

Mission Summary
Fabian
20030903H Aircraft 42RF

Scientific Crew (42RF)

Lead Project Scientist P. Chang
Radar Scientist P. Dodge/F. Marks
Cloud Physics Scientist
Dropwindsonde Scientist S. Aberson
Boundary-Layer Scientist
Workstation Scientist
IWRAP Scientists B. Kerr, D. Estaban
Observers

Mission Briefing:

The mission was the CBLAST experiment short pattern, Day 2 (Fig. 3 in the HFP) with 80 nm legs (IP for the eye traverse 80 nm SW from center). N42RF would do the pattern traversing the eye at 7 kft and N43RF at 5 kft. 12-drop patterns would be done on each of the legs crossing the eyewall. We also planned at least three stairstep patterns; the first in the right-front quadrant near the end of the eye traverse in the NE part of the storm; the second in the left-front quadrant N of the center; and a third in the left-rear quadrant west of the center. Fabian was category 4 hurricane with 135 kt winds. IP for eye traverse was 21.5N, 64.2W and the estimated 1800 UTC storm location was 22.35N, 62.6W.

Mission Synopsis:

Lined up with N43RF at the IP and started the eye traverse leg. The 12-sonde sequence was very well done on the inbound leg. We circled in the eye to clear the sondes and then lined up with N43RF for the outbound leg to the NE. Again, the 12-sonde sequence was very well executed. At the end of the leg we flew a coordinated upwind and downwind leg with N43RF almost 65 nm due N of the center in hurricane force winds. After the downwind leg N43RF had a problem and aborted the stairstep moving the pattern to the SW of the storm where we had started. So, both planes traversed the storm to the other side and set up a second stairstep 60 nm SW of the center. We flew a coordinated downwind and up wind leg with N43RF, and then broke away to fly ENE into the storm center and then turned W back through the eyewall to meet N43RF for a cross-wind stairstep. Enroute we learned that N43RF had abandoned the SW cross wind stairstep and was circumnavigating the storm to the ENE side. After a little consternation with not being informed of the change we traversed the eye to meet up with N43RF. By the time we reached the eye N43RF decided to work NNE of the center again (near where the first stairstep occurred). We exited the eye to the NE and linked up with N43RF about 65 nm NNE of the center and proceeded to do a coordinated downwind and up wind leg. We then flew back and forth to the eye from the NNE for Paul Chang. When we returned for the crosswind pattern N43RF decided to do the crosswind legs W of the center. So we followed N43RF through the eye to a location 65

nm W of the storm and proceeded to do two coordinated cross wind legs. We then proceeded through the eye with N43RF to 60 nm ESE of the center for one more stairstep. We flew two coordinated upwind and downwind legs with N43RF. N43RF then departed, while we flew into the eye from the ESE for Paul Chang. We then flew in and out of the eye to the NNW attempting to fly over drops from the outbound leg on the inbound leg with mixed success. We then exited the storm to the SSW and returned to St. Croix.

Evaluation:

This mission was a stellar accomplishment for AOC, HRD and CBLAST. With only a few minor glitches and miscommunications we managed to work nearly flawlessly as a team to meet almost all of the CBLAST objectives. This mission was a testament to all of the hard work that the AOC, HRD and CBLAST folks put into the preparation for the experiment. We executed the eye traverse getting two very good 12-sonde drops sets in the eyewall. We did most of five stairsteps (four along wind and one cross wind) in near hurricane force, or hurricane force winds in three quadrants of the storm (RF, LF, LR). We also managed to get a number of eyewall penetrations for Paul Chang to check out the IWRAP and SCATs. The GPS dropsondes (normal and experimental) worked very well with minimal bad sondes and a typical success rate for 10-m winds. In spite of the enormous effort to get this mission accomplished everyone should have a phenomenal data set to try to digest.

Problems:

1. 2 AXBTs failed
2. 2 GPS sondes were streamers.
3. LF radar looked good, except we noticed the rings twice during the mission (as expected they were moving inward in a concentric fashion). We tried shutting off the LF transmitter and the rings were still there. We also tried resetting the radar system with minimal success removing the rings.
4. LF radar was operated for much of the flight with a 45° wedge removed behind the aircraft to minimize interference with the IWRAP C-band receiver. This caused problems with KPAC software as the azimuth gap flag was always exceeded causing the software to not make KPACs.

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9/3/2003