

OUTLINE OF RESEARCH ACTIVITIES

ANALYSIS OF SATELLITE DATA FOR SENSOR IMPROVEMENT (Detection of Severe Storms from Space)

T. Theodore Fujita

The University of Chicago
Chicago, Illinois 60637
(312) 962-8112

Significant Accomplishments for FY-84

- Item (1) Stereo photography of clouds over southeast Asia by using NOAA7 (U.S. satellite) and GMS (Japanes satellite)
- Item (2) Lear Jet Experiment based at Grand Island, Nebraska
- Item (3) IR field of the thunderstorm which induced the Andrews AFB microburst. The IR temperature field was analyzed with 1°C accuracy. Results were presented at Andrews AFB and printed as SMRP Research Paper 205, December 1983, entitled "Andrews AFB Microburst".
- Item (4) Planning of MIST (Microburst and Severe Thunderstorm)

Plans for FY-85

- Item (1) Due to the breakdown of GMS II, GMS I, which had been retired, is being used as the replacement satellite. It is expected that GMS III will be launched this Summer so that the US-Japan stereo experiment can be activated again in Autumn 1984.
- Item (2) The Lear Jet Experiment, 17-26 August 1983 was successful. Dates flown were:

Date	Liftoff(GMT)	Touchdown(GMT)	Hours flown	Remarks
Aug 19	2122:??	2313:20	1h 51m ??s	Test flight
Aug 21	2035:23	2252:17	2h 16m 44s	Redwood Falls clouds & Grand Island thunderstorm
Aug 23	2125:19	2333:00	2h 07m 41s	Anvil-top cirrus deck. "C"
Aug 24	2000:08	2210:39	2h 10m 31s	Circular thunderstorm
Aug 25	2108:15	2329:38	2h 11m 13s	Jumping cirrus. "C"

"C" denotes the Schedule C RDSS day arranged by NESS and requested by Fujita.

Flight cases are being analyzed in cooperation with Jim Arnold of MSFC, who is producing the high-resolution images of GOES West.

- Item (4) The MIST Project at Huntsville, Alabama is being planned. The project will be conducted jointly with MSFC. Fujita will be securing from NCAR 2 to 3 Doppler radars and 55 PAM stations. MSFC will operate the upper-air networks. It is expected that rawinsondes will be launched every hour from MSFC during storm days.

Published Papers in FY-84

- [1] Fujita, T.T. and J.C. Dodge (1983)
Applications of stereoscopic height computations from dual geosynchronous satellite data/Joint NASA-Japan stereo project. Ad. Space Res., Vol. 2, No. 6, pp. 153-160.
- [2] Fujita, T.T. and R.M. Wakimoto (1983)
Microbursts in JAWS depicted by Doppler radars, PAM, and aerial photographs. Preprint Volume: 21st Conf. on Radar Meteorology, Sept 19-23, 1983, Edmonton, Alta., Canada, pp. 638-644.
- [3] Fujita, T.T. and R.M. Wakimoto (1983)
JAWS microbursts revealed by triple-Doppler radar, aircraft, and PAM data. Preprint Volume: 13th Conf. on Severe Local Storms, Oct 17-20, 1983, Tulsa, OK, pp. 97-100.
- [4] Smith, B.E. and B.R. Waranauskas (1983)
Analysis of wet microbursts by dual-Doppler and ground photography. Preprint Volume: 13th Conf. on Severe Local Storms, Oct 17-20, 1983, Tulsa, OK, pp. 51-54.
- [5] Fujita, T.T. (1983)
Andrews AFB microburst. SMRP Research Paper 205, Dec 1983, 38 pp.
- [6] Stiegler, D.J.
Damage map of Hurricane Alicia, August 17-18, 1983.