Mission Summary
990827I Aircraft N43RF
Hurricane Dennis XCDX/ Modified Air-Sea Interaction Experiment

Scientific Crew (43RF)

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

Mission Briefing:

This mission was designed to monitor the structure of a slow-moving, slowly developing hurricane and to monitor the ocean structure underneath and ahead of the storm.

Mission Synopsis

The flight departed Bermuda International at 1730 UTC, August 27 and landed at Miami International/ Signature Aviation at 0230 UTC, August 28, a duration of 9 hours. Flight altitudes in Dennis were 14,000 ft. A butterfly XCDX pattern was flown and 4 penetrations were made (Fig. 1).

A well-defined eye was encountered with strongest convection in the north and west quadrants of the eyewall and weakest on the south and east. During the second half of the flight, convection became very active in bands in the southeast quadrant and lightning was frequent.

A total of 8 AXBTs were deployed, all CAD-launched. AXBTs were launched with GPS sondes at the 75 nmi radius east, northeast, north and northwest of the center, as well as in the eyewall along each leg. Clean signals were observed to 350 m on all AXBTs. 34 GPS sondes were launched and 26 sondes were transmitted (Table 1).

Efforts were made to transmit SFMR surface winds, but one frequency was bad and error checking routines designed to eliminate erroneous frequencies was not operating properly, nor was the error checking routines to flag high over-land brightness temperatures.

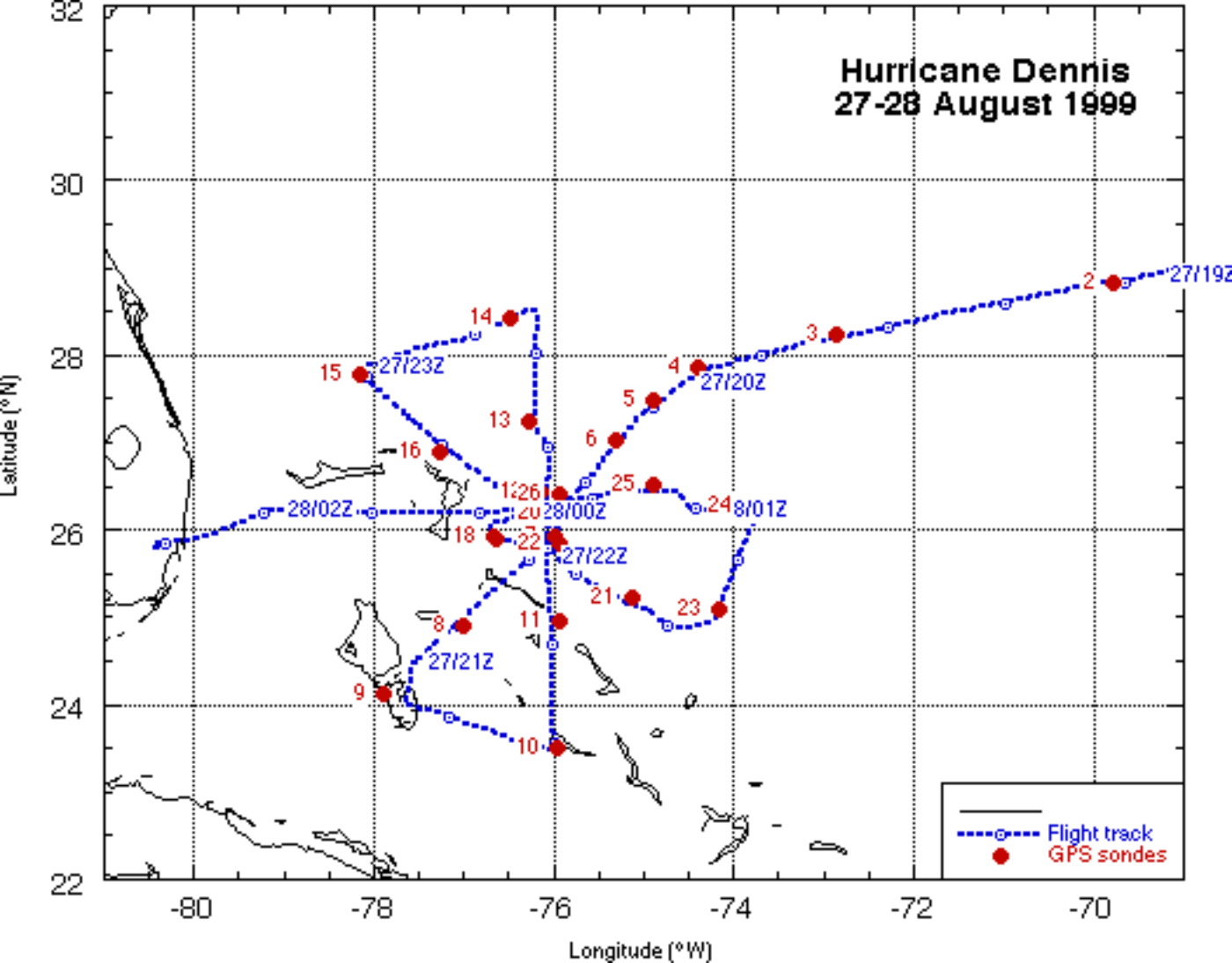
Problems:

Except for the SFMR frequency problem all aircraft systems performed flawlessly. Once again, ATC, New York required us the shift the pattern 1 degree south on the inbound leg to avoid an unannounced restricted area.

Peter Black
black@aoml.noaa.gov

Table 1: Splash locations of sondes transmitted during the 19990827I 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	984715200	27:18:18:00	31.300	-67.230	MBL WND 11509=
2	991435072	27:19:04:00	28.840	-69.770	MBL WND 12514=
3	991435008	27:19:39:00	28.230	-72.850	MBL WND 13022=
4	991435072	27:19:57:00	27.860	-74.390	MBL WND 11532=
5	985035200	27:20:04:00	27.490	-74.890	MBL WND 12039 LST WND
6	990415104	27:20:12:00	27.040	-75.310	MBL WND 11045=
7	991435008	27:20:30:00	25.920	-75.980	MBL WND 21015 EYE=
8	991435008	27:20:50:00	24.900	-77.010	MBL WND 31038=
9	991435008	27:21:06:00	24.130	-77.890	MBL WND 31025=
10	991435008	27:21:30:00	23.500	-75.960	MBL WND 24026=
11	991515008	27:21:50:00	24.970	-75.950	MBL WND 25040 LST WND
12	991435072	27:22:09:00	26.440	-76.150	MBL WND 08568 LST WND
13	991435072	27:22:20:00	27.240	-76.290	MBL WND 07551=
14	991435072	27:22:41:00	28.430	-76.480	MBL WND 09522 LST WND
15	991435072	27:23:00:00	27.780	-78.150	MBL WND 03522 SST 29
16	991435008	27:23:16:00	26.900	-77.280	MBL WND 04047=
17	991435136	27:23:53:00	25.910	-76.650	MBL WND 34053=
18	991435136	27:23:53:00	25.930	-76.670	MBL WND 34552 EYEWALL
19	991435136	28:00:05:00	26.210	-75.960	MBL WND 16051 LST WND
20	990845056	28:00:05:00	26.200	-75.950	MBL WND 16556 LST WND
21	991435136	28:00:24:00	25.220	-75.140	MBL WND 20545 LST WND
22	991037120	28:00:11:00	25.850	-75.950	MBL WND 20574 LST WND
23	990845184	28:00:38:00	25.100	-74.160	MBL WND 16539=
24	991515072	28:00:53:00	26.280	-73.820	MBL WND 13542=
25	991037120	28:01:07:00	26.510	-74.890	MBL WND 13054 RAINBAND
26	991515136	28:01:20:00	26.400	-75.930	MBL WND 13572 EYEWALL


Hurricane Dennis
27-28 August 1999
Latitude (°N)
Longitude (°W)
32
30
28
26
24
22
-80
-78
-76
-74
-72
-70
Flight track
GPS sondes
27/19Z
27/20Z
27/23Z
28/02Z
28/00Z
28/01Z
27/22Z
27/21Z
1
2
3
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