GLACIOLOGICAL DATA COLLECTED BY THE JAPANESE ANTARCTIC RESEARCH EXPEDITION FROM FEBRUARY 1979 TO JANUARY 1980

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1. Introduction

The glaciological and meteorological research by the 20th Japanese Antarctic Research Expedition (JARE-20) from February 1979 to January 1980 was carried out mainly at Mizuho Station (70°42'S, 44°20'E, 2230 m above sea level). Five round trips between Syowa Station (69°00'S, 39°35'E) and Mizuho Station were made in January, April-May, August, October 1979 and January 1980 for logistic support, and two trips between Mizuho Station and St. Y100 (71°17'S, 46°19'E) were made in October 1979 and January 1980 for construction and inspection of the automatic weather station installed at St. Y100. The radio echo sounding for measurement of ice thickness was carried out in October 1979 and January 1980. Data of surface synoptic observations at Mizuho Station in 1979 were published by Wada et al. (1980), Yamanouchi et al. (1981) and Wada et al. (1981).

The present report contains the following data:

(1) Net accumulation at Mizuho Station,
(2) Net accumulation along the Routes S, H, Z, G and Y,
(3) Surface synoptic observations during oversnow traverses,
(4) Results of radio echo sounding.

2. Observation Methods and Observation Regions

2.1. Net accumulation at Mizuho Station

Three stake farms were used to estimate the net accumulation: a 9-stake farm, a 36-stake farm and a 201-stake farm. Net accumulation of the 9-stake farm was measured once a month and the others were measured only once in January 1980, and the results are tabulated in Tables 1,2 and 3, respectively. Net accumulation data of the 9-stake farm from February 1978 to January 1979, which have never been published before, are also included in Table 1. Observers are: Tadashi Okuda, Shigehiko Tsuzurahara, Susumu Kaneto (JARE-19, 1978-1979), Makoto Wada, Takashi Yamanouchi and Koji Tsukamura (JARE-20).

2.2. Net accumulation along the Routes S, H, Z, G and Y

The net accumulation measured during the following oversnow traverses is given in Table 4.

(1) Between Syowa Station and Mizuho Station (Routes S, H and Z)
   a) January 8 to January 25, 1979 (Observers: Shinji Mae and Mitsuyuki Kosha),
   b) April 13 to May 2, 1979 (Observer: Shinji Mae),
   c) August 26 to August 28, 1979 (Observer: Makoto Wada),
   d) October 23 to October 26, 1979 (Observer: Shiji Mae).

(2) Between St. H180 (69°35'E, 42°02'S) and St. A1 (69°47'E, 41°35'S) (Route G)
   a) August 15, 1979 (Observer: Shinji Mae),
   b) October 25, 1979 (Observer: Shinji Mae and Mamoru Kawakubo).

(3) Between Mizuho Station and St. Y100 (Route Z)
   October 17 to October 18, 1979 (Observer: Makoto Wada).

These accumulation data were obtained by the measurement of offset stakes installed at intervals of about 2 km.

2.3. Surface synoptic observations during oversnow traverses

Surface air temperature (stem thermometer), wind speed and direction (3-cup anemometer and magnetic compass), atmospheric station pressure (aneroid barometer), amount and genus of clouds, weather and visibility were observed during the following traverses, and the results are summarized in Table 5.

(1) Round trips between Syowa Station and Mizuho Station
   a) January 7 to January 26, 1979 (Observer: Mitsuyuki Kosha),
   b) April 6 to May 2, 1979 (Observer: Yuji Yamamoto),
   c) August 13 to August 28, 1979 (Observers: Koji Tsukamura and Makoto Wada),
   d) October 6 to October 27, 1979 (Observers: Takashi Yamanouchi, Koji Tsukamura and Makoto Wada).
   e) Janury 4 to January 23, 1980 (Observers: Nobuyoshi Ishikawa, Takashi Yamanouchi and Makoto Wada).

(2) Skarvsnes area
   September 10 to September 22, 1979 (Observer: Mitsuyuki Kosha).

2.4. Results of radio echo sounding

Two types of sounder were used. The sounder consisted of a transmitter, a receiver, and two aerials and an indicator. Specifications of the apparatus are as follows:

	(1)*	(2)*
1. Transmitter		
Carrier frequency	60 MHz	179 MHz
Pulse energy duration	0.3 μs	0.3 μs
Rise time	0.15 μs	0.15 μs
Peak power	1 kW	1 kW
Pulse repetition interval	1 kHz	1 kHz
Total power consumption	DC 24 V, 4 A	DC 28 V, 2.7 A
RF gain	39 dB	39dB
2. Receiver		
Central frequency	60 MHz	179 MHz
Band width	5 MHz	5 MHz
Noise figure	3 dB	3 dB
Receiver sensitivity	-102 dBm	-104 dBm
Input attenuation	0 to 70 dB in 10 dB steps	0 to 70 dB in 10 dB steps
3. Aerials (Three element Yagi antenna)		
Absolute power gain	8 dB	8 dB
4. Indicator (Oscilloscope; rise time 35 ns) (35-mm continuous recording camera)		

(1)*: For the use from oversnow vehicle.
(2)*: For airborne sounding.

Radio echo soundings from oversnow vehicle were carried out between Syowa Station and St. Y80 via Mizuho Station in October 1979. Compiled data in this report were obtained from readings of continuous records on 35-mm films. The sampling distance of records is about 250 m. Location and ice thickness are indicated in Table 6, using the wave velocity of 169 m/μs in ice.

Airborne radio echo soundings in the following regions were carried out by a Pilatus Porter PC-6:

(1) Syowa Station to St. H180 on January 25, 1980,

(2) Syowa Station to Mizuho Station on January 26, 1980,

(3) Yamato Mountains area on January 28, 1980,

(4) Shirase Glacier area on January 29, 1980.

Since the aircraft is too small to install precise navigation instruments, the position of the aircraft was determined by dead

reckoning with known terrestrial objects. So the accuracy of position is about 3 km at most.

Compiled data in this report were obtained from readings of continuous records in 35-mm films. The sampling distance of the records is about 2 km. Using the wave velocity of 169 m/μs in ice and 300 m/μs in air, location, snow surface elevation, bedrock surface elevation and ice thickness are tabulated in Table 7.

References

Wada, M., Yamanouchi, T., Mae, S. and Kawaguchi, S. (1980): Meteorological data at Mizuho Station, Antarctica in 1979. JARE Data Rep., 57 (Meteorol. 7), 92p.

Wada, M., Yamanouchi, T., Mae, S., Kawaguchi, S. and Kusunoki, K. (1981): POLEX-South data, Part 2. Micrometeorological data at Mizuho Station, Antarctica in 1979. JARE Data Rep., 62 (Meteorol. 9), 321p.

Yamanouchi, T., Wada, M., Mae, S. and Kawaguchi, S. (1981): POLEX-South data, Part 1. Radiation data at Mizuho Station, Antarctica in 1979. JARE Data Rep., 61 (Meteorol. 8), 350p.

Table 1. Net accumulation with a 9-stake farm at Mizuho Station.
(mm in depth)

No. / Date	1	2	3	4	5	6	7	8	9
Feb. 1978	165	187	251	295	199	191	154	196	227
Mar.	0	42	-99	-102	63	-3	44	136	4
Apr.	0	-51	-1	0	-63	1	-44	-136	-12
May	2	1	2	1	1	2	2	2	2
June	2	1	2	2	3	2	1	1	0
July	2	3	3	13	3	3	4	4	3
Aug.	1	0	1	-9	0	0	0	0	0
Sep.	0	0	0	-1	-1	2	0	0	-1
Oct.	-2	-6	-5	-3	-1	23	-3	-3	7
Nov.	-6	-7	22	-10	-9	26	-9	-7	81
Dec.	28	30	49	48	29	19	40	57	-5
Jan. 1979	-47	-36	-12	-2	-35	-10	1	-34	-14
Feb.	149	146	117	125	128	107	123	116	178
Mar.	186	69	158	129	127	160	169	170	43
Apr.	-57	29	-52	-10	24	21	-130	-32	-2
May	-11	-17	-29	-11	-12	-7	35	-28	-34
June	15	27	71	1	5	-22	1	-2	0
July	13	1	-36	-8	3	14	34	32	0
Aug.	-11	56	72	12	39	9	-46	29	78
Sep.	-5	-45	-15	-10	-20	0	0	-30	-60
Oct.	1	-2	-3	-4	-5	-2	14	-6	-3
Nov.	-2	-12	-23	-5	-10	-17	-11	-24	-6
Dec.	-38	-28	-26	-24	-40	-18	-29	-25	-33
Jan. 1980	83	101	13	36	34	19	27	8	21

Table 2. Net accumulation with a 36-stake farm at Mizuho Station.
(mm in depth)

Stake No.		Stake No.		Stake No.	
I - 1	48	III - 1	-1	V - 1	43
2	67	2	11	2	12
3	31	3	0	3	14
4	26	4	-1	4	36
5	9	5	1	5	37
6	23	6	-4	6	19
II - 1	3	IV - 1	2	VI - 1	7
2	8	2	-1	2	41
3	12	3	11	3	30
4	14	4	1	4	8
5	-2	5	16	5	-2
6	8	6	54	6	-6

Table 3. Net accumulation with a 201-stake farm at Mizuho Station.
(mm in depth)

Stake No.		Stake No.		Stake No.		Stake No.	
1	353	56	162	111	37	166	114
2	401	57	143	112	56	167	80
3	400	58	174	113	93	168	99
4	447	59	99	114	57	169	65
5	476	60	198	115	95	170	119
6	492	61	149	116	110	171	37
7	448	62	115	117	72	172	-52
8	472	63	134	118	53	173	27
9	460	64	124	119	30	174	3
10	355	65	52	120	2	175	-45
11	421	66	131	121	15	176	-50
12	357	67	138	122	39	177	-75
13	313	68	125	123	72	178	-8
14	334	69	135	124	57	179	18
15	415	70	149	125	52	180	35
16	207	71	164	126	15	181	0
17	171	72	239	127	3	182	-42
18	159	73	191	128	10	183	-13
19	147	74	201	129	18	184	-47
20	185	75	257	130	69	185	-80
21	172	76	287	131	40	186	139
22	272	77	296	132	58	187	86
23	313	78	331	133	146	188	130
24	296	79	294	134	153	189	20
25	299	80	296	135	187	190	178
26	244	81	334	136	232	191	120
27	146	82	312	137	181	192	200
28	208	83	278	138	222	193	218
29	189	84	354	139	254	194	312
30	157	85	359	140	190	195	-48
31	260	86	336	141	152	196	291
32	233	87	276	142	135	197	558
33	214	88	308	143	132	198	365
34	216	89	296	144	167	199	210
35	206	90	366	145	210	200	362
36	217	91	364	146	199	201	390
37	194	92	387	147	207		
38	197	93	373	148	187		
39	196	94	382	149	223		
40	189	95	351	150	203		
41	145	96	349	151	169		
42	135	97	327	152	113		
43	152	98	352	153	124		
44	194	99	350	154	244		
45	157	100	390	155	147		
46	171	101	311	156	183		
47	193	102	123	157	163		
48	129	103	145	158	96		
49	157	104	59	159	184		
50	179	105	12	160	348		
51	189	106	0	161	294		
52	202	107	86	162	300		
53	186	108	105	163	344		
54	192	109	45	164	376		
55	186	110	60	165	331		

Table 4. Net accumulation along Routes S,H,Z,G and Y (cm in depth).

Station No. \ Period	Jan. 1978 - Jan. 1979 (337-356 days)	Jan. - Apr. 1979 (91-114 days)	Apr. - Aug. 1979 (118-136 days)	Aug. - Oct. 1979 (57-60 days)
S 17	—	—	—	2
18	59	32	45	12
19	45	45	15	4
20	22	66	68	17
21	128	29	6	13
22	108	37	50	24
23	55	45	36	13
24	-18	42	-41	-9
25	50	41	16	-4
26	58	52	32	3
27	-6	42	17	-3
28	-32	40	41	-3
29	-33	30	40	-1
30	65	60	20	-11
H 3	57	67	16	4
9	50	36	24	-1
15	72	39	22	-3
21	35	47	-1	1
27	59	47	21	7
35	41	36	41	-3
42	41	29	1	0
48	25	48	26	-1
54	47	42	0	-1
60	62	32	25	-4
64	-50	11	13	-1
68	19	16	-2	7
72	74	44	50	-13
76	17	26	27	-1
80	17	46	16	-17
84	37	25	-1	-1
88	58	5	7	1
92	16	30	24	0
96	45	21	21	0
100	54	25	0	1

Table 4. Continued.

Station No. \ Period	Jan. 1978 - Jan. 1979 (337-356 days)	Jan. - Apr. 1979 (91-114 days)	Apr. - Aug. 1979 (118-136 days)	Aug. - Oct. 197[9] (57-60 days)
H 104	32	10	20	-2
108	11	23	—	0
112	17	41	9	-1
116	28	13	13	-1
120	26	13	13	-1
124	19	9	3	3
128	50	23	10	3
132	38	38	17	-1
136	-3	19	17	1
140	27	28	22	-5
144	39	21	20	-1
148	9	21	30	1
152	25	4	17	-1
156	30	28	5	4
160	6	19	27	-1
164	24	82	6	-1
168	20	30	27	0
172	34	26	0	2
176	21	25	13	2
180	19	34	—	4(195 days)
184	25	4	23	1
188	9	21	17	3
192	43	32	14	7
196	32	21	16	9
200	29	5	10	1
204	18	44	10	2
208	58	-1	10	8
212	28	17	18	-5
216	31	19	13	0
220	25	16	8	-2
224	39	8	18	-1
228	14	38	-12	-1
232	30	10	—	-1(196 days)
236	37	9	18	0

Table 4. Continued.

Station No. \ Period	Jan. 1978 - Jan. 1979 (337-356 days)	Jan. - Apr. 1979 (91-114 days)	Apr. - Aug. 1979 (118-136 days)	Aug. - Oct. 1979 (57-60 days)
H 240	32	30	13	-1
244	34	12	6	-3
248	29	20	15	2
252	16	33	13	4
256	10	17	17	2
260	30	24	13	0
264	5	19	25	-1
268	34	27	17	1
272	79	-9	8	0
276	23	14	9	5
280	33	22	11	2
284	26	29	-8	-5
288	10	3	16	2
293	15	35	—	-1
297	19	-10	2	0
301	17	15	21	-17
S 122	—	3	—	6(182 days)
Z 2	41	12	-2	0
4	37	0	1	-1
6	-66	19	-1	0
8	9	9	18	1
10	4	14	1	0
12	19	16	10	-2
14	61	44	-10	-1
16	27	4	4	1
18	-1	3	7	0
20	18	-1	5	-5
22	31	17	2	9
24	13	28	-6	0
26	-2	2	8	-7
28	-2	8	0	0
30	18	-4	5	-1
32	-39	5	0	1
34	14	19	2	-1

Table 4. Continued.

Station No. \ Period	Jan. 1978 - Jan. 1979 (337-356 days)	Jan. - Apr. 1979 (91-114 days)	Apr. - Aug. 1979 (118-136 days)	Aug. - Oct. 1979 (57-60 days)
Z 36	4	31	47	1
38	15	-1	0	9
40	-4	25	1	0
42	42	-4	-4	6
46	-9	14	0	0
50	23	12	7	-5
54	4	42	0	-3
58	19	40	-6	-7
62	0	0	-3	4
66	1	21	-7	1
70	0	17	-10	1
72	-5	16	0	0
74	0	11	0	-1
76	26	27	-1	19
78	-8	-2	6	-7
80	-3	2	3	0
82	22	37	-13	-3
84	1	0	11	6
86	-1	4	23	-10
88	42	2	1	2
90	1	34	-7	2
92	3	-5	2	0
94	10	0	30	0
96	-3	1	17	0
98	17	11	3	-3
100	11	30	0	-1
102	13	2	-3	8

Table 4. Continued.

Station No. \ Period	Aug. 1977 - Aug. 1979 (729 days)	Aug. 1979 - Oct. 1979 (71 days)	Station No. \ Period	Mar. 1977 - Oct. 1979 (940 days)
G 2	70	12	Y 1802	-5
4	71	0	1804	27
6	74	0	1806	29
8	73	0	1808	109
10	67	0	1810	78
12	77	6	1812	72
14	65	-2	1814	18
16	50	4	1816	37
18	64	5	1818	23
20	62	0	1820	42
22	72	-1	1822	85
24	87	2	1824	74
26	68	6	1826	2
28	—	—	1828	57
			1830	96
			1832	83
			1834	103
			1836	122
			1838	128
			1840	83
			1842	78
			1844	64

Table 5. Surface synoptic observations during oversnow traverses.

Notations for the table

LT : Local standard time (at 45°E, GMT+3h)

St. No.: Station number

v : Wind speed

d : Wind direction

P : Surface pressure

T : Air temperature

N : Amount of cloud

C_L : Genus of low cloud

C_M : Genus of middle cloud

C_H : Genus of upper cloud

Nc : Amount and genus of an individual cloud

w : Present weather

- ○ Clear
- ◐ Fine
- ◍ Cloudy (upper clouds are predominant)
- ◎ Cloudy
- ⊹ Drifting snow
- ⊹ Blowing snow
- ≡ Fog
- ✳ Snow
- ✳⊹ Snowstorm

V : Visibility

Table 5-1a. Surface meteorological data along Routes S, H, G and Z in January 7 - 26, 1979.

Date	LT	St.No.	v (m/s)	d	P (mb)	T (°C)	N	$C_L C_M C_H$	Nc	w
Jan. 7	1200	S 16	2.0	NNW	927	0.5	0^+	6 7 2	0^+Cu, 0^+Ac, 0^+Ci	○
8	1105	S 16	10	NNE	921	-3.3	10^-	6 7 x	2St, 8Ac	≡
	1500	S20-5	2.0	NNE	917.7	-0.8	10^-	8 7 x	1St, 1Sc, 10^-Ac	◎
	1800	S 23	2.0	WSW	996.3	-1.4	10^-	4 7 x	0^+Cu, 0^+Sc, 10^-Ac	◎
9	1030	S 26	5.5	E	982.2	-1.1	0^+	0 0 2	0^+Ci	○
	1235	S 28	6.8	ENE	877.6	-2.1	0^+	0 4 0	0^+Ac	○
	1505	H 35	5.8	NE	864.0	-0.4	0^+	0 4 0	0^+Ac	○
	1830	H 79	2.0	ESE	849.5	-4.2	0^+	0 3 0	0^+Ac	○
	2125	H 94	5.5	ENE	844.0	-10.7	1	0 3 0	1Ac	
10	0910	H 94	12	ENE	841.7	-4.7	9	0 4 2	0^+Ac, 9Ci	⊹
	1210	H 110	13	NE	838.2	-1.3	9	0 5 0	9Ac	⊹
	1510	H 142	13	NE	832.4	-2.2	9	8 4 2	3Sc, 0^+St, 3Ac, 1As, 1Ci	⊹
	1805	H 165	10	NE	826.0	-5.0	10^-	5 4 2	0^+Sc, 2Ac, 10^-Ci	◍
	2105	H 165	10	ENE	825.8	-7.7	10^-	5 7 1	0^+Sc, 10^-As, 0^+Ac, 0^+Ci	◎
11	0635	H 165	11	ENE	824.9	-9.8	1	0 3 1	1Ac, 0^+Ci	⊹
	0850	H 165	15	ENE	823.3	-7.7	1	0 3 1	0^+Ac, 1Ci	⊹
	1200	H 192	13	ENE	816.2	-4.7	8	0 3 1	6Ac, 7Ci	⊹
	1510	H 221	9	E	808.8	-3.2	1	0 3 1	1Ac, 0^+Ci	○
	2125	H 250	14	ENE	799.8	-10.1	1	0 0 2	1Ci	⊹
12	0930	H 250	14	ENE	790.9	-9.4	9	0 0 2	9Ci	◍
	1200	H 272	13	ENE	786.7	-7.6	10^-	0 3 2	4Ac, 10Ci	◍
	1506	H 300	9	ENE	778.0	-7.1	9	0 4 2	2Ac, 9Ci	◍
	1800	Z10.5	9	ENE	770.2	-9.9	9	0 0 2	4Ci	◍
	2200	Z 20	10	ENE	767.4	-14.7	10	0 0 2	0^+Ci	○

Table 5-1a. Continued.

Date	LT	St.No.	v (m/s)	d	P (mb)	T (°C)	N	$C_L C_M C_H$	Nc	w
Jan. 13	0910	Z 24	10	ENE	765.8	-13.1	0	0 0 0		○
	1200	Z 40	10	ENE	758.9	-12.0	0^+	0 4 0	0^+Ac	○
	1500	Z 70	7	ENE	755.0	-10.5	0^+	0 0 2	0^+Ci	○
	1800	Z 85	3	ENE	752.6	-12.0	0^+	0 0 2	0^+Ci	○
	2110	Z 85	4	ENE	751.2	-17.4	0^+	0 0 2	0^+Ci	○
	0915	Z 85	8	ENE	750.2	-15.9	0	0 0 0		○
	1200	Z 98	9	ENE	747.4	-13.2	0^+	0 0 2	0^+Ci	○
23	1200	Z 82	9	E	741.2	-18.2	4	0 7 0	2As, 2Ac	◐
	1500	Z 37	4	E	750.5		10	0 2 x	10As	✳
	1800	Z 6	3	NE	762.3		10^-	0 7 x	6Ac, 4As	◎
24	0855	H 284	4	E	774.2	-15.8	10^-	0 3 2	3Ac, 10^-Ci	◍
	1205	H 226	4	E	792.4	-12.2	9	0 7 2	1As, 1Ac, 9Ci	◍
	1500	H 180	3	ENE	803.8	-10.1	10^-	6 3 2	3St, 4Ac, 10^-Ci	◍
	1800	H 112	2	E	825.8	-10.0	10^-	8 3 2	3Sc, 5Ac, 10^-Ci	✳
	2100	H 83	2	ENE	835.2	-12.2	10^-	8 3 2	6Sc, 2Ac, 2Ci	✳
25	0900	H 83	7	ENE	836.6	-12.5	10^-	0 3 2	3Ac, 10^-Ci	◍
	1200	H 15	7	ENE	856.7	-9.8	10^-	0 7 2	0^+Ac, 10^-Ci	◍
	1500	S 16	5	E	914.4	-2.1	10^-	1 x x	10^-Cu	◎
	2110	S 16	6	E	915.1	-6.2	10^-	4 3 2	2Cu, Sc, 3Ac, 10^-Ci	◍
26	0630	S 16	10	ENE	914.8		10^-	4 3 x	3Sc, 1Cu, 10^-Ac	⊹
	1200	"	10	E	914.2		10^-	8 3 x	10^-Cu, 1St, 0^+Sc, xAc	⊹
	1500	"	8	ENE	913.0		10^-	6 3 2	2Cu, 0^+St, 6Ac, 10^-Ci	◎
	1800	"	5	ENE	912.1		10^-	6 3 2	3Sc, 1Cu, 0^+St, 2Ac, 10^-Ci	◎
	2100	"	5	ENE	911.5		7	6 3 0	3Sc, 1Cu, 0^+St, 3Ac	◐

Table 5-1b. Surface meteorological data along Routes S, H, G, Z and M in April 6 to May 2, 1979.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Apr. 6	2100	S 26	7.0	NE	-23.1	0	0 0 0		○	40
7	0600	S 26	8.1	NE	-25.1	0^+	0 3 0	0^+Ac	○	50
	0900	S 30	8.9	NE	-25.2	0^+	0 3 0	0^+Ac	○	40
	1200	H 62	10.1	NE	-25.1	0	0 0 0		○	1.8
	1510	H 101	10.0	NE	-27.6	0	0 0 0		○	1.8
	1800	H 111	10.1	NE		x	x x x		⊹	0.5
	2100	H 111	8.5	NE	-31.6	x	x x x		⊹	0.5
8	0600	H 111	9.9	NE	-21.5	10	0 2 x	10 As	✳	0.01
	0900	"	13.5	NE	-19.6	10	0 2 x	10 Ns	✳	0.01
	1200	"	16.0	NE	-18.5	10	0 2 x	10 Ns	✳	0.01
	1500	"	15.0	NE	-18.8	10	0 2 x	10 Ns	✳	0.002
	1800	"	14.0	NE	-19.2	10	0 2 x	10 Ns	✳	0.003
	2100	"	16.0	NE	-20.0	10	0 2 x	10 As	✳	0.003
9	0600	H 111	10.0	NE	-24.6	6	0 7 0	6 Ac	⊹	0.05
	0900	"	8.0	NE	-25.0	0	0 0 0		⊹	0.05
	1200	"	10.0	E	-23.6	0^+	0 3 0	0^+Ac	⊹	0.05
	1500	H 140	10.0	E	-25.4	2	0 3 0	2 Ac	⊹	0.1
	1830	H 180	10.0	E	-25.5	10	0 7 x	10 Ac	⊹	0.05
	2100	"	11.0	NE	-26.4	6	0 7 x	6 Ac	⊹	0.15
10	0630	H 180	12.0	NE	-20.9	10	0 2 x	10 As	✳	0.003
	0900	"	12.5	NE	-18.2	10	0 2 x	10 As	✳	0.01
	1200	"	13.0	NE	-17.0	10	0 2 x	10 As	✳	0.01
	1500	"	14.5	NE	-15.2	10	0 2 x	10 As	✳	0.005
	1800	"	15.0	NE	-15.0	10	0 2 x	10 Ns	✳	0.005
	2100	"	15.0	NE	-14.4	10	0 2 x	10 Ns	✳	0.005

Table 5-1b. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Apr. 11	0630	H 180	20.0	NE		10	7 x x	10 St	✳	0.002
	0900	"	18.0	NE	-12.0	10	7 x x	10 St	✳	0.002
	1500	"	20.0	NE		10	7 x x	10 St	✳	0.001
	1800	"	10.0	NE	-11.0	10	0 2 x	10 Ns	✳	0.005
	2100	"	15.0	NE	-11.0	10	0 2 x	10 As	✳	0.005
12	0730	H 180	10.0	NE	-15.2	10	5 7 x	3 Sc, 8 Ac	+	0.02
	0900	"	14.0	E	-13.8	10^-	0 7 x	10^-Ac	+	0.02
	1200	"	15.0	NE	-13.2	10	5 7 x	3 Sc, 10 Ac	+	0.02
	1800	G 4	14.0	NE	-16.9	10	0 7 x	10 Ac	◎	1.0
	2100	G 4	10.0	NE	-18.5	7	5 7 1	0^+Sc, 7 Ac, 0^+Ci	⊖	10
13	0600	G 4	3.0	NE	-22.0	5	0 3 1	5 Ac, 0^+Ci	⊖	10
	0940	A 1	10.0	E	-19.8	5	0 3 0	5 Ac	⊖	10
	1230	A 1	15.0	NE	-19.6	10^-	0 3 2	3 Ac, 8 Ci	⊖	10
	1500	G10.5	11.0	NE	-22.6	10^-	0 3 2	0^+Ac, 10^-Ci	⊖	10
	1800	H 200	10.0	NE	-25.2	0^+	0 3 0	0^+Ac	○	3.0
	2100	H 200	6.0	NE	-26.8	3	0 3 2	3 Ac, 0^+Ci	○	3.0
14	0600	H 200	4.0	NE	-31.8	0	0 0 0		○	40
	0900	H 216	5.5	SE	-31.0	0	0 0 0		○	40
	1200	H 256	6.5	E	-27.0	0	0 0 0		○	10
	1500	H 288	9.5	E	-27.0	0	0 0 0		○	10
	1800	Z 10	10.0	E	-30.8	0	0 0 0		○	20
	2100	Z 10	9.0	E	-31.8	0	0 0 0		○	3.0
15	0600	Z 10	9.0	E	-33.2	0	0 0 0		○	5.0
	0900	Z 22	7.5	E	-33.2	0	0 0 0		○	5.0
	1200	Z 47	9.0	E	-33.0	0	0 0 0		○	5.0

Table 5-1b. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Apr. 15	1500	Z 75	8.5	E	-35.8	0	0 0 0		○	5.0
	1800	Z 90	10.0	E	-36.5	0^+	0 3 0	0^+Ac	○	5.0
	2100	Z 90	9.0	E	-37.2	0^+	0 3 0	0^+Ac	○	5.0
16	0600	Z 90	10.0	E	-36.8	10	0 3 5	3 Ac, 10 Cs	◎	8.0
24	1200	Z 88	11.0	E	-34.0	0	0 0 0		○	1.0
	1500	Z 68	6.0	E	-34.8	0	0 0 0		○	1.0
	1830	Z 35	10.2	E	-33.8	1	0 3 0	1 Ac	○	1.0
	2100	Z 35	9.0	E	-34.2	1	0 3 2	1 Ac, 0^+Ci	○	3.0
25	0600	Z 35	9.0	E	-36.2	3	0 3 1	3 Ac, 0^+Ci	◐	1.0
	0900	Z 25	8.5	E	-34.5	4	0 3 2	4 Ac, 0^+Ci	◐	3.0
	1200	Z 4	9.5	E	-33.3	1	0 3 1	1 Ac, 0^+Ci	○	5.0
	1500	M 12	8.0	E	-33.0	0^+	0 3 0	0^+Ac	○	5.0
	1800	M 25	9.0	E	-33.5	1	0 3 2	1 Ac, 0^+Ci	○	5.0
	2100	M 25	8.0	E	-34.2	1	0 3 2	1 Ac, 0^+Ci	○	3.0
26	0600	M 25	7.0	E	-38.4	0^+	0 3 0	0^+Ac	○	3.0
	0900	M 29	6.0	E	-36.4	0	0 0 0		○	40
	1200	M 35	5.0	E	-36.4	0	0 0 0		○	50
	1500	M 47	5.0	E	-36.4	1	0 3 0	1 Ac	○	40
	1800	M54.5	4.0	E	-37.2	1	0 3 0	1 Ac	○	40
	2100	M54.5	4.0	E	-36.8	0^+	0 3 0	0^+Ac	○	35
27	0600	M54.5	12.5	E	-25.5	10	0 7 x	10 Ac	⊹	0.02
	0900	"	13.5	E	-23.5	10	0 7 x	10 Ac	⊹	0.02
	1200	"	14.5	E	-23.0	10	0 7 x	10 Ac	⊹	0.02
	1500	"	13.5	E	-22.5	10	0 7 x	10 Ac	⊹	0.01

Table 5-1b. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Apr. 27	1800	M54.5	17.0	E	-21.9	10	0 2 x	10 As	✳	0.005
	2100	"	18.5	E	-21.2	10	0 2 x	10 Ns	✳	0.005
28	0655	M54.5	15.0	E	-19.0	10	0 2 x	10 Ns	✳	0.005
	1200	"	12.5	E	-19.2	10	0 7 x	10 Ac	⊹	0.1
	1500	"	13.0	E	-19.2	10	0 7 x	10 Ac	⊹	0.2
	1800	"	11.0	E	-19.2	10	0 7 x	10 Ac	⊹	0.1
	2100	"	10.0	E	-20.0	10	0 7 x	10 Ac	⊹	0.15
29	0600	M54.5	10.0	E	-21.4	10	0 7 x	10 Ac	⊹	0.5
	1200	"	10.0	E	-23.8	10	0 7 x	10 Ac	⊹	0.15
	1500	M 28	12.5	E	-25.2	10	5 7 x	0^+Sc, 10 Ac	◎	10
	1800	"	11.0	E	-26.2	8	0 7 x	8 Ac	◎	5.0
	2100	"	11.5	E	-27.0	10	0 7 x	10 Ac	⊹	0.5
30	0600	M 28	9.5	E	-30.0	4	0 7 0	4 Ac	◐	3.0
	1200	"	7.0	E	-27.5	9	0 2 x	9 As	◎	3.0
	1500	H 179	7.0	NE	-22.5	10	5 7 x	0^+Sc, 10 Ac	◎	5.0
	1800	H 141	5.0	E	-23.5	8	0 7 x	8 Ac	◎	5.0
	2100	"	5.0	E	-22.8	10^-	0 7 x	10^-Ac	◎	5.0
May 1	0600	H 141	6.5	E	-23.0	8	0 7 x	8 Ac	◎	3.0
	1200	H 84	5.0	NE	-19.4	10	0 7 x	10 Ac	◎	5.0
	1525	*	5.0	NE	-19.2	10	5 7 x	4 Sc, 7 Ac	◎	5.0
	1800	H 24	5.0	E	-17.4	10	5 7 x	3 Sc, 8 Ac	◎	5.0
	2100	"	4.5	E	-18.4	6	0 7 x	6 Ac	◐	5.0
2	0600	H 24	0.0	-	-20.1	10	0 7 x	10 Ac	◎	5.0
	1200	S 17	0.0	-	-14.0	10^-	0 2 x	10 Ns	✳	20

* 69°9'S, 41°17'E

Table 5-1c. Surface meteorological data along Routes S, H, G and Z in August 13 - 28, 1979.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Aug. 13	1500	S 23	11.0	ESE	-16.4				✳	0.25
14	1500	H 84	7.5	NE	-23.2				◎	4.0
15	1500	A 1	10.5	E	-28.6				◐	15
16	1500	H 298	13.0	ESE	-34.7				+	0.1
17	1500	Z 16	12.0	ESE	-42.2				+	0.7
18	1500	Z 43	10.0	E	-44.4				◐	2.0
26	0900	Z 92	10.0		-41.6	10^-	0 0 2	10^-Ci	+	0.3
	1200	Z 70	8.0		-41.0	10^-	0 2 2	1 As, 10^-Ci	+	0.6
	1500	Z 40	6.0	E	-39.8	10^-	0 1 2	10^-Ci, 0^+Ac, 0^+Ci	◐	1.0
	1800	Z 13	4.0		-38.6	10^-	0 1 1	10^-Ci, 0^+As	◐	1.0
	2100	Z 13	6.0		-41.8	0			○	5.0
27	0600	Z 13	6.0	NE	-46.3	1	0 2 0	1 As	○	2.0
	0900	H 361	5.5	E	-44.9	3	0 1 2	1 As, 0^+Cc, 2 Ci	◐	5.0
	1200	H 247	3.0	ESE	-41.2	0^+	0 1 2	0^+As, 0^+Ci	○	10
	1500	H 240	3.5	E	-42.8	1	0 0 9	1 Cc	○	2.0
	1800	H 140	7.0	E	-44.6	0			○	1.0
	2100	H 140	7.0	E	-44.2	10^-	0 0 2	10^-Ci	✳	5.0
28	0600	H 140	6.5	E	-46.0	0			○	
	0900	H 92	10.0	E	-42.4	0^+	0 0 2	0^+Ci	+	0.3
	1200	S 30	8.5	ENE	-32.8	0^+	0 1 2	0^+As, 0^+Ci	○	5.0
	1500	S 16	9.5	E	-35.0	0^+	0 1 2	0^+As	○	10

Table 5-1d. Surface meteorological data along Routes S, H, G, Z and Y in October 6 - 27, 1979.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Oct. 6	1500	S 16	15.0	E	-14.5	10^-	0 7 x	8 As, 2 Ac	◎	15
	2100	S 30	15.0	ESE	-22.8	10^-	0 7 2	4 As, 3 Ac, x Ci	◎	20
7	0700	S 30	14.5	E	-25.7	0^+	0 0 2	0^+Ci	○	15
	0900	H 45	8.5	E	-21.3	0^+	0 0 1	0^+Ci	○	30
	1200	H 88	9.0	ESE	-22.3	0^+	0 0 1	0^+Ci	○	30
	1500	H 122	7.5	ESE	-24.5	0^+	0 0 1	0^+Ci	○	30
	1800	H 180	8.0	ESE	-28.6	0^+	0 0 1	0^+Ci	○	30
	2100	H 200	11.0	ESE	-32.4	0^+	0 0 1	0^+Ci	○	30
8	0600	H 200	12.5	ESE	-36.1	0^+	0 0 1	0^+Ci	○	10
	0900	H 212	12.0	ESE	-33.9	0^+	0 0 1	0^+Ci	○	1.5
	1200	H 270	13.0	ESE	-32.3	0	0 0 0		⊹	1.0
	1500	H 305	14.0	E	-32.8	0	0 0 0		⊹	0.5
	1900	Z 25	14.0	E	-37.8	0	0 0 0		⊹	0.3
9	0600	Z 25	14.5	E	-39.2	0	0 0 0		⊹	0.5
	0900	Z 40	14.5	E	-37.5	0	0 0 0		⊹	0.5
	1200	Z 73	12.0	E	-34.9	0	0 0 0		⊹	0.6
	1500	Z 90	11.5	E	-34.0	0	0 0 0		○	1.5
11	0900	Y 10	10.5	E	-36.0	0	0 0 0		⊹	0.6
	1200	Y 22	10.0	E	-28.5	0	0 0 0		⊹	0.6
	1500	Y 28	9.5	E	-31.5	0	0 0 0		⊹	0.6
	1800	Y 38	10.0	ESE	-36.0	0	0 0 0		⊹	0.6
12	0600	Y 43	11.5	ESE	-42.5	0	0 0 0		⊹	0.3
	0900	Y 45	10.0	ESE	-36.5	0	0 0 0		⊹	0.3
	1200	Y 52	11.5	ESE	-33.0	0	0 0 0		⊹	0.3

Table 5-1d. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Oct. 12	1500	Y 58	9.5	E	-28.5	3	0 0 9	3 Cc	⊖	1.0
	1800	Y 67	8.0	ESE	-32.0	0^+	0 3 0	0^+Ac	○	1.5
	2200	Y 72	11.5	E	-37.0	0^+	0 3 0	0^+Ac	+	0.5
13	0600	Y 72	10.5	E	-34.2	0^+	0 3 0	0^+Ac	+	0.5
	0900	Y 74	10.5	ESE	-31.2	9	0 0 2	9 Ci	+	0.5
	1200	Y 82	9.0	ESE	-28.6	10^-	0 0 2	10^-Ci	⊖	1.5
	1500	Y 89	7.0	ESE	-29.1	10^-	0 7 2	8 Ac, 3 Ci	◎	1.5
	1800	Y 100	8.0	ESE	-32.0	10^-	0 3 6	2 Ac, 8 Cs	⊖	2.0
	2200	Y 100	8.0	ESE	-37.7	1	0 3 0	1 Ac	○	2.0
14	0900	Y 100	10.5	E	-30.6	10^-	0 0 9	10^-Ci, 2 Ci	+	0.4
	1200	"	8.5	E	-26.8	10^-	0 2 x	10^-As	◎	1.5
	1500	"	11.5	ESE	-25.6	10	0 2 x	10 As	+	0.8
	1800	"	10.0	SE	-30.2	10	0 2 x	10 As	◎	1.0
	2200	"	10.0	ESE	-35.5	3	0 7 0	3 Ac	⊖	2.0
15	0900	Y 100	13.0	E	-37.0	0	0 0 0		+	0.6
	1300	"	11.5	ESE	-32.4	0	0 0 0		+	1.0
	1500	"	10.0	ESE	-33.5	0	0 0 0		+	1.0
	1800	"	11.0	ESE	-38.6	0	0 0 0		+	0.5
	2100	"	11.0	ESE	-41.8	0	0 0 0		+	0.5
16	0900	Y 100	10.5	E	-33.0	0	0 0 0		+	0.5
	1200	"	9.5	E	-34.5	0	0 0 0		○	1.0
	1500	"	11.5	E	-35.0	0	0 0 0		○	1.5
	1800	"	8.5	ESE	-38.5	0	0 0 0		○	1.0
	2100	"	8.0	E	-40.6	0	0 0 0		○	1.0

Table 5-1d. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Oct. 17	0600	Y 100	10.0	ESE	-42.6	0	0 0 0		○	10
	0900	Y 100	10.0	E	-40.2	0^+	0 3 0	0^+Ac	○	20
	1200	Y 100	8.5	ESE	-33.5	0^+	0 0 2	0^+Ci	○	20
	1500	Y 100	7.5	E	-35.2	0^+	0 3 0	0^+Ac	○	40
	1800	Y 90	8.0	E	-35.0	0^+	0 3 0	0^+Ac	○	40
	2100	Y 76	12.0	E	-41.0	0	0 0 0		○	1.0
18	0600	Y 76	10.5	E	-42.5	0	0 0 0		○	2.0
	0900	Y 72	5.0	E	-37.0	0	0 0 0		○	2.0
	1200	Y 60	3.0	E	-32.5	0	0 0 0		○	8.0
	1800	Y 47	7.0	ESE	-32.2	0	0 0 0		○	40
	2100	Y 40	5.0	ESE	-39.6	0	0 0 0		○	40
23	0900	Z 94	6.0	ENE	-26.6	10^-	0 2 x	10^-As	✳	4.0
	1200	Z 75	5.0	ENE	-25.1	9	0 7 x	5 Ac, 6 As	◎	10
	1500	Z 51	3.0	NE	-23.0	8	0 7 2	7 Ac, x Ci	⊖	15
	1800	Z 26	6.0	ENE	-27.1	6	0 7 2	3 Ac, 3 As, 2Ci, 3Ci	⊖	15
	2100	Z 12	5.0	ENE	-30.7	4	0 7 2	2 As, 2Ac, 0^+Ci	⊖	10
24	0600	Z 12	10.0	E	-27.5	8	0 0 2	8 Ci	⊹	0.4
	0900	Z 12	13.0	E	-26.6	4	0 3 2	0^+Ac, 4 Ci	⊹	0.15
	1200	Z 7	11.0	E	-20.6	10^-	0 7 x	9 As, x Ac	✳	0.2
	1500	Z 7	11.0	ENE	-20.8	8	0 7 2	6 As, 5 Ac, x Ci	✳	0.5
	1800	H 268	7.0	ENE	-21.1	2	0 7 2	2 Ac, 0^+Ci	⊖	10
	2100	H 235	6.0	E	-27.6	2	0 7 2	2 Ac, 0^+Ci	⊖	15
25	0600	H 235	10.0	E	-25.7	8	0 7 2	3 Ac, 8 Ci	⊖	3.0
	0900	H 220	8.0	E	-19.4	8	0 7 2	7 Ac, x Ci	⊖	10
	1200	H 180	3.0	E	-18.5	1	0 3 2	0^+Ac, 1 Ci	○	20

Table 5-1d. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Oct. 25	1500	A 1	4.0	E	-18.4	1	0 3 2	0^+Ac, 1 Ci	○	20
	2100	H 164	4.0	E	-28.4	1	0 3 2	0^+Ac, 1 Ci	○	30
26	0600	H 164	4.0	E	-22.5	10^-	0 7 2	9 Ac, x Ci	✳	8.0
	0900	H 143	4.0	E	-17.4	7	0 7 2	7 Ac, x Ci	⊖	20
	1200	H 94	0.0	-	-16.1	0^+	0 3 1	0^+Ac, 0^+Ci	○	30
	1500	H 45	0.0	-	-17.6	0^+	0 0 2	0^+Ci	○	20
	1800	S 26	0.0	-	-19.4	0^+	0 7 1	0^+Ac, 0^+Ci	○	30
27	0900	S 16	2.0	SE	-20.5	7	0 2 x	7 As, 0^+Ci	⊖	30
	1200	S 16	2.0	ESE	-13.8	10	0 2 8	8 As, 10Ci	◎	30

Table 5-1e. Surface meteorological data along Routes S, H, G, Z and Y in January 4 - 23, 1980.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Jan. 4	0700	S 16	4.7	ENE	-4.2	9		Ac, Cs	◎	30
	2200	S 16	3.3	ENE	-3.2	4		As, cs	◐	50
5	0800	S 16	10.8	E	-3.5	10		Cu	◎	5.0
	2130	S23-4	6.3	ENE	-5.5	8		Ac	◐	1.5
6	0750	S23-4	6.6	ENE	-5.8	6		Ac, Cs	◐	30
	0920	S23-4	7.2	ENE	-5.0	5		As, Ac, Cs	◐	30
	1150	S 30	6.5	ENE	-5.6	5		Ac, Cs	◐	20
	1450	H 52	5.2	ENE	-7.0	9		St, Ac	◎	20
	1802	H 110	4.0	ENE	-7.8	10^-		St, Ac	✳	2.0
	2100	H 150	2.5	ENE	-10.2	10		St, Ac	✳	5.0
7	0630	H 150	5.0	ENE	-13.6	10^-		St, Ac	◎	10
	0900	H 165	4.0	E	-12.0	9		Ac	◎	20
	1230	A 1	4.0	NE	-7.8	9		As, Ac	◎	20
	1500	G 16	3.5	ENE	-6.8	9		Ac, Cs	◎	20
	1800	H 215	2.0	ENE	-7.6	8		St, Ac, Cs	◐	10
	2100	H 255	2.0	E	-15.2	8		St, Ac	✳	5.0
8	0730	H 255	4.5	E	-16.5	2		Ac	○	20
	0910	H 280	4.5	NE	-14.4	1		As, Cs	○	30
	1200	Z 10	3.8	ESE	-13.2	2		As, Cs, Ci	○	20
	1520	Z 18	2.5	E	-15.2	2		Cs, Ci	○	20
	1800	Z 38	2.5	ENE	-15.0	0^+		Ci	○	20
	2100	Z 70	2.0	E	-21.6	0			○	20
9	0845	Z 70	5.0	E	-19.2	0			○	20
	1200	Z 80	7.8	ENE	-15.8	0^+		Cs	○	20

Table 5-1e. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Jan. 12	0940	Y1802	9.0	E	-13.7	1		0^+Ac, 1 Ci	○	15
	1210	Y1828	9.0	E	-12.0	1		0^+Ac, 1 Ci	○	15
	1500	Y 36	8.0	ENE	-10.1	1		0^+Ac, 0^+Ci, 1 Ci	○	20
	1800	Y 64	5.5	ENE	-12.1	2		1Ac, 1 Ci	⊖	20
	2100	Y 80	5.0	ENE	-16.9	9		1 Ac, 9 Ci	⊖	20
13	0900	Y 80	7.5	E	-14.6	10^-		2 As, 8 Ac	✳	5.0
	1230	Y 100	6.5	ENE	-11.4	10		9 Ac, x Ci	✳	5.0
	1500	Y 100							✳	10
	1800	Y 100							✳	15
	2030	Y 100	4.5	ESE	-18.2	10^-		2Ac, 10^-Ci	⊖	20
14	0900	Y 100	7.5	E	-16.8	10^-		1 Ac, 9 Ci	⊖	5.0
	1250	Y 100	12.5		-12.1	10^-		2 Ac, 10^-Ci	⊹	0.4
	1540	Y 100	14.0	ESE	-10.6	10		8 Ac, x Ci	⊹	0.2
	1940	Y 100	15.0	ESE	-13.9	10		x	✳⊹	0.05
15	0930	Y 100	11.5		-11.5	10		9 Ac, x As	✳⊹	0.15
	1220	Y 100	8.5	E	-10.2	10		10 Ac	✳⊹	0.3
	1650	Y 100	9.0	E	-8.2	10		10 Ac	✳	1.0
	1850	Y 100	8.0	ENE	-10.2	10^-		10^-Ac	✳	3.0
	2220	Y 65	11.5	SE	-12.2	10^-		7 Ac, x Ci	⊹	1.0
16	0920	Y 65	11.5	E	-12.4	10		10 As	✳⊹	0.05
	1255	Y 65	7.5	E	-10.1	10		10 As	✳	1.0
	1510	Y 54	6.5	E	-8.2	10		10 As	✳	0.2
	1855	Y 49	12.0	E	-10.2	10		10 As	✳⊹	0.1

Table 5-1e. Continued.

Date	LT	St.No.	v (m/s)	d	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Jan. 20	1200	Z 80	12.0	E	-17.0	0^+	0 3 0	0^+Ac	○	4.0
	1500	Z 40	12.0	E	-15.4	0^+	0 3 0	0^+Ac	○	2.0
	1800	Z 7.5	9.0	E	-13.6	0^+	0 3 2	0^+Ac,0^+Ci	○	5.0
	2100	H 250				0^+	0 3 0	0^+Ac	○	20
	2400	H 250	8.0	E	-18.0	0^+	0 3 0	0^+Ac	○	40
21	0900	H 228	7.0	E	-14.4	0^+	0 3 0	0^+Ac	○	40
	1200	H 152	11.0	ENE	-10.2	1	0 3 0	1 Ac	○	10
	1500	H 114	10.5	E	-9.5	0^+	1 3 0	0^+Cu, 0^+Ac	○	10
	1920	S 28	7.0	E	-9.0	0^+	0 3 2	0^+Ac, 0^+Ci	○	30
	2100	S 28	7.0	E	-11.0	0^+	0 2 2	0^+As, 0^+Ci	○	40
	2400	S 28	7.5	E	-14.0	3	0 3 0	3 Ac	⊖	40
22	0900	S 28	10.0	E	-9.6	6	0 7 0	2 As, 4 Ac	⊖	1.0
	1200	S 16	9.0	ENE	-4.2	10	0 2 0	10 As	✳	2.0
	1640	S 16	9.0	ENE	-3.2	10	0 2 0	10 As	≡	5.0
	2100	S 16	6.0		-3 6	10	0 2 0	10 As	◎	10
23	0600	S 16	9.0	E	-8.4	7	1 2 2	3 Cu,0^+Ac, 4 Ci	⊖	10

Table 5-2. Surface meteorological data at Skarvsnes area from September 10 - 22, 1979.

Date	LT	Lat. (S)	Long. (E)	v (m/s)	d	P (mb)	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Sep. 10	1200	69°15'	39°35'	0.0	-	972.5	-16.9	4	0 4 2	1 Ac, 4 Ci	◐	40
	1500	69°27'	39°30'	2.0	E	967.8	-18.2	10^-	0 3 8	1 Ac, 3 Cs, 7Ci	◍	40
	1800	69°30'	39°38'	2.0	E	963.8	-12.5	10^-	0 7 2	3 Ac, 10^-Ci	◍	35
	2100	"	"	6.0	E	961.7	-10.0	10	0 2 x	10 As	◎	20
11	0700	69°30'	39°38'	7.0	NE	964.3	-9.4	10	0 2 x	10 As	◎	20
	0900	"	"	10.0	E		-9.4	10	0 2 x	10 As	◎	20
	1200	"	"	5.0	NE	968.3	-9.6	10	0 7 x	10 As, 0^+Ac	✳	8
	1500	"	"					10^-	0 7 2	0^+As, 0^+Ac, 10^-Ci	◍	
	1900	"	"			971.2	-12.0	8	0 7 2	0^+As, 0^+Ac, 8 Ci	◐	50
	2100	"	"	7.0	NE	972.3	-10.5	3	0 7 2	0^+Ac, 3 Ci	◑	30
12	0700	69°30'	39°38'	2.0	E	976.8	-19.0	4	0 7 2	2 Ac, 2 Ci	◐	30
	0900	"	"	4.0	NE	977.0	-15.6	8	0 7 2	1 Ac, 8 Ci	◐	30
	1200	"	"	5.0	NE		-15.6	5	0 3 2	3 Ac, 3 Ci	◐	50
	1500	"	"	7.0	NNE		-15.2	8	0 3 2	0^+Ac, 8 Ci	◐	60
	1800	"	"	3.0	NE	977.2	-16.5	0^+	0 0 2	0^+Ci	○	60
	2100	"	"	1.0	NE	977.0	-17.5	0	0 0 0		○	50
13	0700	69°30'	39°38'	2.0	SE	972.8	-2].7	10^-	0 0 2	10^-Ci	◍	40
	0900	"	"			971.1	-19.0	7	0 0 2	7 Ci	◐	30
	1200	"	"	2.0	ENE		-17.8	8	0 0 2	8 Ci	◐	40
	1500	"	"	3.0	ENE		-16.2	10^-	0 0 2	10^-Ci	◍	40
	1800	"	"	3.0	ENE		-16.2	8	0 7 2	3 Ac, 7 Ci	◐	30
	2100	"	"	7.0	ENE	965.3	-11.6	10^-	0 7 2	5 Ac, 5 Ci	◍	20
14	0700	69°30'	39°38'	5.0	NE	963.0	-11.5	10	0 7 x	0^+Ac, 10 As	◎	30
	0900	"	"	12.0	NE	963.2	-11.3	10	0 2 x	10 As	✳	10
	1200	"	"	2.0			-11.3	10	0 7 x	4 Ac, 10 As	✳	10

Table 5-2. Continued.

Date	LT	Lat. (S)	Long. (E)	v (m/s)	d	P (mb)	T (°C)	N	$C_L C_M C_H$	Nc	w	V (km)
Sep. 14	1500	69°30'	39°38'	3.0	ENE	963.4	-12.3	10	0 2 x	10 As	✳	5.0
	1800	"	"	10.0	NE	963.2	-11.7	10	0 7 x	10 As, 2 Ac	◎	4.0
	2100	"	"	0.0	-	966.2	-11.7	10^-	0 7 2	4As, 2 Ac, x Ci	✳	2.0
15	0600	69°30'	39°30'	2.0	ENE	970.2	-15.1	10	0 2 x	10 As	✳	2.0
	0900	"	"	3.0	ENE	971.0	-14.4	10	0 7 x	4 Ac, x As	✳	5.0
	1300	69°27'	39°30'	2.0	NE	972.6	-14.4	10^-	0 3 2	4 Ac, 10^-Ci	◍	20
	1500	"	"	2.0	ENE	973.4	-15.3	10^-	0 5 2	6 Ac, x Ci	◍	15
	2100	"	"	5.0	ENE	974.4	-15.6	0^+	0 3 0	0^+Ac	○	15
16	0700	69°27'	39°30'	2.0	ENE	975.6	-27.5	9	0 7 2	0^+Ac, 1 As, 8 Ci	◍	20
	2100	"	"	0.0	-	978.6	-18.3	0	0 0 0		○	30
17	0630	69°26'	39°35'	0.0	-	979.9	-21.3	0	0 0 0		○	40
	1200	69°26'	39°35'			967.7	-11.8	10^-	0 7 2	9 Ac, 2 As, x Ci	◎	40
18	1800	69°25'	39°38'	0.0	-	966.3	-13.5	10^-	0 5 8	7 Ac, 3 Cs	◍	50
19	0900	69°25'	39°38'			973.1	-22.6	2	0 0 8	2 Cs	◑	50
20	0900	69°25'	39°38'			981.2	-20.7	7	0 7 0	7 Ac	◑	30
21	0900	69°25'	39°38'			989.6	-16.5	0	0 0 0		○	50
22	0900	69°25'	39°38'			990.1	-22.5	0	0 0 0		○	50

Table 6. Radio echo soundings from oversnow vehicle between St. S17 and St. Y100 (via Mizuho Station).

St.	T (m)	St.	T (m)	St.	T (m)	St.	T (m)
S17	-	S22-1	560	S26-5	630	H6	880
	130		510		630		880
	140		480		650		960
From St. S17 to St.S22-1	-	From St.22-1 to St.26-5	470	From St.S26-5 to St.S30	670	From St.H6 to St.H40	960
	-		460		610		930
	180		460		640		890
	180		450		680		890
	210		410		-		880
	250		420		-		770
	330		380		-		730
	330		430		-		720
	330		450		-		680
	340		430		-		690
	330		480		640		650
	330		500		-		670
	340		450		-		680
	340		450		-		690
	340		460		-		690
	330		560		-		720
	340		550		-		770
	330		510	S30	-		760
	330		520				790
	-		550	S30	650		840
	-		560	From St.S30 to H6	670		860
	-		560		690		790
	-		560		710		730
	280		570		680		720
	280	S26-5	600		710		710
	280				720		710
	260				760		720
	300			H6	-		750
	300						750
	350						710
	380						690
	-					H40	-
	-						
	-						
	-						
S22-1	-						

St.: Location
T: Ice thickness
-: No data

Table 6. Continued.

St.	T (m)	St.	T (m)	St.	T (m)	St.	T (m)
H40	640	H68	810	H89	-		-
	600		830		-		-
	630		890		-		-
	640		900		-		-
	690		890		-		-
	750		900		-		-
	750		920		-		-
	760		890		-		-
	770		710		-		-
	770		650		-		-
	770		640		-		-
	790		630		-		-
	840		650		-		-
	880		710		-	H110	-
	890		720		-		
	890		730		960	H110	-
	900		750		-		-
	890		770		-		-
	920		790		-		-
	890		760		-		-
	880		770		-		-
	850		810		-	H113	-
	830		880		-		
	830		890		800		
	830		890		810		
	840		850		810		
	890		860		760		
	840		890		760		
	800		920		810		
	800		920		810		
	810		960		850		
	840		1000		850		
	840		1030		890		
	810		-		900		
	790		-		940		
	770		-		810		
H68	770		-		-		
		H89	-		-		
					-		

From St.H40 to St.H68

From St.H68 to St.H89

From St.H89 to St.H110

Table 6. Continued.

St.	$T_{(m)}$	St.	$T_{(m)}$	St.	$T_{(m)}$
H113	-	H127	1020	H148	1030
	-		1010		1030
From St.H113	-	From St.H127	1020	From St.H148	-
	-		1020		-
to St.H122	-		1020	to St.H166	1060
	-		980		-
	-		1010		-
	-		1010		-
	-		1020		930
	-		1030		940
	-	to St.H148	1050		960
	-		980		960
	-		980		980
	-		980	H166	1020
	1010		980		
	1010		980		
H122	970		980		
			940		
H122	970		980		
	-		980		
	-		980		
From St.H122	-		940		
	-		980		
to St.H127	-		1020		
	-		-		
	-		900		
	-		960		
	-		-		
	-		-		
	1020		890		
H127	1020		-		
			-		
			-		
			-		
			-		
			-		
			-		
		H148	-		

Echo from bedrock surface was not observed from St.H116 to St.Y100.

Table 7a. Airborne radio echo sounding on the route between St.S16 to Mizuho Station.

No.	S (m)	R (m)	T (m)
S16	470		
	470		
	440		
	470		
	500		
From St.S16 to St.S30	500	-20	660
	530		
	530		
	560	-80	780
	560	190	530
	560	160	580
	560	130	630
	530	150	630
	530	120	680
	470	90	730
	440	80	760
	410	210	650
	410	200	680
	410	90	810
	410	110	810
	500	230	710
	470	150	810
S30	470		
From St.S30 to St.H43	530		
	500		
	500	190	850
	470	200	860
	470	220	860
	500	250	850
	440	230	890
H43	410	250	890
From St.H43 to Mizuho Station	Echo from bed rock surface was not observed from St.H43 to Mizuho Station		

No.	S (m)	R (m)	T (m)
S16	710	-110	660
From St.S16	710	-110	680
to St.S19-3	680	-160	750
	710	-150	760
S19-3	740	-20	650
	Echo from bed rock surface was not observed from St.S19-3 to St.H180.		

No.: Location
S: Snow surface elevation
R: Bedrock surfase elevation
T: Ice thickness

Table 7b. Airborne radio echo sounding on Yamato Mountains area.

No.	S (m)	R (m)	T(m)	No.	S (m)	R (m)	T (m)
I- 1	1740	1330	410	I-40	2350		
2	1760	1580	180	41	2350	1290	1060
3	1790	880	910	42	2380	1350	1030
4	1790	940	850	43	2440	1260	1180
5	1820			44	2410	1660	750
6	1820			45	2440	1710	730
7	1850			46	2440	1550	890
8	1850			47	2440		
9	1850			48	2470	2020	450
10	1880			49	2470		
11	1910			50	2470		
12	1910						
13	1910			II-1	2260	1780	480
14	1910			2	2240	1480	760
15	1940			3	2180	1780	400
16	1970	1510	460	4	2180	1430	750
17	2000	1540	460	5	2180	1870	310
18	2030	1580	550	6	2180	1300	880
19	2030	1420	610	7	2090	1260	830
20	2030	1300	730	8	2060	1860	200
21	2060	1360	700	9	2060	1790	270
22	2120	1140	980	10	2030	1400	630
23	2150	1340	810	11	2000	1270	730
24	2150			12	1970	1390	580
25	2150			13	1940	1740	200
26	2120	1320	800	14	1940	1530	410
27	2120	1110	1010	15	1940	1490	450
28	2180	1580	600	16	1880		
29	2180	1620	560	17	1880		
30	2210	1560	650	18	1880		
31	2180			19	1940		
32	2240	1380	860	20	1940		
33	2210			21	1820		
34	2240	1440	800	22	1760		
35	2240	1330	910	23	1760		
36	2260	2140	120	24	1760		
37	2260	1860	400	25	1820		
38	2320	1840	480	26	1790		
39	2350	1340	1010	27	1760		

No.: Flight line number and point

Table 7b. Continued.

No.	S (m)	R (m)	T (m)	No.	S (m)	R (m)	T (m)
II-28	1740			III-16	2030	1820	910
29	1680			17	2030	1300	730
30	1680			18	2060	1630	430
31	1680			19	2090	900	1190
32	-			20	2090	1360	730
33	-			21	2150	1160	990
34	1740			22	2180	1290	890
35	1680			23	2260	1230	1030
36	1620			24	2290	1260	1030
37	1650			25	2320		
38	1680			26	2290		
39	1620			27	2320	1710	610
40	1620			28	2290	1640	650
41	1620	1190	430	29	2290	2020	270
42	1590	840	750	30	2290		
43	1560	960	600	31	2290		
44	1590	830	760	32	2290	2020	270
45	1560	1230	330	33	2290	1910	380
46	1620	790	830	34	2320	1870	450
47	1590			35	2320	1670	650
48	1560	1150	410	36	2320	1720	600
49	1530			37	2320	1740	580
50	1560			38	2350	1600	750
				39	2380	1680	700
III-1	1850	890	960	40	2380		
2	1850			41	2350		
3	1850			42	2380		
4	2000	1200	800				
5	1850	1140	710	IV-1	2120	1520	600
6	1880	1530	350	2	2150		
7	1910	1510	400	3	2150	1520	630
8	1910	1460	450	4	2150		
9	1970	1320	650	5	2180	1330	850
10	1970	1310	660	6	2150	1550	600
11	1970	1170	800	7	2210	1450	760
12	1970	1340	630	8	2180	1630	550
13	2000	1340	660	9	2150	1400	750
14	1970	1320	650	10	2120	1390	730
15	2000	1350	650	11	2120		

Table 7b. Continued.

No.	$S_{(m)}$	$R_{(m)}$	$T_{(m)}$	No.	$S_{(m)}$	$R_{(m)}$	$T_{(m)}$
IV-12	2150			V-13	1740	1110	630
13	2180	1750	430	14	1710		
14	2000	1240	760	15	1710	1130	580
15	1970	990	980	16	1680	1120	560
16	1970	1590	380	17	1650	970	680
17	2000	1690	310	18	1680	1130	550
18	2060	1300	760	19	1740	980	760
19	2000	1250	850	20	1760	1240	510
20	1880	1080	800	21	1760	630	1130
21	1790	1310	480	22	-		
22	1760	1330	430	23	-		
23	1820	1090	730	24	2180	820	1360
24	1790			25	2000	970	1030
25	1790			26	2030	1090	940
26	1760			27	1970		
27	1820			28	1970	1030	940
28	1820			29	1970	960	1010
29	1820			30	1880		
30	1820			31	1880		
31	1820			32	1910		
32	1790	980	810	33	1850	960	890
33	1790	910	880	34	1850	1150	700
34	1820	780	1040				
35	1820						
36	1820						
37	1820						
V- 1	1680						
2	1650						
3	1650						
4	1680						
5	1680						
6	1650						
7	1680						
8	1710						
9	1680						
10	1710						
11	1710						
12	1680		780				

Table 7c. Airborne radio echo sounding on Shirase Glacier area.

No.	$S_{(m)}$	$R_{(m)}$	$T_{(m)}$	No.	$S_{(m)}$	$R_{(m)}$	$T_{(m)}$
I- 1	80	-1210	1290	I-40	1110	30	1080
2	80	-1030	1110	41	1140		
3	80			42	1140		
4	80	-1130	1210	43	1140	-50	1190
5	80	-1160	1240	44	1170	-40	1210
6	80	-960	1040	45	1200	20	1180
7	80			46	1170	60	1010
8	80			47	1290	380	910
9	50			48	1320	40	1280
10	80			49	1320	60	1260
11	80			50	1320	60	1360
12	110			51	1290	10	1280
13	230			52	1350	90	1260
14	200			53	1380	90	1290
15	170			54	1410	30	1380
16	110			55	1440	50	1390
17	140			56	1440	0	1440
18	170			57	1440	130	1310
19	170			58	1470	210	1260
20	140			59	1470	110	1360
21	140			60	1470	60	1410
22	200			61	1500	20	1480
23	320			62	1500	-40	1540
24	440			63	1530	0	1530
25	440			64	1560	-30	1590
26	490			65	1590	10	1580
27	580			66	1590	130	1460
28	580			67	1620		
29	640			68	1620		
30	640			69	1650		
31	700			70	1680		
32	790			71	1740		
33	820	60	760	72	1770		
34	880	80	800	73	1770		
35	910	150	760	74	1770		
36	940	160	780	75	1800		
37	990	140	850	76	1800		
38	1020	40	980	77	1800		
39	1080	100	980	78	1830	540	1290

Table 7c. Continued.

No.	S (m)	R (m)	T (m)	No.	S (m)	R (m)	T (m)
I-79	1860	570	1290	II-24	1720		
80	1860	430	1430	25	1690		
81	1890			26	1690		
82	1890			27	1660		
83	1910			28	1660	400	1260
84	1910			29	1630	400	1230
85	1910			30	1620		
86	1940			31	1620		
87	1970			32	1590		
88	2000			33	1560		
89	2000			34	1560		
90	2030			35	1560		
91	2030			36	1530		
92	2030			37	1530		
93	2030			38	1500	410	1090
				39	1500	210	1290
II-1	2060			40	1460	150	1310
2	2030			41	1430	320	1110
3	2030			42	1430	350	1080
4	2030			43	1410	280	1130
5	2030			44	1410	170	1240
6	2000	770	1230	45	1380		
7	2000			46	1380	90	1290
8	2000	690	1310	47	1350	240	1110
9	2000	820	1180	48	1350	210	1140
10	1940	860	1080	49	1300	160	1140
11	1940			50	1300	70	1230
12	1910			51	1270	30	1240
13	1910			52	1240	-80	1360
14	1880			53	1240	-320	1560
15	1880			54	1200	-440	1640
16	1850			55	1200	-110	1310
17	1850	1240	610	56	1170	-110	1280
18	1820	1190	630	57	1140	-50	1190
19	1820			58	1110	-70	1180
20	1780			59	1080	20	1060
21	1750			60	1020	40	980
22	1750			61	990	-200	1190
23	1720	580	1140	62	990	-320	1310

Table 7c. Continued.

No.	S (m)	R (m)	T (m)	No.	S (m)	R (m)	T (m)
II-63	910	-500	1410	III-18	880	300	580
64	910	-230	1140	19	940	280	660
65	880	-250	1130	20	1060	450	610
66	880			21	1090	330	760
67	760			22	1150	420	730
68	760			23	1180	320	860
69	730			24	1210	270	940
70	760			25	1380	670	710
71	610			26	1290		
72	580			27	1320	460	860
73	440			28	1350	670	680
74	440						
75	350			IV-1	1570	390	1080
76	290			2	1570	660	910
77	140			3	1500	820	680
78	140			4	1530	1030	500
79	140			5	1590	550	1040
80	140			6	1620		
81	110			7	1470		
82	80			8	1470	390	1080
83	80			9	1470	260	1210
				10	1440	310	1130
III-1	290			11	1440	280	1160
2	500			12	1440	210	1230
3	590			13	1410	520	890
4	650			14	1380	550	830
5	740			15	1350	360	990
6	710			16	1320	430	890
7	530	-650	1180	17	1290	460	830
8	410			18	1240	610	630
9	380			19	1210	530	680
10	320	-940	1260	20	1150		
11	320			21	1090		
12	320			22	940		
13	320			23	880		
14	320			24	790		
15	500			25	760		
16	710			26	590		
17	790	-320	1110	27	470		

Table 7c. Continued.

No.	$S_{(m)}$	$R_{(m)}$	$T_{(m)}$	No.	$S_{(m)}$	$R_{(m)}$	$T_{(m)}$
IV-28	440			VI-5	1530	420	1110
29	410			6	1470	510	960
30	440			7	1470	180	1290
				8	1500	120	1380
V- 1	1060			9	1500	70	1430
2	1060			10	1530	200	1330
3	1060			11	1560	220	1340
4	1090			12	1530	240	1290
5	1090	330	760	13	1470	180	1290
6	1060			14	1440	200	1240
7	910			15	1440	160	1280
8	910			16	1410	280	1130
9	820			17	1380	450	930
10	850			18	1320	410	910
11	880			19	1260	350	910
12	790			20	1240	210	1030
13	880			21	1290	100	1190
14	940			22	1290	260	1030
15	1060			23	1290		
16	1060			24	1240		
17	1120			25	1210		
18	1180	420	760	26	1210		
19	1210			27	1210		
20	1290	490	800	28	1180		
21	1320	470	850	29	1210		
22	1320	210	1110	30	1210		
23	1350	240	1110	31	1210		
24	1380	320	1060	32	1210		
25	1380	270	1110	33	1210		
26	1410	300	1110	34	1260	410	850
27	1440	500	940	35	1290	330	960
28	1440	580	860	36	1260	410	850
29	1470	590	880	37	1320	430	890
30	1500	410	1090	38	1320	380	940
VI-1	1440	690	750				
2	1500	540	960				
3	1500	190	1310				
4	1500	190	1310				

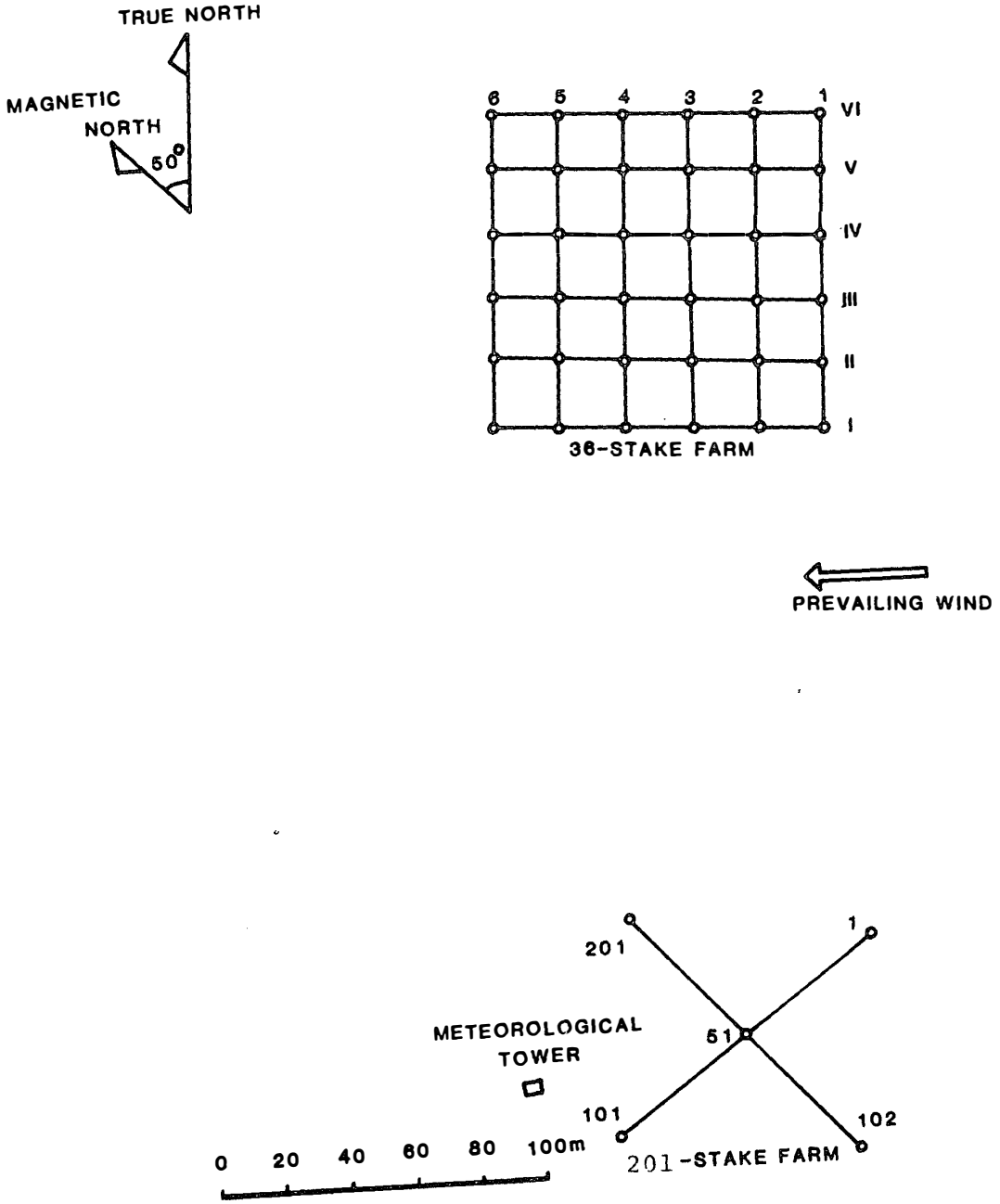

Fig. 1. Locations of stake farm at Mizuho Station.

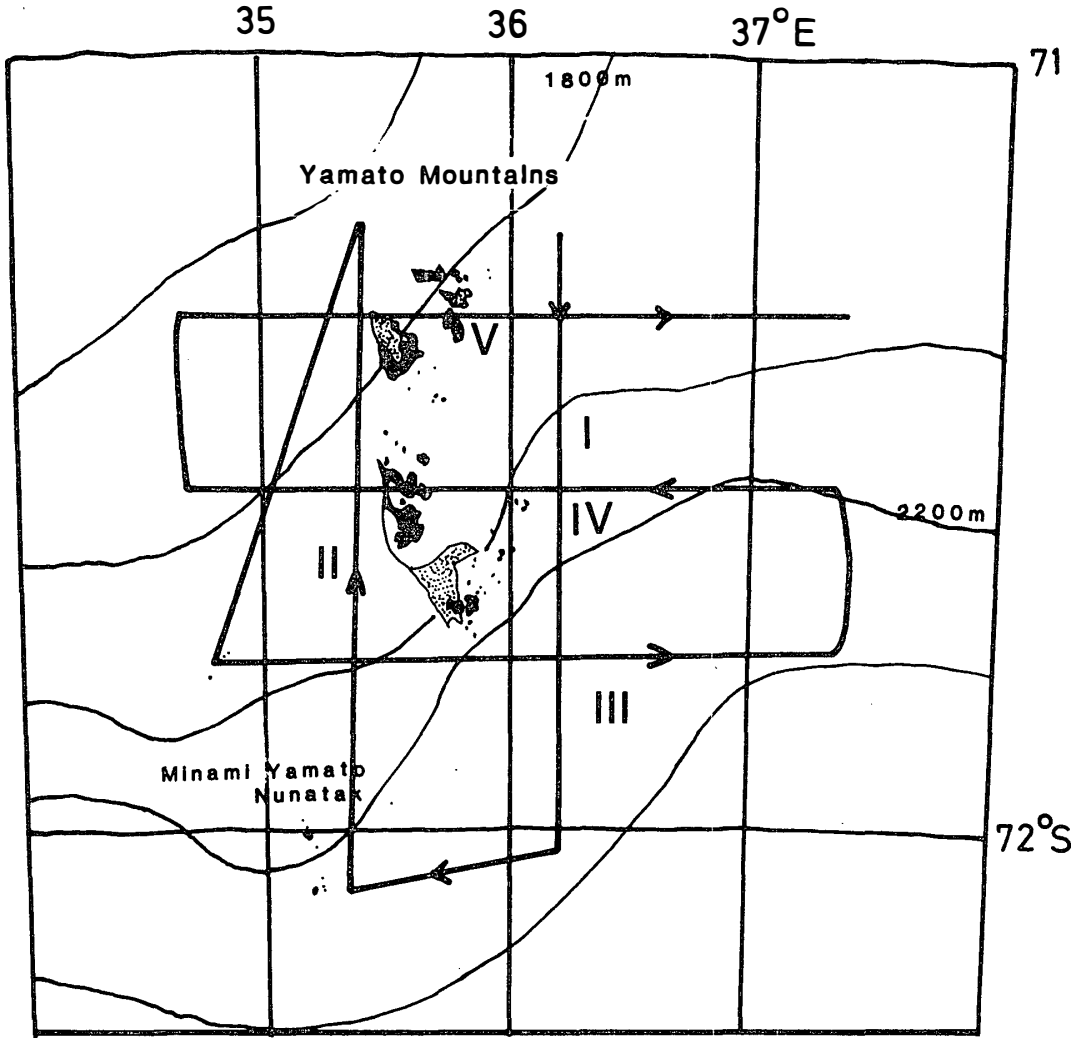

Fig. 2. Flight lines on Yamato Mountains area.

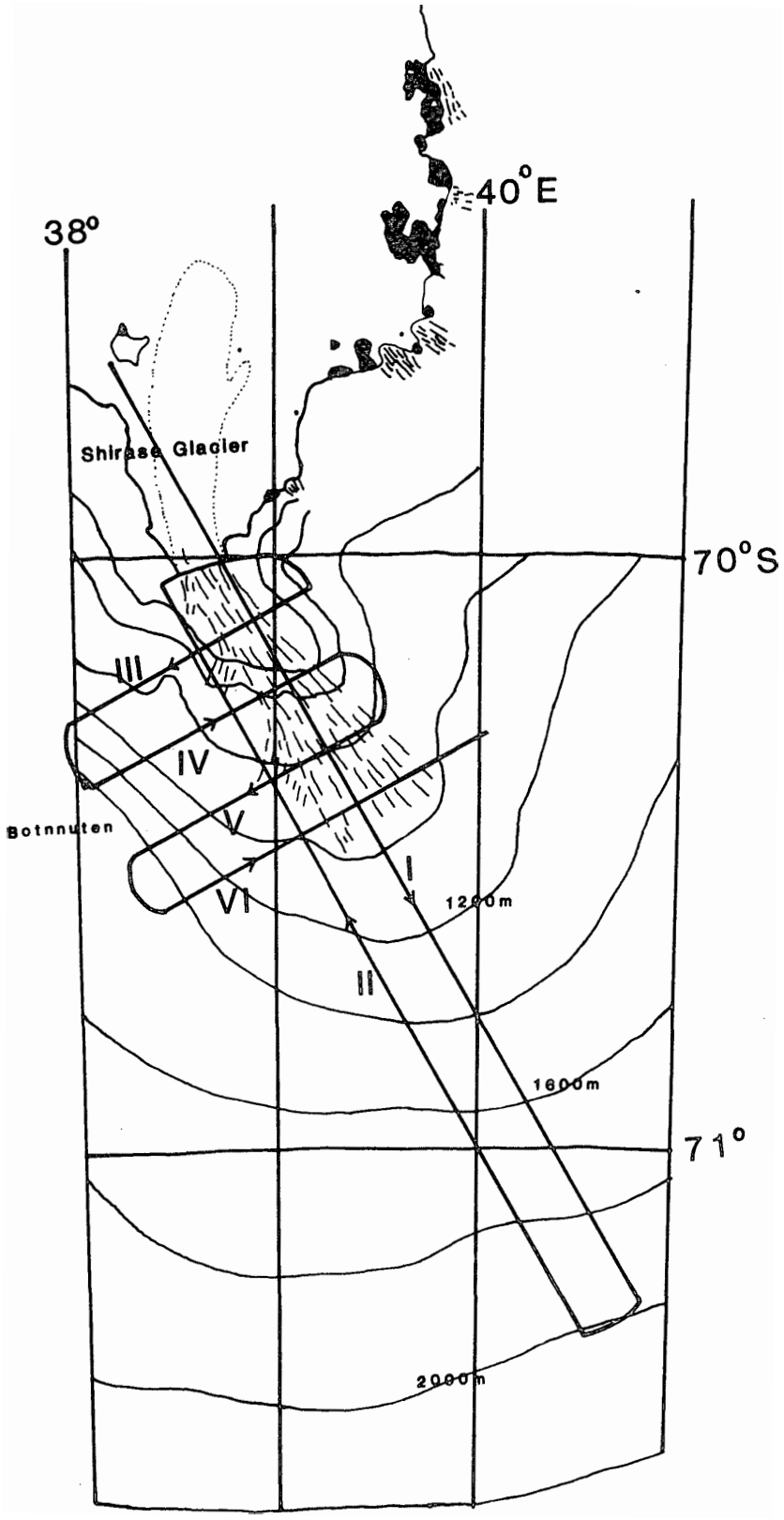

Fig. 3. Flight lines on Shirase Glacier area.

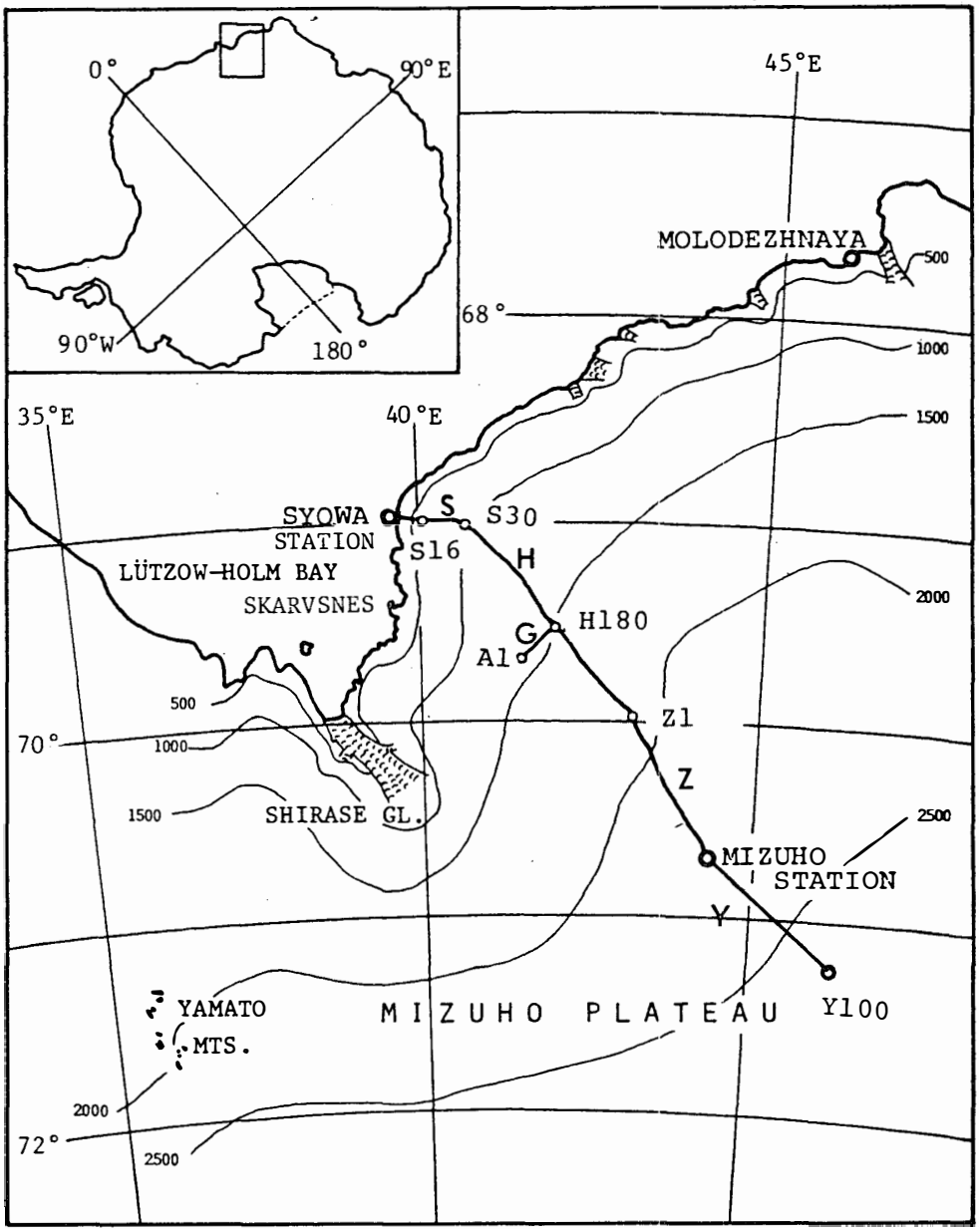

Fig. 4. Locations of stations and traverse routes covered in this report.