.5	2.9	2.6	2.5
4	8.1	6.0	4.5	3.6	3.0	2.7	2.7
3	7.7	6.0	4.5	3.5	2.9	2.6	2.6
2	7.4	5.8	4.3	3.2	2.4	2.1	2.1
1	5.9	4.0	2.1	.8	.2	.1	.1

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	45.	41.	38.	38.	38.
8	******	48.	43.	39.	36.	36.	36.
6	47.	43.	39.	36.	33.	33.	33.
4	40.	39.	35.	32.	29.	28.	29.
3	36.	34.	31.	28.	24.	23.	24.
2	31.	29.	24.	21.	17.	15.	16.
1	19.	15.	9.	4.	1.	1.	1.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	46.	41.	38.	38.	38.
8	******	48.	43.	39.	36.	36.	36.
6	47.	43.	39.	36.	33.	33.	33.
4	40.	38.	35.	32.	29.	28.	29.
3	36.	34.	31.	28.	24.	23.	24.
2	31.	29.	24.	21.	17.	15.	16.
1	19.	15.	9.	4.	1.	1.	1.

SEED WITH 1.00E-03 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	6997.	4977.	3919.	3364.	3008.	2742.	2583.
8	5514.	4149.	3416.	2976.	2688.	2471.	2344.
6	4446.	3346.	2909.	2575.	2354.	2186.	2090.
4	3359.	2721.	2356.	2123.	1969.	1851.	1786.
3	2830.	2347.	2065.	1884.	1764.	1672.	1623.
2	2279.	1944.	1746.	1618.	1532.	1467.	1435.
1	1633.	1497.	1374.	1269.	1178.	1124.	1120.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	11.7	8.1	6.5	5.6	5.0	4.6	4.3
8	11.7	8.6	7.1	6.2	5.6	5.1	4.9
6	12.4	9.6	8.1	7.2	6.5	6.1	5.8
4	14.0	11.3	9.8	8.8	8.2	7.7	7.4
3	15.7	13.0	11.5	10.5	9.8	9.3	9.0
2	19.0	16.2	14.5	13.5	12.8	12.2	12.0
1	28.0	24.9	22.9	21.2	19.6	18.7	18.7

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2135.	1526.	1187.	1040.	990.
8	******	2508.	1637.	1222.	969.	860.	831.
6	2517.	1707.	1196.	917.	734.	656.	644.
4	1463.	1080.	792.	614.	488.	437.	439.
3	1327.	785.	575.	437.	336.	296.	303.
2	634.	487.	339.	236.	160.	130.	141.
1	214.	130.	47.	10.	2.	1.	1.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	3.6	2.5	2.0	1.7	1.7
8	******	5.2	3.4	2.5	2.0	1.8	1.7
6	7.3	4.7	3.3	2.5	2.0	1.8	1.8
4	6.1	4.5	3.3	2.6	2.0	1.8	1.8
3	5.7	4.4	3.2	2.4	1.9	1.6	1.7
2	5.3	4.1	2.8	2.0	1.3	1.1	1.2
1	3.6	2.2	.8	.2	.0	.0	.0

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	35.	31.	28.	27.	28.
8	******	38.	32.	29.	27.	26.	26.
6	37.	33.	29.	26.	24.	23.	24.
4	30.	28.	25.	22.	20.	19.	20.
3	27.	25.	22.	19.	16.	15.	16.
2	22.	20.	16.	13.	9.	8.	9.
1	11.	8.	3.	1.	0.	0.	0.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	35.	31.	28.	27.	28.
8	******	38.	32.	29.	27.	26.	26.
6	37.	33.	29.	26.	24.	23.	24.
4	30.	28.	25.	22.	20.	19.	20.
3	27.	25.	22.	19.	16.	15.	16.
2	22.	20.	16.	13.	9.	8.	9.
1	11.	8.	3.	1.	0.	0.	0.

SEED WITH 1.00E-04 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	5773.	4530.	3837.	3400.	3091.	2907.
8	6759.	4923.	3910.	3370.	3020.	2770.	2625.
6	5192.	3949.	3293.	2889.	2623.	2431.	2323.
4	3929.	3069.	2632.	2355.	2169.	2035.	1964.
3	3194.	2619.	2285.	2069.	1923.	1813.	1766.
2	2576.	2139.	1902.	1745.	1633.	1554.	1525.
1	1836.	1583.	1412.	1278.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	9.6	7.6	6.4	5.7	5.2	4.8
8	14.1	10.1	8.1	7.0	6.3	5.8	5.5
6	14.4	11.0	9.1	8.0	7.3	6.8	6.5
4	16.0	12.8	11.0	9.8	9.0	8.5	8.2
3	17.7	14.6	12.7	11.5	10.7	10.1	9.8
2	21.1	17.8	15.9	14.5	13.6	13.0	12.7
1	30.1	26.4	23.5	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1523.	1053.	795.	691.	666.
8	******	1329.	1145.	828.	637.	562.	550.
6	1972.	1235.	813.	603.	465.	412.	412.
4	994.	733.	515.	383.	288.	253.	261.
3	673.	513.	355.	253.	177.	150.	161.
2	387.	292.	182.	109.	59.	43.	50.
1	91.	43.	9.	1.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2.5	1.8	1.3	1.2	1.1
8	******	3.8	2.4	1.7	1.3	1.2	1.1
6	5.2	3.3	2.3	1.7	1.3	1.1	1.1
4	4.1	3.1	2.1	1.6	1.2	1.1	1.1
3	3.7	2.9	2.0	1.4	1.0	.8	.9
2	3.2	2.4	1.5	.9	.5	.4	.4
1	1.5	.7	.1	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	25.	22.	19.	18.	19.
8	******	27.	23.	20.	17.	17.	17.
6	26.	23.	20.	17.	15.	14.	15.
4	21.	19.	16.	14.	12.	11.	12.
3	17.	16.	13.	11.	8.	8.	8.
2	13.	12.	9.	6.	3.	3.	3.
1	5.	3.	1.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	25.	22.	19.	18.	19.
8	******	27.	23.	20.	17.	17.	17.
6	26.	23.	20.	17.	15.	14.	15.
4	21.	19.	16.	14.	12.	11.	12.
3	17.	16.	13.	11.	8.	8.	8.
2	13.	12.	9.	6.	3.	3.	3.
1	5.	3.	1.	0.	0.	0.	0.

SEED WITH 1.00E-05 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	6759.	5149.	4294.	3768.	3412.	3205.
8	******	5541.	4397.	3744.	3327.	3043.	2880.
6	5790.	4454.	3561.	3181.	2865.	2648.	2531.
4	4297.	3404.	2969.	2561.	2339.	2189.	2115.
3	3526.	2975.	2481.	2223.	2043.	1923.	1874.
2	2749.	2310.	2024.	1827.	1681.	1590.	1567.
1	1977.	1619.	1419.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	11.3	8.6	7.2	6.3	5.7	5.3
8	******	11.5	9.2	7.8	6.9	6.3	6.0
6	16.6	12.4	10.2	8.8	8.0	7.4	7.0
4	17.9	14.2	12.0	10.7	9.7	9.1	8.8
3	19.6	16.0	13.8	12.4	11.3	10.7	10.4
2	22.9	19.2	16.9	15.2	14.0	13.3	13.1
1	31.3	27.0	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	905.	596.	428.	370.	368.
8	******	1116.	559.	454.	331.	289.	294.
6	1373.	599.	444.	311.	223.	195.	204.
4	525.	397.	259.	176.	118.	100.	110.
3	331.	257.	159.	98.	57.	45.	52.
2	164.	121.	60.	27.	11.	7.	9.
1	19.	7.	1.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	1.5	1.0	.7	.6	.6
8	******	2.3	1.4	.9	.7	.6	.6
6	3.0	1.9	1.2	.9	.6	.5	.6
4	2.2	1.7	1.1	.7	.5	.4	.5
3	1.8	1.4	.9	.5	.3	.2	.3
2	1.4	1.0	.5	.2	.1	.1	.1
1	.3	.1	.0	.0	.0	0.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	15.	12.	10.	10.	10.
8	******	17.	13.	11.	9.	9.	9.
6	15.	14.	11.	9.	7.	7.	7.
4	11.	10.	8.	6.	5.	4.	5.
3	9.	8.	6.	4.	3.	2.	3.
2	6.	5.	3.	1.	1.	0.	1.
1	1.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	15.	12.	10.	10.	10.
8	******	17.	13.	11.	9.	9.	9.
6	15.	14.	11.	9.	7.	7.	7.
4	11.	10.	8.	6.	5.	4.	5.
3	9.	8.	6.	4.	3.	2.	3.
2	6.	5.	3.	1.	1.	0.	1.
1	1.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-06 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	7783.	5715.	4685.	4061.	3666.	3448.
8	******	6226.	4822.	4050.	3561.	3248.	3082.
6	6710.	4905.	3962.	3401.	3031.	2794.	2679.
4	4570.	3676.	3076.	2695.	2433.	2269.	2202.
3	3771.	3062.	2604.	2303.	2091.	1962.	1918.
2	2879.	2406.	2075.	1850.	1691.	1596.	1575.
1	1894.	1626.	1420.	1280.	1180.	1124.	1121.

CLOUD BASE TEMPERATURE (^{o}C)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	13.0	9.5	7.8	6.8	6.1	5.7
8	******	13.0	10.0	8.4	7.4	6.8	6.4
6	18.6	13.6	11.0	9.4	8.4	7.8	7.4
4	19.5	15.3	12.8	11.2	10.1	9.5	9.2
3	21.0	17.0	14.5	12.8	11.6	10.9	10.7
2	24.0	20.1	17.3	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		333.	206.	134.	116.	125.
8	******	430.	233.	148.	97.	84.	93.
6	353.	248.	143.	91.	57.	48.	55.
4	152.	125.	71.	42.	24.	19.	23.
3	86.	70.	36.	18.	9.	7.	8.
2	34.	25.	10.	4.	1.	1.	1.
1	2.	1.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		.6	.3	.2	.2	.2
8	******	.9	.5	.3	.2	.2	.2
6	1.0	.7	.4	.3	.2	.1	.2
4	.6	.5	.3	.2	.1	.1	.1
3	.5	.4	.2	.1	.0	.0	.0
2	.3	.2	.1	.0	.0	.0	.0
1	.0	.0	.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		6.	4.	3.	3.	3.
8	******	6.	5.	4.	3.	3.	3.
6	5.	5.	3.	3.	2.	2.	2.
4	3.	3.	2.	2.	1.	1.	1.
3	2.	2.	1.	1.	0.	0.	0.
2	1.	1.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	************		6.	4.	3.	3.	3.
8	******	6.	5.	4.	3.	3.	3.
6	5.	5.	3.	3.	2.	2.	2.
4	3.	3.	2.	2.	1.	1.	1.
3	2.	2.	1.	1.	0.	0.	0.
2	1.	1.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEED WITH 1.00E-07 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		5935.	4559.	4170.	3763.	3554.
8	******	6592.	5019.	4176.	3644.	3320.	3161.
6	7011.	5113.	4084.	3479.	3081.	2837.	2727.
4	4332.	3792.	3138.	2732.	2454.	2286.	2223.
3	3346.	3123.	2636.	2319.	2099.	1967.	1926.
2	2909.	2428.	2083.	1853.	1692.	1597.	1575.
1	1896.	1626.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.0	8.1	7.0	6.3	5.9
8	******	13.7	10.5	8.7	7.6	6.9	6.6
6	19.5	14.2	11.3	9.7	8.6	7.9	7.6
4	20.0	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.3	14.6	12.9	11.7	10.9	10.7
2	24.2	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		57.	33.	20.	17.	19.
8	******	74.	38.	22.	14.	12.	14.
6	53.	40.	22.	13.	7.	6.	7.
4	21.	18.	10.	5.	3.	2.	3.
3	11.	9.	4.	2.	1.	1.	1.
2	4.	3.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.1	.1	.0	.0	.0
8	******	.2	.1	.0	.0	.0	.0
6	.1	.1	.1	.0	.0	.0	.0
4	.1	.1	.0	.0	.0	.0	.0
3	.1	.1	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		1.	1.	0.	0.	1.
8	******	1.	1.	1.	0.	0.	0.
6	1.	1.	1.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		1.	1.	0.	0.	1.
8	******	1.	1.	1.	0.	0.	0.
6	1.	1.	1.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-09 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		6047.	4997.	4193.	3780.	3571.
8	******	6644.	5052.	4196.	3656.	3330.	3173.
6	7058.	5149.	4103.	3491.	3037.	2842.	2734.
4	4920.	3799.	3147.	2737.	2457.	2288.	2225.
3	3356.	3131.	2640.	2321.	2100.	1968.	1926.
2	2912.	2431.	2084.	1854.	1692.	1597.	1576.
1	1997.	1626.	1420.	1230.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	6.0
8	******	13.9	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.3	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		5.	4.	2.	2.	2.
8	******	9.	4.	2.	1.	1.	1.
6	6.	4.	2.	1.	1.	1.	1.
4	2.	2.	1.	1.	0.	0.	0.
3	1.	1.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	4377.	3410.	2355.	2359.	2102.	1970.	1918.
8	3630.	2939.	2494.	2081.	1865.	1757.	1720.
6	3001.	2453.	2110.	1777.	1603.	1518.	1495.
4	2309.	1929.	1681.	1431.	1300.	1239.	1229.
3	1940.	1633.	1439.	1232.	1123.	1074.	1070.
2	1536.	1312.	1160.	1000.	916.	880.	881.
1	1052.	910.	812.	706.	650.	628.	633.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	7.3	5.7	4.8	3.9	3.5	3.3	3.2
8	7.7	6.1	5.2	4.3	3.9	3.7	3.6
6	8.3	6.8	5.9	4.9	4.5	4.2	4.2
4	9.6	8.0	7.0	6.0	5.4	5.2	5.1
3	10.8	9.1	8.0	6.8	6.2	6.0	5.9
2	12.8	10.9	9.7	8.3	7.6	7.3	7.3
1	17.5	15.2	13.5	11.8	10.8	10.5	10.6

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	3199.	2532.	2094.	1813.	1655.
8	******	3717.	2561.	2117.	1793.	1575.	1455.
6	4062.	2700.	1996.	1715.	1485.	1325.	1239.
4	2513.	1972.	1467.	1306.	1157.	1049.	996.
3	1917.	1494.	1202.	1090.	977.	894.	856.
2	1377.	1119.	924.	854.	776.	717.	694.
1	845.	717.	608.	574.	530.	497.	488.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	5.3	4.2	3.5	3.0	2.8
8	******	7.7	5.3	4.4	3.7	3.3	3.0
6	11.3	7.5	5.5	4.8	4.1	3.7	3.4
4	10.5	7.8	6.1	5.4	4.8	4.4	4.2
3	10.6	8.3	6.7	6.1	5.4	5.0	4.8
2	11.5	9.3	7.7	7.1	6.5	6.0	5.8
1	14.1	11.9	10.1	9.6	8.8	8.3	8.1

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	53.	52.	50.	48.	46.
8	******	56.	51.	50.	49.	47.	46.
6	58.	52.	49.	49.	48.	47.	45.
4	52.	49.	47.	48.	47.	46.	45.
3	50.	49.	46.	47.	47.	45.	44.
2	47.	46.	44.	46.	46.	45.	44.
1	45.	44.	43.	45.	45.	44.	44.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	53.	52.	50.	48.	46.
8	******	56.	51.	50.	49.	47.	46.
6	58.	52.	49.	49.	48.	47.	45.
4	52.	49.	47.	48.	47.	46.	45.
3	50.	48.	46.	47.	47.	45.	44.
2	47.	46.	44.	46.	46.	45.	44.
1	45.	44.	43.	45.	45.	44.	44.

SEED WITH 1.00E-03 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	5716.	4283.	3513.	2915.	2589.	2410.	2329.
8	4582.	3644.	3045.	2557.	2289.	2143.	2083.
6	3737.	3005.	2555.	2171.	1959.	1846.	1807.
4	2921.	2334.	2019.	1737.	1580.	1500.	1480.
3	2348.	1970.	1718.	1488.	1360.	1297.	1286.
2	1839.	1565.	1378.	1202.	1105.	1059.	1056.
1	1243.	1074.	956.	841.	778.	750.	754.

CLOUD BASE TEMPERATURE (^oC)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	9.5	7.1	5.9	4.9	4.3	4.0	3.9
8	9.8	7.6	6.3	5.3	4.8	4.5	4.3
6	10.4	8.3	7.1	6.0	5.4	5.1	5.0
4	11.3	9.7	8.4	7.2	6.6	6.3	6.2
3	13.0	10.9	9.5	8.3	7.6	7.2	7.1
2	15.3	13.0	11.5	10.0	9.2	8.8	8.8
1	20.7	17.9	15.9	14.0	13.0	12.5	12.6

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	2540.	1975.	1506.	1372.	1244.
8	******	3012.	2011.	1641.	1369.	1189.	1091.
6	3326.	2149.	1551.	1321.	1129.	997.	928.
4	2092.	1467.	1129.	1000.	877.	738.	745.
3	1509.	1153.	922.	833.	739.	671.	640.
2	1074.	866.	706.	652.	587.	538.	520.
1	654.	552.	464.	438.	402.	374.	367.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	4.2	3.3	2.7	2.3	2.1
8	******	6.3	4.2	3.4	2.9	2.5	2.3
6	9.2	6.0	4.3	3.7	3.1	2.8	2.6
4	8.3	6.1	4.7	4.2	3.7	3.3	3.1
3	8.4	6.5	5.1	4.6	4.1	3.7	3.6
2	8.9	7.2	5.9	5.4	4.9	4.5	4.3
1	10.9	9.2	7.7	7.3	6.7	6.2	6.1

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	42.	40.	38.	36.	35.
8	******	45.	40.	39.	37.	36.	34.
6	47.	42.	38.	38.	37.	35.	34.
4	42.	39.	36.	37.	36.	34.	33.
3	39.	37.	35.	36.	35.	34.	33.
2	37.	36.	34.	35.	35.	34.	33.
1	34.	34.	33.	34.	34.	33.	33.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	42.	40.	38.	36.	35.
8	******	45.	40.	39.	37.	36.	34.
6	47.	42.	38.	38.	37.	35.	34.
4	42.	39.	36.	37.	36.	34.	33.
3	39.	37.	35.	36.	35.	34.	33.
2	37.	36.	34.	35.	35.	34.	33.
1	34.	34.	33.	34.	34.	33.	33.

CLOUD BASE TEMPERATURE (^oC)

SEED WITH 1.03E-04 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	7233.	5151.	4140.	3419.	3019.	2791.	2681.
8	5733.	4329.	3560.	2985.	2659.	2475.	2393.
6	4465.	3525.	2964.	2522.	2268.	2127.	2071.
4	3305.	2707.	2324.	2006.	1822.	1724.	1693.
3	2725.	2271.	1971.	1714.	1566.	1488.	1470.
2	2117.	1794.	1574.	1380.	1268.	1212.	1205.
1	1416.	1222.	1096.	961.	890.	857.	859.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	12.1	8.6	6.9	5.7	5.0	4.7	4.5
8	11.9	9.0	7.4	6.2	5.5	5.2	5.0
6	12.4	9.8	8.2	7.0	6.3	5.9	5.8
4	13.8	11.3	9.7	8.4	7.6	7.2	7.1
3	15.1	12.6	10.9	9.5	8.7	8.3	8.2
2	17.6	14.9	13.1	11.5	10.6	10.1	10.0
1	23.6	20.4	18.1	16.0	14.8	14.3	14.3

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		1914.	1471.	1177.	991.	892.
8	******	2328.	1496.	1213.	999.	855.	781.
6	2599.	1629.	1141.	970.	820.	716.	663.
4	1518.	1094.	823.	731.	635.	564.	532.
3	1131.	961.	669.	607.	534.	480.	457.
2	796.	637.	511.	474.	424.	385.	371.
1	480.	404.	335.	318.	290.	267.	262.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		3.2	2.5	2.0	1.7	1.5
8	******	4.8	3.1	2.5	2.1	1.8	1.6
6	7.2	4.5	3.2	2.7	2.3	2.0	1.8
4	6.3	4.6	3.4	3.0	2.6	2.4	2.2
3	6.3	4.8	3.7	3.4	3.0	2.7	2.5
2	6.6	5.3	4.3	3.9	3.5	3.2	3.1
1	8.0	6.7	5.6	5.3	4.8	4.5	4.4

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		32.	30.	28.	26.	25.
8	******	35.	30.	29.	27.	26.	25.
6	37.	32.	28.	28.	27.	25.	24.
4	31.	29.	26.	27.	26.	25.	24.
3	29.	27.	25.	26.	25.	24.	24.
2	27.	26.	25.	26.	25.	24.	24.
1	25.	25.	24.	25.	25.	24.	23.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		32.	30.	28.	26.	25.
8	******	35.	30.	29.	27.	26.	25.
6	37.	32.	28.	28.	27.	25.	24.
4	31.	29.	26.	27.	26.	25.	24.
3	29.	27.	25.	26.	25.	24.	20.
2	27.	26.	25.	26.	25.	24.	26.
1	25.	25.	24.	25.	25.	24.	23.

SEED WITH 1.00E-05 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	6121.	4777.	3903.	3424.	3147.	3006.
8	5937.	5046.	4071.	3395.	3006.	2784.	2679.
6	5240.	4051.	3363.	2853.	2555.	2386.	2314.
4	3791.	3073.	2617.	2259.	2046.	1929.	1888.
3	3100.	2563.	2211.	1925.	1755.	1663.	1637.
2	2386.	2012.	1759.	1545.	1418.	1352.	1340.
1	1582.	1362.	1207.	1073.	993.	954.	955.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	10.2	8.0	6.5	5.7	5.2	5.0
8	14.5	10.5	8.5	7.1	6.3	5.8	5.6
6	14.6	11.3	9.3	7.9	7.1	6.6	6.4
4	15.8	12.8	10.9	9.4	8.5	8.0	7.9
3	17.2	14.2	12.3	10.7	9.7	9.2	9.1
2	19.9	16.8	14.6	12.9	11.8	11.3	11.2
1	26.4	22.7	20.1	17.9	16.5	15.9	15.9

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	1276.	981.	772.	635.	567.
8	******	1611.	984.	803.	652.	547.	496.
6	1823.	1103.	743.	639.	533.	457.	421.
4	1029.	728.	531.	478.	411.	360.	337.
3	757.	569.	429.	396.	345.	305.	290.
2	527.	419.	326.	309.	274.	245.	235.
1	315.	264.	213.	207.	187.	170.	166.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	2.1	1.6	1.3	1.1	.9
8	******	3.4	2.1	1.7	1.4	1.1	1.0
6	5.1	3.1	2.1	1.8	1.5	1.3	1.2
4	4.3	3.0	2.2	2.0	1.7	1.5	1.6
3	4.2	3.2	2.4	2.2	1.9	1.7	1.6
2	4.4	3.5	2.7	2.6	2.3	2.0	2.0
1	5.3	4.4	3.6	3.5	3.1	2.8	2.8

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	21.	20.	18.	17.	16.
8	******	24.	19.	19.	18.	16.	16.
6	26.	21.	18.	18.	17.	16.	15.
4	21.	19.	17.	17.	17.	16.	15.
3	20.	18.	16.	17.	16.	16.	15.
2	18.	17.	16.	17.	16.	15.	15.
1	17.	16.	15.	16.	16.	15.	15.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	21.	20.	18.	17.	16.
8	******	24.	19.	19.	18.	16.	16.
6	26.	21.	18.	18.	17.	16.	15.
4	21.	19.	17.	17.	17.	16.	15.
3	20.	18.	16.	17.	16.	16.	15.
2	18.	17.	16.	17.	16.	15.	15.
1	17.	16.	15.	16.	16.	15.	15.

SEED WITH 1.00E-06 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE

1.0 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	7216.	5433.	4398.	3818.	3485.	3310.
8	******	5319.	4584.	3797.	3339.	3076.	2945.
6	6093.	4593.	3753.	3175.	2828.	2629.	2539.
4	4297.	3437.	2898.	2501.	2257.	2123.	2063.
3	3475.	2950.	2439.	2126.	1932.	1825.	1791.
2	2650.	2224.	1932.	1702.	1559.	1482.	1465.
1	1741.	1497.	1321.	1178.	1089.	1044.	1043.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	12.0	9.1	7.3	6.4	5.8	5.5
8	******	12.1	9.5	7.9	7.0	6.4	6.1
6	16.9	12.8	10.4	8.8	7.9	7.3	7.1
4	17.9	14.3	12.1	10.4	9.4	8.8	8.6
3	19.3	15.8	13.5	11.8	10.7	10.1	10.0
2	22.1	19.5	16.1	14.2	13.0	12.4	12.2
1	29.0	24.9	22.0	19.6	18.1	17.4	17.4

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	521.	493.	378.	297.	263.
8	******	838.	472.	401.	318.	256.	230.
6	971.	550.	352.	317.	260.	214.	196.
4	526.	353.	249.	236.	200.	168.	157.
3	392.	282.	201.	196.	168.	143.	135.
2	263.	207.	152.	152.	133.	115.	110.
1	156.	130.	99.	102.	91.	80.	78.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1.0	.8	.6	.5	.4
8	******	1.7	1.0	.8	.7	.5	.5
6	2.7	1.6	1.0	.9	.7	.6	.5
4	2.2	1.5	1.0	1.0	.8	.7	.7
3	2.1	1.6	1.1	1.1	.9	.8	.8
2	2.2	1.7	1.3	1.3	1.1	1.0	.9
1	2.6	2.2	1.7	1.7	1.5	1.3	1.3

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	10.	10.	9.	8.	7.
8	******	13.	9.	10.	9.	8.	7.
6	14.	11.	9.	9.	8.	8.	7.
4	11.	10.	8.	9.	8.	7.	7.
3	10.	9.	8.	8.	8.	7.	7.
2	9.	8.	7.	8.	8.	7.	7.
1	8.	8.	7.	8.	8.	7.	7.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	10.	10.	9.	8.	7.
8	******	13.	9.	10.	9.	8.	7.
6	14.	11.	9.	9.	8.	8.	7.
4	11.	10.	8.	9.	8.	7.	7.
3	10.	9.	8.	8.	8.	7.	7.
2	9.	8.	7.	8.	8.	7.	7.
1	8.	8.	7.	8.	8.	7.	7.

SEED WITH 1.00E-07 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	5909.	4767.	4104.	3715.	3514.
8	******	6441.	4946.	4098.	3580.	3274.	3123.
6	6804.	5012.	4024.	3413.	3025.	2794.	2690.
4	4587.	3710.	3091.	2678.	2408.	2250.	2189.
3	3760.	3062.	2594.	2272.	2059.	1935.	1896.
2	2946.	2379.	2050.	1816.	1659.	1571.	1550.
1	1857.	1594.	1398.	1254.	1158.	1106.	1103.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	9.8	7.9	6.8	6.2	5.9
8	******	13.4	10.3	8.5	7.5	6.8	6.5
6	18.9	13.9	11.2	9.5	8.4	7.8	7.5
4	19.5	15.5	12.9	11.2	10.0	9.4	9.1
3	20.9	17.0	14.4	12.6	11.4	10.8	10.5
2	23.7	19.8	17.1	15.1	13.8	13.1	12.9
1	31.0	26.6	23.3	20.9	19.3	18.4	18.4

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	145.	124.	92.	67.	59.
8	******	215.	109.	100.	77.	59.	52.
6	259.	141.	81.	79.	63.	48.	44.
4	135.	91.	57.	59.	49.	38.	36.
3	97.	70.	46.	49.	41.	33.	31.
2	67.	52.	35.	38.	33.	26.	25.
1	39.	32.	23.	26.	23.	19.	18.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	.2	.2	.2	.1	.1
8	******	.4	.2	.2	.2	.1	.1
6	.7	.4	.2	.2	.2	.1	.1
4	.6	.4	.2	.2	.2	.2	.1
3	.5	.4	.3	.3	.2	.2	.2
2	.6	.4	.3	.3	.3	.2	.2
1	.7	.5	.4	.4	.4	.3	.3

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.	3.	2.	2.	2.
8	******	3.	2.	2.	2.	2.	2.
6	4.	3.	2.	2.	2.	2.	2.
4	3.	2.	2.	2.	2.	2.	2.
3	3.	2.	2.	2.	2.	2.	2.
2	2.	2.	2.	2.	2.	2.	2.
1	2.	2.	2.	2.	2.	2.	2.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	2.	3.	2.	2.	2.
8	******	3.	2.	2.	2.	2.	2.
6	4.	3.	2.	2.	2.	2.	2.
4	3.	2.	2.	2.	2.	2.	2.
3	3.	2.	2.	2.	2.	2.	2.
2	2.	2.	2.	2.	2.	2.	2.
1	2.	2.	2.	2.	2.	2.	2.

SEED WITH 1.00E-03 G/M3 OF SALT 4 AT 0.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		6036.	4875.	4184.	3774.	3566.
8	******	6629.	5043.	4185.	3648.	3325.	3169.
6	7330.	5135.	4096.	3482.	3080.	2837.	2729.
4	4806.	3789.	3141.	2730.	2451.	2283.	2221.
3	3345.	3123.	2635.	2315.	2095.	1964.	1923.
2	2905.	2425.	2080.	1849.	1688.	1594.	1573.
1	1392.	1622.	1418.	1276.	1177.	1122.	1119.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.5	14.3	11.4	9.7	8.6	7.9	7.6
4	20.0	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.6	12.9	11.6	10.9	10.7
2	24.2	20.2	17.3	15.4	14.1	13.3	13.1
1	31.5	27.0	23.6	21.3	19.6	18.7	18.6

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		17.	15.	11.	8.	7.
8	******	27.	13.	13.	9.	7.	6.
6	33.	18.	10.	10.	8.	6.	5.
4	17.	11.	7.	7.	6.	5.	4.
3	12.	9.	6.	6.	5.	4.	4.
2	8.	6.	4.	5.	4.	3.	3.
1	5.	4.	3.	3.	3.	2.	2.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.1	.0	.0	.0	.0	.0
6	.1	.0	.0	.0	.0	.0	.0
4	.1	.0	.0	.0	.0	.0	.0
3	.1	.0	.0	.0	.0	.0	.0
2	.1	.1	.0	.0	.0	.0	.0
1	.1	.1	.0	.1	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 4 AT .5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	4511.	3458.	2975.	2504.	2269.	2090.	1965.
8	3794.	2991.	2524.	2219.	2025.	1877.	1774.
6	3099.	2506.	2145.	1905.	1751.	1634.	1555.
4	2395.	1986.	1729.	1552.	1440.	1354.	1299.
3	2027.	1705.	1498.	1356.	1266.	1198.	1155.
2	1624.	1398.	1235.	1129.	1061.	1012.	982.
1	1158.	1016.	924.	860.	820.	792.	776.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	7.5	5.8	4.8	4.2	3.8	3.5	3.3
8	7.9	6.2	5.3	4.6	4.2	3.9	3.7
6	8.6	7.0	6.0	5.3	4.9	4.5	4.3
4	10.0	8.3	7.2	6.5	6.0	5.6	5.4
3	11.3	9.5	8.3	7.5	7.0	6.7	6.4
2	13.5	11.6	10.3	9.4	8.8	8.4	8.2
1	19.3	16.9	15.4	14.3	13.7	13.2	12.9

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	3179.	2387.	1927.	1692.	1608.
8	******	3656.	2532.	1979.	1633.	1455.	1400.
6	3965.	2648.	1960.	1587.	1337.	1209.	1179.
4	2428.	1815.	1420.	1185.	1018.	934.	926.
3	1830.	1427.	1142.	965.	834.	770.	772.
2	1289.	1043.	850.	725.	630.	585.	594.
1	739.	610.	497.	420.	360.	333.	345.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	5.3	4.0	3.2	2.8	2.7
8	******	7.6	5.3	4.1	3.4	3.0	2.9
6	11.0	7.4	5.4	4.4	3.7	3.4	3.3
4	10.1	7.6	5.9	4.9	4.2	3.9	3.9
3	10.2	7.9	6.3	5.4	4.6	4.3	4.3
2	10.7	8.7	7.1	6.0	5.3	4.9	4.9
1	12.3	10.2	8.3	7.0	6.0	5.5	5.8

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	53.	49.	46.	45.	45.
8	******	55.	50.	47.	45.	44.	44.
6	56.	51.	48.	45.	43.	43.	43.
4	50.	48.	45.	43.	41.	41.	42.
3	47.	46.	43.	42.	40.	39.	40.
2	44.	43.	41.	39.	37.	37.	38.
1	39.	38.	35.	33.	30.	30.	31.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	53.	49.	46.	45.	45.
8	******	55.	50.	47.	45.	44.	44.
6	56.	51.	48.	45.	43.	43.	43.
4	50.	48.	45.	43.	41.	41.	42.
3	47.	46.	43.	42.	40.	39.	40.
2	44.	43.	41.	39.	37.	37.	38.
1	39.	38.	35.	33.	30.	30.	31.

SEED WITH 1.00E-03 G/M3 OF SALT 4 AT .5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	5457.	4379.	3531.	3042.	2732.	2511.	2307.
8	4797.	3693.	3072.	2678.	2425.	2244.	2128.
6	3831.	3052.	2587.	2282.	2084.	1943.	1856.
4	2900.	2395.	2060.	1840.	1698.	1597.	1538.
3	2426.	2023.	1771.	1595.	1481.	1401.	1357.
2	1919.	1631.	1443.	1312.	1228.	1170.	1140.
1	1337.	1167.	1053.	975.	925.	891.	876.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	9.8	7.2	5.9	5.1	4.6	4.2	3.9
8	10.0	7.7	6.4	5.6	5.1	4.7	4.4
6	10.6	8.5	7.2	6.3	5.8	5.4	5.2
4	12.1	9.9	8.6	7.7	7.1	6.7	6.4
3	13.5	11.3	9.8	8.9	8.2	7.8	7.5
2	16.0	13.6	12.0	10.9	10.2	9.7	9.5
1	22.3	19.5	17.6	16.2	15.4	14.9	14.6

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2522.	1848.	1463.	1271.	1206.
8	******	2964.	1984.	1520.	1233.	1088.	1046.
6	3232.	2101.	1519.	1210.	1004.	900.	878.
4	1923.	1416.	1088.	897.	759.	692.	687.
3	1431.	1104.	969.	726.	619.	567.	570.
2	995.	799.	642.	542.	464.	427.	435.
1	560.	459.	367.	305.	255.	233.	245.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	4.2	3.1	2.4	2.1	2.0
8	******	6.2	4.1	3.2	2.6	2.3	2.2
6	9.0	5.8	4.2	3.4	2.8	2.5	2.4
4	8.0	5.9	4.5	3.7	3.2	2.9	2.9
3	7.9	6.1	4.8	4.0	3.4	3.2	3.2
2	8.3	6.7	5.3	4.5	3.9	3.6	3.6
1	9.3	7.7	6.1	5.1	4.3	3.9	4.1

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	42.	39.	35.	34.	34.
8	******	45.	39.	36.	34.	33.	33.
6	46.	41.	37.	35.	33.	32.	32.
4	40.	37.	35.	33.	31.	30.	31.
3	37.	35.	33.	31.	29.	29.	30.
2	34.	33.	31.	29.	27.	27.	28.
1	30.	28.	26.	24.	22.	21.	22.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	42.	38.	35.	34.	34.
8	******	45.	39.	36.	34.	33.	33.
6	46.	41.	37.	35.	33.	32.	32.
4	40.	37.	35.	33.	31.	30.	31.
3	37.	35.	33.	31.	29.	29.	30.
2	34.	33.	31.	29.	27.	27.	28.
1	30.	28.	26.	24.	22.	21.	22.

SEED WITH 1.00E-04 G/M3 OF SALT 4 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	7419.	5209.	4158.	3538.	3149.	2882.	2715.
8	5957.	4377.	3585.	3095.	2782.	2565.	2433.
6	4561.	3571.	2994.	2622.	2380.	2212.	2114.
4	3382.	2754.	2362.	2099.	1927.	1809.	1744.
3	2801.	2325.	2019.	1810.	1673.	1579.	1531.
2	2190.	1954.	1631.	1478.	1377.	1310.	1278.
1	1502.	1306.	1172.	1080.	1020.	981.	966.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	12.4	8.7	6.9	5.9	5.2	4.8	4.5
8	12.2	9.1	7.5	6.4	5.8	5.3	5.1
6	12.7	9.9	8.3	7.3	6.6	6.1	5.9
4	14.1	11.5	9.8	8.7	8.0	7.5	7.3
3	15.6	12.9	11.2	10.1	9.3	8.8	8.5
2	18.3	15.4	13.6	12.3	11.5	10.9	10.7
1	25.0	21.8	19.5	18.0	17.0	16.3	16.1

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		1395.	1353.	1047.	900.	858.
8	******	2279.	1470.	1103.	876.	767.	742.
6	2502.	1582.	1112.	870.	708.	630.	620.
4	1441.	1046.	786.	638.	530.	479.	481.
3	1056.	807.	622.	512.	427.	389.	396.
2	723.	577.	453.	376.	315.	287.	297.
1	394.	321.	248.	200.	160.	144.	155.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		3.2	2.3	1.7	1.5	1.4
8	******	4.7	3.1	2.3	1.8	1.6	1.5
6	6.9	4.4	3.1	2.4	2.0	1.8	1.7
4	6.0	4.4	3.3	2.7	2.2	2.0	2.0
3	5.9	4.5	3.5	2.8	2.4	2.2	2.2
2	6.0	4.8	3.8	3.1	2.6	2.4	2.5
1	6.6	5.3	4.1	3.3	2.7	2.4	2.6

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		31.	28.	25.	24.	24.
8	******	34.	29.	26.	24.	23.	23.
6	35.	31.	27.	25.	23.	22.	23.
4	30.	29.	25.	23.	22.	21.	22.
3	27.	26.	24.	22.	20.	20.	21.
2	25.	24.	22.	20.	19.	18.	19.
1	21.	20.	17.	16.	14.	13.	14.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************		31.	28.	25.	24.	24.
8	******	34.	29.	26.	24.	23.	23.
6	35.	31.	27.	25.	23.	22.	23.
4	30.	28.	25.	23.	22.	21.	22.
3	27.	26.	24.	22.	20.	20.	21.
2	25.	24.	22.	20.	19.	18.	19.
1	21.	20.	17.	16.	14.	13.	14.

SEED WITH 1.00E-05 G/M3 OF SALT 4 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	6173.	4796.	4022.	3545.	3231.	3037.
8	7098.	5095.	4097.	3498.	3119.	2866.	2715.
6	5348.	4095.	3391.	2946.	2657.	2463.	2352.
4	3373.	3117.	2552.	2344.	2140.	2004.	1933.
3	3175.	2613.	2254.	2011.	1850.	1743.	1691.
2	2456.	2069.	1810.	1633.	1515.	1438.	1405.
1	1561.	1437.	1284.	1176.	1105.	1060.	1046.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	10.3	8.0	6.7	5.9	5.4	5.1
8	14.8	10.6	8.5	7.3	6.5	6.0	5.7
6	14.9	11.4	9.4	8.2	7.4	6.8	6.5
4	16.1	13.0	11.0	9.8	8.9	8.4	8.1
3	17.6	14.5	12.5	11.2	10.3	9.7	9.4
2	20.5	17.2	15.1	13.6	12.6	12.0	11.7
1	27.7	24.0	21.4	19.6	18.4	17.7	17.4

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	1257.	868.	650.	551.	535.
8	******	1551.	959.	700.	539.	465.	460.
6	1716.	1057.	714.	546.	431.	379.	382.
4	949.	683.	495.	394.	317.	284.	293.
3	683.	519.	386.	310.	250.	225.	236.
2	457.	363.	274.	221.	177.	159.	171.
1	236.	189.	137.	103.	76.	65.	75.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	2.1	1.4	1.1	.9	.9
8	******	3.3	2.0	1.5	1.1	1.0	1.0
6	4.8	2.9	2.0	1.5	1.2	1.1	1.1
4	4.0	2.8	2.1	1.6	1.3	1.2	1.2
3	3.8	2.9	2.1	1.7	1.4	1.2	1.3
2	3.8	3.0	2.3	1.8	1.5	1.3	1.4
1	3.9	3.2	2.3	1.7	1.3	1.1	1.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	21.	18.	15.	15.	15.
8	******	23.	19.	17.	15.	14.	14.
6	24.	21.	17.	16.	14.	13.	14.
4	20.	18.	16.	14.	13.	12.	13.
3	18.	17.	15.	13.	12.	11.	12.
2	16.	15.	13.	12.	10.	10.	11.
1	12.	12.	10.	8.	6.	6.	7.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	21.	18.	15.	15.	15.
8	******	23.	19.	17.	15.	14.	14.
6	24.	21.	17.	16.	14.	13.	14.
4	20.	18.	16.	14.	13.	12.	13.
3	18.	17.	15.	13.	12.	11.	12.
2	16.	15.	13.	12.	10.	10.	11.
1	12.	12.	10.	8.	6.	6.	7.

SEED WITH 1.00E-06 G/M3 OF SALT 4 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	7272.	5450.	4494.	3918.	3552.	3335.
8	******	5367.	4606.	3884.	3431.	3140.	2973.
6	6209.	4635.	3777.	3251.	2910.	2689.	2570.
4	4374.	3476.	2926.	2569.	2331.	2177.	2103.
3	3544.	2992.	2473.	2194.	2005.	1885.	1832.
2	2711.	2269.	1972.	1769.	1630.	1543.	1513.
1	1804.	1554.	1375.	1249.	1161.	1109.	1102.

CLOUD BASE TEMPERATURE (^oC)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	12.1	9.1	7.5	6.5	5.9	5.6
8	******	12.2	9.6	8.1	7.1	6.5	6.2
6	17.2	12.9	10.5	9.0	8.1	7.5	7.1
4	18.2	14.5	12.2	10.7	9.7	9.1	8.8
3	19.7	16.1	13.7	12.2	11.1	10.5	10.2
2	22.6	18.9	16.4	14.7	13.6	12.9	12.6
1	30.1	25.9	22.9	20.8	19.4	18.5	18.4

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	503.	396.	278.	230.	238.
8	******	799.	450.	314.	226.	191.	201.
6	855.	518.	328.	241.	178.	153.	165.
4	448.	325.	222.	168.	126.	111.	122.
3	313.	240.	167.	128.	95.	83.	94.
2	202.	162.	113.	85.	62.	54.	63.
1	93.	73.	46.	30.	19.	15.	19.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	1.0	.7	.5	.4	.4
8	******	1.6	.9	.7	.5	.4	.4
6	2.4	1.4	.9	.7	.5	.4	.5
4	1.9	1.4	.9	.7	.5	.5	.5
3	1.7	1.3	.9	.7	.5	.5	.5
2	1.7	1.3	.9	.7	.5	.4	.5
1	1.5	1.2	.8	.5	.3	.2	.3

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	10.	8.	7.	6.	7.
8	******	12.	9.	7.	6.	6.	6.
6	12.	10.	8.	7.	6.	5.	6.
4	9.	9.	7.	6.	5.	5.	6.
3	8.	8.	6.	6.	5.	4.	5.
2	7.	7.	5.	5.	4.	3.	4.
1	5.	4.	3.	2.	2.	1.	2.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	10.	8.	7.	6.	7.
8	******	12.	9.	7.	6.	6.	6.
6	12.	10.	8.	7.	6.	5.	6.
4	9.	9.	7.	6.	5.	5.	6.
3	8.	8.	6.	6.	5.	4.	5.
2	7.	7.	5.	5.	4.	3.	4.
1	5.	4.	3.	2.	2.	1.	2.

CLOUD BASE TEMPERATURE (^oC)

SEED WITH 1.00E-07 G/M3 OF SALT 4 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		5916.	4805.	4141.	3733.	3523.
8	******	6464.	4955.	4132.	3614.	3296.	3133.
6	6862.	5030.	4034.	3442.	3054.	2814.	2701.
4	4723.	3726.	3101.	2704.	2434.	2268.	2201.
3	3799.	3079.	2606.	2297.	2083.	1954.	1909.
2	2871.	2397.	2063.	1839.	1682.	1589.	1565.
1	1980.	1614.	1413.	1275.	1178.	1122.	1118.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		9.9	8.0	6.9	6.2	5.9
8	******	13.5	10.3	8.6	7.5	6.9	6.5
6	19.1	14.0	11.2	9.6	8.5	7.8	7.5
4	19.7	15.5	12.9	11.3	10.1	9.5	9.2
3	21.1	17.1	14.5	12.8	11.6	10.9	10.6
2	23.9	20.0	17.2	15.3	14.0	13.2	13.0
1	31.3	26.9	23.6	21.3	19.6	18.7	18.6

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		137.	85.	55.	44.	50.
8	******	193.	100.	66.	44.	36.	41.
6	201.	123.	72.	50.	34.	28.	33.
4	100.	75.	47.	34.	23.	20.	24.
3	68.	54.	34.	24.	17.	14.	17.
2	42.	34.	22.	15.	10.	8.	11.
1	17.	13.	7.	4.	2.	2.	3.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.2	.1	.1	.1	.1
8	******	.4	.2	.1	.1	.1	.1
6	.6	.3	.2	.1	.1	.1	.1
4	.4	.3	.2	.1	.1	.1	.1
3	.4	.3	.2	.1	.1	.1	.1
2	.3	.3	.2	.1	.1	.1	.1
1	.3	.2	.1	.1	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		2.	2.	1.	1.	1.
8	******	3.	2.	2.	1.	1.	1.
6	3.	2.	2.	1.	1.	1.	1.
4	2.	2.	1.	1.	1.	1.	1.
3	2.	2.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	1.	1.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		2.	2.	1.	1.	1.
8	******	3.	2.	2.	1.	1.	1.
6	3.	2.	2.	1.	1.	1.	1.
4	2.	2.	1.	1.	1.	1.	1.
3	2.	2.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	1.	1.	0.	0.	0.	0.	0.

SEED WITH 1.00E-08 G/M3 OF SALT 4 AT 0.5 KM ABOVE CLOUD BASE
1.0 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT $(m\ s^{-1})$ \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	5037.	4880.	4139.	3777.	3567.
8	******	6633.	5044.	4190.	3653.	3328.	3170.
6	7039.	5138.	4097.	3486.	3084.	2840.	2731.
4	4811.	3792.	3142.	2734.	2454.	2286.	2223.
3	3849.	3126.	2636.	2319.	2098.	1967.	1925.
2	2909.	2427.	2082.	1852.	1691.	1596.	1574.
1	1895.	1625.	1420.	1279.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT $(m\ s^{-1})$ \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.0	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.6	12.9	11.7	10.9	10.7
2	24.2	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT $(m\ s^{-1})$ \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	16.	10.	6.	5.	6.
8	******	24.	12.	8.	5.	4.	5.
6	24.	15.	8.	6.	4.	3.	4.
4	12.	9.	6.	4.	3.	2.	3.
3	8.	6.	4.	3.	2.	2.	2.
2	5.	4.	2.	2.	1.	1.	1.
1	2.	1.	1.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT $(m\ s^{-1})$ \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.1	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT $(m\ s^{-1})$ \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT $(m\ s^{-1})$ \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	******	******	0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	4563.	3594.	3011.	2644.	2413.	2237.	2110.
8	3942.	3132.	2668.	2371.	2182.	2037.	1934.
6	3263.	2671.	2320.	2090.	1944.	1832.	1753.
4	2571.	2172.	1926.	1765.	1663.	1584.	1530.
3	2221.	1913.	1722.	1597.	1518.	1458.	1416.
2	1849.	1632.	1498.	1411.	1356.	1314.	1286.
1	1445.	1323.	1256.	1204.	1155.	1114.	1108.

CLOUD BASE TEMPERATURE (^oC)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	7.8	6.0	5.0	4.4	4.0	3.7	3.5
8	8.2	6.5	5.6	4.9	4.5	4.2	4.0
6	9.1	7.4	6.4	5.8	5.4	5.1	4.9
4	10.7	9.0	8.0	7.4	6.9	6.6	6.4
3	12.3	10.6	9.6	8.9	8.4	8.1	7.9
2	15.4	13.6	12.5	11.8	11.3	11.0	10.7
1	24.1	22.1	20.9	20.1	19.3	18.6	18.5

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	3043.	2246.	1782.	1545.	1463.
8	******	3525.	2388.	1927.	1476.	1294.	1241.
6	3800.	2432.	1786.	1402.	1144.	1011.	981.
4	2252.	1629.	1221.	972.	795.	704.	695.
3	1636.	1219.	918.	724.	582.	510.	511.
2	1065.	799.	586.	443.	335.	283.	290.
1	451.	298.	165.	75.	25.	10.	13.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	5.1	3.7	3.0	2.6	2.4
8	******	7.3	5.0	3.8	3.1	2.7	2.6
6	10.6	6.9	5.0	3.9	3.2	2.8	2.7
4	9.4	6.8	5.1	4.1	3.3	2.9	2.9
3	9.1	6.8	5.1	4.0	3.2	2.8	2.8
2	8.9	6.7	4.9	3.7	2.8	2.4	2.4
1	7.5	5.0	2.7	1.3	.4	.2	.2

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	50.	46.	42.	41.	41.
8	******	53.	47.	44.	40.	39.	39.
6	54.	48.	44.	40.	37.	36.	36.
4	47.	43.	39.	36.	32.	31.	31.
3	42.	39.	35.	31.	28.	26.	27.
2	37.	33.	28.	24.	20.	18.	18.
1	24.	18.	12.	6.	2.	1.	1.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	50.	46.	42.	41.	41.
8	******	53.	47.	44.	40.	39.	39.
6	54.	48.	44.	40.	37.	36.	36.
4	47.	43.	39.	36.	32.	31.	31.
3	42.	39.	35.	31.	28.	26.	27.
2	37.	33.	28.	24.	20.	18.	18.
1	24.	18.	12.	6.	2.	1.	1.

CLOUD BASE TEMPERATURE (^oC)

SEED WITH 1.00E-03 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	6023.	4462.	3657.	3168.	2860.	2638.	2490.
8	4948.	3825.	3203.	2813.	2563.	2382.	2263.
6	3990.	3205.	2743.	2445.	2253.	2114.	2024.
4	3064.	2552.	2236.	2028.	1894.	1797.	1736.
3	2604.	2215.	1970.	1809.	1704.	1629.	1583.
2	2122.	1850.	1678.	1564.	1490.	1437.	1406.
1	1599.	1449.	1347.	1260.	1176.	1123.	1119.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	10.0	7.4	6.1	5.3	4.8	4.4	4.2
8	10.3	8.0	6.7	5.9	5.3	5.0	4.7
6	11.1	8.9	7.6	6.8	6.3	5.9	5.6
4	12.8	10.6	9.3	8.5	7.9	7.5	7.2
3	14.5	12.3	10.9	10.0	9.5	9.0	8.8
2	17.7	15.4	14.0	13.0	12.4	12.0	11.7
1	26.6	24.1	22.4	21.0	19.6	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	2397.	1722.	1336.	1144.	1083.
8	******	2831.	1853.	1385.	1095.	950.	911.
6	3073.	1948.	1362.	1047.	835.	729.	710.
4	1759.	1249.	912.	709.	563.	491.	489.
3	1253.	917.	670.	513.	396.	339.	344.
2	791.	580.	406.	289.	201.	160.	169.
1	299.	178.	74.	20.	4.	1.	2.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	4.0	2.9	2.2	1.9	1.8
8	******	5.9	3.9	2.9	2.3	2.0	1.9
6	8.5	5.4	3.8	2.9	2.3	2.0	2.0
4	7.3	5.2	3.8	3.0	2.3	2.0	2.0
3	7.0	5.1	3.7	2.8	2.2	1.9	1.9
2	6.6	4.8	3.4	2.4	1.7	1.3	1.4
1	5.0	3.0	1.2	.3	.1	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	40.	35.	32.	30.	30.
8	******	43.	37.	33.	30.	28.	29.
6	44.	38.	33.	30.	27.	26.	26.
4	36.	33.	29.	26.	23.	21.	22.
3	32.	29.	25.	22.	19.	17.	18.
2	27.	24.	19.	16.	12.	10.	11.
1	16.	11.	5.	2.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	40.	35.	32.	30.	30.
8	******	43.	37.	33.	30.	28.	29.
6	44.	38.	33.	30.	27.	26.	26.
4	36.	33.	29.	26.	23.	21.	22.
3	32.	29.	25.	22.	19.	17.	18.
2	27.	24.	19.	16.	12.	10.	11.
1	16.	11.	5.	2.	0.	0.	0.

SEED WITH 1.00E-04 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE

1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	7529.	5344.	4278.	3655.	3265.	2996.	2824.
8	6019.	4503.	3709.	3219.	2906.	2690.	2553.
6	4722.	3716.	3139.	2771.	2532.	2366.	2264.
4	3539.	2910.	2524.	2269.	2103.	1987.	1919.
3	2969.	2497.	2200.	2002.	1871.	1781.	1731.
2	2379.	2054.	1844.	1702.	1604.	1535.	1506.
1	1739.	1551.	1403.	1277.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	12.7	8.9	7.1	6.1	5.4	5.0	4.7
8	12.5	9.4	7.7	6.7	6.1	5.6	5.3
6	13.1	10.3	8.7	7.7	7.0	6.6	6.3
4	14.7	12.1	10.5	9.5	8.8	8.3	8.0
3	16.5	13.9	12.2	11.1	10.4	9.9	9.6
2	19.8	17.1	15.4	14.2	13.4	12.8	12.5
1	29.0	25.9	23.4	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1775.	1236.	931.	786.	749.
8	******	2149.	1347.	979.	751.	642.	621.
6	2341.	1437.	967.	721.	556.	477.	471.
4	1283.	391.	624.	468.	354.	301.	306.
3	883.	635.	440.	319.	228.	187.	196.
2	534.	377.	240.	152.	88.	62.	70.
1	159.	75.	18.	3.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	3.0	2.1	1.6	1.3	1.2
8	******	4.5	2.8	2.0	1.6	1.3	1.3
6	6.5	4.0	2.7	2.0	1.5	1.3	1.3
4	5.3	3.7	2.6	2.0	1.5	1.3	1.3
3	4.9	3.5	2.4	1.8	1.3	1.0	1.1
2	4.4	3.1	2.0	1.3	.7	.5	.6
1	2.6	1.3	.3	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	29.	25.	22.	21.	21.
8	******	32.	27.	23.	21.	19.	20.
6	33.	28.	24.	21.	18.	17.	17.
4	27.	23.	20.	17.	14.	13.	14.
3	23.	20.	17.	14.	11.	10.	10.
2	18.	15.	12.	8.	5.	4.	4.
1	8.	5.	1.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	29.	25.	22.	21.	21.
8	******	32.	27.	23.	21.	19.	20.
6	33.	28.	24.	21.	18.	17.	17.
4	27.	23.	20.	17.	14.	13.	14.
3	23.	20.	17.	14.	11.	10.	10.
2	18.	15.	12.	8.	5.	4.	[illegible]
1	8.	5.	1.	0.	0.	0.	0.

SEED WITH 1.00E-05 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	6315.	4912.	4131.	3650.	3333.	3135.
8	7284.	5226.	4213.	3612.	3231.	2977.	2821.
6	5512.	4236.	3525.	3080.	2791.	2597.	2483.
4	4024.	3262.	2797.	2493.	2290.	2155.	2082.
3	3331.	2770.	2414.	2175.	2011.	1903.	1853.
2	2627.	2244.	1987.	1806.	1672.	1585.	1561.
1	1846.	1610.	1418.	1279.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	10.5	8.2	6.9	6.1	5.6	5.2
8	15.2	10.9	8.8	7.5	6.7	6.2	5.9
6	15.3	11.8	9.8	8.6	7.8	7.2	6.9
4	16.8	13.6	11.7	10.4	9.5	9.0	8.7
3	18.5	15.4	13.4	12.1	11.2	10.6	10.3
2	21.9	18.7	16.6	15.1	13.9	13.2	13.0
1	30.8	26.8	23.6	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1141.	759.	545.	449.	439.
8	******	1431.	842.	586.	427.	355.	354.
6	1551.	917.	580.	412.	297.	245.	251.
4	798.	539.	350.	244.	167.	133.	143.
3	526.	362.	226.	145.	88.	65.	74.
2	286.	187.	97.	48.	20.	12.	14.
1	51.	16.	2.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	1.9	1.3	.9	.7	.7
8	******	3.0	1.8	1.2	.9	.7	.7
6	4.3	2.5	1.6	1.1	.8	.7	.7
4	3.3	2.2	1.5	1.0	.7	.6	.6
3	2.9	2.0	1.3	.8	.5	.4	.4
2	2.4	1.6	.8	.4	.2	.1	.1
1	.8	.3	.0	.0	.0	0.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	19.	16.	13.	12.	12.
8	******	21.	17.	14.	12.	11.	11.
6	22.	18.	14.	12.	10.	9.	9.
4	17.	14.	11.	9.	7.	6.	6.
3	14.	12.	9.	6.	4.	3.	4.
2	10.	8.	5.	3.	1.	1.	1.
1	3.	1.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	19.	16.	13.	12.	12.
8	******	21.	17.	14.	12.	11.	11.
6	22.	18.	14.	12.	10.	9.	9.
4	17.	14.	11.	9.	7.	6.	6.
3	14.	12.	9.	6.	4.	3.	4.
2	10.	8.	5.	3.	1.	1.	1.
1	3.	1.	0.	0.	0.	0.	0.

SEED WITH 1.00E-06 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	7405.	5547.	4578.	3993.	3623.	3406.
8	******	5982.	4698.	3969.	3508.	3214.	3048.
6	6352.	4750.	3878.	3346.	2996.	2772.	2656.
4	4494.	3587.	3028.	2565.	2416.	2259.	2191.
3	3561.	3005.	2575.	2287.	2084.	1957.	1913.
2	2825.	2391.	2065.	1847.	1689.	1596.	1574.
1	1989.	1625.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	12.3	9.2	7.6	6.7	6.0	5.7
8	******	12.5	9.8	8.3	7.3	6.7	6.4
6	17.6	13.2	10.8	9.3	8.3	7.7	7.4
4	18.7	14.9	12.6	11.1	10.1	9.4	9.1
3	20.3	16.7	14.3	12.7	11.6	10.9	10.6
2	23.5	19.8	17.2	15.4	14.1	13.3	13.1
1	31.5	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		507.	312.	203.	159.	167.
8	******	675.	357.	229.	149.	118.	126.
6	711.	403.	227.	146.	91.	70.	78.
4	328.	213.	120.	72.	41.	30.	35.
3	196.	127.	65.	34.	16.	11.	13.
2	87.	50.	19.	7.	2.	1.	2.
1	8.	2.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.8	.5	.3	.3	.3
8	******	1.4	.7	.5	.3	.2	.3
6	2.0	1.1	.6	.4	.3	.2	.2
4	1.4	.9	.5	.3	.2	.1	.1
3	1.1	.7	.4	.2	.1	.1	.1
2	.7	.4	.2	.1	.0	.0	.0
1	.1	.0	.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		8.	6.	5.	4.	5.
8	******	10.	7.	5.	4.	4.	4.
6	10.	8.	6.	4.	3.	2.	3.
4	7.	6.	4.	3.	2.	1.	2.
3	5.	4.	2.	1.	1.	1.	1.
2	3.	2.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		8.	6.	5.	4.	5.
8	******	10.	7.	5.	4.	4.	4.
6	10.	8.	6.	4.	3.	2.	3.
4	7.	6.	4.	3.	2.	1.	2.
3	5.	4.	2.	1.	1.	1.	1.
2	3.	2.	1.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-07 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		5950.	4832.	4161.	3757.	3544.
8	******	6509.	4986.	4157.	3634.	3314.	3154.
6	6915.	5072.	4065.	3468.	3075.	2833.	2723.
4	4762.	3762.	3129.	2727.	2452.	2285.	2221.
3	3824.	3112.	2631.	2317.	2098.	1967.	1925.
2	2900.	2424.	2082.	1853.	1692.	1597.	1575.
1	1896.	1626.	1420.	1290.	1190.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		9.9	8.1	6.9	6.3	5.9
8	******	13.6	10.4	8.7	7.6	6.9	6.6
6	19.2	14.1	11.3	9.6	8.5	7.9	7.6
4	19.8	15.7	13.0	11.4	10.2	9.5	9.3
3	21.2	17.3	14.6	12.9	11.7	10.9	10.7
2	24.2	20.2	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		103.	58.	34.	26.	29.
8	******	148.	69.	41.	24.	18.	21.
6	148.	82.	41.	24.	13.	10.	11.
4	61.	33.	19.	10.	5.	4.	4.
3	33.	20.	9.	4.	2.	1.	2.
2	13.	7.	2.	1.	0.	0.	0.
1	1.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		.2	.1	.1	.0	.0
8	******	.3	.1	.1	.0	.0	.0
6	.4	.2	.1	.1	.0	.0	.0
4	.3	.2	.1	.0	.0	.0	.0
3	.2	.1	.0	.0	.0	.0	.0
2	.1	.1	.0	.0	.0	.0	.0
1	.0	.0	.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		2.	1.	1.	1.	1.
8	******	2.	1.	1.	1.	1.	1.
6	2.	2.	1.	1.	0.	0.	0.
4	1.	1.	1.	0.	0.	0.	0.
3	1.	1.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	************		2.	1.	1.	1.	1.
8	******	2.	1.	1.	1.	1.	1.
6	2.	2.	1.	1.	0.	0.	0.
4	1.	1.	1.	0.	0.	0.	0.
3	1.	1.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-08 G/M3 OF SALT 4 AT 1.0 KM ABOVE CLOUD BASE
1.0 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		6041.	4984.	4192.	3779.	3570.
8	******	6639.	5048.	4193.	3655.	3330.	3172.
6	7046.	5144.	4101.	3489.	3086.	2842.	2733.
4	4815.	3796.	3146.	2736.	2456.	2288.	2225.
3	3353.	3130.	2639.	2321.	2100.	1968.	1926.
2	2912.	2430.	2084.	1854.	1692.	1597.	1576.
1	1397.	1626.	1420.	1280.	1180.	1124.	1121.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		10.1	8.1	7.0	6.3	5.9
8	******	13.8	10.5	8.7	7.6	6.9	6.6
6	19.6	14.3	11.4	9.7	8.6	7.9	7.6
4	20.1	15.8	13.1	11.4	10.2	9.5	9.3
3	21.4	17.4	14.7	12.9	11.7	10.9	10.7
2	24.3	20.3	17.4	15.4	14.1	13.3	13.1
1	31.6	27.1	23.7	21.3	19.7	18.7	18.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		12.	7.	4.	3.	3.
8	******	17.	8.	5.	3.	2.	2.
6	17.	9.	4.	3.	1.	1.	1.
4	7.	4.	2.	1.	1.	0.	0.
3	4.	2.	1.	0.	0.	0.	0.
2	1.	1.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		.0	.0	.0	.0	.0
8	******	.0	.0	.0	.0	.0	.0
6	.0	.0	.0	.0	.0	.0	.0
4	.0	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	************		0.	0.	0.	0.	0.
8	******	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	7934.	5576.	4132.	3545.	3210.	3025.
8	******	6208.	4577.	3620.	3114.	2847.	2704.
6	6817.	4819.	3818.	3039.	2650.	2447.	2345.
4	4629.	3572.	2947.	2406.	2130.	1988.	1927.
3	3705.	2955.	2483.	2054.	1932.	1721.	1679.
2	2809.	2307.	1973.	1654.	1489.	1408.	1385.
1	1345.	1560.	1360.	1159.	1053.	1006.	1001.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	13.2	9.3	7.0	5.9	5.4	5.0
8	******	12.9	9.7	7.5	6.5	5.9	5.6
6	18.9	13.4	10.6	8.4	7.4	6.8	6.5
4	19.3	14.9	12.3	10.0	8.9	8.3	8.0
3	20.6	16.4	13.8	11.4	10.2	9.6	9.3
2	23.4	19.2	16.4	13.8	12.4	11.7	11.5
1	30.8	26.0	22.7	19.3	17.6	16.8	16.7

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	3541.	2735.	2336.
8	******	******	******	3856.	2844.	2293.	2006.
6	******	******	3806.	2818.	2230.	1868.	1673.
4	******	3552.	2380.	1973.	1655.	1436.	1313.
3	3912.	2503.	1926.	1585.	1365.	1206.	1122.
2	2294.	1691.	1321.	1197.	1058.	953.	902.
1	1205.	983.	816.	772.	703.	648.	626.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	5.9	4.6	3.9
8	******	******	******	8.0	5.9	4.8	4.2
6	******	******	10.6	7.8	6.2	5.2	4.6
4	******	14.8	9.9	8.2	6.9	6.0	5.5
3	21.7	13.9	10.1	8.8	7.6	6.7	6.2
2	19.1	14.1	11.0	10.0	8.8	7.9	7.5
1	20.1	16.4	13.6	12.9	11.7	10.8	10.4

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	50.	46.	44.
8	******	******	******	52.	48.	45.	43.
6	******	******	50.	48.	46.	43.	42.
4	******	50.	45.	45.	44.	42.	41.
3	51.	46.	42.	44.	43.	41.	40.
2	45.	42.	40.	42.	42.	40.	39.
1	40.	39.	37.	40.	40.	39.	38.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	50.	46.	44.
8	******	******	******	52.	48.	45.	43.
6	******	******	50.	48.	46.	43.	42.
4	******	50.	45.	45.	44.	42.	41.
3	51.	46.	42.	44.	43.	41.	40.
2	45.	42.	40.	42.	42.	40.	39.
1	40.	39.	37.	40.	40.	39.	38.

SEED WITH 1.00E-03 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
.5 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	6997.	5131.	4294.	3845.	3590.
8	******	******	5721.	4387.	3742.	3391.	3197.
6	******	5941.	4576.	3640.	3161.	2899.	2762.
4	5664.	4266.	3470.	2850.	2519.	2340.	2257.
3	4427.	3482.	2899.	2417.	2156.	2017.	1960.
2	3287.	2681.	2282.	1932.	1741.	1642.	1609.
1	2112.	1784.	1553.	1337.	1219.	1162.	1152.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	11.7	8.6	7.2	6.4	6.0
8	******	******	11.9	9.1	7.8	7.1	6.7
6	******	16.5	12.7	10.1	8.8	8.1	7.7
4	23.6	17.8	14.5	11.9	10.5	9.8	9.4
3	24.6	19.3	16.1	13.4	12.0	11.2	10.9
2	27.4	22.3	19.0	16.1	14.5	13.7	13.4
1	35.2	29.7	25.9	22.3	20.3	19.4	19.2

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	2792.	2100.	1773.
8	******	******	******	3089.	2215.	1748.	1514.
6	******	******	3048.	2216.	1720.	1416.	1257.
4	******	2958.	1855.	1530.	1266.	1084.	988.
3	3190.	1977.	1410.	1222.	1041.	909.	842.
2	1815.	1316.	1012.	919.	806.	719.	678.
1	938.	759.	623.	594.	537.	492.	474.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	4.7	3.5	3.0
8	******	******	******	6.4	4.6	3.6	3.2
6	******	******	8.5	6.2	4.8	3.9	3.5
4	******	11.9	7.7	6.4	5.3	4.5	4.1
3	17.7	11.0	7.8	6.8	5.8	5.1	4.7
2	15.1	11.0	8.4	7.7	6.7	6.0	5.6
1	15.6	12.7	10.4	9.9	9.0	8.2	7.9

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	39.	35.	33.
8	******	******	******	41.	37.	34.	32.
6	******	******	40.	38.	35.	33.	31.
4	******	40.	35.	35.	33.	32.	30.
3	42.	36.	33.	34.	33.	31.	30.
2	36.	33.	31.	32.	32.	30.	30.
1	31.	30.	29.	31.	31.	30.	29.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	39.	35.	33.
8	******	******	******	41.	37.	34.	32.
6	******	******	40.	38.	35.	33.	31.
4	******	40.	35.	35.	33.	32.	30.
3	42.	36.	33.	34.	33.	31.	30.
2	36.	33.	31.	32.	32.	30.	30.
1	31.	30.	29.	31.	31.	30.	29.

SEED WITH 1.00E-04 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE

.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	***	***	***	6096.	5307.	4427.	4094.
8	***	***	6845.	5139.	4330.	3886.	3634.
6	***	7197.	5346.	4213.	3632.	3306.	3129.
4	6846.	4975.	3981.	3264.	2874.	2656.	2549.
3	5196.	4305.	3298.	2754.	2451.	2284.	2209.
2	3775.	3046.	2576.	2189.	1971.	1854.	1810.
1	2381.	2002.	1738.	1505.	1374.	1307.	1292.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	***	***	***	10.2	8.3	7.4	6.8
8	***	***	14.3	10.7	9.0	8.1	7.6
6	***	20.0	14.8	11.7	10.1	9.2	8.7
4	28.5	20.7	16.6	13.6	12.0	11.1	10.6
3	28.9	22.2	18.3	15.3	13.6	12.7	12.3
2	31.5	25.4	21.5	18.2	16.4	15.4	15.1
1	39.7	33.4	29.0	25.1	22.9	21.8	21.5

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	***	***	***	***	2078.	1519.	1266.
8	***	***	***	2337.	1627.	1254.	1077.
6	***	***	2277.	1642.	1249.	1008.	890.
4	***	2149.	1346.	1116.	911.	768.	697.
3	2421.	1454.	1010.	885.	746.	643.	593.
2	1327.	952.	718.	662.	576.	508.	477.
1	669.	541.	438.	426.	383.	347.	334.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	***	***	***	***	3.5	2.5	2.1
8	***	***	***	4.9	3.4	2.6	2.2
6	***	***	6.3	4.6	3.5	2.8	2.5
4	***	9.0	5.6	4.6	3.8	3.2	2.9
3	13.4	8.1	5.6	4.9	4.1	3.6	3.3
2	11.1	7.9	6.0	5.5	4.8	4.2	4.0
1	11.2	9.0	7.3	7.1	6.4	5.8	5.6

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	***	***	***	***	29.	26.	24.
8	***	***	***	31.	27.	24.	23.
6	***	***	30.	28.	26.	23.	22.
4	***	30.	25.	25.	24.	22.	21.
3	32.	27.	23.	24.	23.	22.	21.
2	26.	24.	22.	23.	23.	21.	21.
1	22.	21.	20.	22.	22.	21.	21.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	***	***	***	***	29.	26.	24.
8	***	***	***	31.	27.	24.	23.
6	***	***	30.	28.	26.	23.	22.
4	***	30.	25.	25.	24.	22.	21.
3	32.	27.	23.	24.	23.	22.	21.
2	26.	24.	22.	23.	23.	21.	21.
1	22.	21.	20.	22.	22.	21.	21.

SEED WITH 1.00E-05 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10				7144.	5725.	4990.	4568.
8				5919.	4909.	4357.	4041.
6			6164.	4787.	4085.	3690.	3468.
4		5729.	4494.	3667.	3211.	2951.	2815.
3	6035.	4533.	3592.	3077.	2729.	2532.	2437.
2	4275.	3407.	2861.	2434.	2187.	2050.	1994.
1	2644.	2213.	1914.	1664.	1518.	1441.	1421.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10				11.9	9.5	8.3	7.6
8				12.3	10.2	9.1	8.4
6			17.1	13.3	11.3	10.2	9.6
4		23.9	18.7	15.3	13.4	12.3	11.7
3	33.5	25.2	20.5	17.1	15.2	14.1	13.5
2	35.6	28.4	23.8	20.3	18.2	17.1	16.6
1	44.1	36.9	31.9	27.7	25.3	24.0	23.7

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10					1360.	956.	792.
8				1557.	1049.	783.	670.
6			1460.	1069.	795.	625.	551.
4		1395.	833.	713.	574.	473.	429.
3	1582.	920.	617.	562.	468.	395.	364.
2	827.	591.	433.	417.	360.	312.	293.
1	406.	331.	261.	267.	239.	213.	205.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10					2.3	1.6	1.3
8				3.2	2.2	1.6	1.4
6			4.1	3.0	2.2	1.7	1.5
4		5.8	3.5	3.0	2.4	2.0	1.8
3	8.8	5.1	3.4	3.1	2.6	2.2	2.0
2	6.9	4.9	3.6	3.5	3.0	2.6	2.4
1	6.8	5.5	4.4	4.4	4.0	3.5	3.4

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10					19.	16.	15.
8				21.	18.	15.	14.
6			19.	18.	16.	14.	14.
4		20.	16.	16.	15.	14.	13.
3	21.	17.	14.	15.	15.	14.	13.
2	16.	15.	13.	15.	14.	13.	13.
1	13.	13.	12.	14.	14.	13.	13.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10					19.	16.	15.
8				21.	18.	15.	14.
6			19.	18.	16.	14.	14.
4		20.	16.	16.	15.	14.	13.
3	21.	17.	14.	15.	15.	14.	13.
2	16.	15.	13.	15.	14.	13.	13.
1	13.	13.	12.	14.	14.	13.	13.

SEED WITH 1.00E-06 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	*****	*****	*****	*****	6447.	5524.	5010.
8	*****	*****	*****	6726.	5473.	4797.	4416.
6	*****	*****	6993.	5354.	4518.	4043.	3777.
4	******	6502.	4981.	4351.	3526.	3219.	3057.
3	6911.	5060.	4057.	3382.	2986.	2756.	2642.
2	4756.	3748.	3119.	2662.	2385.	2227.	2159.
1	2985.	2406.	2072.	1811.	1650.	1562.	1537.

CLOUD BASE TEMPERATURE (^{o}C)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	*****	*****	*****	*****	10.7	9.2	8.4
8	*****	*****	*****	14.0	11.4	10.0	9.2
6	*****	*****	19.4	14.9	12.5	11.2	10.5
4	******	27.1	20.8	16.9	14.7	13.4	12.7
3	38.4	28.1	22.5	18.8	16.6	15.3	14.7
2	39.6	31.2	26.0	22.2	19.9	18.6	18.0
1	48.1	40.1	34.5	30.2	27.5	26.0	25.6

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	*****	*****	*****	*****	638.	421.	350.
8	*****	*****	*****	750.	484.	343.	295.
6	*****	*****	630.	502.	363.	272.	242.
4	******	622.	345.	328.	259.	205.	188.
3	706.	399.	252.	257.	211.	171.	159.
2	346.	250.	174.	189.	161.	135.	128.
1	165.	138.	104.	120.	107.	92.	90.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	*****	*****	*****	*****	1.1	.7	.6
8	*****	*****	*****	1.6	1.0	.7	.6
6	*****	*****	1.7	1.4	1.0	.8	.7
4	******	2.6	1.4	1.4	1.1	.9	.8
3	3.9	2.2	1.4	1.4	1.2	.9	.9
2	2.9	2.1	1.5	1.6	1.3	1.1	1.1
1	2.7	2.3	1.7	2.0	1.8	1.5	1.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	*****	*****	*****	*****	9.	7.	7.
8	*****	*****	*****	10.	8.	7.	6.
6	*****	*****	8.	9.	7.	6.	6.
4	******	9.	6.	7.	7.	6.	6.
3	9.	7.	6.	7.	7.	6.	6.
2	7.	6.	5.	7.	6.	6.	6.
1	5.	5.	5.	6.	6.	6.	6.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	*****	*****	*****	*****	9.	7.	7.
8	*****	*****	*****	10.	8.	7.	6.
6	*****	*****	8.	9.	7.	6.	6.
4	******	9.	6.	7.	7.	6.	6.
3	9.	7.	6.	7.	7.	6.	6.
2	7.	6.	5.	7.	6.	6.	6.
1	5.	5.	5.	6.	6.	6.	6.

CLOUD BASE TEMPERATURE (^{o}C)

SEED WITH 1.00E-07 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE
.5 X ADIBATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	5943.	5958.	5287.
8	******	******	******	7303.	5850.	5069.	4649.
6	******	******	7499.	5742.	4801.	4259.	3968.
4	******	6996.	5260.	4306.	3728.	3382.	3205.
3	7472.	5378.	4261.	3582.	3151.	2892.	2768.
2	5035.	3948.	3261.	2809.	2512.	2333.	2260.
1	3019.	2517.	2156.	1904.	1733.	1635.	1608.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	11.6	9.3	8.8
8	******	******	******	15.2	12.2	10.6	9.7
6	******	******	20.8	15.9	13.3	11.8	11.0
4	******	29.1	21.9	17.9	15.5	14.1	13.4
3	41.5	29.9	23.7	19.9	17.5	16.1	15.4
2	42.0	32.9	27.2	23.4	20.9	19.4	18.8
1	50.3	41.9	35.9	31.7	28.9	27.2	26.9

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	143.	87.	74.
8	******	******	******	174.	107.	71.	62.
6	******	******	124.	114.	90.	56.	51.
4	******	128.	66.	74.	57.	42.	40.
3	145.	80.	48.	57.	46.	35.	34.
2	67.	50.	33.	42.	35.	28.	27.
1	31.	27.	19.	27.	23.	19.	19.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	.2	.1	.1
8	******	******	******	.4	.2	.1	.1
6	******	******	.3	.3	.2	.2	.1
4	******	.5	.3	.3	.2	.2	.2
3	.8	.4	.3	.3	.3	.2	.2
2	.6	.4	.3	.4	.3	.2	.2
1	.5	.4	.3	.4	.4	.3	.3

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	2.	1.	1.
8	******	******	******	2.	2.	1.	1.
6	******	******	2.	2.	2.	1.	1.
4	******	2.	1.	2.	1.	1.	1.
3	2.	1.	1.	2.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	1.	1.	1.	1.	1.	1.	1.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	2.	1.	1.
8	******	******	******	2.	2.	1.	1.
6	******	******	2.	2.	2.	1.	1.
4	******	2.	1.	2.	1.	1.	1.
3	2.	1.	1.	2.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	1.	1.	1.	1.	1.	1.	1.

SEED WITH 1.00E-08 G/M3 OF SALT 3 AT 0.0 KM ABOVE CLOUD BASE

.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	7068.	5935.	5352.
8	******	******	******	7456.	5945.	5132.	4703.
6	******	******	7609.	5942.	4871.	4309.	4013.
4	******	7109.	5319.	4371.	3778.	3419.	3241.
3	7600.	5449.	4303.	3632.	3192.	2923.	2798.
2	5094.	3992.	3290.	2846.	2543.	2358.	2284.
1	3046.	2540.	2174.	1928.	1754.	1651.	1624.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	11.8	9.9	8.9
8	******	******	******	15.5	12.4	10.7	9.8
6	******	******	21.1	16.2	13.5	12.0	11.1
4	******	29.6	22.2	18.2	15.7	14.2	13.5
3	42.2	30.3	23.9	20.2	17.7	16.2	15.5
2	42.5	33.3	27.4	23.7	21.2	19.6	19.0
1	50.8	42.3	36.2	32.1	29.2	27.5	27.1

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	17.	10.	9.
8	******	******	******	21.	13.	8.	7.
6	******	******	14.	14.	10.	7.	6.
4	******	15.	8.	9.	7.	5.	5.
3	17.	9.	5.	7.	5.	4.	4.
2	8.	6.	4.	5.	4.	3.	3.
1	4.	3.	2.	3.	3.	2.	2.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	.0	.0	.0
8	******	******	******	.0	.0	.0	.0
6	******	******	.0	.0	.0	.0	.0
4	******	.1	.0	.0	.0	.0	.0
3	.1	.1	.0	.0	.0	.0	.0
2	.1	.0	.0	.0	.0	.0	.0
1	.1	.1	.0	.1	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	0.	0.	0.
8	******	******	******	0.	0.	0.	0.
6	******	******	0.	0.	0.	0.	0.
4	******	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	0.	0.	0.
8	******	******	******	0.	0.	0.	0.
6	******	******	0.	0.	0.	0.	0.
4	******	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-02 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	5609.	4487.	3840.	3367.	3069.
8	******	6301.	4711.	3978.	3372.	2990.	2750.
6	7233.	4988.	3850.	3253.	2870.	2575.	2391.
4	4856.	3628.	2980.	2575.	2311.	2101.	1973.
3	3990.	3013.	2521.	2207.	1997.	1830.	1731.
2	2939.	2360.	2017.	1799.	1636.	1513.	1443.
1	1947.	1624.	1422.	1295.	1193.	1120.	1081.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	9.3	7.5	6.4	5.6	5.1
8	******	13.1	9.8	8.1	7.0	6.2	5.7
6	20.1	13.5	10.7	9.0	8.0	7.2	6.6
4	20.2	15.1	12.4	10.7	9.6	8.8	8.2
3	21.6	16.7	14.0	12.3	11.1	10.2	9.6
2	24.5	19.7	16.8	14.9	13.6	12.6	12.0
1	32.5	27.1	23.7	21.4	19.9	18.7	18.0

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	3246.	2578.	2291.
8	******	******	******	3599.	2586.	2150.	1961.
6	******	******	3773.	2606.	2011.	1740.	1629.
4	******	3496.	2346.	1804.	1474.	1323.	1272.
3	3737.	2449.	1787.	1433.	1200.	1097.	1071.
2	2163.	1638.	1277.	1063.	911.	849.	844.
1	1103.	919.	753.	646.	563.	534.	545.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	5.4	4.3	3.8
8	******	******	******	7.5	5.4	4.5	4.1
6	******	******	10.5	7.2	5.6	4.8	4.5
4	******	14.6	9.8	7.5	6.1	5.5	5.3
3	20.8	13.6	9.9	8.0	6.7	6.1	6.0
2	18.0	13.6	10.6	8.9	7.6	7.1	7.0
1	18.4	15.3	12.6	10.8	9.4	8.9	9.1

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	46.	43.	43.
8	******	******	******	48.	43.	42.	42.
6	******	******	49.	44.	41.	40.	41.
4	******	49.	44.	41.	39.	39.	39.
3	49.	45.	41.	39.	38.	37.	38.
2	42.	41.	39.	37.	36.	36.	37.
1	36.	36.	35.	33.	32.	32.	34.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s⁻¹) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	46.	43.	43.
8	******	******	******	48.	43.	42.	42.
6	******	******	49.	44.	41.	40.	41.
4	******	49.	44.	41.	39.	39.	39.
3	49.	45.	41.	39.	38.	37.	38.
2	42.	41.	39.	37.	36.	36.	37.
1	36.	36.	35.	33.	32.	32.	34.

SEED WITH 1.00E-03 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE

.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	7337.	5424.	4565.	3984.	3629.
8	******	******	5758.	4630.	3975.	3517.	3236.
6	******	6019.	4509.	3834.	3356.	3010.	2801.
4	5917.	4322.	3503.	3002.	2678.	2437.	2297.
3	4611.	3535.	2935.	2553.	2300.	2111.	2004.
2	3419.	2733.	2322.	2051.	1869.	1732.	1659.
1	2214.	1844.	1610.	1449.	1342.	1261.	1223.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	11.7	9.0	7.6	6.6	6.0
8	******	******	12.0	9.6	8.3	7.3	6.7
6	******	16.7	12.8	10.7	9.3	8.4	7.8
4	24.7	18.0	14.6	12.5	11.2	10.2	9.6
3	25.6	19.6	16.3	14.2	12.8	11.7	11.1
2	28.5	22.8	19.4	17.1	15.6	14.4	13.8
1	36.9	30.7	26.8	24.2	22.4	21.0	20.4

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	2520.	1961.	1732.
8	******	******	******	2947.	1982.	1622.	1474.
6	******	******	3014.	2022.	1525.	1305.	1219.
4	******	2901.	1924.	1378.	1107.	987.	949.
3	3006.	1923.	1373.	1086.	897.	816.	797.
2	1683.	1265.	971.	800.	678.	629.	628.
1	836.	699.	566.	482.	415.	393.	403.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	4.2	3.3	2.9
8	******	******	******	5.9	4.1	3.4	3.1
6	******	******	8.4	5.6	4.2	3.6	3.4
4	******	11.7	7.6	5.7	4.6	4.1	4.0
3	16.7	10.7	7.6	6.0	5.0	4.5	4.4
2	14.0	10.5	8.1	6.7	5.6	5.2	5.2
1	13.9	11.7	9.4	8.0	6.9	6.5	6.7

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	36.	33.	32.
8	******	******	******	38.	33.	32.	31.
6	******	******	40.	35.	31.	30.	30.
4	******	39.	34.	31.	29.	29.	29.
3	39.	35.	32.	30.	28.	28.	28.
2	33.	32.	29.	28.	27.	27.	27.
1	27.	27.	26.	25.	24.	24.	25.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	36.	33.	32.
8	******	******	******	38.	33.	32.	31.
6	******	******	40.	35.	31.	30.	30.
4	******	39.	34.	31.	29.	29.	29.
3	39.	35.	32.	30.	28.	28.	28.
2	33.	32.	29.	28.	27.	27.	27.
1	27.	27.	26.	25.	24.	24.	25.

SEED WITH 1.00E-04 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	******	6403.	5270.	4557.	4129.
8	******	******	6888.	5380.	4551.	4001.	3670.
6	******	7287.	5380.	4400.	3813.	3407.	3164.
4	7156.	5034.	4012.	3407.	3019.	2743.	2584.
3	5398.	4058.	3333.	2879.	2582.	2367.	2248.
2	3911.	3095.	2614.	2298.	2086.	1933.	1854.
1	2479.	2058.	1790.	1607.	1483.	1394.	1355.

CLOUD BASE TEMPERATURE (^oC)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	******	10.7	8.8	7.6	6.9
8	******	******	14.3	11.2	9.5	8.3	7.6
6	******	20.2	14.9	12.2	10.6	9.5	8.8
4	29.8	21.0	16.7	14.2	12.6	11.4	10.8
3	30.0	22.5	18.5	16.0	14.3	13.2	12.5
2	32.6	25.8	21.8	19.1	17.4	16.1	15.5
1	41.3	34.3	29.8	26.8	24.7	23.2	22.6

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	******	******	1816.	1388.	1231.
8	******	******	******	2096.	1406.	1138.	1041.
6	******	******	2243.	1456.	1068.	908.	855.
4	******	2090.	1314.	973.	765.	681.	661.
3	2219.	1401.	975.	760.	615.	559.	553.
2	1191.	903.	680.	553.	460.	428.	433.
1	570.	485.	386.	324.	274.	260.	272.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	******	******	3.0	2.3	2.1
8	******	******	******	4.4	2.9	2.4	2.2
6	******	******	6.2	4.0	3.0	2.5	2.4
4	******	8.7	5.5	4.1	3.2	2.8	2.8
3	12.3	7.8	5.4	4.2	3.4	3.1	3.1
2	9.9	7.5	5.7	4.6	3.8	3.6	3.6
1	9.5	8.1	6.4	5.4	4.6	4.3	4.5

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	******	******	26.	23.	23.
8	******	******	******	28.	24.	22.	22.
6	******	******	29.	25.	22.	21.	21.
4	******	29.	25.	22.	20.	20.	20.
3	29.	26.	23.	21.	19.	19.	20.
2	23.	23.	21.	19.	18.	18.	19.
1	19.	19.	18.	17.	16.	16.	17.

CLOUD BASE TEMPERATURE (^oC)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	-5	0	5	10	15	20	25
10	******	******	******	******	26.	23.	23.
8	******	******	******	28.	24.	22.	22.
6	******	******	29.	25.	22.	21.	21.
4	******	29.	25.	22.	20.	20.	20.
3	29.	26.	23.	21.	19.	19.	20.
2	23.	23.	21.	19.	18.	18.	19.
1	19.	19.	18.	17.	16.	16.	17.

CLOUD BASE TEMPERATURE (^oC)

SEED WITH 1.00E-05 G/M3 OF SALT 3 AT 0.5 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	7473.	5983.	5110.	4602.
8	******	******	******	6163.	5119.	4463.	4074.
6	******	******	6199.	4968.	4254.	3780.	3500.
4	******	5792.	4524.	3800.	3343.	3028.	2848.
3	6266.	4592.	3724.	3193.	2847.	2605.	2473.
2	4417.	3455.	2895.	2533.	2290.	2120.	2033.
1	2740.	2264.	1960.	1754.	1614.	1516.	1476.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	12.5	10.0	8.5	7.7
8	******	******	******	12.8	10.7	9.3	8.5
6	******	******	17.2	13.8	11.8	10.5	9.7
4	******	24.1	18.9	15.8	13.9	12.6	11.9
3	34.8	25.5	20.7	17.7	15.8	14.5	13.7
2	36.8	28.8	24.1	21.1	19.1	17.7	16.9
1	45.7	37.7	32.7	29.2	26.9	25.3	24.6

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	1103.	835.	758.
8	******	******	******	1313.	833.	677.	637.
6	******	******	1424.	888.	626.	534.	519.
4	******	1332.	802.	579.	441.	396.	397.
3	1351.	866.	584.	446.	350.	321.	329.
2	684.	543.	398.	318.	257.	241.	254.
1	310.	279.	215.	177.	143.	137.	151.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	1.8	1.4	1.3
8	******	******	******	2.7	1.7	1.4	1.3
6	******	******	4.0	2.5	1.7	1.5	1.4
4	******	5.5	3.3	2.4	1.8	1.6	1.7
3	7.5	4.8	3.2	2.5	1.9	1.8	1.8
2	5.7	4.5	3.3	2.7	2.1	2.0	2.1
1	5.2	4.7	3.6	2.9	2.4	2.3	2.5

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	16.	14.	14.
8	******	******	******	18.	14.	13.	14.
6	******	******	19.	15.	13.	12.	13.
4	******	19.	15.	13.	12.	12.	12.
3	18.	16.	14.	12.	11.	11.	12.
2	13.	14.	12.	11.	10.	10.	11.
1	10.	11.	10.	9.	8.	8.	9.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	16.	14.	14.
8	******	******	******	18.	14.	13.	14.
6	******	******	19.	15.	13.	12.	13.
4	******	19.	15.	13.	12.	12.	12.
3	18.	16.	14.	12.	11.	11.	12.
2	13.	14.	12.	11.	10.	10.	11.
1	10.	11.	10.	9.	8.	8.	9.

SEED WITH 1.00E-06 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	***	***	***	***	6654.	5615.	5039.
8	***	***	***	6934.	5637.	4876.	4443.
6	***	***	7023.	5501.	4646.	4109.	3803.
4	***	6559.	5005.	4155.	3623.	3275.	3082.
3	7116.	5105.	4081.	3470.	3072.	2808.	2669.
2	4869.	3784.	3143.	2735.	2458.	2275.	2188.
1	2952.	2442.	2102.	1873.	1713.	1611.	1574.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	***	***	***	***	11.1	9.4	8.4
8	***	***	***	14.4	11.7	10.2	9.3
6	***	***	19.5	15.3	12.9	11.4	10.6
4	***	27.3	20.9	17.3	15.1	13.6	12.8
3	39.5	28.4	22.7	19.3	17.1	15.6	14.9
2	40.6	31.5	26.2	22.8	20.5	19.0	18.2
1	49.2	40.7	35.0	31.2	28.6	26.9	26.2

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	***	***	***	***	431.	331.	321.
8	***	***	***	542.	321.	264.	267.
6	***	***	600.	355.	235.	206.	216.
4	***	565.	322.	224.	161.	149.	163.
3	501.	354.	228.	169.	125.	119.	132.
2	234.	214.	150.	116.	88.	86.	99.
1	98.	101.	74.	58.	43.	43.	52.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	***	***	***	***	.7	.6	.5
8	***	***	***	1.1	.7	.6	.6
6	***	***	1.7	1.0	.7	.6	.6
4	***	2.4	1.3	.9	.7	.6	.7
3	2.8	2.0	1.3	.9	.7	.7	.7
2	1.9	1.8	1.3	1.0	.7	.7	.8
1	1.6	1.7	1.2	1.0	.7	.7	.9

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	***	***	***	***	6.	6.	6.
8	***	***	***	7.	5.	5.	6.
6	***	***	8.	6.	5.	5.	5.
4	***	8.	6.	5.	4.	4.	5.
3	7.	6.	5.	5.	4.	4.	5.
2	5.	5.	5.	4.	3.	4.	4.
1	3.	4.	3.	3.	2.	3.	3.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	-5	0	5	10	15	20	25
10	***	***	***	***	6.	6.	6.
8	***	***	***	7.	5.	5.	6.
6	***	***	8.	6.	5.	5.	5.
4	***	8.	6.	5.	4.	4.	5.
3	7.	6.	5.	5.	4.	4.	5.
2	5.	5.	5.	4.	3.	4.	4.
1	3.	4.	3.	3.	2.	3.	3.

SEED WITH 1.00E-07 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	7009.	5885.	5297.
8	******	******	******	7375.	5902.	5092.	4558.
6	******	******	7509.	5791.	4840.	4278.	3977.
4	******	7015.	5267.	4340.	3758.	3398.	3214.
3	7535.	5393.	4268.	3610.	3176.	2907.	2777.
2	5066.	3959.	3267.	2932.	2533.	2347.	2269.
1	3036.	2527.	2164.	1922.	1750.	1647.	1618.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	11.7	9.8	8.8
8	******	******	******	15.4	12.3	10.6	9.7
6	******	******	20.9	16.1	13.4	11.9	11.0
4	******	29.2	21.9	18.1	15.7	14.2	13.4
3	41.9	30.0	23.7	20.1	17.6	16.1	15.4
2	42.2	33.0	27.2	23.6	21.1	19.6	18.9
1	50.6	42.1	36.1	32.0	29.2	27.5	27.0

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	76.	60.	63.
8	******	******	******	101.	56.	47.	52.
6	******	******	114.	65.	40.	36.	42.
4	******	108.	59.	40.	27.	26.	31.
3	82.	66.	41.	29.	21.	20.	25.
2	36.	39.	26.	20.	14.	14.	18.
1	14.	17.	12.	9.	6.	6.	8.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	.1	.1	.1
8	******	******	******	.2	.1	.1	.1
6	******	******	.3	.2	.1	.1	.1
4	******	.5	.2	.2	.1	.1	.1
3	.5	.4	.2	.2	.1	.1	.1
2	.3	.3	.2	.2	.1	.1	.1
1	.2	.3	.2	.1	.1	.1	.1

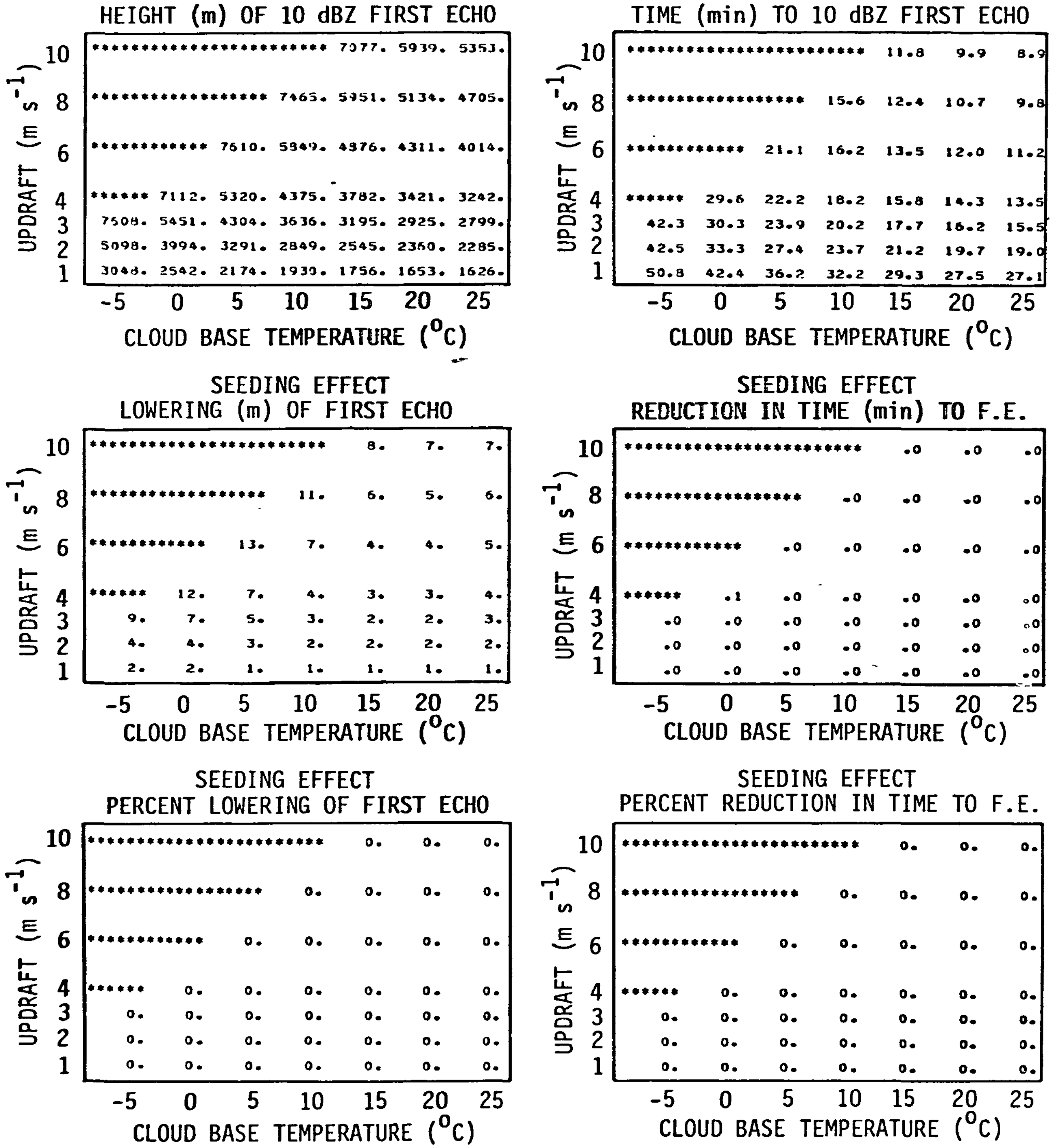
SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	1.	1.	1.
8	******	******	******	1.	1.	1.	1.
6	******	******	1.	1.	1.	1.	1.
4	******	2.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	0.	1.	1.	0.	0.	0.	1.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	1.	1.	1.
8	******	******	******	1.	1.	1.	1.
6	******	******	1.	1.	1.	1.	1.
4	******	2.	1.	1.	1.	1.	1.
3	1.	1.	1.	1.	1.	1.	1.
2	1.	1.	1.	1.	1.	1.	1.
1	0.	1.	1.	0.	0.	0.	1.

SEED WITH 1.00E-08 G/M3 OF SALT 3 AT .5 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS



SEED WITH 1.00E-02 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	5715.	4577.	3923.	3448.	3147.
8	******	6433.	4813.	3970.	3461.	3078.	2836.
6	7434.	5018.	3964.	3360.	2979.	2685.	2500.
4	5001.	3755.	3103.	2701.	2439.	2233.	2105.
3	4324.	3146.	2559.	2350.	2146.	1984.	1886.
2	3094.	2516.	2181.	1963.	1818.	1703.	1636.
1	2142.	1831.	1646.	1524.	1444.	1382.	1347.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	9.5	7.6	6.5	5.7	5.2
8	******	13.4	10.0	8.3	7.2	6.4	5.9
6	20.7	13.9	11.0	9.3	8.3	7.5	6.9
4	20.8	15.6	12.9	11.3	10.2	9.3	8.8
3	22.4	17.5	14.9	13.1	11.9	11.0	10.5
2	25.8	21.0	18.2	16.4	15.2	14.2	13.6
1	35.7	30.5	27.4	25.4	24.1	23.0	22.4

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	3162.	2497.	2214.
8	******	******	******	3506.	2497.	2061.	1975.
6	******	******	3660.	2496.	1901.	1629.	1519.
4	******	3369.	2224.	1679.	1345.	1191.	1140.
3	3593.	2312.	1650.	1289.	1051.	943.	915.
2	2007.	1482.	1113.	888.	728.	658.	651.
1	908.	712.	530.	407.	312.	272.	280.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	5.3	4.2	3.7
8	******	******	******	7.3	5.2	4.3	3.9
6	******	******	10.2	6.9	5.3	4.5	4.2
4	******	14.0	9.3	7.0	5.6	5.0	4.8
3	20.0	12.8	9.2	7.2	5.8	5.2	5.1
2	16.7	12.3	9.3	7.4	6.1	5.5	5.4
1	15.1	11.9	8.8	6.8	5.2	4.5	4.7

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	45.	42.	41.
8	******	******	******	47.	42.	40.	40.
6	******	******	48.	43.	39.	38.	38.
4	******	47.	42.	38.	36.	35.	35.
3	47.	42.	38.	35.	33.	32.	33.
2	39.	37.	34.	31.	29.	28.	28.
1	30.	28.	24.	21.	18.	16.	17.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	45.	42.	41.
8	******	******	******	47.	42.	40.	40.
6	******	******	48.	43.	39.	38.	38.
4	******	47.	42.	38.	36.	35.	35.
3	47.	42.	38.	35.	33.	32.	33.
2	39.	37.	34.	31.	29.	28.	28.
1	30.	28.	24.	21.	18.	16.	17.

SEED WITH 1.00E-03 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	7154.	5516.	4643.	4057.	3696.
8	******	******	5962.	4718.	4057.	3596.	3311.
6	******	6155.	4719.	3936.	3455.	3108.	2895.
4	6075.	4447.	3617.	3116.	2793.	2554.	2411.
3	4759.	3665.	3062.	2683.	2434.	2248.	2139.
2	3570.	2878.	2472.	2208.	2033.	1901.	1828.
1	2397.	2035.	1814.	1667.	1568.	1495.	1460.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	11.9	9.2	7.7	6.8	6.2
8	******	******	12.2	9.8	8.5	7.5	6.9
6	******	17.1	13.1	10.9	9.6	8.6	8.0
4	25.3	18.5	15.1	13.0	11.6	10.6	10.0
3	26.4	20.4	17.0	14.9	13.5	12.5	11.9
2	29.8	24.0	20.6	18.4	16.9	15.8	15.2
1	39.9	33.9	30.2	27.8	26.1	24.9	24.3

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	2442.	1899.	1664.
8	******	******	******	2759.	1900.	1544.	1400.
6	******	******	2904.	1920.	1425.	1207.	1124.
4	******	2677.	1709.	1264.	992.	870.	835.
3	2859.	1793.	1247.	956.	764.	679.	662.
2	1532.	1120.	822.	643.	514.	460.	459.
1	653.	509.	362.	264.	188.	157.	166.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	4.1	3.1	2.8
8	******	******	******	5.7	4.0	3.2	2.9
6	******	******	8.1	5.3	4.0	3.4	3.1
4	******	11.2	7.1	5.3	4.1	3.6	3.5
3	15.9	10.0	6.9	5.3	4.2	3.8	3.7
2	12.8	9.3	6.8	5.4	4.3	3.8	3.8
1	10.9	8.5	6.0	4.4	3.1	2.6	2.8

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	34.	32.	31.
8	******	******	******	37.	32.	30.	30.
6	******	******	39.	33.	29.	28.	28.
4	******	38.	32.	29.	26.	25.	26.
3	39.	33.	29.	26.	24.	23.	24.
2	30.	29.	25.	23.	20.	19.	20.
1	21.	20.	17.	14.	11.	10.	10.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	34.	32.	31.
8	******	******	******	37.	32.	30.	30.
6	******	******	38.	33.	29.	28.	28.
4	******	38.	32.	29.	26.	25.	26.
3	38.	33.	29.	26.	24.	23.	24.
2	30.	28.	25.	23.	20.	19.	20.
1	21.	20.	17.	14.	11.	10.	10.

SEED WITH 1.00E-04 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE

.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******************			6494.	5345.	4624.	4191.
8	************		6999.	5467.	4628.	4074.	3737.
6	******	7441.	5491.	4497.	3905.	3496.	3248.
4	7340.	5159.	4122.	3512.	3124.	2848.	2685.
3	5550.	4184.	3452.	2999.	2703.	2490.	2368.
2	4058.	3233.	2752.	2441.	2233.	2084.	2004.
1	2650.	2233.	1973.	1799.	1677.	1592.	1557.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******************			10.8	8.9	7.7	7.0
8	************		14.6	11.4	9.6	8.5	7.8
6	******	20.7	15.3	12.5	10.8	9.7	9.0
4	30.6	21.5	17.2	14.6	13.0	11.9	11.2
3	30.8	23.2	19.2	16.7	15.0	13.8	13.2
2	33.8	26.9	22.9	20.3	18.6	17.4	16.7
1	44.2	37.2	32.9	30.0	27.9	26.5	25.9

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************************				1741.	1321.	1170.
8	******************			2009.	1329.	1066.	974.
6	************		2133.	1359.	976.	819.	771.
4	******	1964.	1205.	868.	661.	576.	560.
3	2067.	1275.	857.	640.	495.	437.	434.
2	1043.	765.	542.	410.	313.	277.	283.
1	400.	310.	202.	133.	80.	61.	70.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************************				2.9	2.2	1.9
8	******************			4.2	2.8	2.2	2.0
6	************		5.9	3.8	2.7	2.3	2.1
4	******	8.2	5.0	3.6	2.8	2.4	2.3
3	11.5	7.1	4.8	3.6	2.7	2.4	2.4
2	8.7	6.4	4.5	3.4	2.6	2.3	2.4
1	6.7	5.2	3.4	2.2	1.3	1.0	1.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************************				25.	22.	22.
8	******************			27.	22.	21.	21.
6	************		28.	23.	20.	19.	19.
4	******	28.	23.	20.	17.	17.	17.
3	27.	23.	20.	18.	15.	15.	15.
2	20.	19.	16.	14.	12.	12.	12.
1	13.	12.	9.	7.	5.	4.	4.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	************************				25.	22.	22.
8	******************			27.	22.	21.	21.
6	************		28.	23.	20.	19.	19.
4	******	28.	23.	20.	17.	17.	17.
3	27.	23.	20.	18.	15.	15.	15.
2	20.	19.	16.	14.	12.	12.	12.
1	13.	12.	9.	7.	5.	4.	4.

SEED WITH 1.00E-05 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	7566.	6053.	5172.	4557.
8	******	******	******	6247.	5190.	4527.	4134.
6	******	******	6309.	5058.	4336.	3859.	3574.
4	******	5916.	4526.	3895.	3435.	3119.	2936.
3	6417.	4711.	3832.	3298.	2950.	2709.	2575.
2	4552.	3579.	3016.	2654.	2410.	2243.	2158.
1	2879.	2410.	2103.	1893.	1739.	1642.	1612.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	12.6	10.1	8.6	7.8
8	******	******	******	13.0	10.8	9.4	8.6
6	******	******	17.5	14.1	12.0	10.7	9.9
4	******	24.7	19.3	16.2	14.3	13.0	12.2
3	35.6	26.2	21.3	18.3	16.4	15.1	14.3
2	37.9	29.8	25.1	22.1	20.1	18.7	18.0
1	48.0	40.2	35.1	31.5	29.0	27.4	26.9

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	1032.	774.	703.
8	******	******	******	1229.	768.	612.	577.
6	******	******	1315.	798.	544.	456.	445.
4	******	1208.	701.	485.	350.	305.	309.
3	1200.	747.	477.	341.	247.	218.	226.
2	550.	419.	278.	197.	137.	118.	129.
1	171.	134.	72.	38.	17.	12.	15.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	1.7	1.3	1.2
8	******	******	******	2.6	1.6	1.3	1.2
6	******	******	3.7	2.2	1.5	1.3	1.2
4	******	5.0	2.9	2.0	1.5	1.3	1.3
3	6.7	4.2	2.6	1.9	1.4	1.2	1.3
2	4.6	3.5	2.3	1.6	1.1	1.0	1.1
1	2.8	2.2	1.2	.6	.3	.2	.2

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	15.	13.	13.
8	******	******	******	16.	13.	12.	12.
6	******	******	17.	14.	11.	11.	11.
4	******	17.	13.	11.	9.	9.	10.
3	16.	14.	11.	9.	8.	7.	8.
2	11.	10.	8.	7.	5.	5.	6.
1	6.	5.	3.	2.	1.	1.	1.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (°C)	-5	0	5	10	15	20	25
10	******	******	******	******	15.	13.	13.
8	******	******	******	16.	13.	12.	12.
6	******	******	17.	14.	11.	11.	11.
4	******	17.	13.	11.	9.	9.	10.
3	16.	14.	11.	9.	8.	7.	8.
2	11.	10.	8.	7.	5.	5.	6.
1	6.	5.	3.	2.	1.	1.	1.

SEED WITH 1.00E-06 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	6703.	5657.	5079.
8	******	******	******	6996.	5694.	4919.	4486.
6	******	******	7106.	5563.	4697.	4159.	3854.
4	******	6652.	5074.	4215.	3678.	3330.	3140.
3	7215.	5188.	4150.	3534.	3129.	2867.	2733.
2	4944.	3864.	3214.	2801.	2517.	2336.	2256.
1	3014.	2515.	2163.	1926.	1754.	1652.	1625.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	11.2	9.4	8.5
8	******	******	******	14.6	11.8	10.2	9.3
6	******	******	19.7	15.5	13.0	11.6	10.7
4	******	27.7	21.1	17.6	15.3	13.9	13.1
3	40.1	28.8	23.1	19.6	17.4	15.9	15.2
2	41.2	32.2	26.8	23.3	21.0	19.5	18.8
1	50.2	41.9	36.1	32.1	29.2	27.5	27.1

SEEDING EFFECT LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	383.	283.	281.
8	******	******	******	480.	274.	221.	225.
6	******	******	518.	293.	183.	155.	165.
4	******	472.	252.	163.	107.	95.	105.
3	402.	270.	159.	105.	68.	60.	68.
2	158.	134.	80.	50.	30.	25.	31.
1	36.	29.	12.	5.	2.	1.	2.

SEEDING EFFECT REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	.6	.5	.5
8	******	******	******	1.0	.6	.5	.5
6	******	******	1.4	.8	.5	.4	.5
4	******	2.0	1.1	.7	.4	.4	.4
3	2.2	1.5	.9	.6	.4	.3	.4
2	1.3	1.1	.7	.4	.2	.2	.3
1	.6	.5	.2	.1	.0	.0	.0

SEEDING EFFECT PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	5.	5.	5.
8	******	******	******	6.	5.	4.	5.
6	******	******	7.	5.	4.	4.	4.
4	******	7.	5.	4.	3.	3.	3.
3	5.	5.	4.	3.	2.	2.	2.
2	3.	3.	2.	2.	1.	1.	1.
1	1.	1.	1.	0.	0.	0.	0.

SEEDING EFFECT PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	5.	5.	5.
8	******	******	******	6.	5.	4.	5.
6	******	******	7.	5.	4.	4.	4.
4	******	7.	5.	4.	3.	3.	3.
3	5.	5.	4.	3.	2.	2.	2.
2	3.	3.	2.	2.	1.	1.	1.
1	1.	1.	1.	0.	0.	0.	0.

SEED WITH 1.00E-07 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	7021.	5996.	5309.
8	******	******	******	7392.	5913.	5103.	4670.
6	******	******	7532.	5807.	4852.	4290.	3991.
4	******	7041.	5285.	4354.	3769.	3410.	3229.
3	7557.	5414.	4284.	3624.	3188.	2919.	2792.
2	5080.	3978.	3283.	2845.	2543.	2358.	2283.
1	3046.	2540.	2174.	1930.	1756.	1653.	1626.

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	11.7	9.8	8.8
8	******	******	******	15.4	12.3	10.6	9.7
6	******	******	20.9	16.1	13.5	11.9	11.1
4	******	29.3	22.0	18.1	15.7	14.2	13.5
3	42.0	30.1	23.8	20.1	17.7	16.2	15.5
2	42.3	33.1	27.4	23.7	21.2	19.7	19.0
1	50.8	42.3	36.2	32.2	29.3	27.6	27.1

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	64.	49.	52.
8	******	******	******	84.	44.	36.	40.
6	******	******	92.	49.	28.	24.	28.
4	******	82.	41.	25.	16.	14.	17.
3	61.	44.	24.	15.	9.	3.	10.
2	22.	20.	11.	7.	4.	3.	4.
1	4.	3.	1.	1.	0.	0.	0.

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	.1	.1	.1
8	******	******	******	.2	.1	.1	.1
6	******	******	.3	.1	.1	.1	.1
4	******	.3	.2	.1	.1	.1	.1
3	.3	.2	.1	.1	.1	.0	.1
2	.2	.2	.1	.1	.0	.0	.0
1	.1	.1	.0	.0	.0	.0	.0

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	1.	1.	1.
8	******	******	******	1.	1.	1.	1.
6	******	******	1.	1.	1.	1.	1.
4	******	1.	1.	1.	0.	0.	1.
3	1.	1.	1.	0.	0.	0.	0.
2	0.	1.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	-5	0	5	10	15	20	25
10	******	******	******	******	1.	1.	1.
8	******	******	******	1.	1.	1.	1.
6	******	******	1.	1.	1.	1.	1.
4	******	1.	1.	1.	0.	0.	1.
3	1.	1.	1.	0.	0.	0.	0.
2	0.	1.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

SEED WITH 1.00E-08 G/M3 OF SALT 3 AT 1.0 KM ABOVE CLOUD BASE
.5 X ADIABATIC WATER CONTENTS

HEIGHT (m) OF 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	******	******	7078.	5940.	5355.
8	******	******	******	7467.	5953.	5136.	4705.
6	******	******	7613.	5851.	4877.	4312.	4016.
4	******	7115.	5322.	4377.	3783.	3423.	3244.
3	7511.	5454.	4306.	3637.	3196.	2926.	2801.
2	5099.	3996.	3292.	2850.	2546.	2361.	2286.
1	3049.	2543.	2176.	1931.	1757.	1654.	1627.

CLOUD BASE TEMPERATURE (^{o}C)

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	******	******	11.8	9.9	8.9
8	******	******	******	15.6	12.4	10.7	9.8
6	******	******	21.1	16.3	13.5	12.0	11.2
4	******	29.6	22.2	18.2	15.8	14.3	13.5
3	42.3	30.3	23.9	20.2	17.8	16.3	15.6
2	42.5	33.3	27.4	23.8	21.2	19.7	19.1
1	50.8	42.4	36.3	32.2	29.3	27.6	27.1

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
LOWERING (m) OF FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	******	******	7.	5.	6.
8	******	******	******	9.	5.	4.	5.
6	******	******	10.	5.	3.	3.	3.
4	******	9.	5.	3.	2.	2.	2.
3	6.	5.	3.	2.	1.	1.	1.
2	2.	2.	1.	1.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	******	******	.0	.0	.0
8	******	******	******	.0	.0	.0	.0
6	******	******	.0	.0	.0	.0	.0
4	******	.0	.0	.0	.0	.0	.0
3	.0	.0	.0	.0	.0	.0	.0
2	.0	.0	.0	.0	.0	.0	.0
1	.0	.0	.0	.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT LOWERING OF FIRST ECHO

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	******	******	0.	0.	0.
8	******	******	******	0.	0.	0.	0.
6	******	******	0.	0.	0.	0.	0.
4	******	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1})	-5	0	5	10	15	20	25
10	******	******	******	******	0.	0.	0.
8	******	******	******	0.	0.	0.	0.
6	******	******	0.	0.	0.	0.	0.
4	******	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

APPENDIX T

TRAJECTORY MODEL RESULTS

SALT 2 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	10.0	8.5	7.5	7.0	6.5	6.0
6	11.5	10.0	8.5	8.0	7.5	7.5
4	14.0	12.5	11.0	10.0	9.5	9.5
3	16.5	14.5	13.0	12.0	11.5	11.0
2	20.5	18.5	16.5	15.5	15.0	14.5
1	34.5	29.5	27.5	25.5	24.5	24.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	4.5	3.0	2.5	2.0	1.5	2.0
6	4.0	2.5	2.5	2.0	1.5	1.5
4	4.5	3.0	2.5	2.0	2.0	1.5
3	5.0	4.0	3.0	2.0	1.5	2.0
2	7.0	4.5	4.0	3.0	2.5	2.5
1	8.0	7.5	5.0	4.0	3.0	2.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	31.	26.	25.	22.	19.	25.
6	26.	20.	23.	20.	17.	17.
4	24.	19.	19.	17.	17.	14.
3	23.	22.	19.	14.	12.	15.
2	25.	20.	20.	16.	14.	15.
1	19.	20.	15.	14.	11.	8.

T-01

SALT 2 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	12.0	10.0	8.5	7.5	7.0	7.0
6	13.0	11.0	9.5	9.0	8.5	8.0
4	15.5	13.5	12.0	11.0	10.5	10.5
3	18.0	16.0	14.0	13.5	12.5	12.5
2	23.0	20.5	18.0	17.0	16.5	16.0
1	39.0	33.0	30.0	28.0	26.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	2.5	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.0	.5	1.0
4	3.0	2.0	1.5	1.0	1.0	.5
3	3.5	2.5	2.0	.5	.5	.5
2	4.5	2.5	2.5	1.5	1.0	1.0
1	3.5	4.0	2.5	1.5	1.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	17.	13.	15.	17.	13.	13.
6	16.	12.	14.	10.	6.	11.
4	16.	13.	11.	8.	9.	5.
3	16.	14.	13.	4.	4.	4.
2	16.	11.	12.	8.	6.	6.
1	8.	11.	8.	5.	4.	0.

SALT 2 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	13.0	11.0	9.0	8.5	8.0	7.5
6	14.5	12.0	10.5	9.5	9.0	9.0
4	17.0	14.5	13.0	12.0	11.0	11.0
3	20.0	17.0	15.0	14.0	13.0	13.0
2	25.5	22.0	19.5	18.0	17.0	17.0
1	42.0	36.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	1.5	.5	1.0	.5	0.0	.5
6	1.0	.5	.5	.5	0.0	0.0
4	1.5	1.0	.5	0.0	.5	0.0
3	1.5	1.5	1.0	0.0	0.0	0.0
2	2.0	1.0	1.0	.5	.5	0.0
1	.5	1.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	10.	4.	10.	6.	0.	6.
6	6.	4.	5.	5.	0.	0.
4	8.	6.	4.	0.	4.	0.
3	7.	8.	6.	0.	0.	0.
2	7.	4.	5.	3.	3.	0.
1	1.	3.	0.	0.	0.	0.

SALT 2 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.0	15.5	13.5	12.0	11.5	11.0
3	21.0	18.0	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	.5	0.0	0.0	0.0	0.0	0.0
3	.5	.5	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	3.	0.	0.	0.	0.	0.
3	2.	3.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-02

SALT 2 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-03

SALT 2 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-08 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	9.5	7.5	7.0	6.0	5.5	5.5
6	10.5	8.5	7.5	7.0	6.5	6.0
4	12.0	10.0	9.0	8.5	7.5	7.5
3	13.5	12.0	10.5	9.5	9.0	8.5
2	16.0	14.0	12.5	11.5	11.0	10.5
1	24.5	20.5	18.5	16.5	15.5	15.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	5.0	4.0	3.0	3.0	2.5	2.5
6	5.0	4.0	3.5	3.0	2.5	3.0
4	6.5	5.5	4.5	3.5	4.0	3.5
3	8.0	6.5	5.5	4.5	4.0	4.5
2	11.5	9.0	8.0	7.0	6.5	6.5
1	18.0	16.5	14.0	13.0	12.0	11.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	34.	35.	30.	33.	31.	31.
6	32.	32.	32.	30.	28.	33.
4	35.	35.	33.	29.	35.	32.
3	37.	35.	34.	32.	31.	35.
2	42.	39.	39.	38.	37.	38.
1	42.	45.	43.	44.	44.	42.

T-04

SALT 2 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	11.0	9.0	7.5	7.0	6.5	6.0
6	11.5	9.5	8.5	8.0	7.0	7.0
4	13.5	11.5	10.0	9.5	8.5	8.5
3	15.5	13.0	11.5	10.5	10.0	9.5
2	19.0	16.0	14.0	13.0	12.0	12.0
1	29.0	25.5	22.0	19.0	18.5	18.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	3.5	2.5	2.5	2.0	1.5	2.0
6	4.0	3.0	2.5	2.0	2.0	2.0
4	5.0	4.0	3.5	2.5	3.0	2.5
3	6.0	5.5	4.5	3.5	3.0	3.5
2	9.5	7.0	6.5	5.5	5.5	5.0
1	13.5	11.5	10.5	10.5	9.0	8.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	24.	22.	25.	22.	19.	25.
6	26.	24.	23.	20.	22.	22.
4	27.	26.	26.	21.	26.	23.
3	28.	30.	28.	25.	23.	27.
2	35.	30.	32.	30.	31.	29.
1	32.	31.	32.	36.	33.	30.

T-05

SALT 2 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	12.0	10.0	8.5	7.5	7.0	6.5
6	13.0	11.0	9.5	8.5	8.0	7.5
4	15.0	12.5	11.0	10.0	9.5	9.0
3	17.0	14.5	13.0	11.5	11.0	10.5
2	21.0	18.0	16.0	14.5	13.5	13.5
1	33.5	29.0	25.5	23.0	22.0	21.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	2.5	1.5	1.5	1.5	1.0	1.5
6	2.5	1.5	1.5	1.5	1.0	1.5
4	3.5	3.0	2.5	2.0	2.0	2.0
3	4.5	4.0	3.0	2.5	2.0	2.5
2	6.5	5.0	4.5	4.0	4.0	3.5
1	9.0	8.0	7.0	6.5	5.5	5.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	17.	13.	15.	17.	13.	19.
6	16.	12.	14.	15.	11.	17.
4	19.	19.	19.	17.	17.	18.
3	21.	22.	19.	18.	15.	19.
2	24.	22.	22.	22.	23.	[illegible]
1	21.	22.	22.	22.	20.	19.

SALT 2 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.0	8.5	8.0
4	15.5	14.0	12.5	11.0	10.0	10.0
3	19.0	16.0	14.5	12.5	12.0	11.5
2	24.0	20.5	18.0	16.0	15.5	14.5
1	37.5	32.5	28.5	26.5	25.0	24.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	1.0	.5	.5	.5	.5	.5
6	1.0	.5	.5	1.0	.5	1.0
4	2.0	1.5	1.0	1.0	1.5	1.0
3	2.5	2.5	1.5	1.5	1.0	1.5
2	3.5	2.5	2.5	2.5	2.0	2.5
1	5.0	4.5	4.0	3.0	2.5	2.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	7.	4.	5.	6.	6.	6.
6	6.	4.	5.	10.	6.	11.
4	11.	10.	7.	8.	13.	9.
3	12.	14.	9.	11.	8.	12.
2	13.	11.	12.	14.	11.	15.
1	12.	12.	12.	10.	9.	8.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 2 1.00E-06 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.0	11.5	10.0	8.5	8.0	7.5
6	15.5	12.5	11.0	10.0	9.0	8.5
4	18.0	15.0	13.0	12.0	11.0	10.5
3	21.0	18.0	15.5	14.0	13.0	12.5
2	26.5	22.5	19.5	17.5	17.0	16.5
1	41.5	35.5	32.0	29.0	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	.5	0.0	0.0	.5	0.0	.5
6	0.0	0.0	0.0	0.0	0.0	.5
4	.5	.5	.5	0.0	.5	.5
3	.5	.5	.5	0.0	0.0	.5
2	1.0	.5	1.0	1.0	.5	.5
1	1.0	1.5	.5	.5	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	3.	0.	0.	6.	0.	6.
6	0.	0.	0.	0.	0.	6.
4	3.	3.	4.	0.	4.	5.
3	2.	3.	3.	0.	0.	4.
2	4.	2.	5.	5.	3.	3.
1	2.	4.	2.	2.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

T-06

SALT 2 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.0	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	19.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	.5	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	3.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

T-07

SALT 2 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.0	9.5	8.5	8.0	7.5	7.0
6	13.0	11.5	10.0	9.5	9.0	8.5
4	16.0	14.5	13.0	12.0	11.5	11.0
3	19.0	17.0	15.5	14.0	13.0	13.0
2	24.5	22.5	20.5	18.5	17.5	17.0
1	42.0	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	2.0	1.5	1.0	.5	1.0
6	2.5	1.0	1.0	.5	0.0	.5
4	2.5	1.0	.5	0.0	0.0	0.0
3	2.5	1.5	.5	0.0	0.0	0.0
2	3.0	.5	0.0	0.0	0.0	0.0
1	.5	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	24.	17.	15.	11.	6.	13.
6	16.	8.	9.	5.	0.	6.
4	14.	6.	4.	0.	0.	0.
3	12.	8.	3.	0.	0.	0.
2	11.	2.	0.	0.	0.	0.
1	1.	1.	0.	0.	0.	0.

SALT 2 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.0	10.5	9.5	8.5	8.0	8.0
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.5	15.5	13.5	12.0	11.5	11.0
3	20.5	18.0	16.0	14.0	13.0	13.0
2	25.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.5	1.0	.5	.5	0.0	0.0
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.0	0.0	0.0	0.0	0.0	0.0
3	1.0	.5	0.0	0.0	0.0	0.0
2	1.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.	9.	5.	6.	0.	0.
6	6.	0.	0.	0.	0.	0.
4	5.	0.	0.	0.	0.	0.
3	5.	3.	0.	0.	0.	0.
2	4.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-09

SALT 2 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-11

SALT 2 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.0	5.5	5.5
6	10.5	9.0	8.0	7.0	6.5	6.5
4	12.5	10.5	9.5	9.0	8.0	8.0
3	14.0	12.0	11.0	10.5	9.5	9.5
2	17.0	15.0	14.0	13.0	12.5	12.5
1	26.5	23.5	22.5	21.5	20.5	20.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	5.0	3.5	3.0	3.0	2.5	2.5
6	5.0	3.5	3.0	3.0	2.5	2.5
4	6.0	5.0	4.0	3.0	3.5	3.0
3	7.5	6.5	5.0	3.5	3.5	3.5
2	10.5	8.0	6.5	5.5	5.0	4.5
1	16.0	13.5	10.0	8.0	7.0	6.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	34.	30.	30.	33.	31.	31.
6	32.	28.	27.	30.	28.	28.
4	32.	32.	30.	25.	30.	27.
3	35.	35.	31.	25.	27.	27.
2	38.	35.	32.	30.	29.	26.
1	38.	36.	31.	27.	25.	23.

SALT 2 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.0	9.0	7.5	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	14.0	12.0	10.5	10.0	9.0	9.0
3	16.0	13.5	12.5	11.5	10.5	10.5
2	19.0	16.5	15.5	14.5	13.5	13.5
1	30.5	27.0	24.5	23.0	22.5	22.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	2.5	2.5	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	4.5	3.5	3.0	2.0	2.5	2.0
3	5.5	5.0	3.5	2.5	2.5	2.5
2	9.5	6.5	5.0	4.0	4.0	3.5
1	12.0	10.0	8.0	6.5	5.0	4.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	24.	22.	25.	22.	19.	25.
6	23.	20.	18.	20.	17.	22.
4	24.	23.	22.	17.	22.	18.
3	26.	27.	22.	18.	19.	19.
2	31.	28.	24.	22.	23.	21.
1	28.	27.	25.	22.	18.	17.

SALT 2 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.5	10.0	8.5	7.5	7.0	7.0
6	13.0	11.0	9.5	9.0	8.0	8.0
4	15.5	13.0	11.5	10.5	10.0	9.5
3	17.5	15.0	13.5	12.5	11.5	11.5
2	21.5	18.5	17.0	15.5	14.5	14.5
1	34.0	30.0	27.5	25.5	25.0	24.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.0	1.0	1.0
4	3.0	2.5	2.0	1.5	1.5	1.5
3	4.0	3.5	2.5	1.5	1.5	1.5
2	6.0	4.5	3.5	3.0	3.0	2.5
1	8.5	7.0	5.0	4.0	2.5	2.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.	13.	15.	17.	13.	13.
6	16.	12.	14.	10.	11.	11.
4	16.	16.	15.	13.	13.	16.
3	19.	19.	16.	11.	12.	12.
2	22.	20.	17.	16.	17.	15.
1	20.	19.	15.	14.	9.	8.

SALT 2 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.5	12.5	11.5	10.5	10.5
3	19.5	16.5	14.5	13.5	12.5	12.0
2	24.5	21.0	18.5	17.0	16.0	15.5
1	37.5	33.0	30.0	28.0	27.0	26.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	1.0	.5	.5	.5	.5	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.0	1.0	.5	1.0	.5
3	2.0	2.0	1.5	.5	.5	1.0
2	3.0	2.0	2.0	1.5	1.5	1.5
1	5.0	4.0	2.5	1.5	.5	.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	7.	4.	5.	6.	6.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	6.	7.	4.	9.	5.
3	9.	11.	9.	4.	4.	8.
2	11.	9.	10.	8.	9.	9.
1	12.	11.	8.	5.	2.	2.

SALT 2 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	7.5
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.0	13.5	12.0	11.0	11.0
3	21.5	18.0	15.5	14.0	13.0	13.0
2	27.0	22.5	20.0	18.0	17.0	17.0
1	41.5	36.0	32.0	29.0	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	.5
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	.5	0.0	0.0	.5	0.0
3	0.0	.5	.5	0.0	0.0	0.0
2	.5	.5	.5	.5	.5	0.0
1	1.0	1.0	.5	.5	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	6.
6	0.	0.	0.	0.	0.	0.
4	0.	3.	0.	0.	4.	0.
3	0.	3.	3.	0.	0.	0.
2	2.	2.	2.	3.	3.	0.
1	2.	3.	2.	2.	0.	0.

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SALT ? 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.0	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	.5	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	3.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

SALT 2 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-14

SALT 2 1.00E-02 G/M3

ADIABATIC WATER CONTENTS

SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.5	10.0	9.0	8.5	8.0	7.5
6	13.0	11.5	10.5	10.0	9.0	9.0
4	16.5	14.5	13.5	12.0	11.5	11.0
3	19.5	17.5	16.0	14.0	13.0	13.0
2	25.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.0	1.5	1.0	.5	0.0	.5
6	2.5	1.0	.5	0.0	0.0	0.0
4	2.0	1.0	0.0	0.0	0.0	0.0
3	2.0	1.0	0.0	0.0	0.0	0.0
2	2.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	21.	13.	10.	6.	0.	6.
6	16.	8.	5.	0.	0.	0.
4	11.	6.	0.	0.	0.	0.
3	9.	5.	0.	0.	0.	0.
2	7.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-15

SALT 2 1.00E-03 G/M3

ADIABATIC WATER CONTENTS

SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.0	11.0	9.5	9.0	8.0	8.0
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.5	15.5	13.5	12.0	11.5	11.0
3	21.0	18.5	15.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.5	.5	.5	0.0	0.0	0.0
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.0	0.0	0.0	0.0	0.0	0.0
3	.5	0.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.	4.	5.	0.	0.	0.
6	6.	0.	0.	0.	0.	0.
4	5.	0.	0.	0.	0.	0.
3	2.	0.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-05 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-16

SALT 2 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-17

SALT 2 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	13.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.5	9.0	8.0	7.5	7.0	6.5
6	12.0	10.5	9.5	8.5	8.5	8.0
4	14.5	13.0	12.0	11.5	11.0	11.0
3	17.0	16.0	15.0	14.0	13.0	13.0
2	22.5	21.0	20.5	18.5	17.5	17.0
1	39.0	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.0	2.5	2.0	1.5	1.0	1.5
6	3.5	2.0	1.5	1.5	.5	1.0
4	4.0	2.5	1.5	.5	.5	0.0
3	4.5	2.5	1.0	0.0	0.0	0.0
2	5.0	2.0	0.0	0.0	0.0	0.0
1	3.5	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	28.	22.	20.	17.	13.	19.
6	23.	16.	14.	15.	6.	11.
4	22.	16.	11.	4.	4.	0.
3	21.	14.	6.	0.	0.	0.
2	18.	9.	0.	0.	0.	0.
1	8.	0.	0.	0.	0.	0.

T-18

SALT 2 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	12.0	10.0	9.5	8.0	7.5	7.0
6	13.0	11.5	10.5	9.5	9.0	8.5
4	16.0	14.0	13.0	12.0	11.5	11.0
3	19.5	17.0	15.0	14.0	13.0	13.0
2	24.0	22.0	20.5	18.5	17.5	17.0
1	41.0	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	2.5	1.5	1.5	1.0	.5	1.0
6	2.5	1.0	.5	.5	0.0	.5
4	2.5	1.5	.5	0.0	0.0	0.0
3	3.0	1.5	0.0	0.0	0.0	0.0
2	3.5	1.0	0.0	0.0	0.0	0.0
1	1.5	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	17.	13.	15.	11.	6.	13.
6	16.	8.	5.	5.	0.	6.
4	14.	10.	4.	0.	0.	0.
3	14.	9.	0.	0.	0.	0.
2	13.	4.	0.	0.	0.	0.
1	4.	0.	0.	0.	0.	0.

T-19

SALT 2 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	8.0	7.5
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.5	15.0	13.5	12.0	11.5	11.0
3	20.5	18.0	16.0	14.0	13.0	13.0
2	26.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	1.0	.5	.5	.5	0.0	.5
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.0	.5	0.0	0.0	0.0	0.0
3	1.0	.5	0.0	0.0	0.0	0.0
2	1.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	7.	4.	5.	6.	0.	6.
6	6.	0.	0.	0.	0.	0.
4	5.	3.	0.	0.	0.	0.
3	5.	3.	0.	0.	0.	0.
2	5.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-06 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 2 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-21

SALT 2 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	9.0	7.5	6.5	6.0	6.0	6.0
6	10.0	9.0	8.0	7.0	7.0	7.0
4	12.5	11.0	10.0	9.0	9.0	8.5
3	14.5	13.0	12.0	11.0	10.5	10.5
2	18.5	17.0	15.5	14.5	14.0	14.0
1	32.0	29.0	25.5	25.0	24.0	24.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	4.0	3.5	3.0	2.0	2.0
6	5.5	3.5	3.0	3.0	2.0	2.0
4	6.0	4.5	3.5	3.0	2.5	2.5
3	7.0	5.5	4.0	3.0	2.5	2.5
2	9.0	6.0	5.0	4.0	3.5	3.0
1	10.5	8.0	7.0	4.5	3.5	2.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	38.	35.	35.	33.	25.	25.
6	35.	28.	27.	30.	22.	22.
4	32.	29.	26.	25.	22.	23.
3	33.	30.	25.	21.	19.	19.
2	31.	26.	24.	22.	20.	18.
1	25.	22.	22.	15.	13.	9.

SALT 3 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.5	9.0	7.5	7.0	6.5	6.5
6	11.5	10.0	9.0	8.0	8.0	7.5
4	14.5	12.5	11.0	10.5	10.0	10.0
3	16.5	15.0	13.5	12.5	12.0	12.0
2	21.0	19.0	17.0	16.0	15.5	15.5
1	38.0	33.0	31.0	28.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.0	2.5	2.5	2.0	1.5	1.5
6	4.0	2.5	2.0	2.0	1.0	1.5
4	4.0	3.0	2.5	1.5	1.5	1.0
3	5.0	3.5	2.5	1.5	1.0	1.0
2	6.5	4.0	3.5	2.5	2.0	1.5
1	4.5	4.0	1.5	1.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	28.	22.	25.	22.	19.	19.
6	26.	20.	18.	20.	11.	17.
4	22.	19.	19.	13.	13.	9.
3	23.	19.	16.	11.	8.	8.
2	24.	17.	17.	14.	11.	9.
1	11.	11.	5.	3.	0.	0.

T-22

SALT 3 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.0	10.0	8.5	8.0	7.5	7.0
6	13.0	11.5	10.0	9.0	8.5	8.5
4	15.5	13.5	12.0	11.5	11.0	11.0
3	18.5	16.0	14.5	13.5	13.0	13.0
2	23.5	21.0	19.0	17.5	17.0	17.0
1	42.0	36.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.5	1.5	1.5	1.0	.5	1.0
6	2.5	1.0	1.0	1.0	.5	.5
4	3.0	2.0	1.5	.5	.5	0.0
3	3.0	2.5	1.5	.5	0.0	0.0
2	4.0	2.0	1.5	1.0	.5	0.0
1	.5	1.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	17.	13.	15.	11.	6.	13.
6	16.	8.	9.	10.	6.	6.
4	16.	13.	11.	4.	4.	0.
3	14.	14.	9.	4.	0.	0.
2	15.	9.	7.	5.	3.	0.
1	1.	3.	0.	0.	0.	0.

T-23

SALT 3 1.00E-05 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.0	11.0	9.5	8.5	8.0	8.0
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.0	15.0	13.0	12.0	11.5	11.0
3	20.0	18.0	15.5	14.0	13.0	13.0
2	26.5	23.0	20.5	18.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.5	.5	.5	.5	0.0	0.0
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.5	.5	.5	0.0	0.0	0.0
3	1.5	.5	.5	0.0	0.0	0.0
2	1.0	0.0	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.	4.	5.	6.	0.	0.
6	6.	0.	0.	0.	0.	0.
4	8.	3.	4.	0.	0.	0.
3	7.	3.	3.	0.	0.	0.
2	4.	0.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

SALT 3 1.00E-06 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.0	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	.5	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	3.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-07 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-08 G/M3
ADIABATIC WATER CONTENTS .
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-25

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	8.0	6.5	6.0	5.5	5.0	5.0
6	8.5	7.5	6.5	6.0	6.0	5.5
4	10.5	9.0	8.0	7.5	7.0	6.5
3	11.5	10.5	9.0	8.5	8.0	8.0
2	14.0	12.5	11.0	10.5	10.0	9.5
1	20.0	17.5	16.0	15.0	14.0	14.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	6.5	5.0	4.0	3.5	3.0	3.0
6	7.0	5.0	4.5	4.0	3.0	3.5
4	8.0	6.5	5.5	4.5	4.5	4.5
3	10.0	8.0	7.0	5.5	5.0	5.0
2	13.5	10.5	9.5	8.0	7.5	7.5
1	22.5	19.5	16.5	14.5	13.5	12.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	45.	43.	40.	39.	38.	38.
6	45.	40.	41.	40.	33.	39.
4	43.	42.	41.	38.	39.	41.
3	47.	43.	44.	39.	38.	38.
2	49.	46.	46.	43.	43.	44.
1	53.	53.	51.	49.	49.	47.

SALT 3 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.5	6.0	5.5
6	10.5	9.0	7.5	7.0	6.5	6.5
4	12.0	10.5	9.5	8.5	8.0	8.0
3	13.5	12.0	10.5	10.0	9.5	9.0
2	16.0	14.0	13.0	12.0	11.5	11.0
1	27.5	23.5	21.5	18.5	18.0	18.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.5	3.0	2.5	2.5
4	6.5	5.0	4.0	3.5	3.5	3.0
3	8.0	6.5	5.5	4.0	3.5	4.0
2	11.5	9.0	7.5	6.5	6.0	6.0
1	15.0	13.5	11.0	11.0	9.5	8.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	29.	32.	30.	29.	28.
4	35.	32.	30.	29.	30.	27.
3	37.	35.	34.	29.	27.	31.
2	42.	39.	37.	35.	34.	35.
1	35.	36.	34.	37.	35.	30.

SALT 3 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	11.0	9.0	8.0	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	13.5	11.5	10.5	9.5	9.0	8.5
3	15.5	13.5	11.5	11.0	10.5	10.0
2	19.5	17.0	14.5	13.5	12.5	12.5
1	33.0	28.5	25.5	23.5	22.5	22.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	5.0	4.0	3.0	2.5	2.5	2.5
3	6.0	5.0	4.5	3.0	2.5	3.0
2	8.0	6.0	6.0	5.0	5.0	4.5
1	9.5	8.5	7.0	6.0	5.0	4.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	25.
6	23.	20.	18.	20.	17.	22.
4	27.	26.	22.	21.	22.	23.
3	28.	27.	28.	21.	19.	23.
2	29.	26.	29.	27.	29.	26.
1	22.	23.	22.	20.	18.	15.

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SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	12.5	10.0	9.5	7.5	7.0	7.0
6	11.0	11.0	9.5	9.5	8.0	8.0
4	15.0	13.0	11.5	10.5	9.5	9.5
3	17.5	15.0	13.5	12.5	11.5	11.0
2	23.0	19.5	17.5	16.0	15.0	15.0
1	40.0	34.5	30.5	28.5	27.0	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.5	1.0	1.0
4	3.5	2.5	2.0	1.5	2.0	1.5
3	4.0	3.5	2.5	1.5	1.5	2.0
2	4.5	3.5	3.0	2.5	2.5	2.0
1	2.5	2.5	2.0	1.0	.5	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.	13.	15.	17.	13.	13.
6	16.	12.	14.	15.	11.	11.
4	19.	16.	15.	13.	17.	14.
3	19.	19.	16.	11.	12.	15.
2	16.	15.	15.	14.	14.	12.
1	6.	7.	6.	3.	2.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.0	12.5	11.5	10.5	10.5
3	20.5	17.0	15.0	14.0	13.0	12.5
2	26.0	22.5	20.0	18.0	17.0	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	1.0	.5	.5	.5	.5	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.5	1.0	.5	1.0	.5
3	1.0	1.5	1.0	0.0	0.0	.5
2	1.5	.5	.5	.5	.5	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	7.	4.	5.	6.	6.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	10.	7.	4.	9.	5.
3	5.	8.	6.	0.	0.	4.
2	5.	2.	2.	3.	3.	0.
1	0.	1.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

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SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	8.5	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.0	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	.5	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	.5	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	6.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	4.	0.
3	0.	0.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-09 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.0	8.5	7.5	7.0	7.0	7.0
6	11.5	10.5	9.0	8.5	8.5	8.0
4	14.5	13.0	12.0	11.5	11.0	11.0
3	17.5	16.0	14.5	14.0	13.0	13.0
2	23.0	21.0	19.5	18.5	17.5	17.0
1	40.0	36.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.5	3.0	2.5	2.0	1.0	1.0
6	4.0	2.0	2.0	1.5	.5	1.0
4	4.0	2.5	1.5	.5	.5	0.0
3	4.0	2.5	1.5	0.0	0.0	0.0
2	4.5	2.0	1.0	0.0	0.0	0.0
1	2.5	1.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	31.	26.	25.	22.	13.	13.
6	26.	15.	10.	15.	6.	11.
4	22.	16.	11.	4.	4.	0.
3	19.	14.	9.	0.	0.	0.
2	16.	9.	5.	0.	0.	0.
1	6.	3.	0.	0.	0.	0.

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.5	10.0	8.5	8.0	7.5	7.5
6	13.0	11.5	10.5	9.5	9.0	9.0
4	16.0	14.5	13.0	12.0	11.5	11.0
3	19.5	17.5	15.0	14.0	13.0	13.0
2	25.0	23.0	20.5	18.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.0	1.5	1.5	1.0	.5	.5
6	2.5	1.0	.5	.5	0.0	0.0
4	2.5	1.0	.5	0.0	0.0	0.0
3	2.0	1.0	0.0	0.0	0.0	0.0
2	2.5	0.0	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	21.	13.	15.	11.	6.	6.
6	16.	8.	5.	5.	0.	0.
4	14.	6.	4.	0.	0.	0.
3	9.	5.	0.	0.	0.	0.
2	9.	0.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	13.0	11.0	9.5	9.0	8.0	8.0
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.5	15.5	13.5	12.0	11.5	11.0
3	20.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	1.5	.5	.5	0.0	0.0	0.0
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.0	0.0	0.0	0.0	0.0	0.0
3	1.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	10.	4.	5.	0.	0.	0.
6	6.	0.	0.	0.	0.	0.
4	5.	0.	0.	0.	0.	0.
3	5.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	15.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	15.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-08 G/M3
ADIABATIC WATER CONTENTS :
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	19.5	15.5	13.5	12.0	11.5	11.0
3	21.5	19.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1})	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1})	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1})	0	5	10	15	20	25
8	8.0	7.0	6.0	5.5	5.0	5.0
6	9.0	8.0	7.0	6.5	6.0	6.0
4	11.0	9.5	8.5	8.0	7.5	7.5
3	12.5	11.0	10.0	9.5	9.0	9.0
2	15.5	14.0	13.0	12.5	12.0	11.5
1	23.5	21.5	21.0	20.5	20.0	20.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1})	0	5	10	15	20	25
8	6.5	4.5	4.0	3.5	3.0	3.0
6	6.5	4.5	4.0	3.5	3.0	3.0
4	7.5	6.0	5.0	4.0	4.0	3.5
3	9.0	7.5	6.0	4.5	4.0	4.0
2	12.0	9.0	7.5	6.0	5.5	5.5
1	19.0	15.5	11.5	9.0	7.5	6.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1})	0	5	10	15	20	25
8	45.	39.	40.	39.	38.	38.
6	42.	36.	36.	35.	33.	33.
4	41.	39.	37.	33.	35.	32.
3	42.	41.	38.	32.	31.	31.
2	44.	39.	37.	32.	31.	32.
1	45.	42.	35.	31.	27.	25.

CLOUD BASE TEMPERATURE (^{o}C)

T-32

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.5	9.0	7.0	6.5	6.0	5.5
6	10.5	9.0	8.0	7.5	7.0	6.5
4	12.5	11.0	9.5	9.0	8.5	8.5
3	14.0	12.5	11.5	10.5	10.0	10.0
2	17.0	15.5	14.0	13.5	13.0	12.5
1	28.5	25.5	24.0	22.5	21.5	21.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.0	2.5	2.0	2.5
4	6.0	4.5	4.0	3.0	3.0	2.5
3	7.5	6.0	4.5	3.5	3.0	3.0
2	10.5	7.5	6.5	5.0	4.5	4.5
1	14.0	11.5	8.5	7.0	6.0	5.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	28.	27.	25.	22.	28.
4	32.	29.	30.	25.	26.	23.
3	35.	32.	28.	25.	23.	23.
2	38.	33.	32.	27.	26.	26.
1	33.	31.	26.	24.	22.	19.

T-33

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	11.0	9.0	8.0	7.0	6.5	6.5
6	12.0	10.0	9.0	8.5	7.5	7.5
4	14.0	12.0	11.0	10.0	9.5	9.0
3	16.0	13.5	12.5	11.5	11.0	10.5
2	20.0	17.0	15.5	15.0	14.0	13.5
1	32.5	29.0	27.0	25.5	24.5	24.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	1.5
6	3.5	2.5	2.0	1.5	1.5	1.5
4	4.5	3.5	2.5	2.0	2.0	2.0
3	5.5	5.0	3.5	2.5	2.0	2.5
2	7.5	6.0	5.0	3.5	3.5	3.5
1	10.0	8.0	5.5	4.0	3.0	2.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	19.
6	23.	20.	18.	15.	17.	17.
4	24.	23.	19.	17.	17.	18.
3	26.	27.	22.	18.	15.	19.
2	27.	26.	24.	19.	20.	21.
1	24.	22.	17.	14.	11.	8.

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.5	10.0	9.0	8.0	7.5	7.0
6	13.5	11.0	10.0	9.0	8.5	8.0
4	15.5	13.0	12.0	11.0	10.0	10.0
3	19.0	15.5	13.5	12.5	12.0	11.5
2	23.0	20.0	18.5	17.0	15.5	15.5
1	39.0	33.0	30.0	28.0	26.5	26.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.0	1.5	1.0	1.0	.5	1.0
6	2.0	1.5	1.0	1.0	.5	1.0
4	3.0	2.5	1.5	1.0	1.5	1.0
3	3.5	3.0	2.5	1.5	1.0	1.5
2	4.5	3.0	2.0	1.5	2.0	1.5
1	4.5	4.0	2.5	1.5	1.0	.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.	13.	10.	11.	6.	13.
6	13.	12.	9.	10.	6.	11.
4	16.	16.	11.	8.	13.	9.
3	16.	16.	16.	11.	8.	12.
2	16.	13.	10.	8.	11.	9.
1	11.	11.	8.	5.	4.	2.

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	8.0	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.5	13.0	11.5	11.0	10.5
3	20.5	17.5	15.5	14.0	13.0	12.5
2	26.0	22.5	20.0	18.0	17.0	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.0	.5	.5	.5	0.0	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.0	.5	.5	.5	.5
3	1.0	1.0	.5	0.0	0.0	.5
2	1.5	.5	.5	.5	.5	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	7.	4.	5.	6.	0.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	6.	4.	4.	4.	5.
3	5.	5.	3.	0.	0.	4.
2	5.	2.	2.	3.	3.	0.
1	0.	1.	0.	0.	0.	0.

T-34

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

T-35

SALT 3 1.00E-08 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.0	9.0	8.0	7.5	7.5	7.0
6	11.5	10.5	10.0	9.5	9.0	8.5
4	15.0	13.5	13.0	12.0	11.5	11.0
3	19.0	16.5	15.5	14.0	13.0	13.0
2	23.5	22.0	20.5	18.5	17.5	17.0
1	40.0	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.5	2.5	2.0	1.5	.5	1.0
6	4.0	2.0	1.0	.5	0.0	.5
4	3.5	2.0	.5	0.0	0.0	0.0
3	3.5	2.0	.5	0.0	0.0	0.0
2	4.0	1.0	0.0	0.0	0.0	0.0
1	2.5	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	31.	22.	20.	17.	6.	13.
6	26.	16.	9.	5.	0.	6.
4	19.	13.	4.	0.	0.	0.
3	16.	11.	3.	0.	0.	0.
2	15.	4.	0.	0.	0.	0.
1	6.	0.	0.	0.	0.	0.

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.5	10.0	9.0	8.5	8.0	8.0
6	13.5	12.0	11.0	10.0	9.0	9.0
4	16.5	14.5	13.5	12.0	11.5	11.0
3	19.5	18.0	16.0	14.0	13.0	13.0
2	25.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.0	1.5	1.0	.5	0.0	0.0
6	2.0	.5	0.0	0.0	0.0	0.0
4	2.0	1.0	0.0	0.0	0.0	0.0
3	2.0	.5	0.0	0.0	0.0	0.0
2	2.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	21.	13.	10.	6.	0.	0.
6	13.	4.	0.	0.	0.	0.
4	11.	6.	0.	0.	0.	0.
3	9.	3.	0.	0.	0.	0.
2	7.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.0	11.0	10.0	9.0	8.0	8.0
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.5	15.5	13.5	12.0	11.5	11.0
3	21.0	19.5	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.5	.5	0.0	0.0	0.0	0.0
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.0	0.0	0.0	0.0	0.0	0.0
3	.5	0.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.	4.	0.	0.	0.	0.
6	6.	0.	0.	0.	0.	0.
4	5.	0.	0.	0.	0.	0.
3	2.	0.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-37

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-38

SALT 3 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	19.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-33

SALT 3 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.0	8.0	7.5	7.0	6.5	6.0
6	10.5	9.5	8.5	8.5	8.0	7.5
4	13.0	12.0	11.5	11.0	11.0	10.5
3	16.0	15.0	14.5	14.0	13.0	13.0
2	21.5	20.0	19.5	18.5	17.5	17.0
1	37.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.5	3.5	2.5	2.0	1.5	2.0
6	5.0	3.0	2.5	1.5	1.0	1.5
4	5.5	3.5	2.0	1.0	.5	.5
3	5.5	3.5	1.5	0.0	0.0	0.0
2	6.0	3.0	1.0	0.0	0.0	0.0
1	5.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	38.	30.	25.	22.	19.	25.
6	32.	24.	23.	15.	11.	17.
4	30.	23.	15.	8.	4.	5.
3	26.	19.	9.	0.	0.	0.
2	22.	13.	5.	0.	0.	0.
1	12.	1.	0.	0.	0.	0.

SALT 1 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.5	9.0	8.0	7.5	7.0	7.0
6	12.0	10.5	9.5	9.0	8.5	8.0
4	14.5	13.5	12.5	11.5	11.5	11.0
3	17.5	16.0	15.0	14.0	13.0	13.0
2	22.5	21.5	20.5	18.5	17.5	17.0
1	40.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.0	2.5	2.0	1.5	1.0	1.0
6	3.5	2.0	1.5	1.0	.5	1.0
4	4.0	2.0	1.0	.5	0.0	0.0
3	4.0	2.5	1.0	0.0	0.0	0.0
2	5.0	1.5	0.0	0.0	0.0	0.0
1	2.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	28.	22.	20.	17.	13.	13.
6	23.	16.	14.	10.	6.	11.
4	22.	13.	7.	4.	0.	0.
3	19.	14.	6.	0.	0.	0.
2	18.	7.	0.	0.	0.	0.
1	5.	0.	0.	0.	0.	0.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.0	10.0	9.0	8.0	7.5	7.5
6	13.5	11.5	10.5	9.5	9.0	9.0
4	16.0	14.0	13.0	12.0	11.5	11.0
3	18.5	17.0	15.0	14.0	13.0	13.0
2	24.5	22.5	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.5	1.5	1.0	1.0	.5	.5
6	2.0	1.0	.5	.5	0.0	0.0
4	2.5	1.5	.5	0.0	0.0	0.0
3	3.0	1.5	0.0	0.0	0.0	0.0
2	3.0	.5	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	17.	13.	10.	11.	6.	6.
6	13.	8.	5.	5.	0.	0.
4	14.	10.	4.	0.	0.	0.
3	14.	8.	0.	0.	0.	0.
2	11.	2.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-40

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.0	11.0	9.5	9.0	8.0	8.0
6	14.5	12.5	11.0	10.0	9.0	9.0
4	17.5	15.0	13.5	12.0	11.5	11.0
3	21.0	19.0	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	.5	.5	.5	0.0	0.0	0.0
6	1.0	0.0	0.0	0.0	0.0	0.0
4	1.0	.5	0.0	0.0	0.0	0.0
3	.5	.5	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	3.	4.	5.	0.	0.	0.
6	6.	0.	0.	0.	0.	0.
4	5.	3.	0.	0.	0.	0.
3	2.	3.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (°C)

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SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (°C)

SALT 3 1.00E-07 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	19.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-08 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	8.0	7.5	6.5	6.0	5.5	5.5
6	9.5	8.5	7.5	7.0	6.5	6.5
4	11.5	10.5	9.5	9.0	8.5	8.5
3	14.0	12.5	11.0	10.5	10.5	10.5
2	18.0	16.5	15.0	14.0	14.0	14.0
1	31.5	29.0	26.5	25.5	25.0	25.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	6.5	4.0	3.5	3.0	2.5	2.5
6	6.0	4.0	3.5	3.0	2.5	2.5
4	7.0	5.0	4.0	3.0	3.0	2.5
3	7.5	6.0	5.0	3.5	2.5	2.5
2	9.5	6.5	5.5	4.5	3.5	3.0
1	11.0	8.0	6.0	4.0	2.5	1.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	45.	35.	35.	33.	31.	31.
6	39.	32.	32.	30.	28.	28.
4	38.	32.	30.	25.	26.	23.
3	35.	32.	31.	25.	19.	19.
2	35.	28.	27.	24.	20.	18.
1	26.	22.	18.	14.	9.	6.

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SALT 4 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.0	8.5	7.5	7.0	6.5	6.5
6	11.0	9.5	8.5	8.0	7.5	7.5
4	13.5	12.0	11.0	10.0	9.5	9.5
3	16.0	14.5	13.0	12.0	11.5	11.5
2	21.0	18.5	17.0	16.0	15.5	15.5
1	39.5	35.5	32.0	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.5	3.0	2.5	2.0	1.5	1.5
6	4.5	3.0	2.5	2.0	1.5	1.5
4	5.0	3.5	2.5	2.0	2.0	1.5
3	5.5	4.0	3.0	2.0	1.5	1.5
2	6.5	4.5	3.5	2.5	2.0	1.5
1	3.0	1.5	.5	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	31.	26.	25.	22.	19.	19.
6	29.	24.	23.	20.	17.	17.
4	27.	23.	19.	17.	17.	14.
3	26.	22.	19.	14.	12.	12.
2	24.	20.	17.	14.	11.	9.
1	7.	4.	2.	0.	0.	0.

SALT 4 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.5	9.5	8.5	7.5	7.5	7.0
6	12.5	11.0	9.5	9.0	8.5	8.5
4	15.0	13.5	12.0	11.0	11.0	10.5
3	18.0	16.0	14.5	13.5	13.0	13.0
2	23.5	22.0	19.5	18.0	17.0	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.0	2.0	1.5	1.5	.5	1.0
6	3.0	1.5	1.5	1.0	.5	.5
4	3.5	2.0	1.5	1.0	.5	.5
3	3.5	2.5	1.5	.5	0.0	0.0
2	4.0	1.0	1.0	.5	.5	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	21.	17.	15.	17.	6.	13.
6	19.	12.	14.	10.	6.	6.
4	19.	13.	11.	8.	4.	5.
3	16.	14.	9.	4.	0.	0.
2	15.	4.	5.	3.	3.	0.
1	0.	1.	0.	0.	0.	0.

SALT 4 1.00E-05 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.5	10.5	9.5	8.5	8.0	8.0
6	14.0	12.0	10.5	9.5	9.0	9.0
4	17.0	15.0	13.0	12.0	11.5	11.0
3	20.0	17.5	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.0	1.0	.5	.5	0.0	0.0
6	1.5	.5	.5	.5	0.0	0.0
4	1.5	.5	.5	0.0	0.0	0.0
3	1.5	1.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.	9.	5.	6.	0.	0.
6	10.	4.	5.	5.	0.	0.
4	8.	3.	4.	0.	0.	0.
3	7.	5.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-44

SALT 4 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.0	12.5	11.0	10.0	9.0	9.0
4	18.0	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	.5	0.0	0.0	0.0	0.0	0.0
4	.5	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	3.	0.	0.	0.	0.	0.
4	3.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-45

SALT 4 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	19.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	7.0	6.0	5.5	5.0	4.5	4.5
6	8.0	7.0	6.0	6.0	5.5	5.5
4	9.5	8.0	7.5	7.0	6.5	6.5
3	11.0	9.5	8.5	8.0	7.5	7.5
2	13.0	11.5	10.5	10.0	9.0	9.0
1	19.0	17.5	15.5	14.5	14.0	13.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	7.5	5.5	4.5	4.0	3.5	3.5
6	7.5	5.5	5.0	4.0	3.5	3.5
4	9.0	7.5	6.0	5.0	5.0	4.5
3	10.5	9.0	7.5	6.0	5.5	5.5
2	14.5	11.5	10.0	8.5	8.5	8.0
1	23.5	19.5	17.0	15.0	13.5	13.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	52.	48.	45.	44.	44.	44.
6	48.	44.	45.	40.	39.	39.
4	49.	48.	44.	42.	43.	41.
3	49.	49.	47.	43.	42.	42.
2	53.	50.	49.	46.	49.	47.
1	55.	53.	52.	51.	49.	49.

T-06

SALT 4 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	8.5	7.5	6.5	6.0	5.5	5.5
6	9.5	8.5	7.5	7.0	6.5	6.0
4	11.0	10.0	9.0	8.0	7.5	7.5
3	13.0	11.0	10.0	9.5	9.0	8.5
2	15.5	13.5	12.5	11.5	11.0	10.5
1	23.5	24.5	22.0	20.0	19.0	19.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	6.0	4.0	3.5	3.0	2.5	2.5
6	6.0	4.0	3.5	3.0	2.5	3.0
4	7.5	5.5	4.5	4.0	4.0	3.5
3	8.5	7.5	6.0	4.5	4.0	4.5
2	12.0	9.5	8.0	7.0	6.5	6.5
1	14.0	12.5	10.5	9.5	8.5	7.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	41.	35.	35.	33.	31.	31.
6	39.	32.	32.	30.	28.	33.
4	41.	35.	33.	33.	35.	32.
3	40.	41.	38.	32.	31.	35.
2	44.	41.	39.	38.	37.	38.
1	33.	34.	32.	32.	31.	26.

T-47

SALT 4 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	10.0	8.5	7.5	7.0	6.5	6.0
6	11.0	9.5	8.5	7.5	7.0	7.0
4	13.0	11.0	10.0	9.0	8.5	8.5
3	14.5	12.5	11.5	10.5	10.0	10.0
2	19.5	17.0	15.0	14.0	13.0	12.5
1	34.5	30.5	27.5	24.5	24.0	24.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	4.5	3.0	2.5	2.0	1.5	2.0
6	4.5	3.0	2.5	2.5	2.0	2.0
4	5.5	4.5	3.5	3.0	3.0	2.5
3	7.0	6.0	4.5	3.5	3.0	3.0
2	8.0	6.0	5.5	4.5	4.5	6.5
1	8.0	6.5	5.0	5.0	3.5	2.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	31.	26.	25.	22.	19.	25.
6	29.	24.	23.	25.	22.	22.
4	30.	29.	26.	25.	26.	23.
3	33.	32.	28.	25.	23.	23.
2	29.	26.	27.	24.	26.	26.
1	19.	18.	15.	17.	13.	9.

SALT 4 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	11.5	9.5	9.5	7.5	7.0	6.5
6	12.5	10.5	9.5	8.5	8.0	7.5
4	14.5	12.5	11.0	10.0	9.5	9.5
3	17.5	15.0	13.5	12.0	11.5	11.0
2	23.0	20.0	18.0	16.5	15.5	15.5
1	41.5	35.5	32.0	29.0	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.0	2.0	1.5	1.5	1.0	1.5
6	3.0	2.0	1.5	1.5	1.0	1.5
4	4.0	3.0	2.5	2.0	2.0	1.5
3	4.0	3.5	2.5	2.0	1.5	2.0
2	4.5	3.0	2.5	2.0	2.0	1.5
1	1.0	1.5	.5	.5	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	21.	17.	15.	17.	13.	19.
6	19.	16.	14.	15.	11.	17.
4	22.	19.	19.	17.	17.	14.
3	19.	19.	16.	14.	12.	15.
2	16.	13.	12.	11.	11.	9.
1	2.	4.	2.	2.	0.	0.

SALT 4 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	13.0	10.5	9.0	8.0	7.5	7.5
6	14.0	12.0	10.0	9.5	8.5	8.5
4	16.5	14.0	12.5	11.5	11.0	10.5
3	20.5	17.0	15.5	14.0	13.0	13.0
2	26.5	23.0	20.5	18.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	1.5	1.0	1.0	1.0	.5	.5
6	1.5	.5	1.0	.5	.5	.5
4	2.0	1.5	1.0	.5	.5	.5
3	1.0	1.5	.5	0.0	0.0	0.0
2	1.0	0.0	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	10.	9.	10.	11.	6.	6.
6	10.	4.	9.	5.	6.	6.
4	11.	10.	7.	4.	4.	5.
3	5.	8.	3.	0.	0.	0.
2	4.	0.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

T-48

SALT 4 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	8.5	8.0	7.5
6	15.0	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	.5	0.0	.5
6	.5	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	6.	0.	6.
6	3.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-49

SALT 4 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.0	9.5	7.5	7.0	6.5	6.5
6	11.0	10.0	9.0	8.5	8.0	8.0
4	13.5	12.5	11.5	11.0	10.5	10.5
3	16.5	15.5	14.0	13.5	13.0	13.0
2	22.0	20.5	19.0	18.0	17.5	17.0
1	39.5	36.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.5	3.0	2.5	2.0	1.5	1.5
6	4.5	2.5	2.0	1.5	1.0	1.0
4	5.0	3.0	2.0	1.0	1.0	.5
3	5.0	3.0	2.0	.5	0.0	0.0
2	5.5	2.5	1.5	.5	0.0	0.0
1	3.0	1.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	38.	26.	25.	22.	19.	19.
6	29.	20.	18.	15.	11.	11.
4	27.	19.	15.	8.	9.	5.
3	23.	16.	13.	4.	0.	0.
2	20.	11.	7.	3.	0.	0.
1	7.	3.	0.	0.	0.	0.

SALT 4 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	11.0	9.5	8.5	8.0	7.5	7.5
6	12.5	11.0	10.0	9.5	9.0	9.0
4	15.5	14.5	13.0	12.0	11.5	11.0
3	18.5	17.0	15.5	14.0	13.0	13.0
2	25.0	22.5	20.5	18.5	17.5	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.5	2.0	1.5	1.0	.5	.5
6	3.0	1.5	1.0	.5	0.0	0.0
4	3.0	1.0	.5	0.0	0.0	0.0
3	3.0	1.5	.5	0.0	0.0	0.0
2	2.5	.5	0.0	0.0	0.0	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	24.	17.	15.	11.	6.	6.
6	19.	12.	9.	5.	0.	0.
4	16.	6.	4.	0.	0.	0.
3	14.	8.	3.	0.	0.	0.
2	9.	2.	0.	0.	0.	0.
1	0.	1.	0.	0.	0.	0.

SALT 4 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	12.5	10.5	9.5	8.5	8.0	8.0
6	14.0	12.0	11.0	10.0	9.0	9.0
4	17.0	15.5	13.5	12.0	11.5	11.0
3	20.5	19.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	2.0	1.0	.5	.5	0.0	0.0
6	1.5	.5	0.0	0.0	0.0	0.0
4	1.5	0.0	0.0	0.0	0.0	0.0
3	1.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.	9.	5.	6.	0.	0.
6	10.	4.	0.	0.	0.	0.
4	8.	0.	0.	0.	0.	0.
3	5.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

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SALT 4 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	13.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	1.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	7.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 4 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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SALT 4 1.00E-09 G/M3
ADIABATIC WATER CONTENTS
SEED AT 0.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-53

SALT 4 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	7.5	6.5	5.5	5.5	5.0	5.0
6	8.5	7.5	6.5	6.0	6.0	5.5
4	10.0	9.0	8.0	8.0	7.5	7.5
3	11.5	10.5	9.5	9.0	9.0	8.5
2	14.5	13.0	12.5	12.0	11.5	11.5
1	22.5	21.5	21.0	20.5	20.0	19.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	7.0	5.0	4.5	3.5	3.0	3.0
6	7.0	5.0	4.5	4.0	3.0	3.5
4	8.5	6.5	5.5	4.0	4.0	3.5
3	10.0	8.0	6.5	5.0	4.0	4.5
2	13.0	10.0	8.0	6.5	6.0	5.5
1	20.0	15.5	11.5	9.0	7.5	7.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	48.	43.	45.	39.	38.	38.
6	45.	40.	41.	40.	33.	39.
4	46.	42.	41.	33.	35.	32.
3	47.	43.	41.	36.	31.	35.
2	47.	43.	39.	35.	34.	32.
1	47.	42.	35.	31.	27.	26.

SALT 4 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	9.0	7.5	6.5	6.0	6.0	5.5
6	10.0	8.5	7.5	7.0	7.0	6.5
4	11.5	10.0	9.5	8.5	8.5	8.0
3	13.5	12.0	11.0	10.5	10.0	9.5
2	16.0	15.0	13.5	13.0	12.5	12.0
1	28.5	26.0	24.0	23.0	22.5	22.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	5.5	4.0	3.5	3.0	2.0	2.5
6	5.5	4.0	3.5	3.0	2.0	2.5
4	7.0	5.5	4.0	3.5	3.0	3.0
3	8.0	6.5	5.0	3.5	3.0	3.5
2	11.5	8.0	7.0	5.5	5.0	5.0
1	14.0	11.0	8.5	6.5	5.0	4.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	38.	35.	35.	33.	25.	31.
6	35.	32.	32.	30.	22.	28.
4	38.	35.	30.	29.	26.	27.
3	37.	35.	31.	25.	23.	27.
2	42.	35.	34.	30.	29.	29.
1	33.	30.	26.	22.	18.	15.

SALT 4 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	10.5	8.5	7.5	7.0	6.5	6.0
6	11.5	9.5	8.5	8.0	7.5	7.5
4	13.5	11.5	10.5	9.5	9.0	9.0
3	15.0	13.0	12.0	11.0	11.0	10.5
2	20.0	17.5	16.0	14.5	14.0	14.0
1	33.5	29.5	27.5	26.0	25.0	24.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	4.0	3.0	2.5	2.0	1.5	2.0
6	4.0	3.0	2.5	2.0	1.5	1.5
4	5.0	4.0	3.0	2.5	2.5	2.0
3	6.5	5.5	4.0	3.0	2.0	2.5
2	7.5	5.5	4.5	4.0	3.5	3.0
1	9.0	7.5	5.0	3.5	2.5	2.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	28.	26.	25.	22.	19.	25.
6	26.	24.	23.	20.	17.	17.
4	27.	26.	22.	21.	22.	18.
3	30.	30.	25.	21.	15.	19.
2	27.	24.	22.	22.	20.	18.
1	21.	20.	15.	12.	9.	8.

SALT 4 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	12.0	10.0	8.5	7.5	7.0	6.5
6	13.0	10.5	9.5	8.5	8.0	8.0
4	15.0	13.0	11.5	10.5	10.0	9.5
3	17.5	15.5	13.5	12.5	12.0	11.5
2	23.0	20.5	18.5	17.0	16.0	16.0
1	40.0	34.5	31.0	28.5	27.0	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	2.5	1.5	1.5	1.5	1.0	1.5
6	2.5	2.0	1.5	1.5	1.0	1.0
4	3.5	2.5	2.0	1.5	1.5	1.5
3	4.0	3.0	2.5	1.5	1.0	1.5
2	4.5	2.5	2.0	1.5	1.5	1.0
1	2.5	2.5	1.5	1.0	.5	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	17.	13.	15.	17.	13.	19.
6	16.	16.	14.	15.	11.	11.
4	19.	16.	15.	13.	13.	14.
3	19.	16.	16.	11.	8.	12.
2	16.	11.	10.	8.	9.	6.
1	6.	7.	5.	3.	2.	0.

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SALT 4 1.00E-06 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	13.0	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.5	13.0	11.5	11.0	10.5
3	20.0	17.5	15.5	14.0	13.0	12.5
2	26.0	23.0	20.0	18.0	17.0	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	1.5	.5	.5	.5	.5	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.0	.5	.5	.5	.5
3	1.5	1.0	.5	0.0	0.0	.5
2	1.5	0.0	.5	.5	.5	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	10.	4.	5.	6.	6.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	6.	4.	4.	4.	5.
3	7.	5.	3.	0.	0.	4.
2	5.	0.	2.	3.	3.	0.
1	0.	1.	0.	0.	0.	0.

SALT 4 1.00E-07 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-08 G/M3
ADIBATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 1.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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SALT 4 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	9.5	8.5	8.0	7.5	7.0	7.0
6	11.0	10.0	9.5	9.0	8.5	8.5
4	14.0	13.0	12.0	12.0	11.5	11.0
3	17.0	16.0	15.0	14.0	13.0	13.0
2	22.5	21.5	20.5	18.5	17.5	17.0
1	39.0	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	5.0	3.0	2.0	1.5	1.0	1.0
6	4.5	2.5	1.5	1.0	.5	.5
4	4.5	2.5	1.5	0.0	0.0	0.0
3	4.5	2.5	1.0	0.0	0.0	0.0
2	5.0	1.5	0.0	0.0	0.0	0.0
1	3.5	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	34.	26.	20.	17.	13.	13.
6	29.	20.	14.	10.	6.	6.
4	24.	15.	11.	0.	0.	0.
3	21.	14.	6.	0.	0.	0.
2	18.	7.	0.	0.	0.	0.
1	8.	0.	0.	0.	0.	0.

SALT 4 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.0	9.5	9.0	8.0	8.0	7.5
6	12.5	11.5	10.5	10.0	9.0	9.0
4	16.0	14.5	13.0	12.0	11.5	11.0
3	19.0	17.5	16.0	14.0	13.0	13.0
2	24.5	22.5	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	2.0	1.0	1.0	0.0	.5
6	3.0	1.0	.5	0.0	0.0	0.0
4	2.5	1.0	.5	0.0	0.0	0.0
3	2.5	1.0	0.0	0.0	0.0	0.0
2	3.0	.5	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	24.	17.	10.	11.	0.	6.
6	19.	8.	5.	0.	0.	0.
4	14.	6.	4.	0.	0.	0.
3	12.	5.	0.	0.	0.	0.
2	11.	2.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	12.5	10.5	9.5	9.0	8.0	8.0
6	14.0	12.5	11.0	10.0	9.0	9.0
4	17.5	15.0	13.5	12.0	11.5	11.0
3	20.5	18.5	16.0	14.0	13.0	13.0
2	26.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	2.0	1.0	.5	0.0	0.0	0.0
6	1.5	0.0	0.0	0.0	0.0	0.0
4	1.0	.5	0.0	0.0	0.0	0.0
3	1.0	0.0	0.0	0.0	0.0	0.0
2	1.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.	9.	5.	0.	0.	0.
6	10.	0.	0.	0.	0.	0.
4	5.	3.	0.	0.	0.	0.
3	5.	0.	0.	0.	0.	0.
2	4.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (°C)

SALT 4 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.0	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	.5	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (°C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	3.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (°C)

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SALT 4 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-59

SALT 4 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT 1.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	19.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	8.5	7.5	7.0	6.5	6.5	6.0
6	10.0	9.0	8.5	8.0	8.0	7.5
4	12.5	11.5	11.0	11.0	10.5	10.5
3	15.5	14.5	14.0	13.5	13.0	13.0
2	20.5	20.0	19.5	18.5	17.5	17.0
1	37.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	6.0	4.0	3.0	2.5	1.5	2.0
6	5.5	3.5	2.5	2.0	1.0	1.5
4	6.0	4.0	2.5	1.0	1.0	.5
3	6.0	4.0	2.0	.5	0.0	0.0
2	7.0	3.0	1.0	0.0	0.0	0.0
1	5.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	41.	35.	30.	28.	19.	25.
6	35.	28.	23.	20.	11.	17.
4	32.	26.	19.	8.	9.	5.
3	28.	22.	13.	4.	0.	0.
2	25.	13.	5.	0.	0.	0.
1	12.	1.	0.	0.	0.	0.

T-60

SALT 4 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.0	9.5	8.0	7.5	7.0	6.5
6	11.5	10.0	9.5	8.5	8.5	8.0
4	14.0	13.0	12.0	11.5	11.0	11.0
3	16.5	15.5	15.0	14.0	13.0	13.0
2	22.0	21.0	20.0	18.5	17.5	17.0
1	40.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	4.5	3.0	2.0	1.5	1.0	1.5
6	4.0	2.5	1.5	1.5	.5	1.0
4	4.5	2.5	1.5	.5	.5	0.0
3	5.0	3.0	1.0	0.0	0.0	0.0
2	5.5	2.0	.5	0.0	0.0	0.0
1	2.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	31.	26.	20.	17.	13.	19.
6	26.	20.	14.	15.	6.	11.
4	24.	16.	11.	4.	4.	0.
3	23.	15.	6.	0.	0.	0.
2	20.	9.	2.	0.	0.	0.
1	5.	0.	0.	0.	0.	0.

T-61

SALT 4 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.5	9.5	8.5	8.0	7.5	7.0
6	12.5	11.0	10.0	9.5	9.0	8.5
4	15.5	14.0	12.5	12.0	11.5	11.0
3	18.0	16.5	15.5	14.0	13.0	13.0
2	24.5	22.5	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.0	2.0	1.5	1.0	.5	1.0
6	3.0	1.5	1.0	.5	0.0	.5
4	3.0	1.5	1.0	0.0	0.0	0.0
3	3.5	2.0	.5	0.0	0.0	0.0
2	3.0	.5	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	21.	17.	15.	11.	6.	13.
6	19.	12.	9.	5.	0.	6.
4	16.	10.	7.	0.	0.	0.
3	16.	11.	3.	0.	0.	0.
2	11.	2.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.0	10.5	9.5	8.5	8.0	7.5
6	14.0	12.0	11.0	10.0	9.0	9.0
4	17.0	15.0	13.5	12.0	11.5	11.0
3	20.5	18.0	16.0	14.0	13.0	13.0
2	26.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.5	1.0	.5	.5	0.0	.5
6	1.5	.5	0.0	0.0	0.0	0.0
4	1.5	.5	0.0	0.0	0.0	0.0
3	1.0	.5	0.0	0.0	0.0	0.0
2	1.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	10.	9.	5.	6.	0.	6.
6	10.	4.	0.	0.	0.	0.
4	8.	3.	0.	0.	0.	0.
3	5.	3.	0.	0.	0.	0.
2	4.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	9.0	8.0	8.0
6	15.0	12.5	11.0	10.0	9.0	9.0
4	18.0	15.5	13.5	12.0	11.5	11.0
3	21.5	18.0	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	0.0	0.0	0.0
6	.5	0.0	0.0	0.0	0.0	0.0
4	.5	0.0	0.0	0.0	0.0	0.0
3	0.0	.5	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	0.	0.	0.
6	3.	0.	0.	0.	0.	0.
4	3.	0.	0.	0.	0.	0.
3	0.	3.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 4 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	19.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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SALT 4 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT 2.0 KM WHEN CLOUD IS 2.0 KM TALL

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	8.0	6.5	6.0	5.5	5.0	5.0
6	8.5	7.5	6.5	6.0	6.0	5.5
4	10.5	9.0	8.0	7.5	7.0	6.5
3	11.5	10.5	9.0	8.5	8.0	8.0
2	14.0	12.5	11.0	10.5	10.0	9.5
1	20.0	17.5	16.0	15.0	14.0	14.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	6.5	5.0	4.0	3.5	3.0	3.0
6	7.0	5.0	4.5	4.0	3.0	3.5
4	8.0	6.5	5.5	4.5	4.5	4.5
3	10.0	8.0	7.0	5.5	5.0	5.0
2	13.5	10.5	9.5	8.0	7.5	7.5
1	22.5	19.5	16.5	14.5	13.5	12.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	45.	43.	40.	39.	38.	38.
6	45.	40.	41.	40.	33.	39.
4	43.	42.	41.	38.	39.	41.
3	47.	43.	44.	39.	38.	38.
2	49.	46.	46.	43.	43.	44.
1	53.	53.	51.	49.	49.	47.

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.5	6.0	5.5
6	10.5	9.0	7.5	7.0	6.5	6.5
4	12.0	10.5	9.5	8.5	8.0	8.0
3	13.5	12.0	10.5	10.0	9.5	9.0
2	16.0	14.0	13.0	12.0	11.5	11.0
1	27.5	23.5	21.5	18.5	18.0	18.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.5	3.0	2.5	2.5
4	6.5	5.0	4.0	3.5	3.5	3.0
3	8.0	6.5	5.5	4.0	3.5	4.0
2	11.5	9.0	7.5	6.5	6.0	6.0
1	15.0	13.5	11.0	11.0	9.5	8.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	28.	32.	30.	28.	28.
4	35.	32.	30.	29.	30.	27.
3	37.	35.	34.	29.	27.	31.
2	42.	39.	37.	35.	34.	35.
1	35.	36.	34.	37.	35.	30.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.0	9.0	9.0	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	13.5	11.5	10.5	9.5	9.0	8.5
3	15.5	13.5	11.5	11.0	10.5	10.0
2	19.5	17.0	14.5	13.5	12.5	12.5
1	33.0	28.5	25.5	23.5	22.5	22.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	5.0	4.0	3.0	2.5	2.5	2.5
3	6.0	5.0	4.5	3.0	2.5	3.0
2	8.0	6.0	6.0	5.0	5.0	4.5
1	9.5	8.5	7.0	6.0	5.0	4.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	25.
6	23.	20.	19.	20.	17.	22.
4	27.	26.	22.	21.	22.	23.
3	28.	27.	28.	21.	19.	23.
2	29.	26.	29.	27.	29.	26.
1	22.	23.	22.	20.	18.	15.

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.5	10.0	8.5	7.5	7.0	7.0
6	13.0	11.0	9.5	8.5	8.0	8.0
4	15.0	13.0	11.5	10.5	9.5	9.5
3	17.5	15.0	13.5	12.5	11.5	11.0
2	23.0	19.5	17.5	16.0	15.0	15.0
1	40.0	34.5	30.5	28.5	27.0	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.5	1.0	1.0
4	3.5	2.5	2.0	1.5	2.0	1.5
3	4.0	3.5	2.5	1.5	1.5	2.0
2	4.5	3.5	3.0	2.5	2.5	2.0
1	2.5	2.5	2.0	1.0	.5	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.	13.	15.	17.	13.	13.
6	16.	12.	14.	15.	11.	11.
4	19.	16.	15.	13.	17.	14.
3	19.	19.	16.	11.	12.	15.
2	16.	15.	15.	14.	14.	12.
1	6.	7.	6.	3.	2.	0.

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.0	12.5	11.5	10.5	10.5
3	20.5	17.0	15.0	14.0	13.0	12.5
2	26.0	22.5	20.0	18.0	17.0	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.0	.5	.5	.5	.5	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.5	1.0	.5	1.0	.5
3	1.0	1.5	1.0	0.0	0.0	.5
2	1.5	.5	.5	.5	.5	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	7.	4.	5.	6.	6.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	10.	7.	4.	9.	5.
3	5.	8.	6.	0.	0.	4.
2	5.	2.	2.	3.	3.	0.
1	0.	1.	0.	0.	0.	0.

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	8.5	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.0	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	.5	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	.5	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	6.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	4.	0.
3	0.	0.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-66

SALT 3 1.00E-09 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
3600. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	13.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-57

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	8.0	6.5	6.0	5.5	5.0	5.0
6	8.5	7.5	6.5	6.0	6.0	5.5
4	10.5	9.0	8.0	7.5	7.0	6.5
3	11.5	10.5	9.0	8.5	8.0	8.0
2	14.0	12.5	11.0	10.5	10.0	9.5
1	22.5	17.5	16.5	15.5	14.5	14.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	6.5	5.0	4.0	3.5	3.0	3.0
6	7.0	5.0	4.5	4.0	3.0	3.5
4	8.0	6.5	5.5	4.5	4.5	4.5
3	10.0	8.0	7.0	5.5	5.0	5.0
2	13.5	10.5	9.5	8.0	7.5	7.5
1	20.0	19.5	16.0	14.0	13.0	12.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	45.	43.	40.	39.	38.	38.
6	45.	40.	41.	40.	33.	39.
4	43.	42.	41.	38.	39.	41.
3	47.	43.	44.	39.	38.	38.
2	49.	46.	46.	43.	43.	44.
1	47.	53.	49.	47.	47.	47.

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.5	6.0	5.5
6	10.5	9.0	7.5	7.0	6.5	6.5
4	12.0	10.5	9.5	8.5	8.0	8.0
3	13.5	12.0	10.5	10.0	9.5	9.0
2	16.0	14.5	13.0	12.0	11.5	11.0
1	28.5	24.5	22.0	20.0	18.5	18.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.5	3.0	2.5	2.5
4	6.5	5.0	4.0	3.5	3.5	3.0
3	8.0	6.5	5.5	4.0	3.5	4.0
2	11.5	8.5	7.5	6.5	6.0	6.0
1	14.0	12.5	10.5	9.5	9.0	8.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	28.	32.	30.	28.	28.
4	35.	32.	30.	29.	30.	27.
3	37.	35.	34.	29.	27.	31.
2	42.	37.	37.	35.	34.	35.
1	33.	34.	32.	32.	33.	30.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.0	9.0	8.0	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	13.5	11.5	10.5	9.5	9.0	8.5
3	15.5	13.5	11.5	11.0	10.5	10.0
2	19.5	17.0	14.5	13.5	12.5	12.5
1	34.0	29.0	26.5	23.5	22.5	23.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	5.0	4.0	3.0	2.5	2.5	2.5
3	6.0	5.0	4.5	3.0	2.5	3.0
2	8.0	6.0	6.0	5.0	5.0	4.5
1	8.5	8.0	6.0	6.0	5.0	3.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	25.
6	23.	20.	18.	20.	17.	22.
4	27.	26.	22.	21.	22.	23.
3	28.	27.	28.	21.	19.	23.
2	29.	26.	29.	27.	29.	26.
1	20.	22.	18.	20.	18.	11.

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SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	12.5	10.0	8.5	7.5	7.0	7.0
6	13.0	11.0	9.5	8.5	8.0	8.0
4	15.0	13.0	11.5	10.5	9.5	9.5
3	18.0	15.0	13.5	12.5	11.5	11.0
2	23.0	20.0	17.5	16.0	15.5	15.5
1	41.5	35.5	31.5	29.0	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.5	1.0	1.0
4	3.5	2.5	2.0	1.5	2.0	1.5
3	3.5	3.5	2.5	1.5	1.5	2.0
2	4.5	3.0	3.0	2.5	2.0	1.5
1	1.0	1.5	1.0	.5	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	14.	13.	15.	17.	13.	13.
6	16.	12.	14.	15.	11.	11.
4	19.	16.	15.	13.	17.	14.
3	16.	19.	15.	11.	12.	15.
2	16.	13.	15.	14.	11.	9.
1	2.	4.	3.	2.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.0	12.5	11.5	10.5	10.5
3	20.5	17.5	15.5	14.0	13.0	12.5
2	26.0	22.5	20.0	18.0	17.0	17.0
1	42.5	36.5	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	1.0	.5	.5	.5	.5	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.5	1.0	.5	1.0	.5
3	1.0	1.0	.5	0.0	0.0	.5
2	1.5	.5	.5	.5	.5	0.0
1	0.0	.5	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	7.	4.	5.	6.	6.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	10.	7.	4.	9.	5.
3	5.	5.	3.	0.	0.	4.
2	5.	2.	2.	3.	3.	0.
1	0.	1.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	14.0	11.5	10.0	8.5	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.0	11.0
3	21.5	13.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	.5	0.0	0.0	.5	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	.5	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	3.	0.	0.	6.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	4.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
120. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	8.0	6.5	6.0	5.5	5.0	5.0
6	8.5	7.5	6.5	6.0	6.0	5.5
4	10.5	9.0	8.0	7.5	7.0	6.5
3	12.0	10.5	9.0	8.5	8.0	8.0
2	14.5	12.5	11.5	10.5	10.0	9.5
1	24.5	20.5	16.5	16.0	15.0	15.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	6.5	5.0	4.0	3.5	3.0	3.0
6	7.0	5.0	4.5	4.0	3.0	3.5
4	8.0	6.5	5.5	4.5	4.5	4.5
3	9.5	8.0	7.0	5.5	5.0	5.0
2	13.0	10.5	9.0	8.0	7.5	7.5
1	18.0	16.5	16.0	13.5	12.5	11.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	45.	43.	40.	39.	38.	38.
6	45.	40.	41.	40.	33.	39.
4	43.	42.	41.	38.	39.	41.
3	44.	43.	44.	39.	38.	38.
2	47.	46.	44.	43.	43.	44.
1	42.	45.	49.	46.	45.	43.

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SALT 3 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.5	6.0	5.5
6	10.5	9.0	7.5	7.0	6.5	6.5
4	12.0	10.5	9.5	8.5	8.0	8.0
3	14.0	12.0	10.5	10.0	9.5	9.0
2	16.0	14.5	13.0	12.0	11.5	11.0
1	29.0	25.0	22.5	21.0	19.0	19.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.5	3.0	2.5	2.5
4	6.5	5.0	4.0	3.5	3.5	3.0
3	7.5	6.5	5.5	4.0	3.5	4.0
2	11.5	8.5	7.5	6.5	6.0	6.0
1	13.5	12.0	10.0	8.5	8.5	7.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	28.	32.	30.	28.	28.
4	35.	32.	30.	29.	30.	27.
3	35.	35.	34.	29.	27.	31.
2	42.	37.	37.	35.	34.	35.
1	32.	32.	31.	29.	31.	26.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	11.0	9.0	8.0	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	13.5	11.5	10.5	9.5	9.0	8.5
3	16.0	13.5	11.5	11.0	10.5	10.0
2	19.5	17.0	15.0	14.0	13.0	12.5
1	34.5	30.5	27.5	24.5	23.5	24.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	5.0	4.0	3.0	2.5	2.5	2.5
3	5.5	5.0	4.5	3.0	2.5	3.0
2	8.0	6.0	5.5	4.5	4.5	4.5
1	9.0	6.5	5.0	5.0	4.0	2.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	25.
6	23.	20.	18.	20.	17.	22.
4	27.	26.	22.	21.	22.	23.
3	26.	27.	28.	21.	19.	23.
2	29.	26.	27.	24.	26.	26.
1	19.	18.	15.	17.	15.	9.

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	12.5	10.0	8.5	7.5	7.0	7.0
6	13.0	11.0	9.5	8.5	8.0	8.0
4	15.5	13.0	11.5	10.5	9.5	9.5
3	18.0	15.5	13.5	12.5	11.5	11.0
2	23.5	20.0	18.0	16.5	15.5	15.5
1	41.5	35.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.5	1.0	1.0
4	3.0	2.5	2.0	1.5	2.0	1.5
3	3.5	3.0	2.5	1.5	1.5	2.0
2	4.0	3.0	2.5	2.0	2.0	1.5
1	1.0	1.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.	13.	15.	17.	13.	13.
6	16.	12.	14.	15.	11.	11.
4	16.	16.	15.	13.	17.	14.
3	16.	16.	16.	11.	12.	15.
2	15.	13.	12.	11.	11.	9.
1	2.	4.	0.	0.	0.	0.

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SALT 1 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	13.5	11.0	9.5	8.5	7.5	7.5
6	14.5	12.0	10.5	9.5	9.0	8.5
4	17.0	14.5	13.0	11.5	10.5	10.5
3	20.5	17.5	15.5	14.0	13.0	13.0
2	26.5	23.0	20.5	18.0	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	1.0	.5	.5	.5	.5	.5
6	1.0	.5	.5	.5	0.0	.5
4	1.5	1.0	.5	.5	1.0	.5
3	1.0	1.0	.5	0.0	0.0	0.0
2	1.0	0.0	0.0	.5	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	7.	4.	5.	6.	6.	6.
6	6.	4.	5.	5.	0.	6.
4	8.	6.	4.	4.	9.	5.
3	5.	5.	3.	0.	0.	0.
2	4.	0.	0.	3.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	10.0	8.5	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.0	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	0.0	.5	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	.5	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	0.	6.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	4.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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SALT 3 1.00E-08 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
60. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}): 8, 6, 4, 3, 2, 1

0	5	10	15	20	25
14.5	11.5	10.0	9.0	8.0	8.0
15.5	12.5	11.0	10.0	9.0	9.0
18.5	15.5	13.5	12.0	11.5	11.0
21.5	18.5	16.0	14.0	13.0	13.0
27.5	23.0	20.5	18.5	17.5	17.0
42.5	37.0	32.5	29.5	27.5	26.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}): 8, 6, 4, 3, 2, 1

0	5	10	15	20	25
0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}): 8, 6, 4, 3, 2, 1

0	5	10	15	20	25
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 3 1.00E-02 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}): 8, 6, 4, 3, 2, 1

0	5	10	15	20	25
8.0	6.5	6.0	5.5	5.0	5.0
8.5	7.5	6.5	6.0	6.0	5.5
10.5	9.0	8.0	7.5	7.0	6.5
12.0	10.5	9.0	8.5	8.0	8.0
14.5	13.0	11.5	10.5	10.0	9.5
24.5	20.5	17.0	16.0	15.0	15.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}): 8, 6, 4, 3, 2, 1

0	5	10	15	20	25
6.5	5.0	4.0	3.5	3.0	3.0
7.0	5.0	4.5	4.0	3.0	3.5
8.0	6.5	5.5	4.5	4.5	4.5
9.5	8.0	7.0	5.5	5.0	5.0
13.0	10.0	9.0	8.0	7.5	7.5
18.0	16.5	15.5	13.5	12.5	11.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}): 8, 6, 4, 3, 2, 1

0	5	10	15	20	25
45.	43.	40.	39.	38.	38.
45.	40.	41.	40.	33.	39.
43.	42.	41.	38.	39.	41.
44.	43.	44.	39.	38.	38.
47.	43.	44.	43.	43.	44.
42.	45.	48.	46.	45.	42.

CLOUD BASE TEMPERATURE (^{o}C)

T-70

SALT 3 1.00E-03 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	9.5	8.0	7.0	5.5	6.0	5.5
6	10.5	9.0	7.5	7.0	6.5	6.5
4	12.0	10.5	9.5	8.5	8.0	8.0
3	14.0	12.0	11.0	10.0	9.5	9.0
2	16.5	14.5	13.0	12.0	11.5	11.0
1	29.0	25.0	23.5	21.0	19.0	20.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.5	3.0	2.5	2.5
4	6.5	5.0	4.0	3.5	3.5	3.0
3	7.5	6.5	5.0	4.0	3.5	4.0
2	11.0	8.5	7.5	6.5	6.0	6.0
1	13.5	12.0	9.0	8.5	8.5	6.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	28.	32.	30.	28.	28.
4	35.	32.	30.	29.	30.	27.
3	35.	35.	31.	29.	27.	31.
2	40.	37.	37.	35.	34.	35.
1	32.	32.	28.	29.	31.	25.

CLOUD BASE TEMPERATURE (^{o}C)

T-75

SALT 3 1.00E-04 G/M3
ADIBATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	11.0	9.0	8.0	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	13.5	11.5	10.5	9.5	9.0	8.5
3	16.0	13.5	12.0	11.0	10.5	10.0
2	19.5	17.0	15.0	14.0	13.0	13.0
1	34.0	31.0	27.5	25.0	25.0	24.0

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	5.0	4.0	3.0	2.5	2.5	2.5
3	5.5	5.0	4.0	3.0	2.5	3.0
2	8.0	6.0	5.5	4.5	4.5	4.0
1	8.5	6.0	5.0	4.5	2.5	2.5

CLOUD BASE TEMPERATURE (^{o}C)

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	25.
6	23.	20.	18.	20.	17.	22.
4	27.	26.	22.	21.	22.	23.
3	26.	27.	25.	21.	19.	23.
2	29.	26.	27.	24.	26.	24.
1	20.	16.	15.	15.	9.	9.

CLOUD BASE TEMPERATURE (^{o}C)

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	12.5	10.0	8.5	7.5	7.0	7.0
6	13.0	11.0	9.5	8.5	8.0	8.0
4	15.5	13.0	11.5	10.5	9.5	9.5
3	19.0	15.5	14.0	12.5	11.5	11.0
2	23.5	20.5	19.0	16.5	15.5	15.5
1	41.5	35.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.5	1.0	1.0
6	2.5	1.5	1.5	1.5	1.0	1.0
4	3.0	2.5	2.0	1.5	2.0	1.5
3	3.5	3.0	2.0	1.5	1.5	2.0
2	4.0	2.5	2.5	2.0	2.0	1.5
1	1.0	1.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.	13.	15.	17.	13.	13.
6	16.	12.	14.	15.	11.	11.
4	16.	16.	15.	13.	17.	14.
3	16.	16.	13.	11.	12.	15.
2	15.	11.	12.	11.	11.	9.
1	2.	4.	0.	0.	0.	0.

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	14.0	11.0	9.5	8.5	7.5	7.5
6	15.0	12.0	10.5	9.5	9.0	8.5
4	17.5	14.5	13.0	11.5	10.5	10.5
3	20.5	17.5	15.5	14.0	13.0	13.0
2	26.5	23.0	20.5	18.0	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	.5	.5	.5	.5	.5	.5
6	.5	.5	.5	.5	0.0	.5
4	1.0	1.0	.5	.5	1.0	.5
3	1.0	1.0	.5	0.0	0.0	0.0
2	1.0	0.0	0.0	.5	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.	4.	5.	6.	6.	6.
6	3.	4.	5.	5.	0.	6.
4	5.	6.	4.	4.	9.	5.
3	5.	5.	3.	0.	0.	0.
2	4.	0.	0.	3.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-76

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	8.5	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	13.5	15.5	13.5	12.0	11.0	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	.5	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	.5	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	6.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	4.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-77

SALT 3 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
45. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	8.0	6.5	6.0	5.5	5.0	5.0
6	9.0	7.5	6.5	6.0	6.0	5.5
4	10.5	9.0	8.0	7.5	7.0	6.5
3	12.0	10.5	9.5	9.0	8.5	8.0
2	14.5	13.0	11.5	11.0	10.5	10.0
1	24.5	21.0	18.0	16.5	15.5	16.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	6.5	5.0	4.0	3.5	3.0	3.0
6	6.5	5.0	4.5	4.0	3.0	3.5
4	9.0	6.5	5.5	4.5	4.5	4.5
3	9.5	8.0	6.5	5.0	4.5	5.0
2	13.0	10.0	9.0	7.5	7.0	7.0
1	18.0	15.0	14.5	13.0	12.0	10.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	45.	43.	40.	39.	38.	38.
6	42.	40.	41.	40.	33.	39.
4	43.	42.	41.	38.	39.	41.
3	44.	43.	41.	36.	35.	38.
2	47.	43.	44.	41.	40.	41.
1	42.	43.	45.	44.	44.	40.

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.5	6.0	5.5
6	10.5	9.0	8.0	7.0	6.5	6.5
4	12.0	10.5	9.5	8.5	8.0	8.0
3	14.0	12.0	11.0	10.0	9.5	9.0
2	17.0	15.0	13.5	12.5	11.5	11.5
1	29.0	25.0	23.5	21.0	19.5	20.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	5.0	3.5	3.0	3.0	2.5	2.5
4	6.5	5.0	4.0	3.5	3.5	3.0
3	7.5	6.5	5.0	4.0	3.5	4.0
2	10.5	8.0	7.0	6.0	6.0	5.5
1	13.5	12.0	9.0	8.5	8.0	6.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	32.	28.	27.	30.	28.	28.
4	35.	32.	30.	29.	30.	27.
3	35.	35.	31.	29.	27.	31.
2	38.	35.	34.	32.	34.	32.
1	32.	32.	28.	29.	29.	25.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	11.0	9.0	8.0	7.0	6.5	6.0
6	12.0	10.0	9.0	8.0	7.5	7.0
4	13.5	11.5	10.5	9.5	9.0	8.5
3	16.0	14.0	12.0	11.0	10.5	10.0
2	19.5	17.0	15.0	14.5	13.5	13.5
1	34.5	30.5	27.5	25.0	25.0	24.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.5	2.5	2.0	2.0	1.5	2.0
6	3.5	2.5	2.0	2.0	1.5	2.0
4	5.0	4.0	3.0	2.5	2.5	2.5
3	5.5	4.5	4.0	3.0	2.5	3.0
2	8.0	6.0	5.5	4.0	4.0	3.5
1	8.0	6.5	5.0	4.5	2.5	2.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	24.	22.	20.	22.	19.	25.
6	23.	20.	18.	20.	17.	22.
4	27.	26.	22.	21.	22.	23.
3	26.	24.	25.	21.	19.	23.
2	29.	26.	27.	22.	23.	21.
1	19.	18.	15.	15.	9.	8.

T-73

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.5	10.0	8.5	8.0	7.0	7.0
6	13.0	11.0	9.5	9.0	8.0	8.0
4	15.5	13.5	11.5	10.5	9.5	9.5
3	18.0	15.5	14.0	12.5	11.5	11.5
2	23.5	20.5	18.0	17.0	15.5	15.5
1	42.5	35.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.0	1.5	1.5	1.0	1.0	1.0
6	2.5	1.5	1.5	1.0	1.0	1.0
4	3.0	2.0	2.0	1.5	2.0	1.5
3	3.5	3.0	2.0	1.5	1.5	1.5
2	4.0	2.5	2.5	1.5	2.0	1.5
1	0.0	1.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.	13.	15.	11.	13.	13.
6	16.	12.	14.	10.	11.	11.
4	16.	13.	15.	13.	17.	14.
3	16.	16.	13.	11.	12.	12.
2	15.	11.	12.	8.	11.	9.
1	0.	4.	0.	0.	0.	0.

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	14.0	11.0	9.5	8.5	8.0	7.5
6	15.0	12.0	10.5	9.5	9.0	8.5
4	17.5	14.5	13.0	11.5	10.5	10.5
3	20.5	17.5	15.5	14.0	13.0	13.0
2	26.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	.5	.5	.5	.5	0.0	.5
6	.5	.5	.5	.5	0.0	.5
4	1.0	1.0	.5	.5	1.0	.5
3	1.0	1.0	.5	0.0	0.0	0.0
2	1.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	3.	4.	5.	6.	0.	6.
6	3.	4.	5.	5.	0.	6.
4	5.	6.	4.	4.	9.	5.
3	5.	5.	3.	0.	0.	0.
2	4.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.0	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	.5	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT (m s^{-1}) \ CLOUD BASE TEMPERATURE (°C)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	4.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-50

SALT 3 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
30. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	19.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

T-81

SALT 3 1.00E-02 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	8.0	6.5	6.0	5.5	5.0	5.0
6	9.5	7.5	7.0	6.5	6.0	5.5
4	11.0	9.5	8.5	8.0	7.0	7.0
3	12.5	11.0	10.0	9.0	8.5	8.5
2	15.0	13.0	12.5	11.0	10.5	10.5
1	24.5	23.0	20.0	18.0	16.0	17.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	6.5	5.0	4.0	3.5	3.0	3.0
6	6.0	5.0	4.0	3.5	3.0	3.5
4	7.5	6.0	5.0	4.0	4.5	4.0
3	9.0	7.5	6.0	5.0	4.5	4.5
2	12.5	10.0	8.0	7.5	7.0	6.5
1	18.0	14.0	12.5	11.5	11.5	9.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	45.	43.	40.	39.	38.	38.
6	39.	40.	36.	35.	33.	39.
4	41.	39.	37.	33.	39.	36.
3	42.	41.	38.	36.	35.	35.
2	45.	43.	39.	41.	40.	38.
1	42.	38.	38.	39.	42.	36.

SALT 3 1.00E-03 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	9.5	8.0	7.0	6.5	6.0	5.5
6	11.0	9.0	8.0	7.0	6.5	6.5
4	12.5	10.5	9.5	9.0	8.0	8.0
3	14.5	12.5	11.0	10.0	9.5	9.5
2	17.5	15.5	14.0	13.0	12.0	11.5
1	29.0	25.0	24.5	21.0	20.0	20.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	5.0	3.5	3.0	2.5	2.0	2.5
6	4.5	3.5	3.0	3.0	2.5	2.5
4	6.0	5.0	4.0	3.0	3.5	3.0
3	7.0	6.0	5.0	4.0	3.5	3.5
2	10.0	7.5	6.5	5.5	5.5	5.5
1	13.5	12.0	8.0	8.5	7.5	6.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	34.	30.	30.	28.	25.	31.
6	29.	28.	27.	30.	28.	28.
4	32.	32.	30.	25.	30.	27.
3	33.	32.	31.	29.	27.	27.
2	36.	33.	32.	30.	31.	32.
1	32.	32.	25.	29.	27.	25.

SALT 3 1.00E-04 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	11.5	9.5	8.0	7.0	6.5	6.5
6	12.0	10.0	9.0	8.0	7.5	7.5
4	14.5	12.0	10.5	9.5	9.0	8.5
3	16.5	14.0	12.5	11.5	10.5	10.5
2	19.5	17.0	15.0	14.5	14.0	13.5
1	34.5	32.0	27.5	25.0	25.0	25.0

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	3.0	2.0	2.0	2.0	1.5	1.5
6	3.5	2.5	2.0	2.0	1.5	1.5
4	4.0	3.5	3.0	2.5	2.5	2.5
3	5.0	4.5	3.5	2.5	2.5	2.5
2	8.0	6.0	5.5	4.0	3.5	3.5
1	8.0	5.0	5.0	4.5	2.5	1.5

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^{o}C)	0	5	10	15	20	25
8	21.	17.	20.	22.	19.	19.
6	23.	20.	18.	20.	17.	17.
4	22.	23.	22.	21.	22.	23.
3	23.	24.	22.	18.	19.	19.
2	29.	26.	27.	22.	20.	21.
1	19.	14.	15.	15.	9.	6.

SALT 3 1.00E-05 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	12.5	10.5	9.0	8.0	7.5	7.0
6	13.5	11.0	9.5	9.0	8.0	8.0
4	16.0	13.5	11.5	10.5	10.0	9.5
3	18.0	15.5	14.0	12.5	12.0	11.5
2	23.5	20.5	18.0	17.5	15.5	16.0
1	42.5	36.5	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	2.0	1.0	1.0	1.0	.5	1.0
6	2.0	1.5	1.5	1.0	1.0	1.0
4	2.5	2.0	2.0	1.5	1.5	1.5
3	3.5	3.0	2.0	1.5	1.0	1.5
2	4.0	2.5	2.5	1.0	2.0	1.0
1	0.0	.5	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.	9.	10.	11.	6.	13.
6	13.	12.	14.	10.	11.	11.
4	14.	13.	15.	13.	13.	14.
3	16.	16.	13.	11.	8.	12.
2	15.	11.	12.	5.	11.	6.
1	0.	1.	0.	0.	0.	0.

T-93

SALT 3 1.00E-06 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.0	11.5	9.5	8.5	8.0	7.5
6	15.0	12.5	10.5	9.5	9.0	8.5
4	18.0	14.5	13.5	11.5	11.0	10.5
3	20.5	18.0	16.0	14.0	13.0	13.0
2	27.0	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	.5	0.0	.5	.5	0.0	.5
6	.5	0.0	.5	.5	0.0	.5
4	.5	1.0	0.0	.5	.5	.5
3	1.0	.5	0.0	0.0	0.0	0.0
2	.5	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	3.	0.	5.	6.	0.	6.
6	3.	0.	5.	5.	0.	6.
4	3.	6.	0.	4.	4.	5.
3	5.	3.	0.	0.	0.	0.
2	2.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-07 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

SALT 3 1.00E-08 G/M3
ADIABATIC WATER CONTENTS
SEED AT .5 KM WHEN CLOUD IS .5 KM TALL
15. SEC SEEDING PULSE

TIME (min) TO 10 dBZ FIRST ECHO

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	14.5	11.5	10.0	9.0	8.0	8.0
6	15.5	12.5	11.0	10.0	9.0	9.0
4	18.5	15.5	13.5	12.0	11.5	11.0
3	21.5	18.5	16.0	14.0	13.0	13.0
2	27.5	23.0	20.5	18.5	17.5	17.0
1	42.5	37.0	32.5	29.5	27.5	26.5

SEEDING EFFECT
REDUCTION IN TIME (min) TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0	0.0	0.0

SEEDING EFFECT
PERCENT REDUCTION IN TIME TO F.E.

UPDRAFT ($m\ s^{-1}$) \ CLOUD BASE TEMPERATURE (^oC)	0	5	10	15	20	25
8	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.

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