

Mission Summary
Humberto
010923n1 Aircraft 49RF

Scientific Crew (49RF)
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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), and to get the strength of the ridge to the east of Humberto. See Fig. 2.

Mission Synopsis:

Flight track flown exactly as planned except for 1.25 h delay due to engine problems.

Synoptic findings:

1. Environmental surface pressures were high. All surface pressures during the mission were between 1015 and 1020 hPa. Because of the high environmental pressures, inner-core winds are higher than usual given the central pressure.
2. Environmental surface winds were light, and barely showed the storm circulation. Humberto is a small storm.
3. Humberto was located at the western end of a well-defined anticyclone at and above 250 hPa. This allowed for the development of Humberto into a category 2 hurricane during the mission.
4. Strong westerly winds were beginning to impinge upon the circulation at 300 hPa, suggesting that a downturn in intensity was likely.
5. A shortwave in the long-wave trough over the eastern United States was located at 250 and 300 hPa just off the coast of Wilmington, NC. This probably will not impact the track for another day.
6. A ridge axis was east of Humberto along 32N, from 400 hPa to the surface. This suggests a turn to the east in the strong westerly just to the north of the storm.
7. A weak cyclone circulation was located near 40N 67.5W near the surface. However, surface pressures were high in this area.
8. A cold low was located near 29N 73W at 200 hPa, and this feature tilted and had a surface reflection near 29N 66W. This feature is unlikely to impact the track.

9. A cold front had passed off the United States east coast. As the cold air moved over the warm waters of the Atlantic, a deck of stratocumulus was in evidence. The layers of clouds had fascinating structure. See Fig. 3a-e.
10. A beautiful sunset was seen. See Fig.4a-c..

Evaluation:

1. Paul Reasor was trained 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. The data were mentioned in the 5am Humberto discussion. See Fig. 5.

Problems:

1. Engine trouble.
2. There was some SATCOM difficulty, especially around sunset. There were 12 failures in a row delaying the data leaving the plane.
3. The first three sondes were transmitted with a blank line after the UZNT13 line. These were retransmitted at the direction of Warren Van Werne at CARCAH.
4. Dropwindsonde 22 stopped transmitting near 850 hPa. The AVAPS operator quickly ended the sonde, even though the sonde was still in the air. It may have started transmitting again before splash.

Sim Aberson

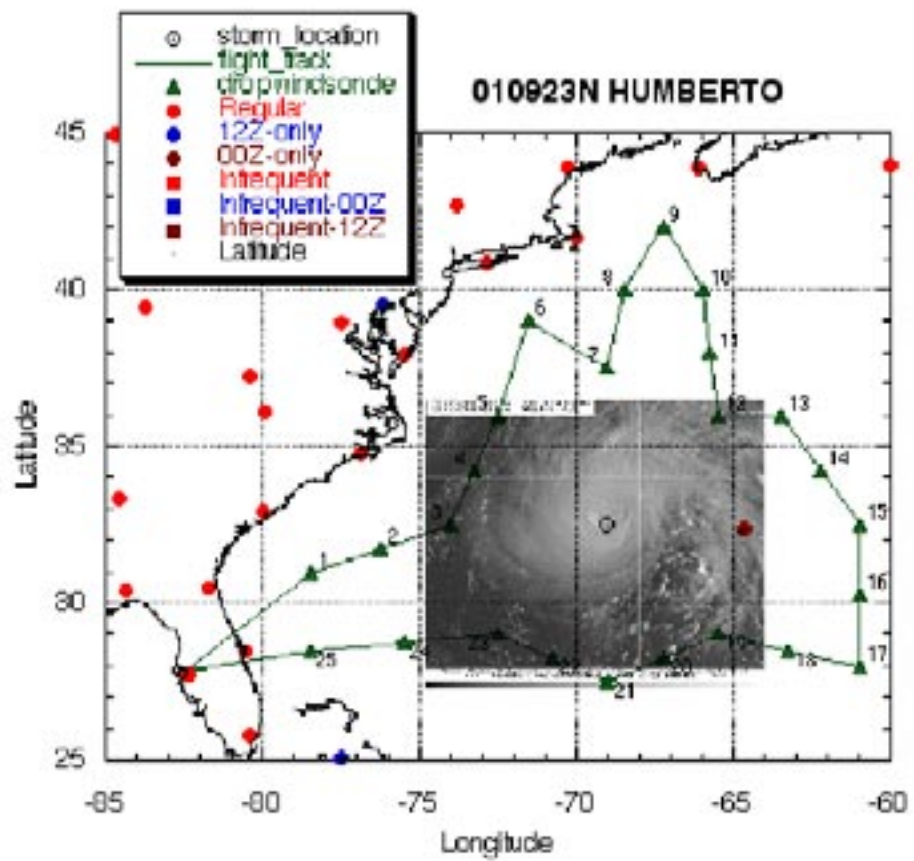


Fig. 1.

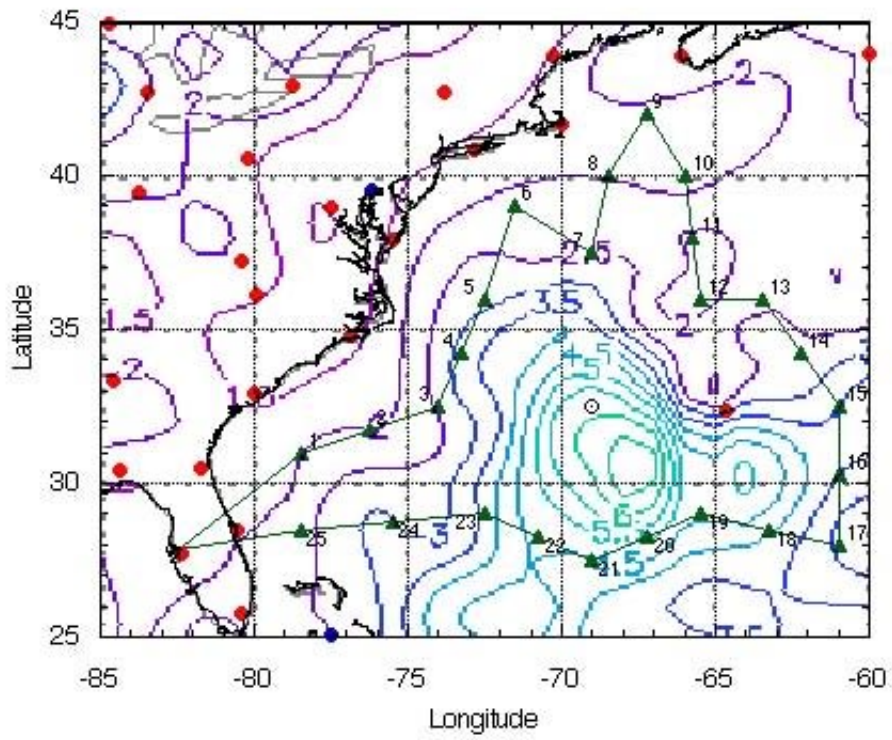


Fig. 2.



Fig. 3a



Fig. 3b



Fig. 3c



Fig. 3d



Fig. 3e



Fig.4a



Fig. 4b



Fig.4c

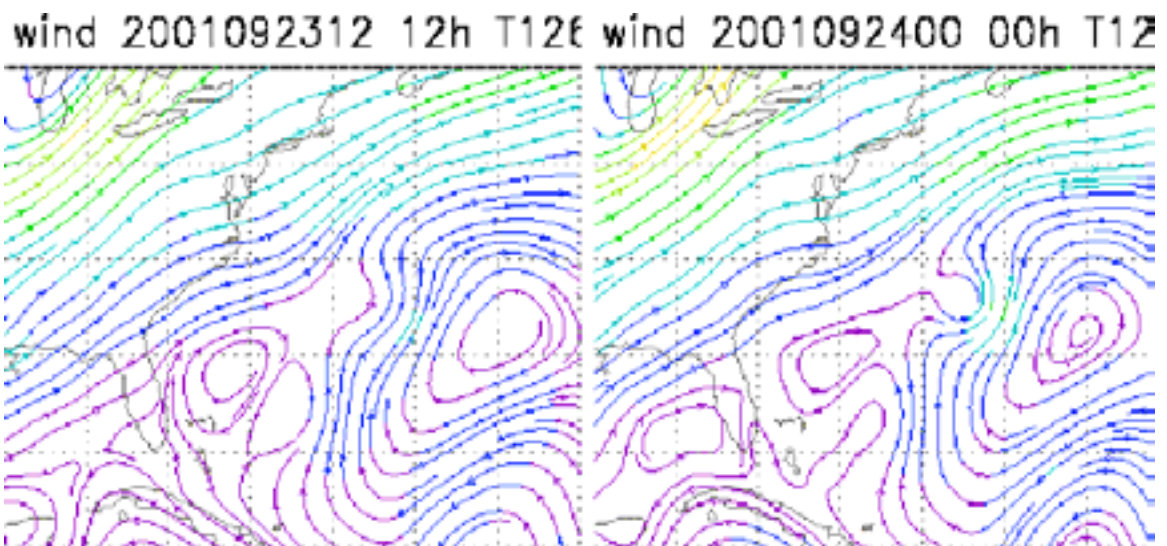


Fig. 5