19940911I_LPS

Hurricane Research Division

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To: F. D. Marks

From: H. E. Willoughby

Subject: Flight 940911I (Debby)

Planning: N43RF's flight on 11SEP94 was the only flight on the second day of the tropical cyclogenesis experiment in Debby. It was intended to be the same as on the 10th but it was flown in the opposite direction and modified to allow for Debby's proximity to Cuba and Hispaniola. We had the option of breaking off the pattern after the initial east–to–west leg and returning to Miami through the Windward Passage if the storm was too weak to work with or too close to land.

Operations: We left Barbados at 1854 UT on 11SEP94 and reached our initial point, 17N 67W at 2050. From the IP, we flew westward along 17N under the convective anvil through confused winds on the east side of the wave axis. We crossed the axis at 72.7W, passing into clear air and consistent wind from the northeast. At 76W, the end of the east–to west leg, we turned toward the southeast on the diagonal leg to the southernmost point, 15N 73.1W. The south to north leg was a little west of the wave axis because we needed to enter the Windward Passage between Haiti and Cuba. North of the center we deviated to the northwest, entered the passage, and followed it north of the islands. The north end of the passage was filled by sea–breeze convection from the islands. The final point of the pattern was north of the islands at 23.5N 73.6W. From their we followed airways to Opa–Loca, recovering at 0234 UT on 12SEP94.

Equipment: Again, the aircraft and instrumentation worked well. We continued to have some bits on the PMS precipitation probe hanging high, but this tape was readable on the ground. All of the four dropsondes deployed worked for winds and thermodynamics, although some values appear dubious.

Critique: We obtained a repeat of the previous days mission with four good soundings straddling the wave axis. Observations west of the axis did not support existence of the cyclone anticyclone couplet superimposed on the wave's broadly cyclonic circulation, although careful examination of the flow under the anvil east of the axis may reveal a cyclonic asymmetry there. The traverse of the windward passage, and indeed the whole leg north of the center, was compromised by proximity to land.

E.2 Lead Project Scientist (On-Board)

E.2.1 Preflight

✓ 1. Participate in general mission briefing.

✓ 2. Determine specific mission and flight requirements for assigned aircraft.

✓ 3. Determine from CARCAH or field program director whether aircraft has operational fix responsibility and discuss with OAO flight director/meteorologist and CARCAH unless briefed otherwise by field program director.

✓ 4. Contact HRD members of crew to:

a. Assure availability for mission.
b. Arrange ground transportation schedule when deployed.
c. Determine equipment status.

✓ 5. Meet with OAO flight crew at least 90 minutes before takeoff, provide copies of flight requirements and provide a formal briefing for the flight director, navigator, and pilots.

✓ 6. Report status of aircraft, systems, necessary on-board supplies and crews to appropriate HRD operations center (MGOC in Miami or FGOC at remote recovery location).

E.2.2 In-Flight

✓ 1. Confirm from OAO flight director/meteorologist that satellite data link is operative (information).

✓ 2. Confirm camera mode of operation.

✓ 3. Confirm data recording rate.

✓ 4. Complete Form E-2.

E.2.3 Postflight

_____ 1. Debrief scientific crew.

_____ 2. Report landing time, aircraft, crew, and mission status along with supplies (tapes, etc.) remaining aboard the aircraft to the appropriate HRD operations center (MGOC or FGOC).

_____ 3. Gather completed forms for mission and turn in at the appropriate operations center. [Note: all data removed from the aircraft by HRD personnel should be cleared with the OAO flight director.]

_____ 4. Determine next mission status, if any, and brief crews as necessary.

_____ 5. Notify the appropriate operations center (FGOC or MGOC) as to where you can be contacted and arrange for any further coordination required.

Form E-2
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On-Board Lead Project Scientist Check List

Date 11SEP94 Aircraft N43RF Flight ID 940911I

A. Participants

HRD		OAO	
Function	Participant	Function	Participant
Lead Proj. Sci.	WILLOUGHBY	Flight Director	DAMIANO
Cloud Physics	M BLACK	Pilots	TICKNOR/TENNISON
Radar		Navigator	RATHBURN
Doppler		Sys. Engr.	ROLLS
Photographer		Data Tech.	LYNCH
Omegasonde	KADLAN	El. Tech.	GONZALES
~~AXBT/AXCP~~ WORKSTATION	GRIFFIN	Other	

Take-Off 11/1854 Location BDOS Landing Location

B. Past and Forecast Storm Locations

Date/Time	Latitude	Longitude	MSLP	Max. Wind
12/00Z	17 N	73 1/2		50 KT

C. Mission Briefing

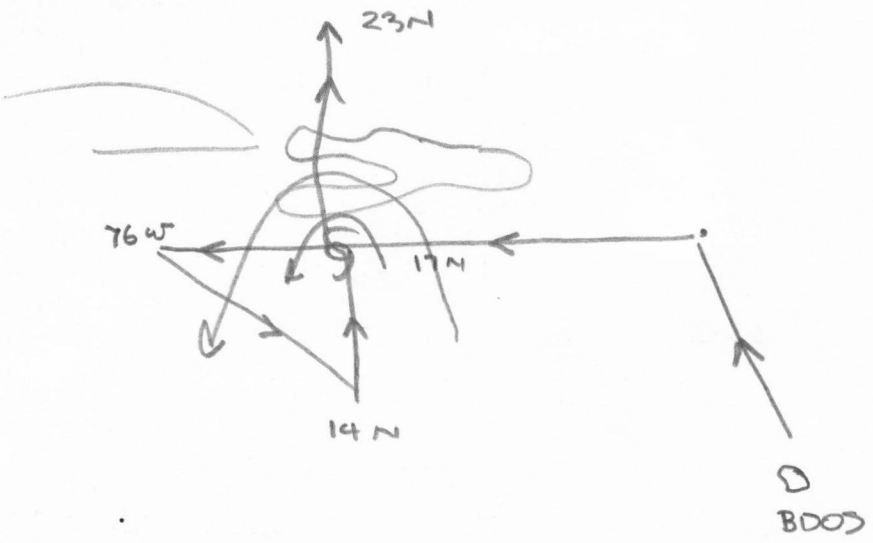
FLY E → W @17N, LOCATE TROUGH AXIS, CONTINUE TO 76W, THEN SE TO POINT ON TROUGH, THEN N ALONG TROUGH AXIS TO 23N, THEN OFF

D. Equipment Status

Equipment	Pre-Flight	In-Flight	Post-Flight
Aircraft	↑	↑	
Radar	↑	↑	
Cloud physics	↑	↑	
Data system	↑	↑	
Omegasondes	↑	↑	
AXBT/AXCP	NO13		
Doppler	↑	↑	
Photography	↑	↑	

REMARKS:

E. I. Proposed Flight Pattern (sketch or designate by number)

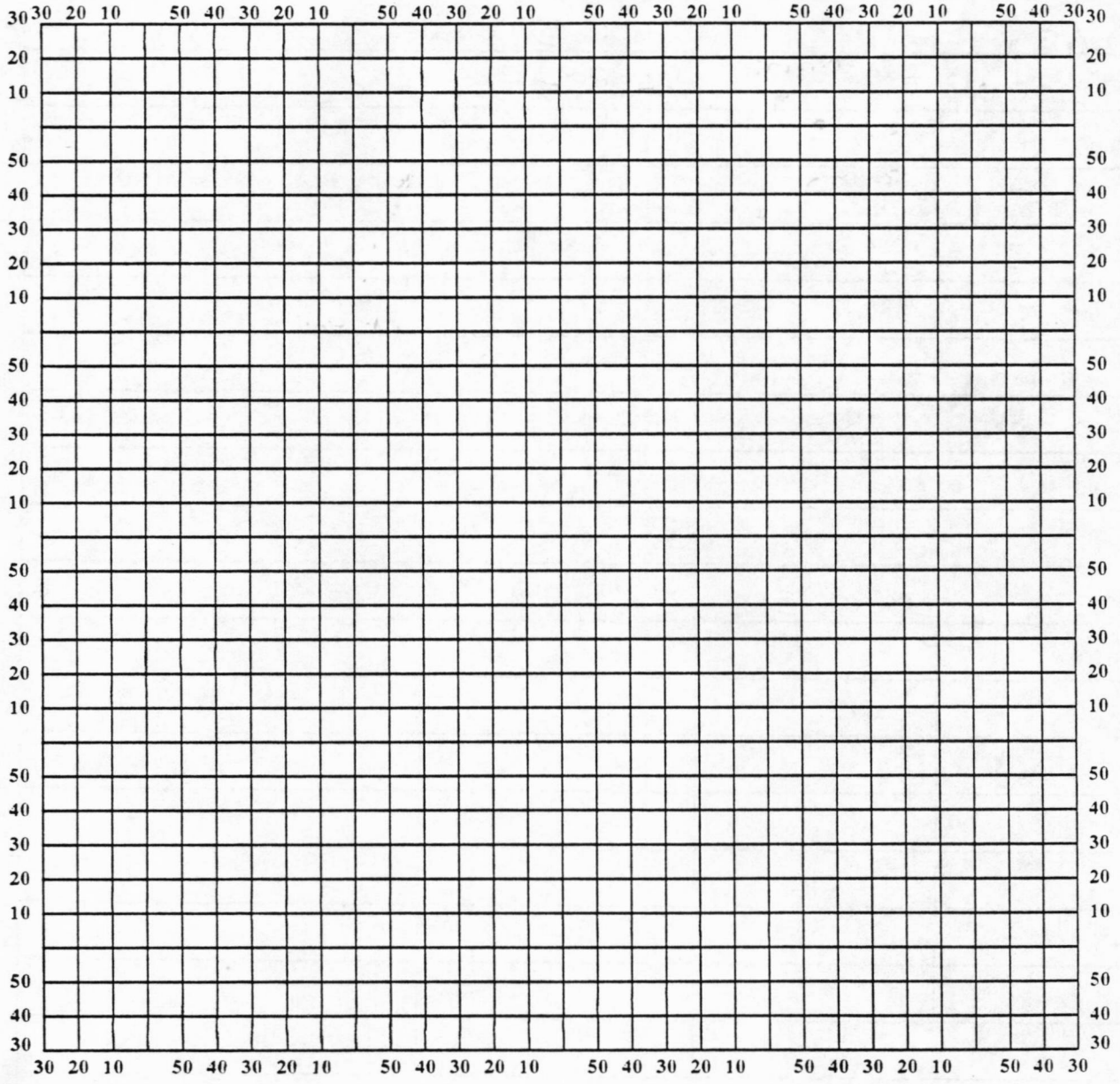


E. II. Actual Flight Pattern

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes of ϕ and λ.

Date_____ Longitude _____ Observer _____



Note: Label full degrees according to location of flight area.

Lead Project Scientist Event Log

Date 11 SEP 94 Flight 940911I LPS WILLOUGHBY

Time	Event	Position	Comments
11/1854	TO	BDOS	
2050	IP DROP 1	17-00 67-00	RL WIND 060/08 GOOD CLASSIC "ONION" 57o 12H WAVE
2122	DROP 2	17-00 69-47	IN HOLE E OF BIG CB
2155	DROP 3 WAVE AXIS	17-00 72-42	OUTSIDE CONV W OF TROUGH
2233	TURN DROP 4	17-00 76-00	TRAK SE GOOD! LAST DROP
2315	TURN -N	15-04 73-10	TRAK N A BIT W OF WAVE AXIS
2335	TURN NNW TO AVOID HAITI	16-41 73-19	
12/0000	THREADING PASSAGE	OUT WAY THROUGH WINWARD	
0030	TRAK N	20-12 73-15	
0111	TURN NW FINAL POINT	23-32 73-36	
0234	RECOVER	OFF	

TRAK W ACCROSS WAVE