Mission Summary
Humberto
010924n1 Aircraft 49RF

Scientific Crew (49RF)

Lead Project Scientist	Sim Aberson
Dropwindsonde Scientist	Paul Reasor

Mission Briefing:

Synoptic surveillance mission for Hurricane Humberto, possibly threatening the northeastern United States (Fig. 1). Regular mission slightly modified due to COVES NOAA/NASA research missions. Important points are a five degree octagon around the storm (including the Bermuda sounding) (Fig. 2).

Mission Synopsis:

Flight track flown exactly as planned except for recovery in Savannah to get plane repaired.

Synoptic findings:

1. Environmental surface pressures were high. All surface pressures, except near the cold front approaching the southeast U. S. coast, were between 1015 and 1019 hPa. Because the of high environmental pressures, inner-core winds are higher than usual given the central pressure
2. Environmental surface winds were light in the environment. Due to the poor forecast position, the eastern periphery of the small hurricane was sampled. One dropwindsonde had 31 kt at the surface; this apparently did not get into the HRD surface analysis. The specialist on duty increased the radius of gale force winds based on this dropwindsonde.
3. No data showed the presence of the upper-level anticyclone seen the previous day. Humberto was weakening under the strong upper-level westerlies over the storm.
4. One one small bit of convection was overshooting the cirrus shield in the inner core of the storm, as seen visually from the aircraft. See Fig. 3. The cirrus was at about 40K ft, and the shadow of the G-IVs contrail along with a glory were seen there. See Fig. 4.
5. The only overshooting top was seen in the strong band, resembling a cold front, well southeast of the storm center. See Fig. 5.
6. A ridge axis was southeast of Humberto along 32N, from 200 hPa to the surface. This suggests a further turn to the east in the strong westerlies just to the north of the storm. The longwave trough was flatter than expected, suggesting a more easterly track than expected.
7. A cold low was located near 32.5N 70W at 200 hPa extending to 29N 71W at 500 hPa.
8. The cold front off the United States east coast had moved further east. A large deck of stratocumulus with a great amount of structure persisted off the northeastern United States coast. See Fig. 6a-e.

9. The terminator, the shadow of the earth, was seen at sunset. See Fig. 7.

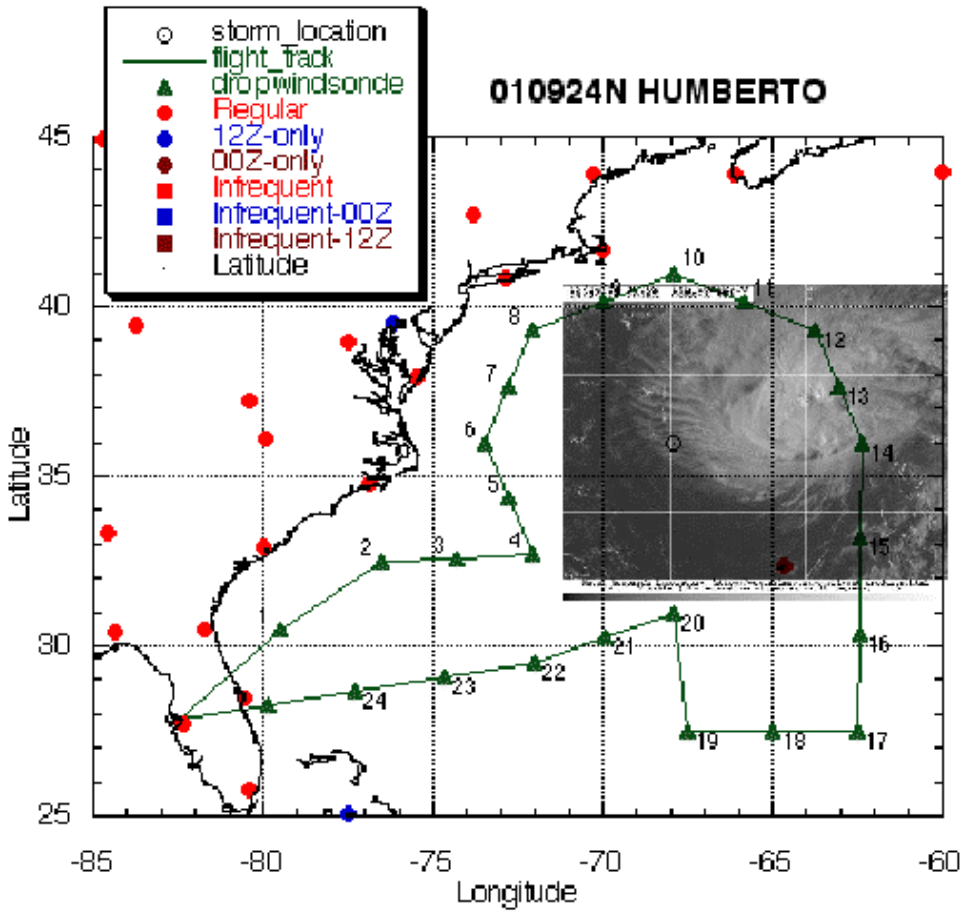
Evaluation:

1. Paul Reasor continued his training to run HAPS and process dropwindsondes.
2. The dropwindsonde data had a big impact on the numerical guidance, pushing the storm further to the east away from the coast in the models (Fig. 8). The data were mentioned in the 11pm and 5am Humberto discussions.

Problems:

1. There was some SATCOM difficulty, especially before sunset. However, they were not as bad as the previous day.
2. Sonde number 7 needed to be retransmitted as instructed by Warren Van Werne at CARCAH.
3. Two dropwindsondes, numbers 9 and 13, had the problem of transmitting data at 0.4 and 0.6 s intervals. The files were manually edited to fix this problem, and the good data were sent out.
4. Dropwindsonde 21 was a fast fall and was replaced. Data from the fast fall were not sent out.

Sim Aberson


storm_location
flight_track
dropwindsonde
Regular
12Z-only
00Z-only
Infrequent
Infrequent-00Z
Infrequent-12Z
Latitude
010924N HUMBERTO
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40
35
30
25
-85
-80
-75
-70
-65
-60
Longitude
Latitude

Fig. 1.

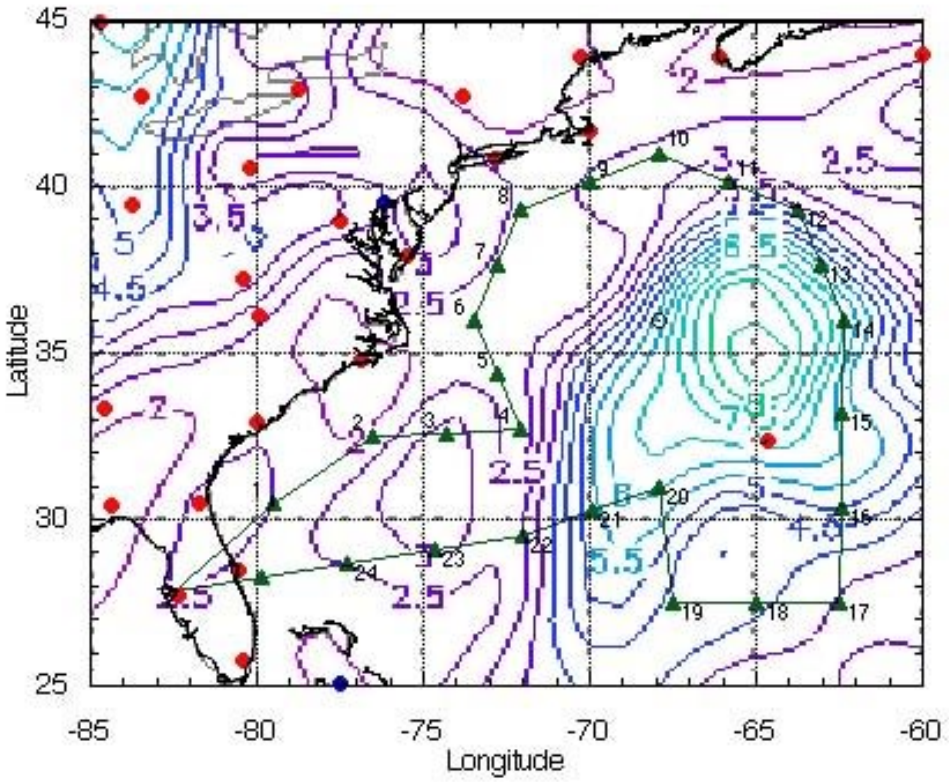

Fig. 2.

Fig. 3

Fig. 4

Fig. 5

Fig. 6a

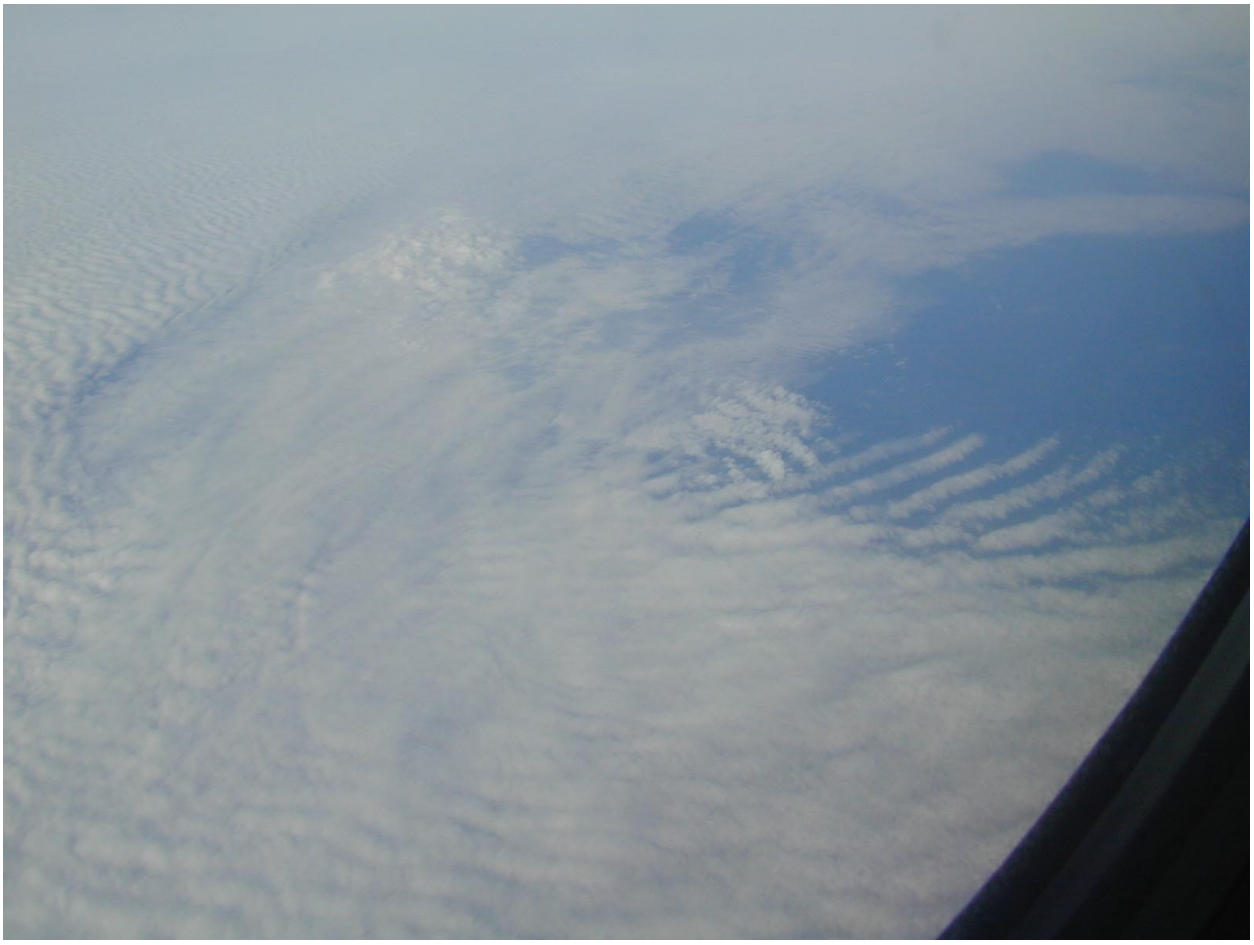

Fig. 6b

Fig. 6c

Fig. 6d

Fig. 6e

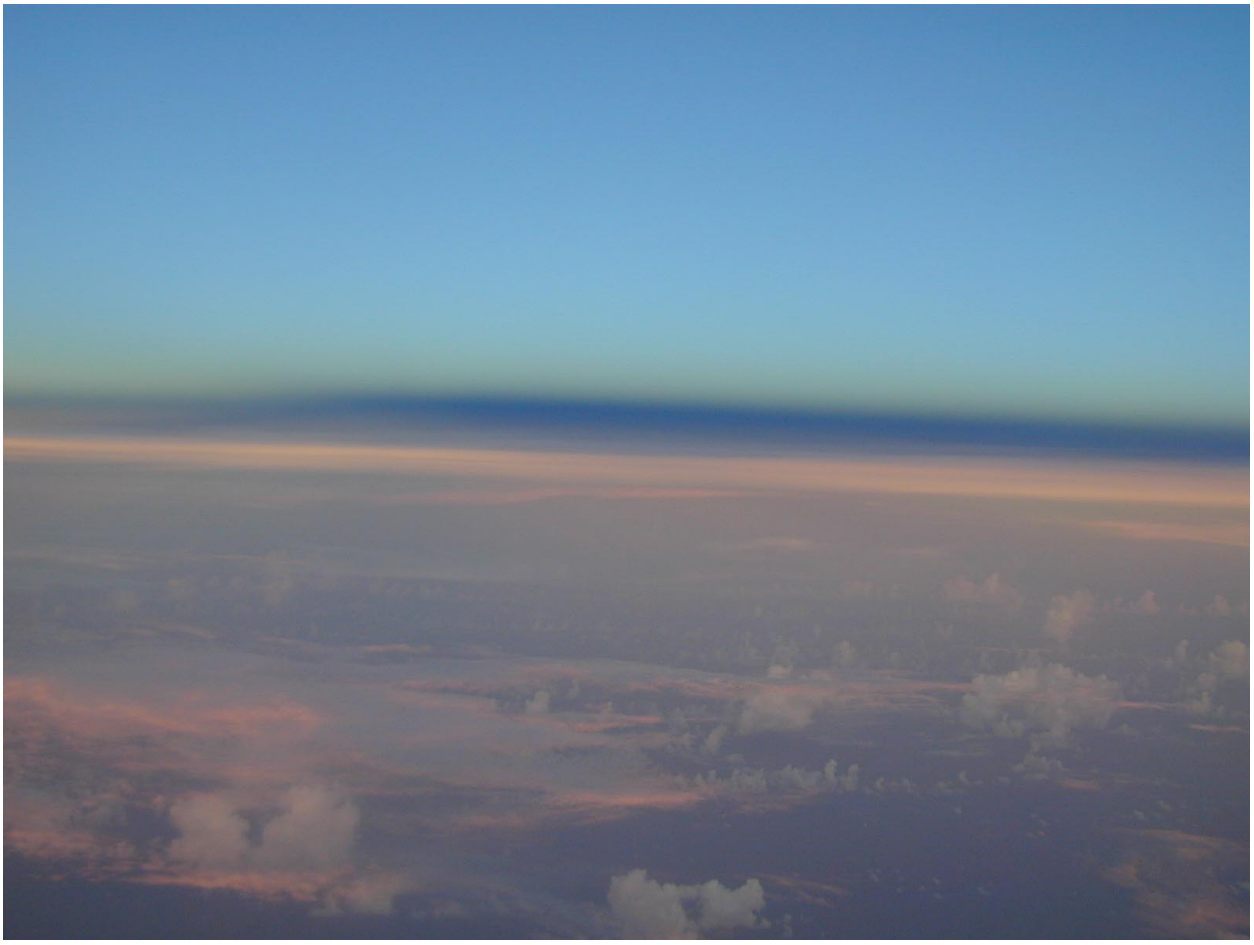

Fig. 7

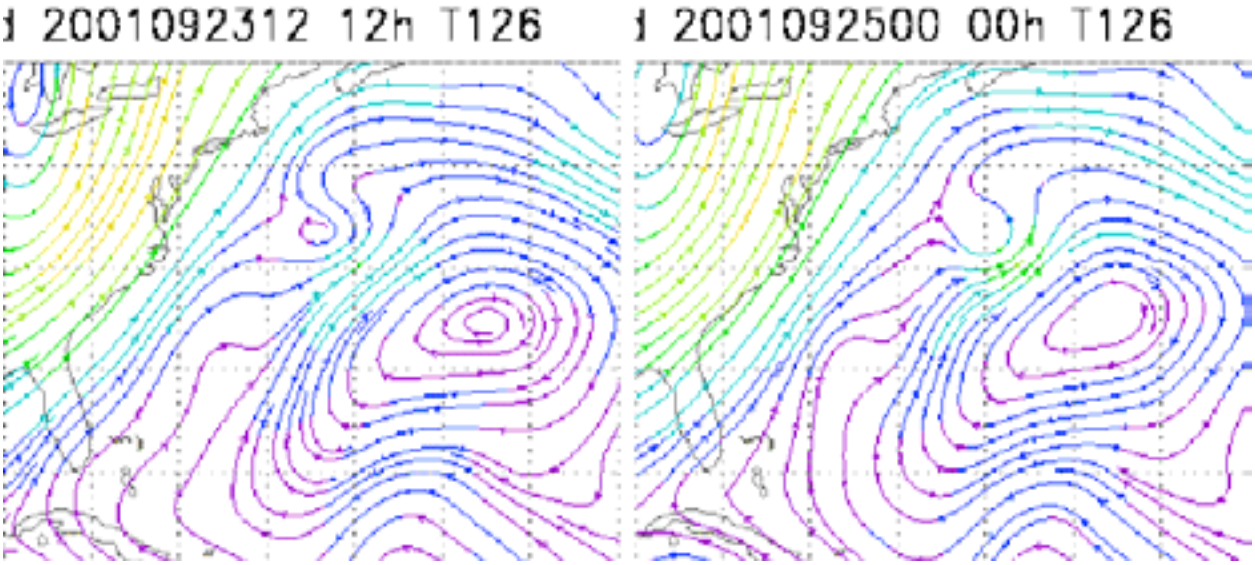

Fig. 8