

CPEX Mission #13    20 June 2017    Takeoff ~ 1655    Landing ~ 2235 UTC

Draft Mission Scientist Report (Ed Zipser, 15 July 2017)

This was the first CPEX flight into the NAMED tropical cyclone Cindy, although the previous flight on 19 June investigated the “potential TC Cindy” and flights in the NW Caribbean on 17-18-19 June probed the semi-organized convection that certainly had a role in the eventual formation of this rather unconventional tropical cyclone. The objective was to map the structure, crossing the major rain band on the east side, and use the unique resources available on the DC-8 to map the kinematic and thermodynamic structure near the cyclone center. The near-absence of high and middle clouds close to the cyclone center made this a tempting target for DAWN. On the return leg eastbound toward Florida, some time was spent overflying (perhaps) representative deep convection within the rainband east of the cyclone center. images in later figures.

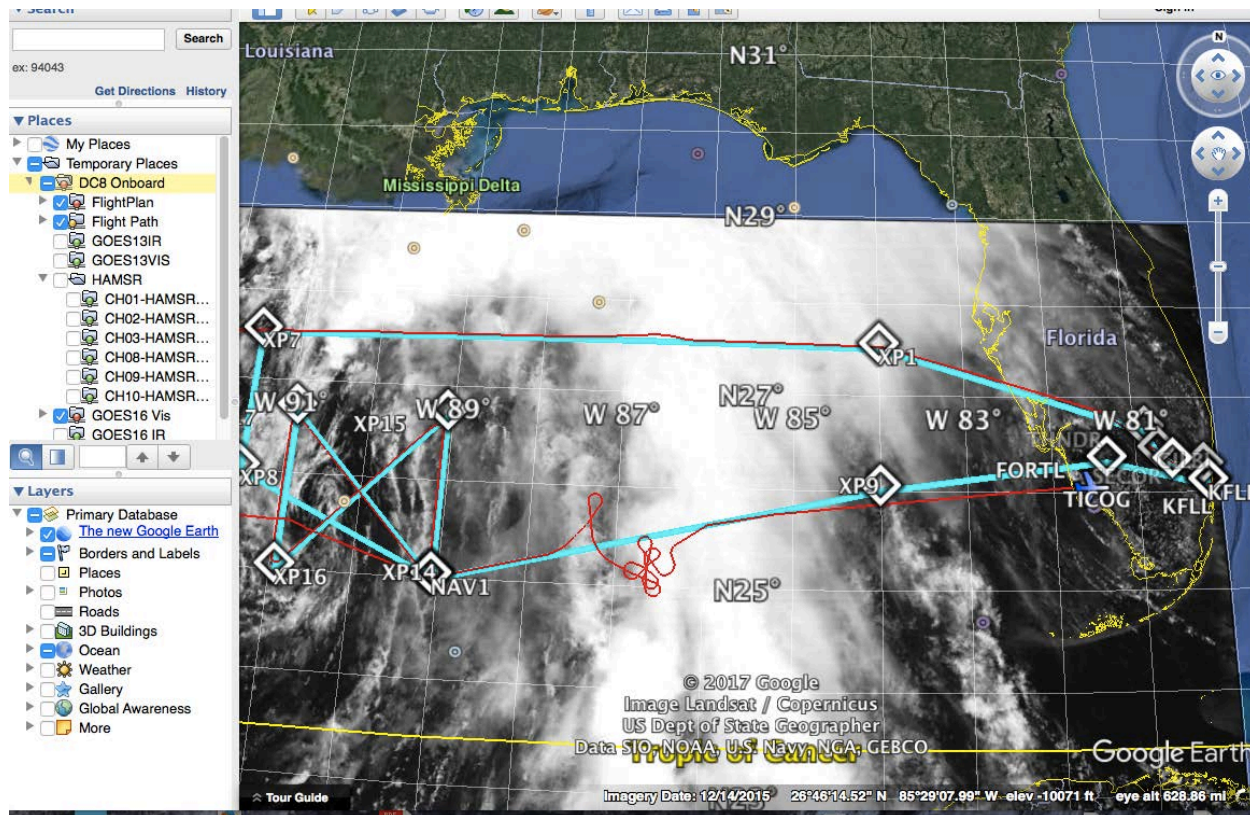


Figure 1. DC-8 flight track on 20 June, together with a snapshot of a VIS image. Comparison of VIS with IR images in this report is instructive. The cyclone center is not at the center of curvature of the thin bands on VIS, but (at least at some levels) is closer to the large (~ 100 km) warm area shown on the IR images.

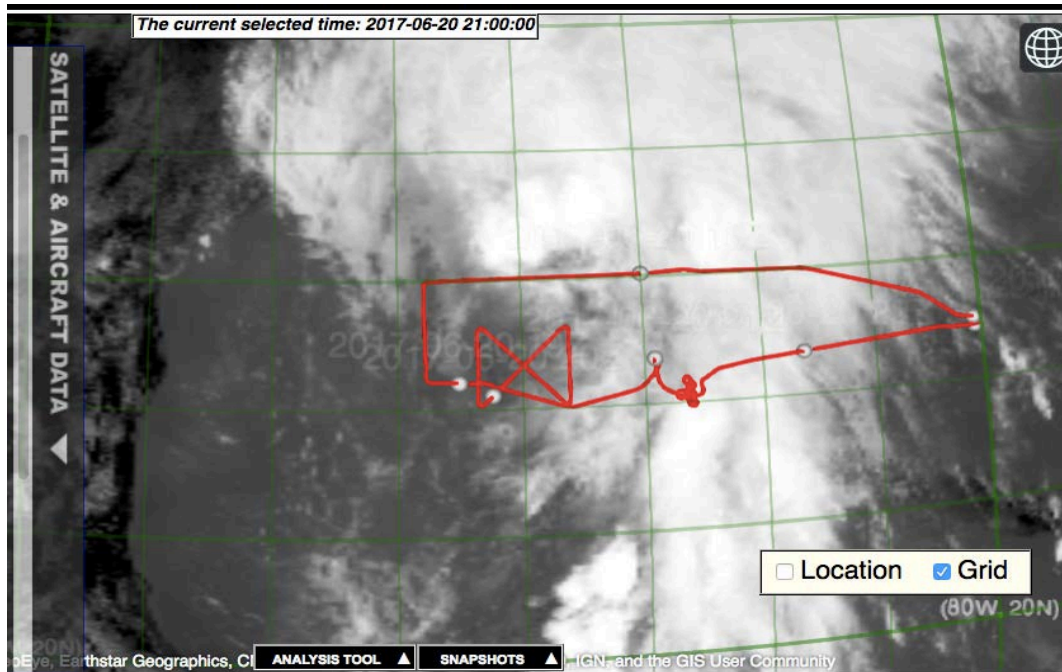


Fig 2. Entire flight track on IR image (Approx 2100 UTC).

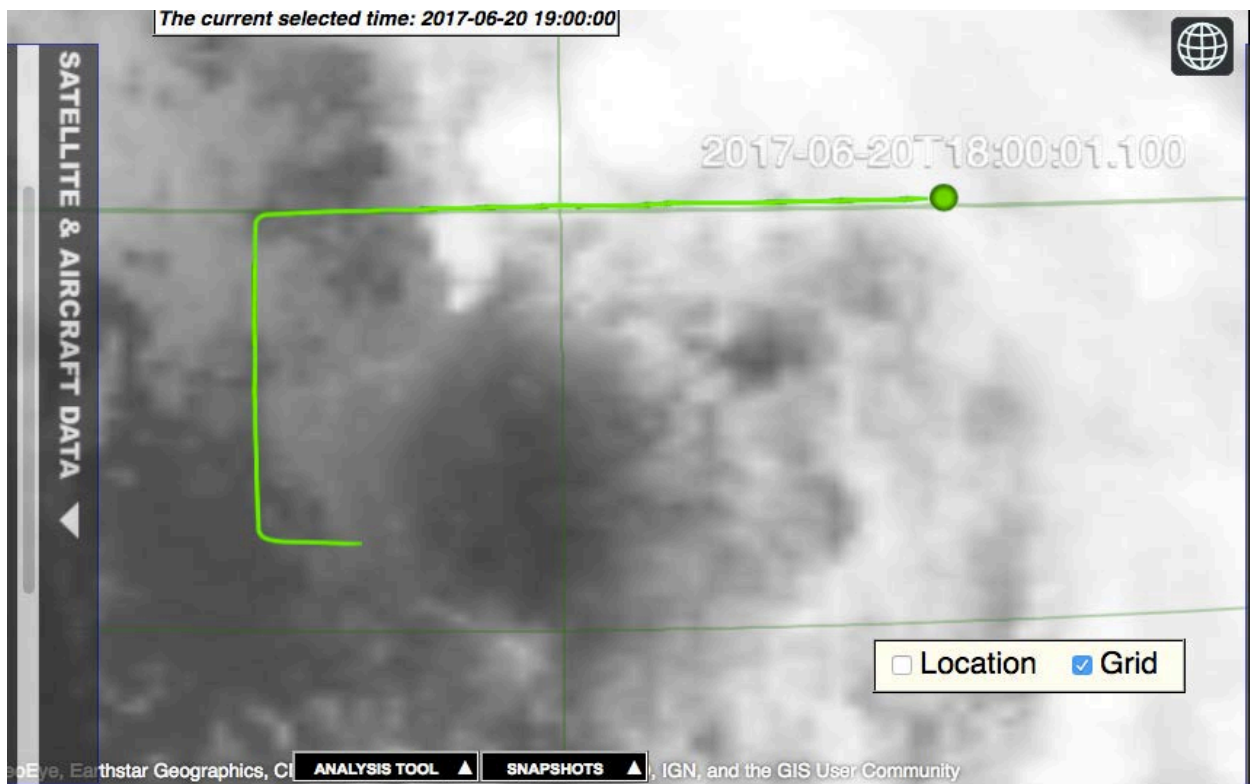


Fig. 3. Flight track from 18-1900 UTC on IR image approx. 1900. DC-8 maintained westbound track without deviation as lightning was confined to cells north of track. Some debate about best place to turn left; concerned about lower clouds preventing DAWN from obtaining low level winds. Plan to center the fig-4 pattern near 26N 90W in large, warm IR region.



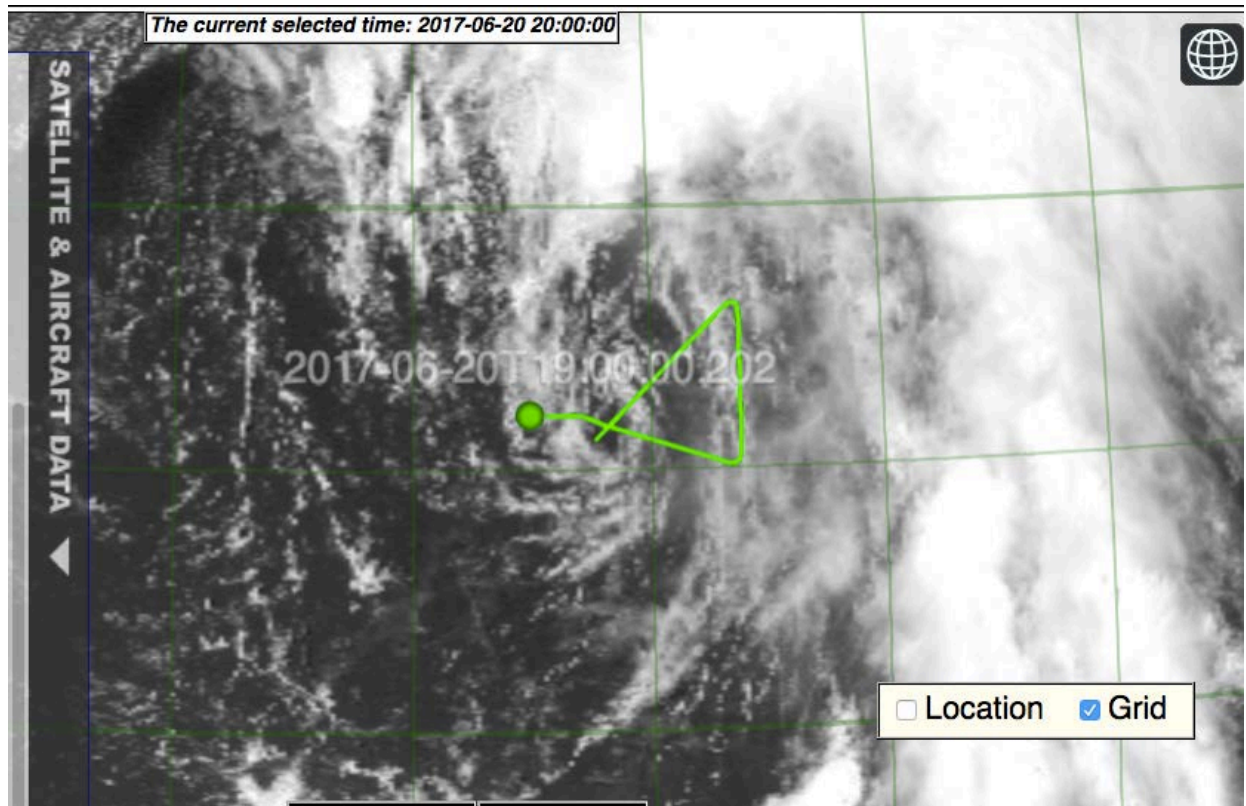


Fig. 4. DC-8 track from 19-20 UTC on VIS image at ~ 20 UTC

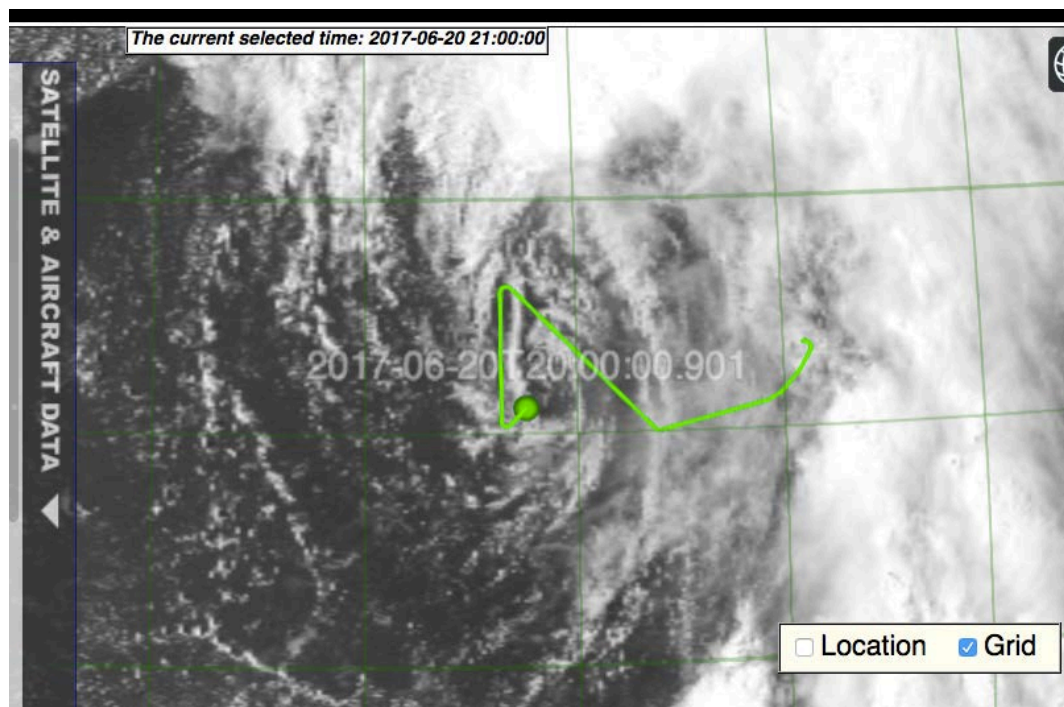


Fig. 5. DC-8 track from 20-21 UTC on VIS image at ~ 21 UTC

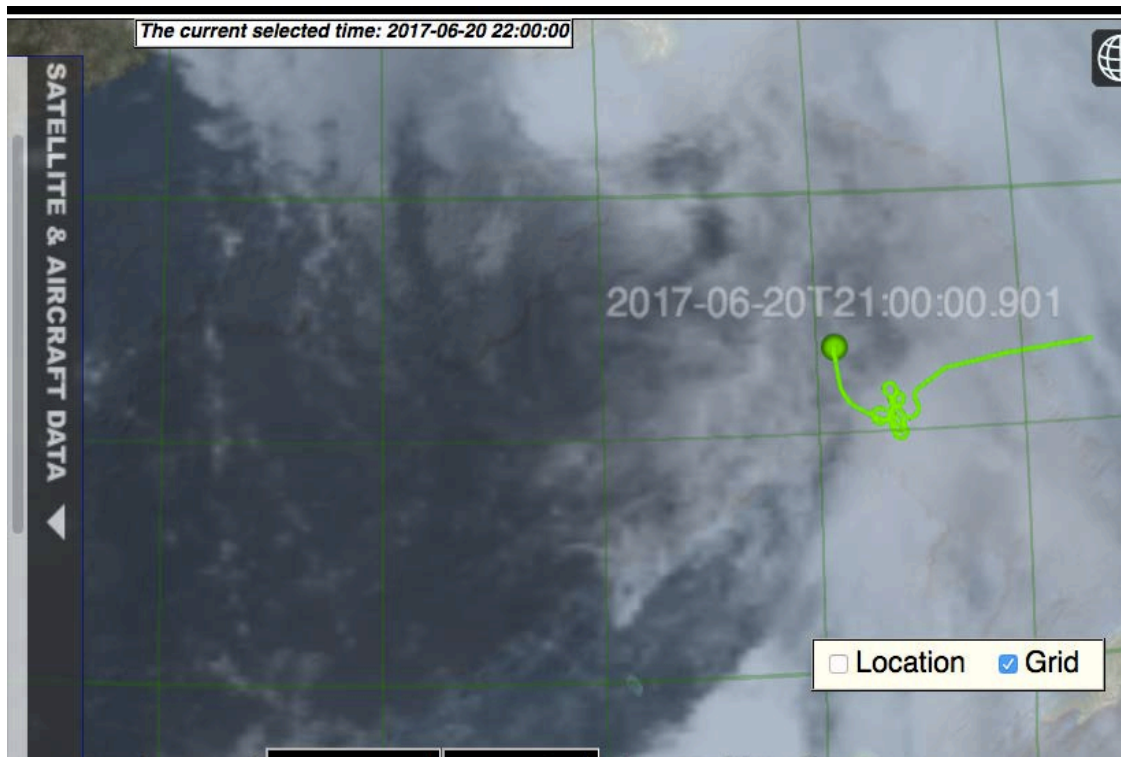


Fig. 6. DC-8 track from 21-22 UTC on IR image ~ 22 UTC. Shows some overflights of “typical” deep convection in major rainband east of the cyclone before returning to FLL.

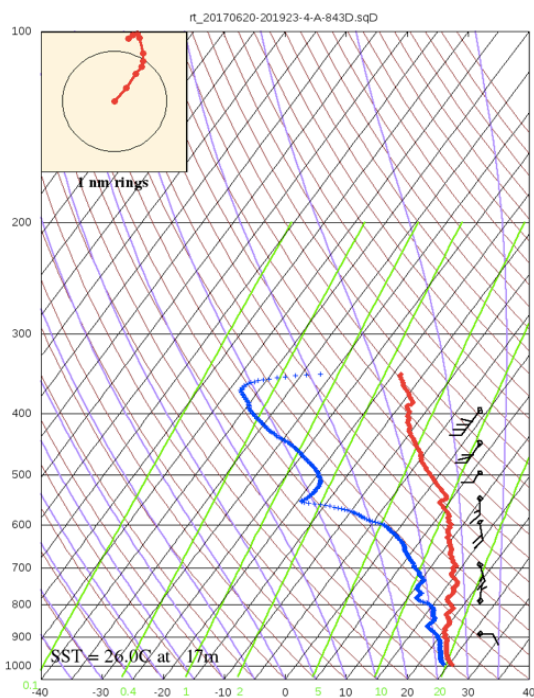


Fig 7b: Quick look dropsonde @193720 UTC ~26°30' 90°40'. Note strong shear. This is close to apparent cyclone center on VIS image.

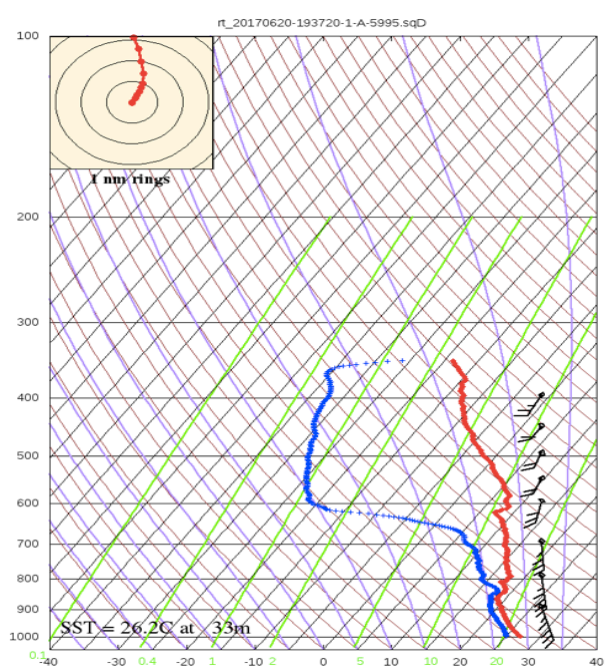


Fig 7a: Quick look dropsonde@201923 UTC, ~ 26°30' 89°05'. Compare with VIS, IR images.