

Mission Summary
980824I Aircraft 43RF
Bonnie Six-Aircraft Modified Air-Sea Interaction/Synoptic Flow

Scientific Crew (43RF)

Lead Scientist	P. Black
Radar	J. Gamache
Workstation	P. Dodge
SRA/SCR scientist	E. Walsh
SRA/SCR engineer	W. Wright

Mission Briefing:

This flight was part of a 6-plane modified air-sea interaction/synoptic-flow mission to measure directional surface wave spectra throughout the storm environment, measure SST and underlying ocean thermal structure and drop GPS sondes in the environment around a large hurricane. The purpose of these measurements was to determine the extent to which SST decreases induced by the hurricane and surrounding environmental features modified the hurricane intensity, rate of intensity change and atmospheric boundary layer structure. The purpose was also to determine the influence of the ocean surface wave spectrum on the parameterization of the air-sea fluxes. The aircraft participating in the experiment were the two NOAA WP-3D Orion aircraft flying stacked rotating Fig 4 patterns at 5 kft and 15 kft, the NOAA G-IVSP Gulfstream jet aircraft flying at 37 kft in the storm environment, an AFRES WC-130 reconnaissance aircraft flying at 10 kft, the NASA DC-8 jet aircraft flying a rotating Fig 4 pattern at 37 kft concurrent with the NOAA P-3s and the high-altitude NASA ER-2 aircraft flying the rotating Fig 4 pattern at 65 kft. These flights were the fourth day of flights into Bonnie.

No GPS sondes or AXBTs were dropped on this flight. All GPS drops and AXBTs were deployed from 42RF flying an identical pattern at 15 kft

Mission Synopsis

Bonnie was nearly stationary during this flight. The flight was flown at 5 kft radar altitude for the purpose of obtaining high resolution directional wave images from the NASA Wallops Scanning Radar Altimeter (SRA). It was open in the west through south quadrant. The SE through NW quadrants consisted of 3 major stratiform bands with imbedded small convective cores. The legs at 5 kft in these quadrants were quite turbulent. The maximum wind of 115 kt at flight level (65 kt at 10-m level from dropsonde) was in the NE quadrant and rather broad. The maximum wind radius was quite large, averaging 50-70 nm. The center of circulation was just inside a hook-shaped 45 dBZ convective feature, adjacent to the inner edge of the north inner eyewall. No wind maximum was associated with this feature.

Evaluation:

This flight is part of a landmark 6-plane synoptic flow experiment. It marks the first time in history that directional wave spectra and ocean sea heights have been measured in all quadrants of a hurricane. The unique aspect of this flight was that wave spectra were measured while the other cooperating aircraft were measuring the environmental flow structure of the atmosphere around a nearly-stationary hurricane and also determining the oceanic thermal structure beneath the inner core. It marks the first time in history that 6 research aircraft have flown a coordinated pattern simultaneously in a hurricane.

Problems:

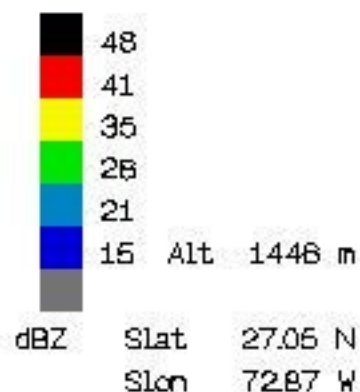
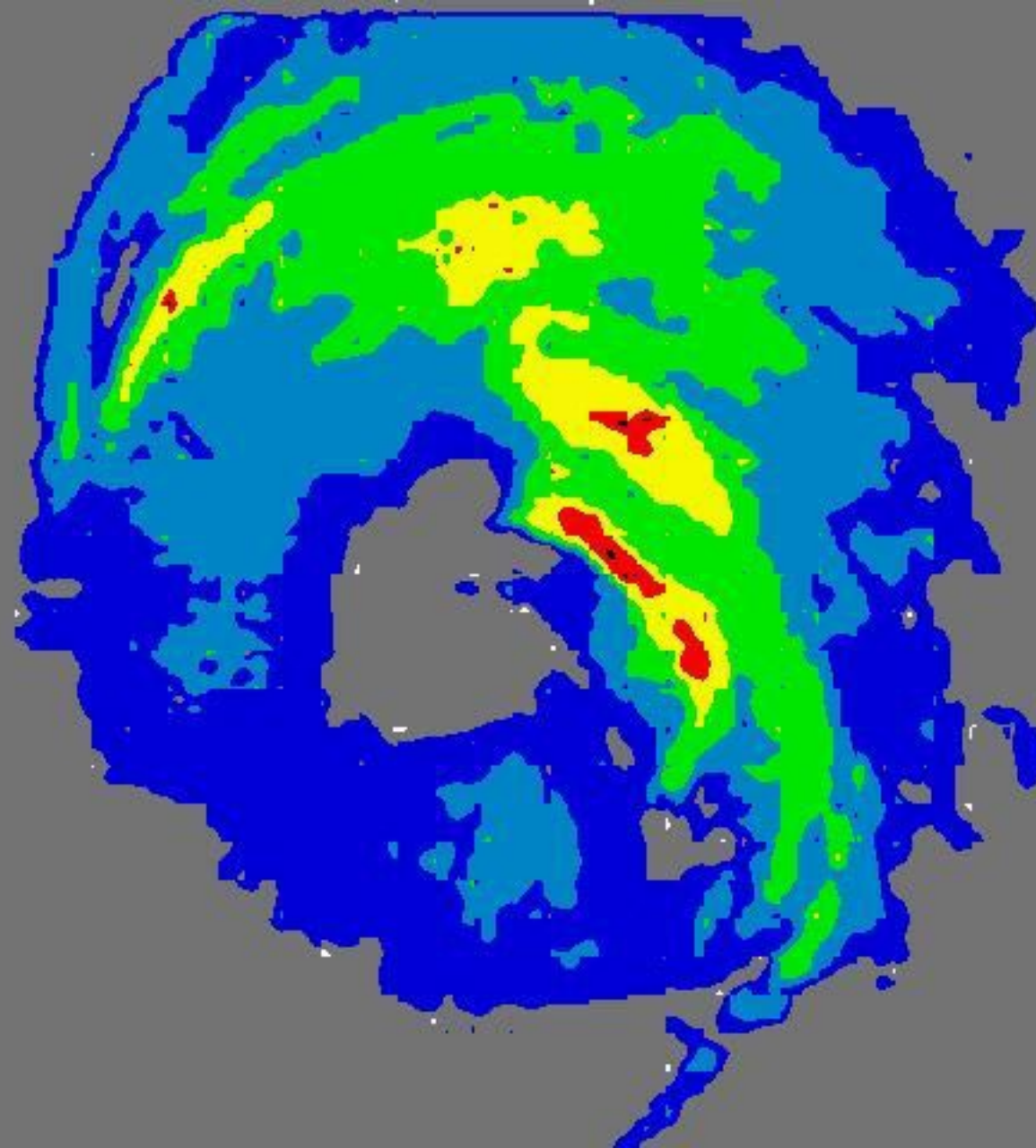
No major problems were encountered during this flight.

Peter G. Black

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BONNIE #3

252424 Z to
252424 Z



360 X 360 km

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