(2)

FINAL REPORT

Cyclones and Cyclogenesis over North Pacific

North Atlantic, Arctic Ocean, and their Upwind Continents

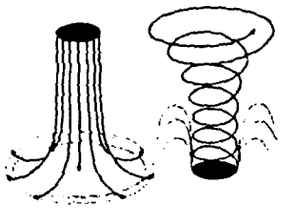
ABSTRACT

For determining seasonal and annual variations of cyclone activities in the northern hemisphere, over 500 cyclones in NMC and Japanese surface maps were examined and their 6-hourly parameters were determined for generating the Northern Hemisphere Cyclone Tape. The cyclone tape, covering a five year period, June 1981 - May 1986 was generated under this contract. Produced from this tape are five Volumes of annual reports showing monthly, seasonal, and annual distributions of cyclone parameters depicted by red-colored cyclone parameters superimposed upon green-colored base maps.

N00014-84-C-0513

July 8, 1990

T. Theodore Fujita



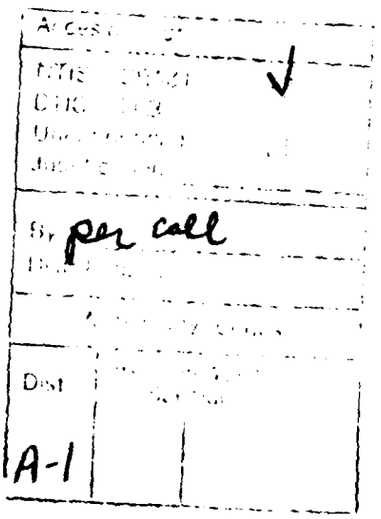
T. Theodore Fujita
5727 Maryland Avenue, Chicago, Illinois 60637
Home: (312) 288-3045 • Office: (312)702-8112

FINAL REPORT

Cyclones and Cyclogenesis over North Pacific

North Atlantic, Arctic Ocean, and their Upwind Continents.

CONTRACT NUMBER N00014-84-C-0513



STATEMENT "A" per Kathleen Villard
ONR/Code 1122MM, 800 N. Quincy St.
Arlington, VA 22217-5000
TELECON 8/10/90 VG

July 8, 1990

BY

T. Theodore Fujita

RESEARCH PERFORMED

In an attempt to determine cyclone activities over North Pacific, North Atlantic, Arctic Ocean, and their upwind continents, all cyclones detected in the 6-hourly NMC surface maps and 12-hourly Japanese maps were analyzed and examined for continuity and accuracy. The period of analysis is five (5) years, June 1981 through May 1986. A total of 7304 NMC maps and 3652 Japanese Maps were examined and re-analyzed.

The cyclone computer tape designed and updated by Fujita now includes "5" years of data. The tape will be updated further under the next grant. The copy of the tape will be available to NAVY and other authorized users at various updating stages. The tape contains year, month, day, 6-hourly time, latitude and longitude, direction and speed of translational motion, central pressure, deepening and filling, estimated cyclone windspeed, rate of change in windspeed (intensification and weakening). The cumulative numbers of these cyclones for entry in the cyclone tape are listed hereunder.

	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986
JUN	1- 75	1008-1089	2116-2202	3225-3315	4283-4357
JUL	76- 163	1091-1185	2203-2287	3316-3382	4359-4439
AUG	164- 223	1187-1265	2288-2357	3383-3453	4441-4514
SEP	224- 304	1266-1348	2360-2442	3454-3522	4515-4581
OCT	305- 388	1350-1446	2446-2525	3524-3610	4582-4670
NOV	390- 488	1448-1560	2526-2628	3611-3697	4671-4765
DEC	489- 593	1562-1651	2629-2742	3699-3799	4766-4868
JAN	594- 682	1652-1744	2743-2845	3800-3894	4869 - 4949
FEB	683- 767	1746-1836	2846-2933	3895-3988	4950 - 5001
MAR	768- 851	1838-1924	2934-3037	3989-4095	5002 - 5085
APR	852- 940	1925-2018	3038-3136	4096-4191	5086 - 5180
MAY	941-1006	2019-2115	3137-3224	4192-4281	5181 - 5277

The cyclone parameters incuded in this cyclone tape were mapped experimentally into Northern-hemisphere statistical maps. It has been found that different types of maps can be produced for specific objectives which will increase as years go by and more cyclone data are included in future years through systematic updating. Results of the experimental mapping were forwarded as "ANNUAL REPORTS" to

Scientific Officer N00014
and
Administrative Contracting Officer N 62880

at the end of each year on July 8. A list of these annual report is:

Annual Reports	Periods	Remarks
Volume 1	June 1981 - May 1982	Cover page attached
Volume 2	June 1982 - May 1983	Cover page attached
Volume 3	June 1983 - May 1984	Cover page attached
Volume 4	June 1984 - May 1985	Cover page attached
Volume 5	June 1985 - May 1986	Cover page attached

It has been found that the results of these test analyses presnted in these annual reports are very useful in obtaining climatological cyclone situations for the Navy operations. It is feasible to determine the regions of climatological storm hazards anywhere in the Northern Hemisphere. An effor of updating the cyclone tape in future years under the new grant will enhance the accuracy of prediction. The cyclone tape, including the future updating, can be duplicated by the Navy and its format may be changed for individual computers.

223 NORTHERN HEMISPHERE CYCLONES JUN 81 - MAY 82

224 NORTHERN HEMISPHERE CYCLONES JUN 82 - MAY 83

225 NORTHERN HEMISPHERE CYCLONES JUN 83 - MAY 84

228 NORTHERN HEMISPHERE CYCLONES JUN 84 - MAY 85

229 NORTHERN HEMISPHERE CYCLONES JUN 85 - MAY 86

WIND RESE

Departme

Northern Hemisphere Cycl
JUN 81 - MAY 82

by

T. Theodore Fujita

WRL Researc

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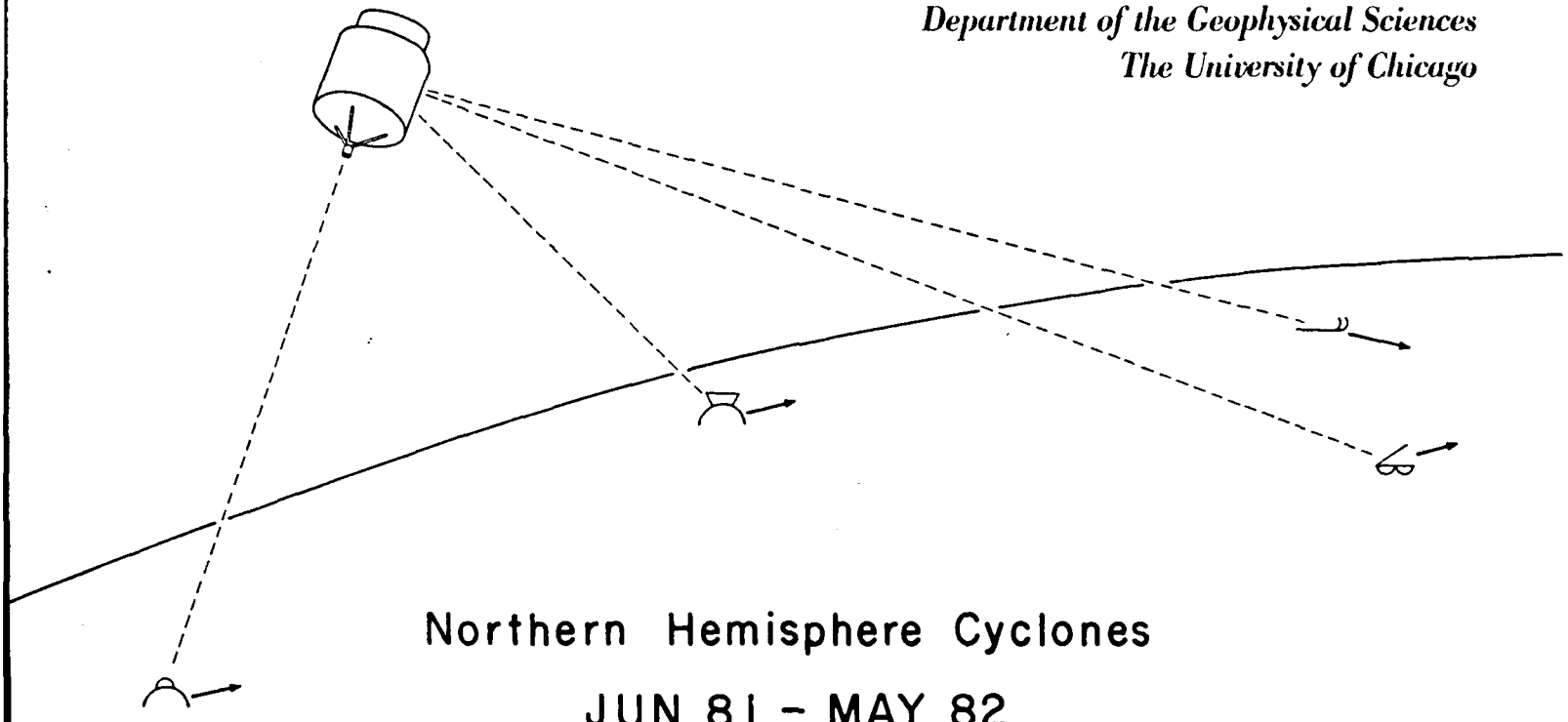
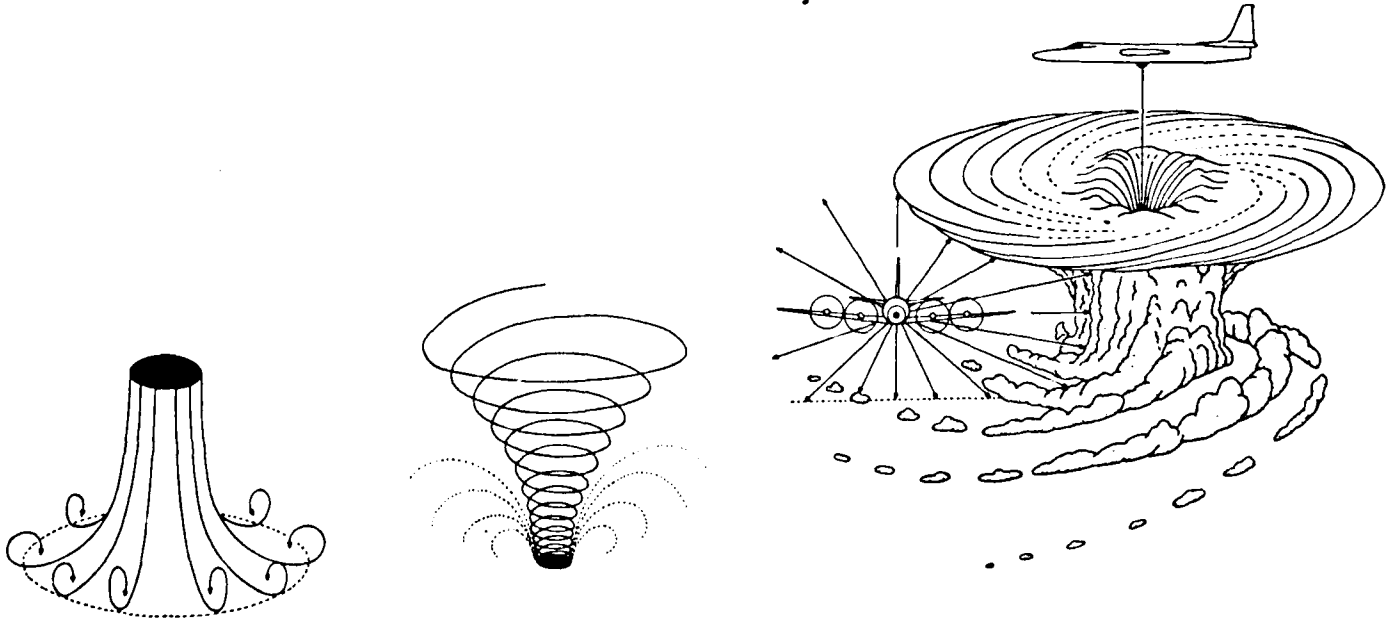
Department of the Geophysical Sciences
The University of Chicago



Northern Hemisphere Cyclones
JUN 81 - MAY 82

by

T. Theodore Fujita



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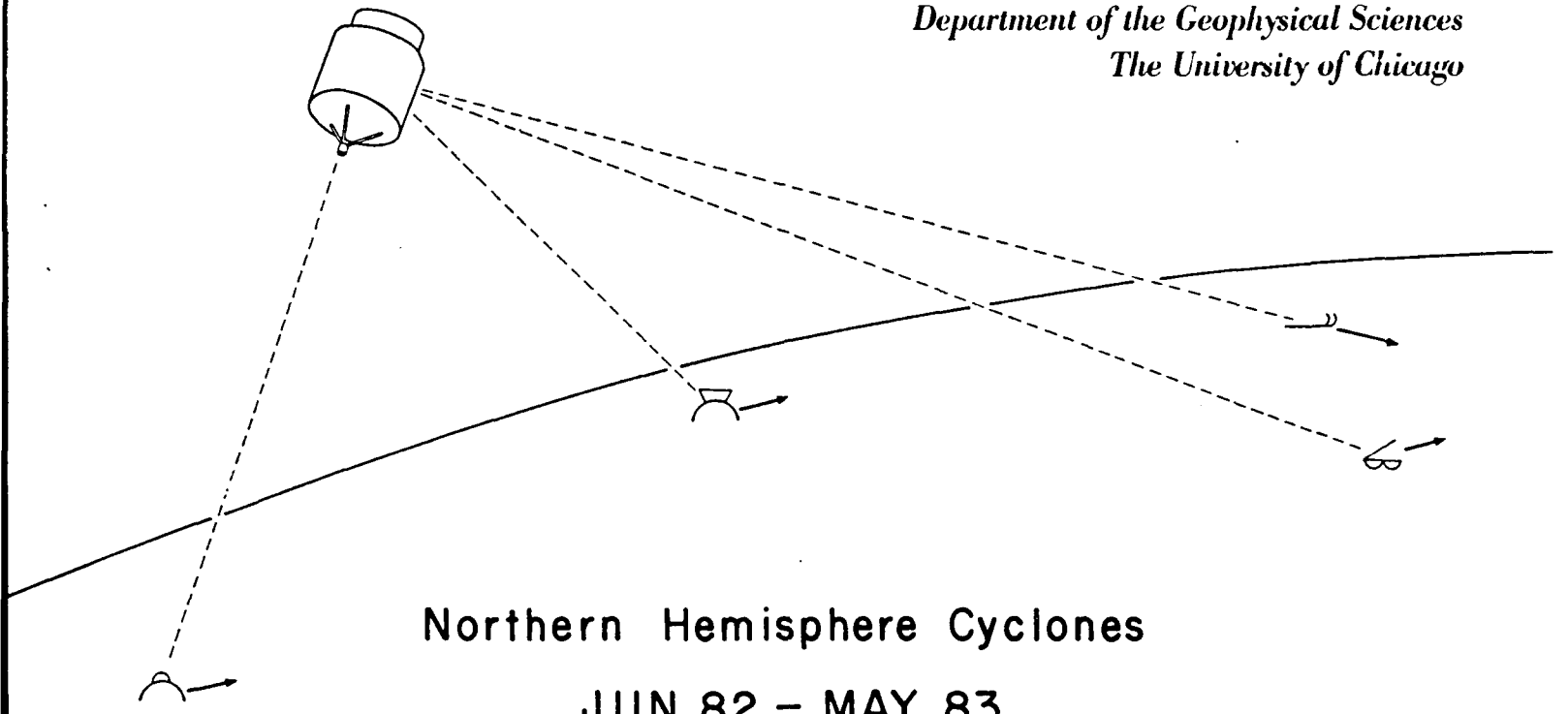

Northern Hemisphere Cyclones

JUN 82 – MAY 83

by

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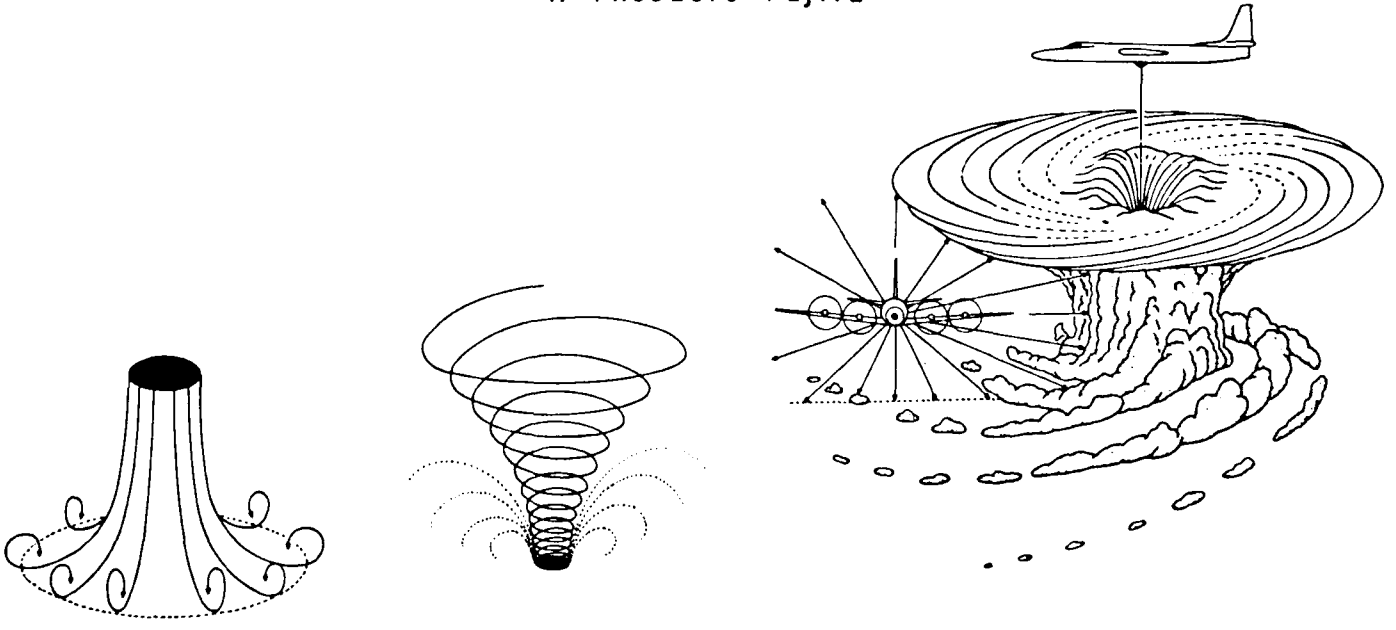

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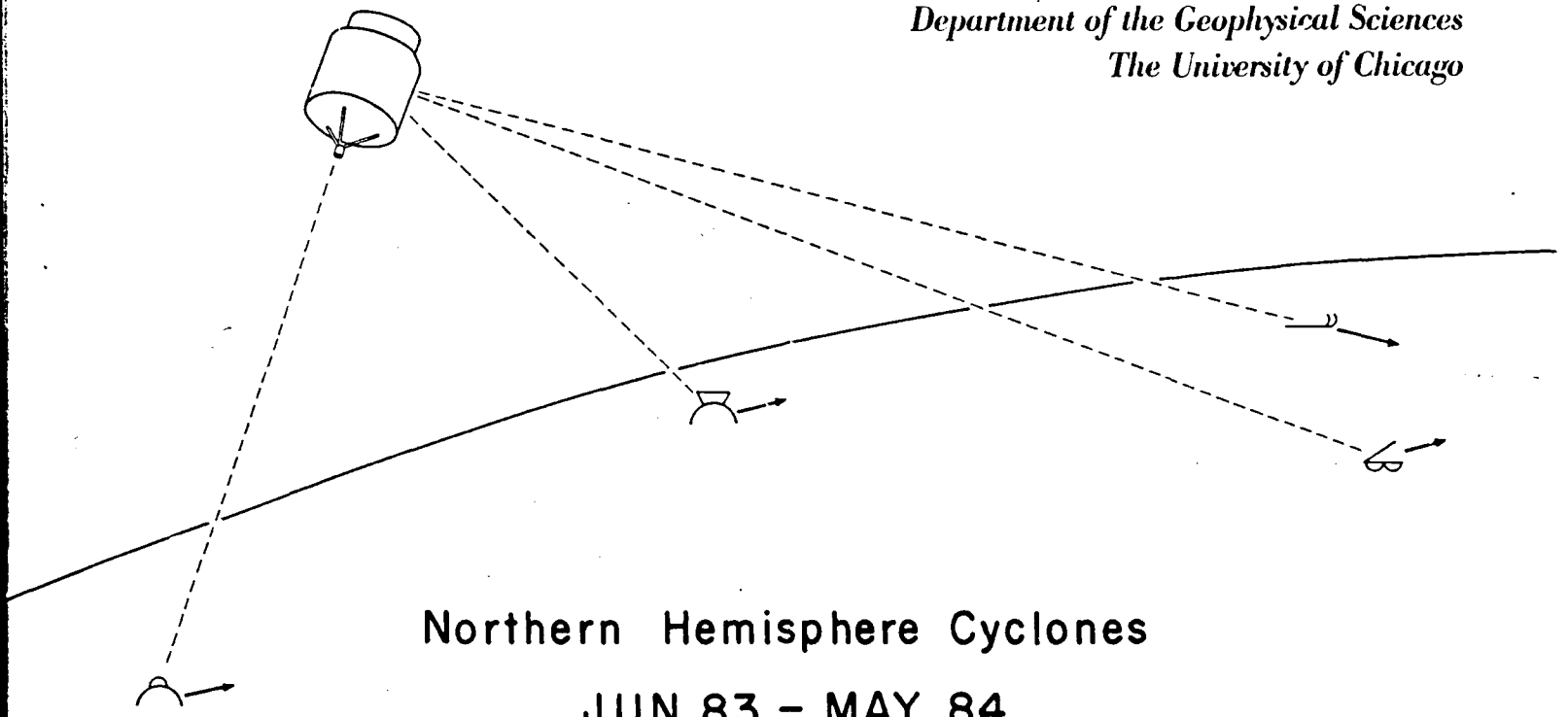
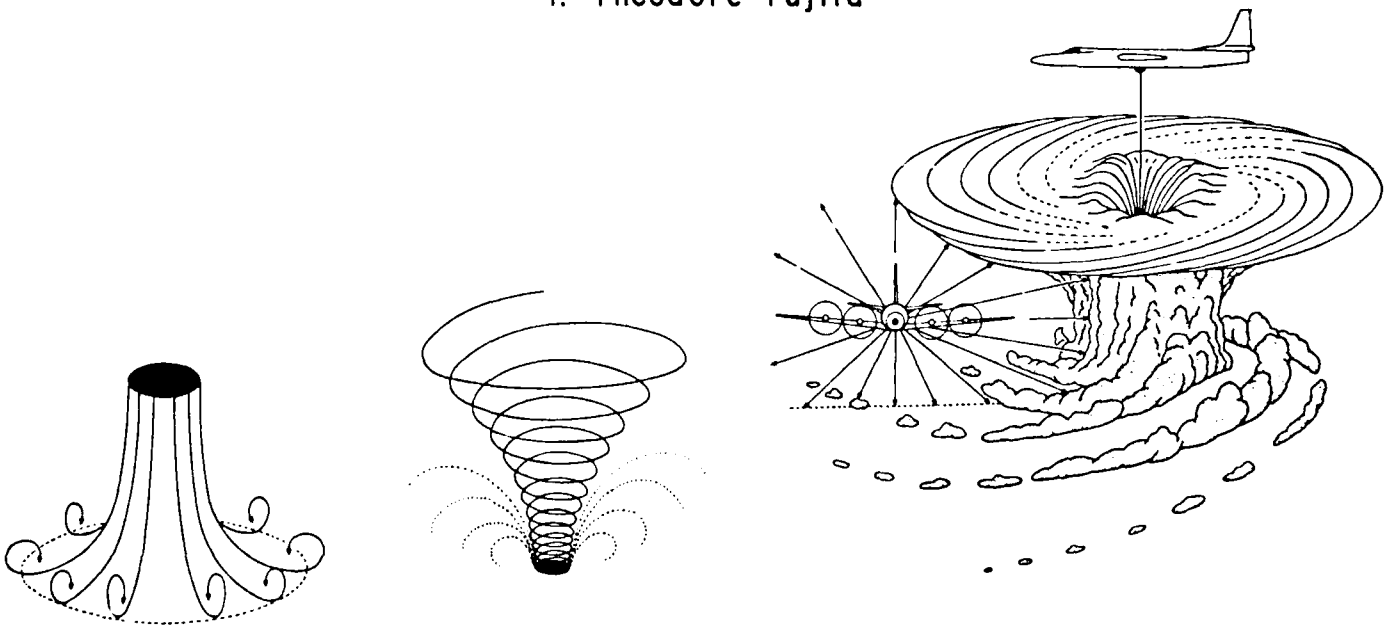


Northern Hemisphere Cyclones
JUN 83 - MAY 84

by

T. Theodore Fujita



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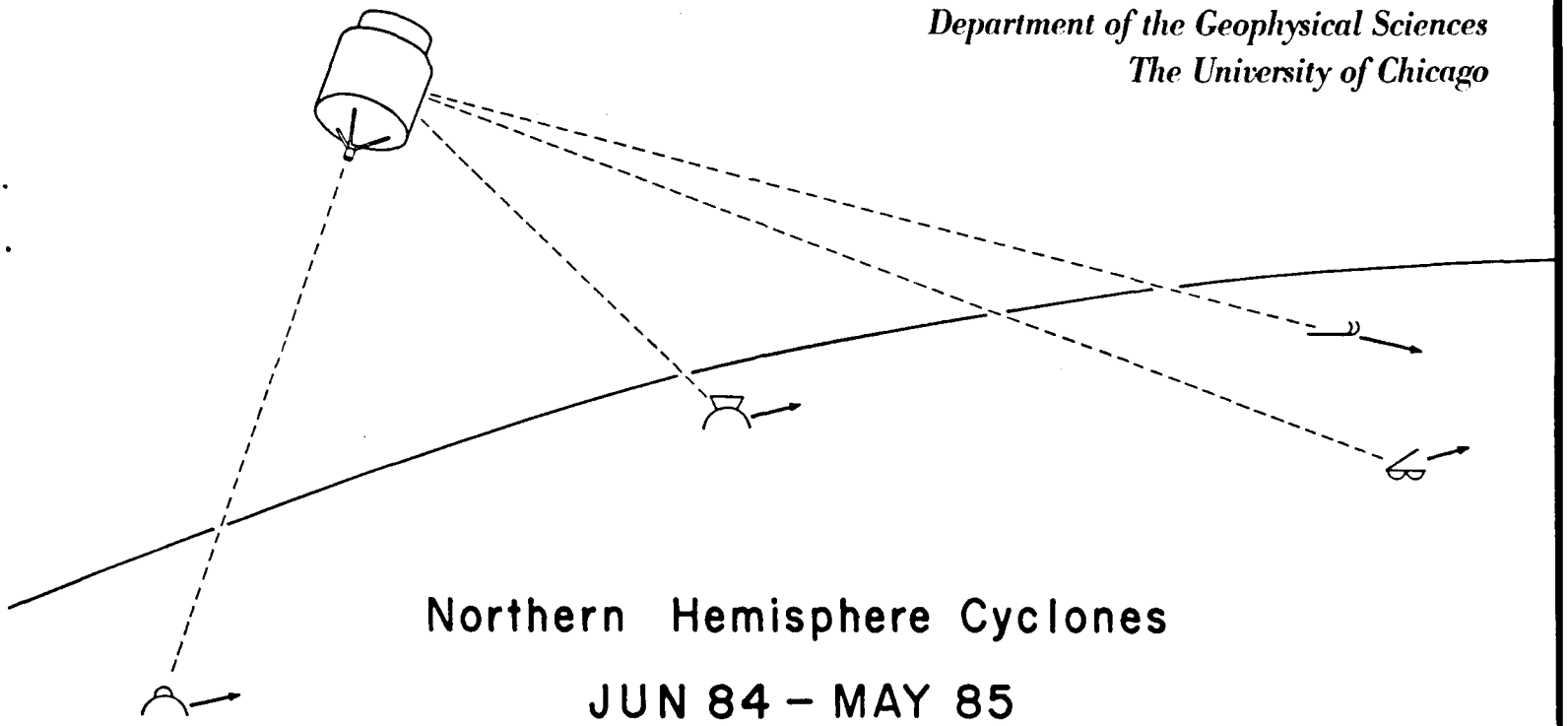
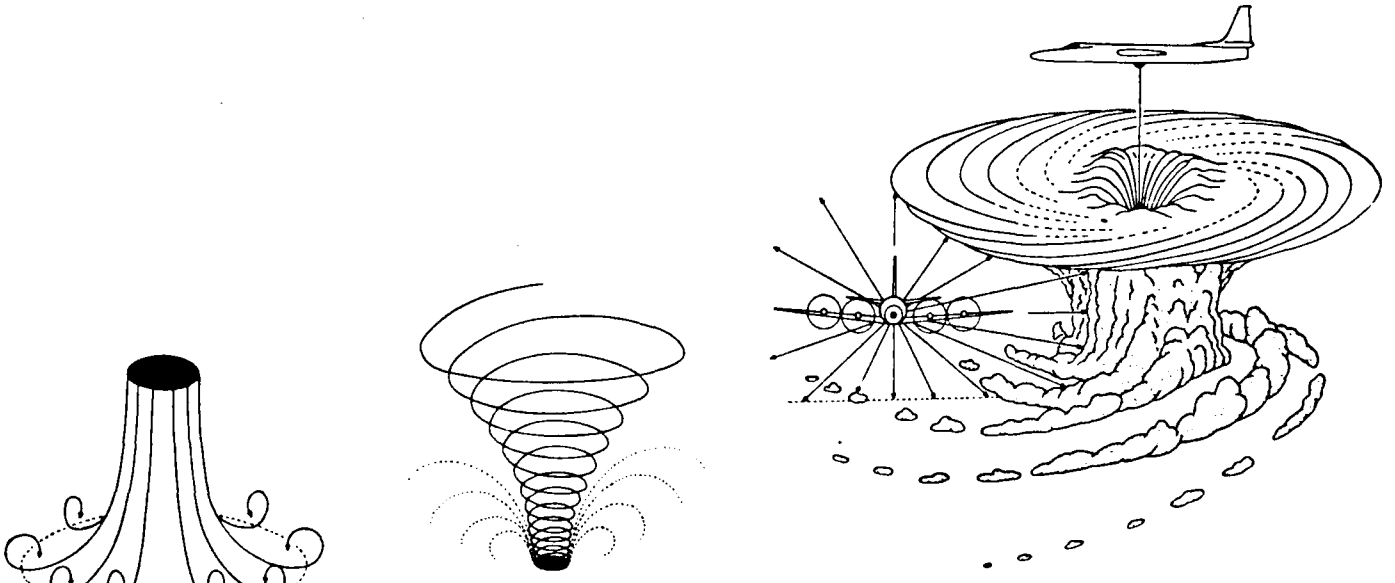


Northern Hemisphere Cyclones

JUN 84 – MAY 85

by

T. Theodore Fujita



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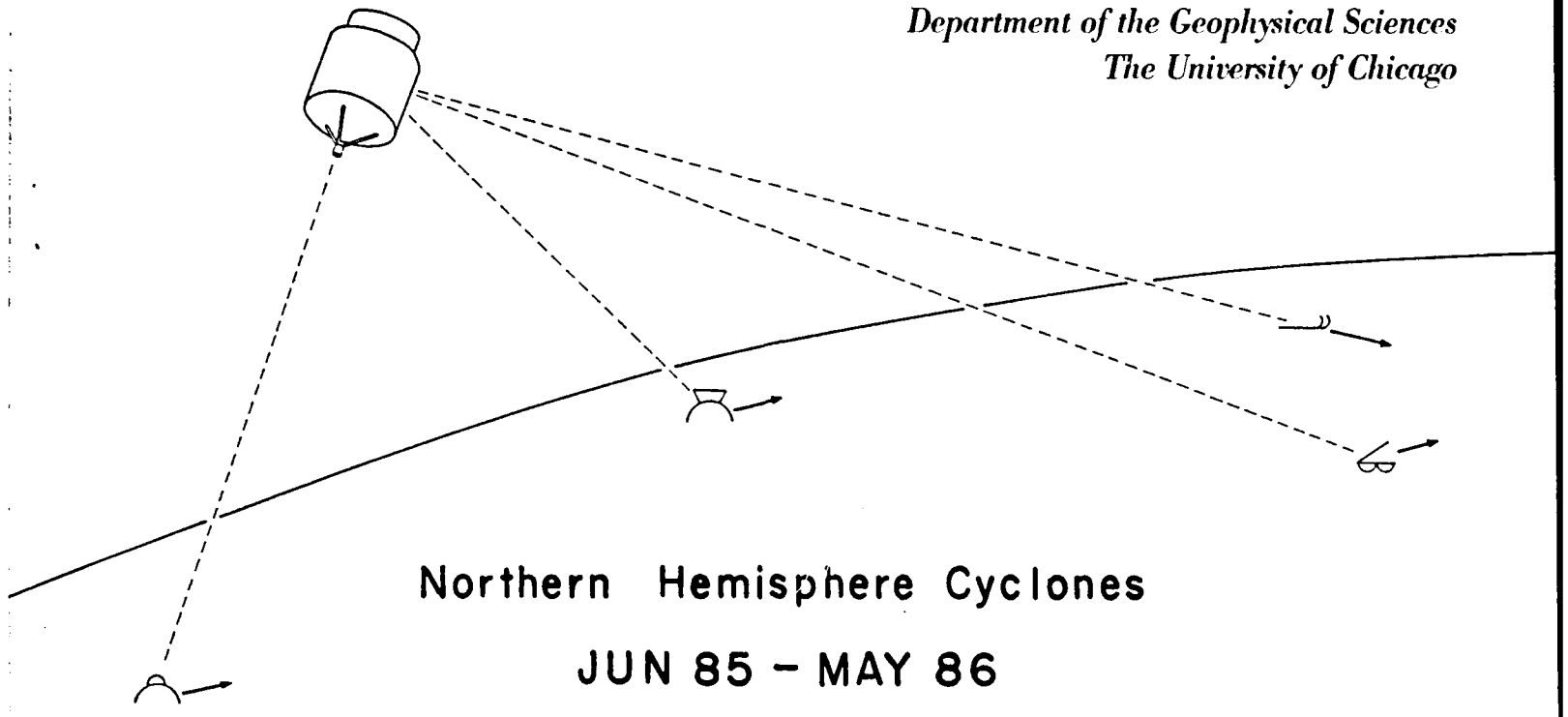
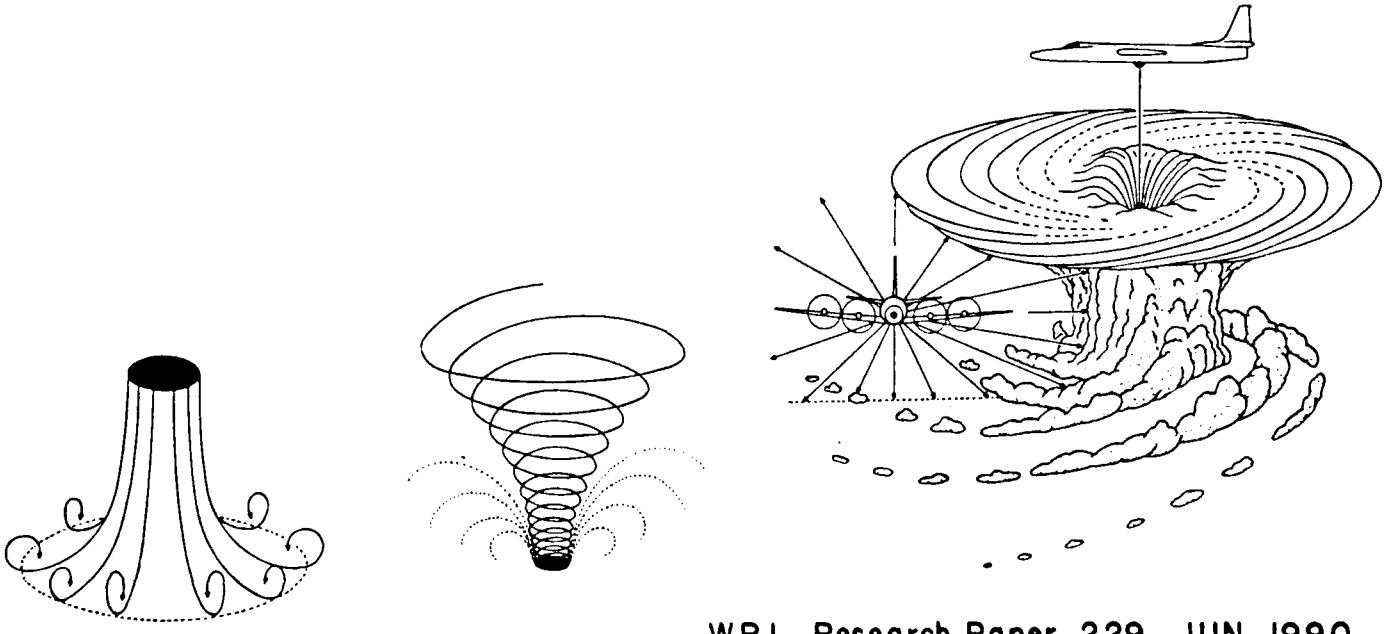


Northern Hemisphere Cyclones

JUN 85 – MAY 86

by

T. Theodore Fujita



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