

CPEX Research Flight # 9 --- June 15, 2017 Takeoff about 1710Z after very efficient
Troubleshooting and substitution of parts to get a working back-up radio.
Landing about 2150Z

Draft Summary by Airborne Mission Scientist Ed Zipser
Ground Mission Scientists Dave Raymond and Shuyi Chen (Need to verify – notes not clear)

Mission Objective: Originally this had been anticipated as a chance to do boxes for DAWN in a region of trade wind scattered convection. However, by takeoff time, new and fairly deep convection had developed in the target area in the NW Caribbean, so, plans were modified from mostly clear-air boxes to the pre-planned convective modules.

Results: While some useful data was no doubt obtained, the accomplishments fell short of objectives, for several reasons. Because of a media photographer on board, the crew, without advance warning to the mission scientists, was constrained to enforce more stringent weather avoidance guidelines than usual, resulting in anything but straight line tracks through or over convective weather. To compound the problems, there was very extensive cirrus and middle cloud for several kilometers below the aircraft, in the 6-10 km altitude range, which prevented DAWN from obtaining data for most of the mission. Last but not least, many of the dropsondes experiences partial failures from being dropped through deep clouds and precipitation. After A few attempts to execute useful patterns around the convection, the decision was made at 2010Z to abandon the mission and RTB. [*Note added later by EZ: To the great credit of this crew, for which this mission was their first in CPEX, they were extremely cooperative in working with all the mission scientists to find workarounds to the problems encountered in this mission, and for the remainder of CPEX, we had almost no significant weather avoidance issues.*]

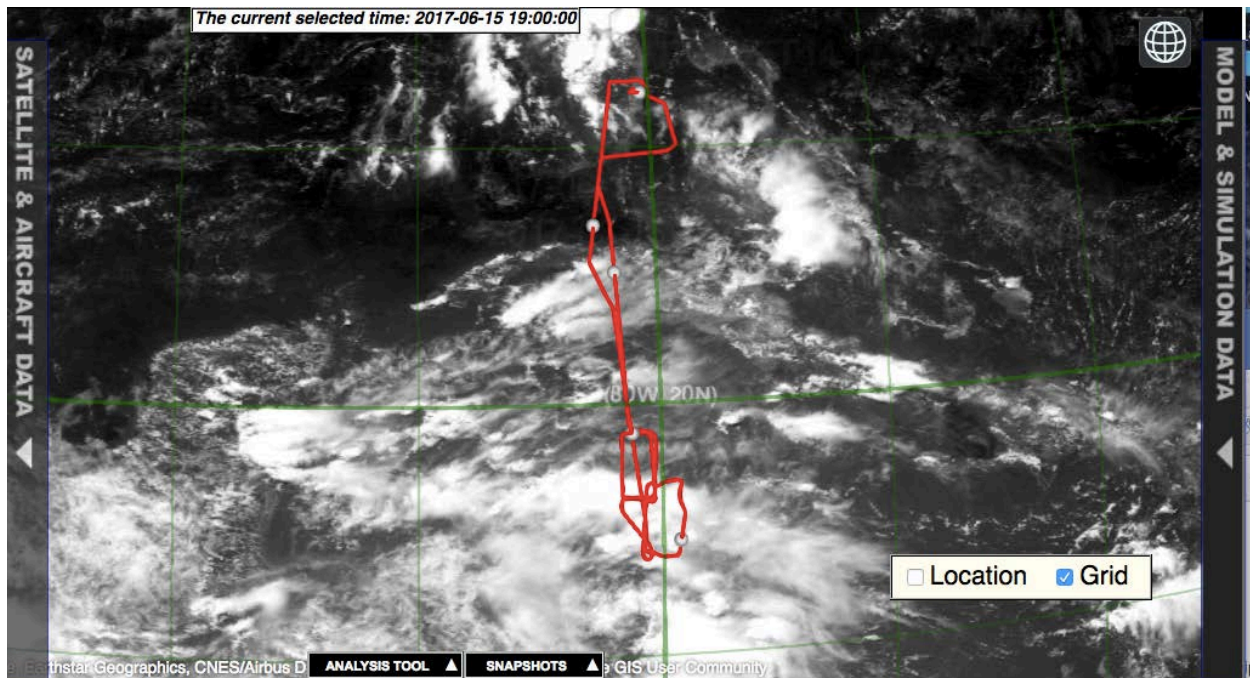


Fig. 1. Full flight track overlaid on VIS image at 1900Z, showing extensive convective regions in NW Caribbean.

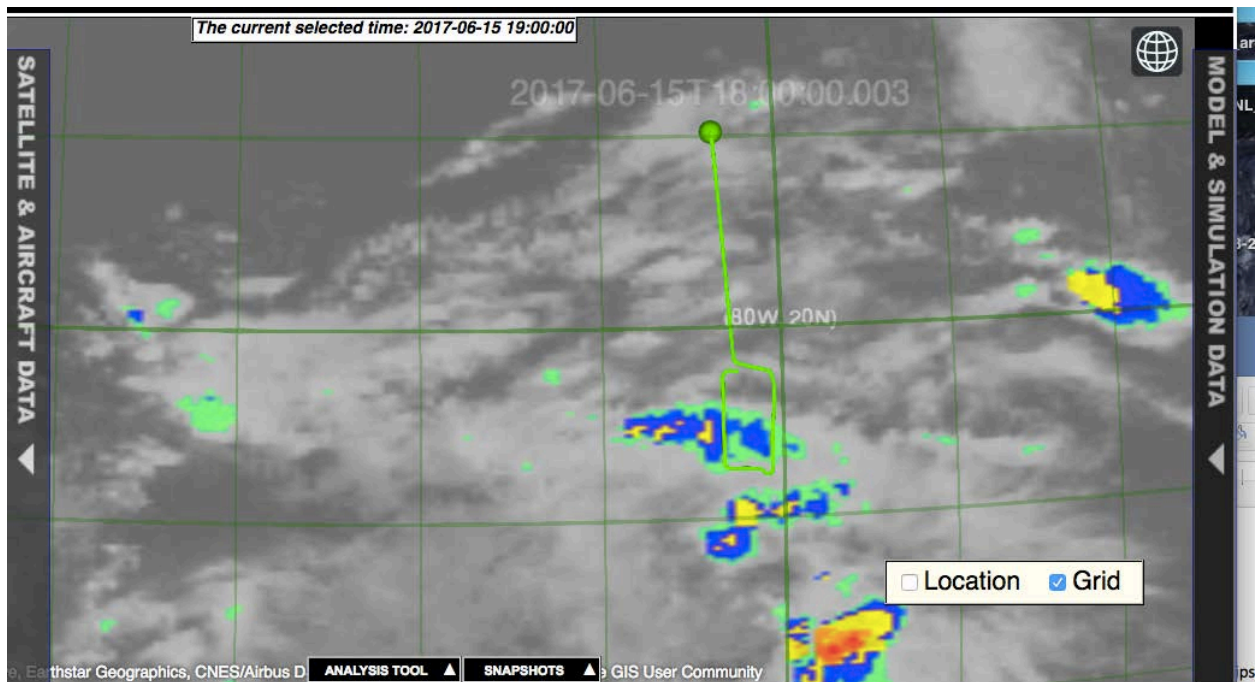


Fig. 2. Flight track from 18-19Z on color-enhanced IR image at 19Z.

First box selected at about 1814Z centered near 19.0N 80.5W. Started box at NE corner ~1829Z. Shortly after that asked to extend it 20 nm to south to clear the weather. At this point the mission scientists were still debating whether to stick with this box or go to deeper CBs near 17N.

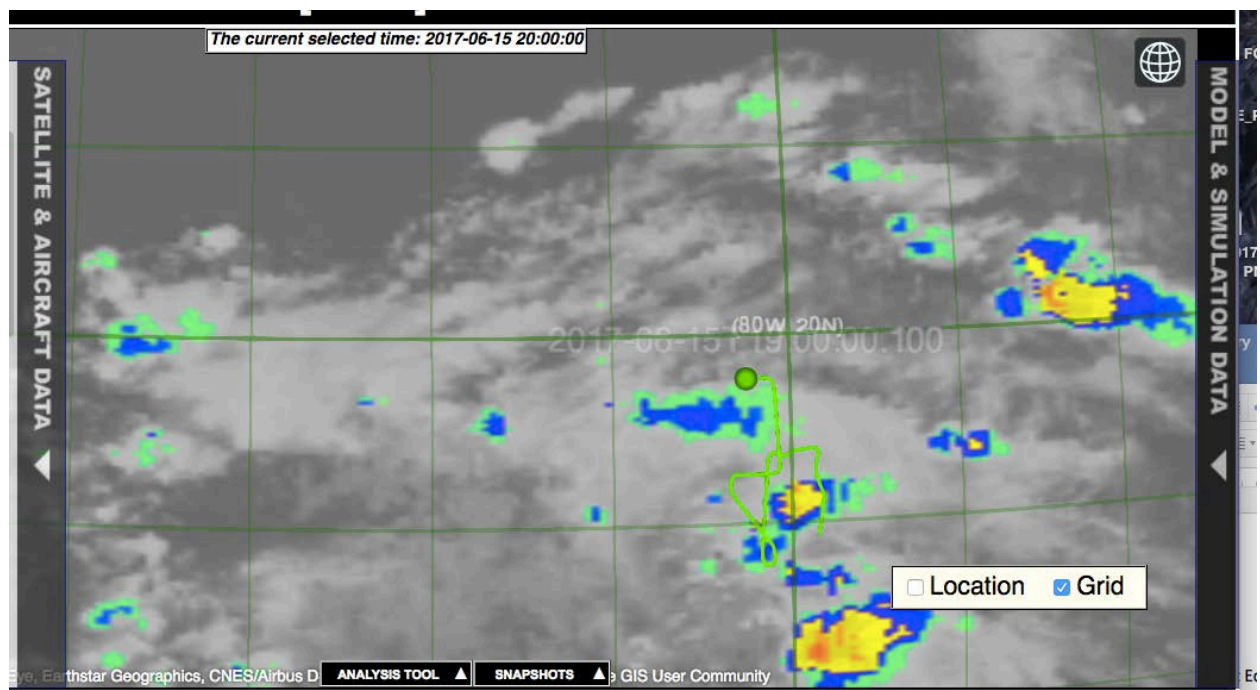


Fig. 3. Flight track from 19-20Z on color-enhanced IR image at 20Z.

Uncertainty continued on best strategy from 1900 -1931. Extended current box by 30 nm, Got initial clearance for new box centered 17.5N 80.0W. 1938Z: Crossed some convection. Close to convection near 1956 but constantly turning to avoid.

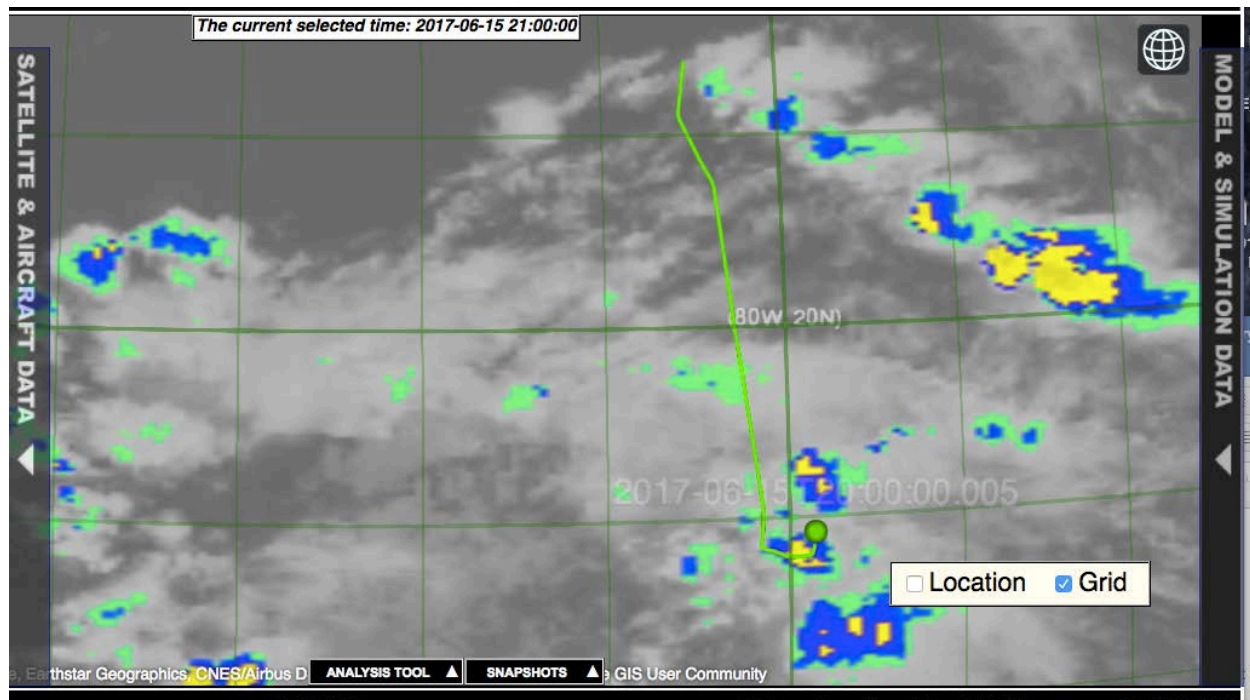


Fig. 4. Flight track from 20-21Z on color-enhanced IR image at 2100Z

2010: After crossing band from S-N with dropsondes S, center, and N, decided to RTB.

Please note that there are 3 good quick-look images available from APR-2 on the Web Site.