Mission Summary
990826I Aircraft 43RF
Hurricane Dennis Two Plane (2 WP-3D) Synoptic Flow

Scientific Crew (43RF)

Lead Scientist	P. Black
AXBT Scientist	P. Black
Radar scientist	J. Gamache
GPS Dropsonde	M. Black
HRD Workstation	P. Dodge
Observer	NBC6 cameraman

Mission Briefing:

This flight was part of the second two-plane synoptic flow mission flown in Hurricane Dennis. It was designed to map the steering currents in mid- and low-level, especially assess the relative strengths of the mid- and low-level anticyclone to the north of Dennis and the strength of the southwesterly flow ahead of a trough over the mid-Atlantic region. This sampling is being done to determine the validity of model track forecasts which are predicting recurvature off the Florida east coast.

Mission Synopsis

The flight departed Miami International/ Signature Aviation at 1730 UTC, August 26 and landed at Bermuda International at 0130 UTC, August 27, a duration of 8 hours. Flight altitudes in Dennis were 12,000 ft, and 22-26,000 ft for the duration of the flight north of Dennis.

A total of 6 AXBTs were deployed, all CAD-launched. One each was launched in the SW and NE 'eyewall' region together with GPS sondes. The others were launched across the future track of the storm. Clean signals were observed to 350 m on all AXBTs. Nineteen GPS sondes were launched and 15 were transmitted (Table 1), with one giving late launch detect, and one with no winds.

The mission was designed to be one coordinated pass through the center from SW to NE while N42RF flew NW to SE (see Fig.1 for flight track). Following this single pass, the aircraft climbed to maximum altitude of 22,000 ft and commenced the remainder of the synoptic flow mission, while step-climbing to 26,000 ft. Maximum flight-level winds were 57 kt, and an eyewall was trying to form with most convection in the NE quadrant.

Midway through the mission, ATC New York refused permission for the aircraft to continue its mission saying a large area bounded by 26N, 73W; 26N, 67W; 29N, 67W and 29N, 73W plus a 45 n. mi. 'buffer around this region was 'hot' and therefore off limits. A second coastal warning area C-122, was also activated as we attempted to fly around the original area. ATC New York then vectored us inland over North Carolina and back out over the water at 31N (Fig. 1), refusing

permission for any further track changes except a route direct to Bermuda. Thus, the synoptic flow portion of the mission was not completed, and the objectives not achieved.

Problems:

All aircraft systems performed flawlessly. The main problem was aborting the flight pattern by order ATC New York.

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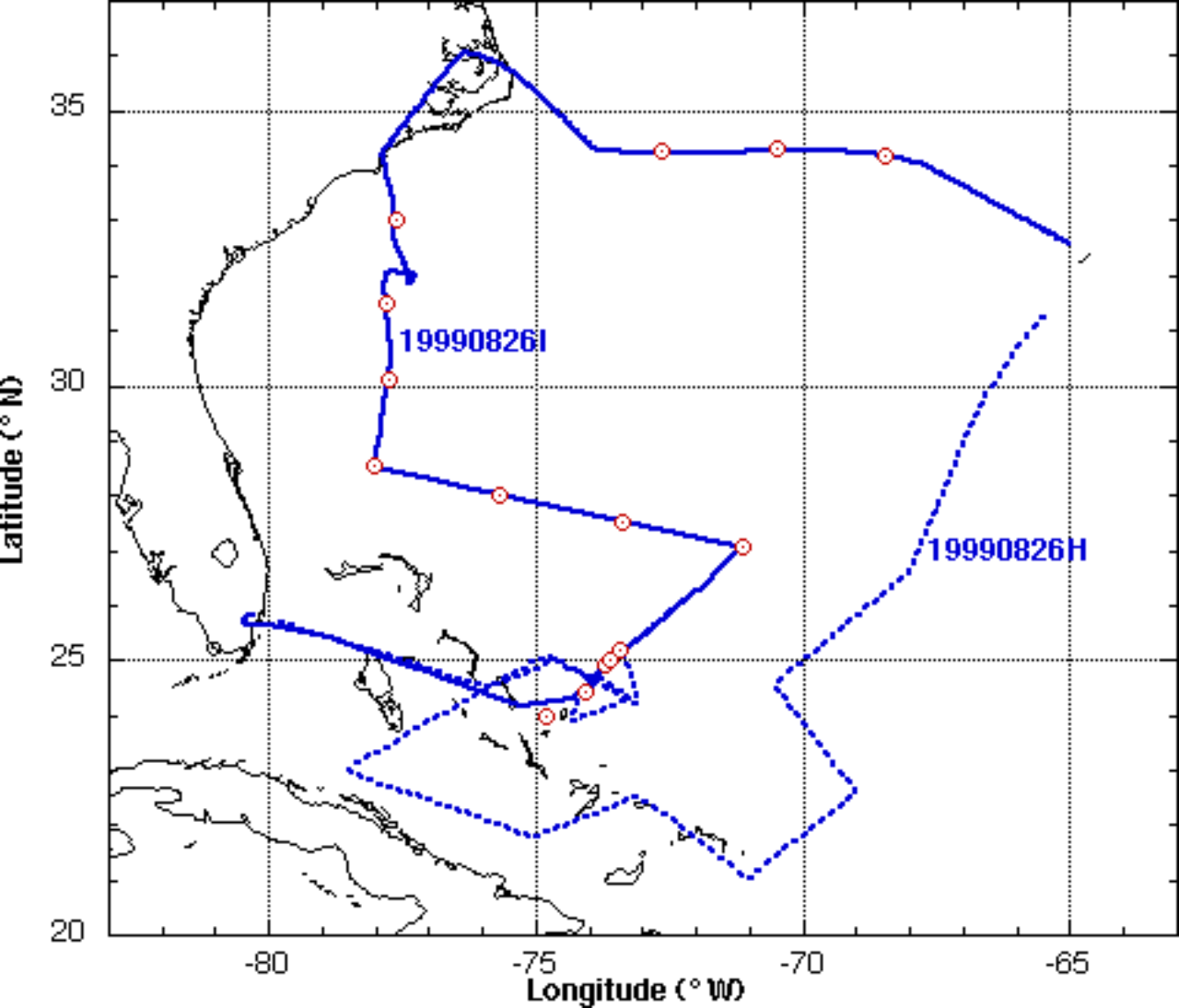
Table 1: Splash locations of sondes transmitted during the 19990826I Dennis mission. Here MBL = mean boundary layer wind (fffdd; fff = wind direction in deg and dd = wind speed in kt), and LST WND = height of last wind (meters).

#	Sonde ID	Time (UTC)	Lat (°N)	Lon (°W)	Comment
1	984715264	26:20:00:00	27.08	-71.12	MBLWND 12521=
2	984325376	26:20:24:00	27.54	-73.39	MBLWND 11520 SST 293
3	985035264	26:18:54:00	23.99	-74.82	MBLWND 32023=
4	984325440	26:19:06:00	24.45	-74.07	MBLWND 29025 SST 282
5	984715328	26:20:49:00	28.02	-75.70	MBLWND 13013=
6	985035136	26:19:14:00	24.92	-73.73	MBLWND 10061 EYEWALL
7	985035072	26:19:16:00	25.00	-73.64	MBLWND 09564 EYEWALL
8	985035072	26:19:20:00	25.18	-73.42	MBLWND 11563=
9	985035264	26:21:15:00	28.56	-78.03	
10	984715264	26:21:34:00	30.13	-77.76	MBLWND 16012 LST WND
11	984715264	26:21:52:00	31.52	-77.79	MBLWND 20012=
12	984325440	26:22:19:00	33.03	-77.63	MBLWND 18512=
13	985035072	26:23:40:00	34.28	-72.65	MBLWND 20514=
14	985035072	27:00:00:00	34.30	-70.47	MBLWND 21009=
15	985035200	27:00:18:00	34.20	-68.47	MBLWND 22509=


19990826I
19990826H
35
30
25
20
-80
-75
-70
-65
Latitude (° N)
Longitude (° W)