Mission Summary
980921H Aircraft 42RF
Hurricane Georges Inner Core Structure at Landfall (Puerto Rico) and Partial Synoptic Flow

Scientific Crew (42RF)

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GPS sonde scientist	S. Aberson
CSCAT/VSDR	I. Popstefanija

Mission Briefing:

This flight was part of a 5-plane inner core structure and synoptic-flow mission to drop GPS sondes in the environment around a weakening hurricane as it made landfall on Puerto Rico (beginning with the eye over St. Croix). Inner core aircraft were one WP-3D (42RF) at 15 kft, the NASA DC-8 at 37 kft and an AFRES WC-130 at 10 kft. This mission dropped 20 GPS sondes-10 in the inner core (5 in the eyewall) and 10 in the environment north and northwest of the storm.. No AXBTs were dropped. The flight was flown at max altitude 500-450 mb, except for the iron cross pattern in the inner core which was flown at 550 mb. The purpose of the flight was to provide improved initial conditions for track models and to discern the inner core structure of a weakening hurricane.

Mission Synopsis

The flight departed Grantly Adams Barbados at 1615 UTC, 21 Sept and landed at 0115 UTC, 22 Sept. The flight legs were oriented SE - NW, W-E,NE-SW AND S-N. Maximum flight-level wind in the inner core was 80 kt at 550 mb, 114 kt at the 925 mb level from dropsonde. Minimum central pressure was 971 mb and the eye diameter was 30 nm. Storm motion was 285° at 13 kt.

Numerous small bands were encountered during the approach to the storm from the SE, bands extending outward over 150 nm. five thin bands every 20 nm were observed. The eyewall extended from the S to NE quadrants, open to the NW and N. Peak flight level winds were in the W and NE quadrants. Eyewall sondes and EVTD Doppler wind data showed a much stronger circulation below 849 mb than at higher levels. The EVTD Doppler based hodograph showed nearly a 20 kt northerly shear from 10 to 5 km. This may have caused the dramatic weakening over the past day. The CSCAT/VSDR worked flawlessly, recording vertical wind profile data along each leg, showing the low level wind max.

St Croix was in the eye when we arrived. During the flight, the eye approached and made landfall on the SE coast of Puerto Rico. The initial leg was designed to be a radial on the San Juan WSR-88D. The NASA DC-8 flew a butterfly pattern commencing with a NW to SE leg. They reached their SE point as 42RF reached its IP at the SE point.

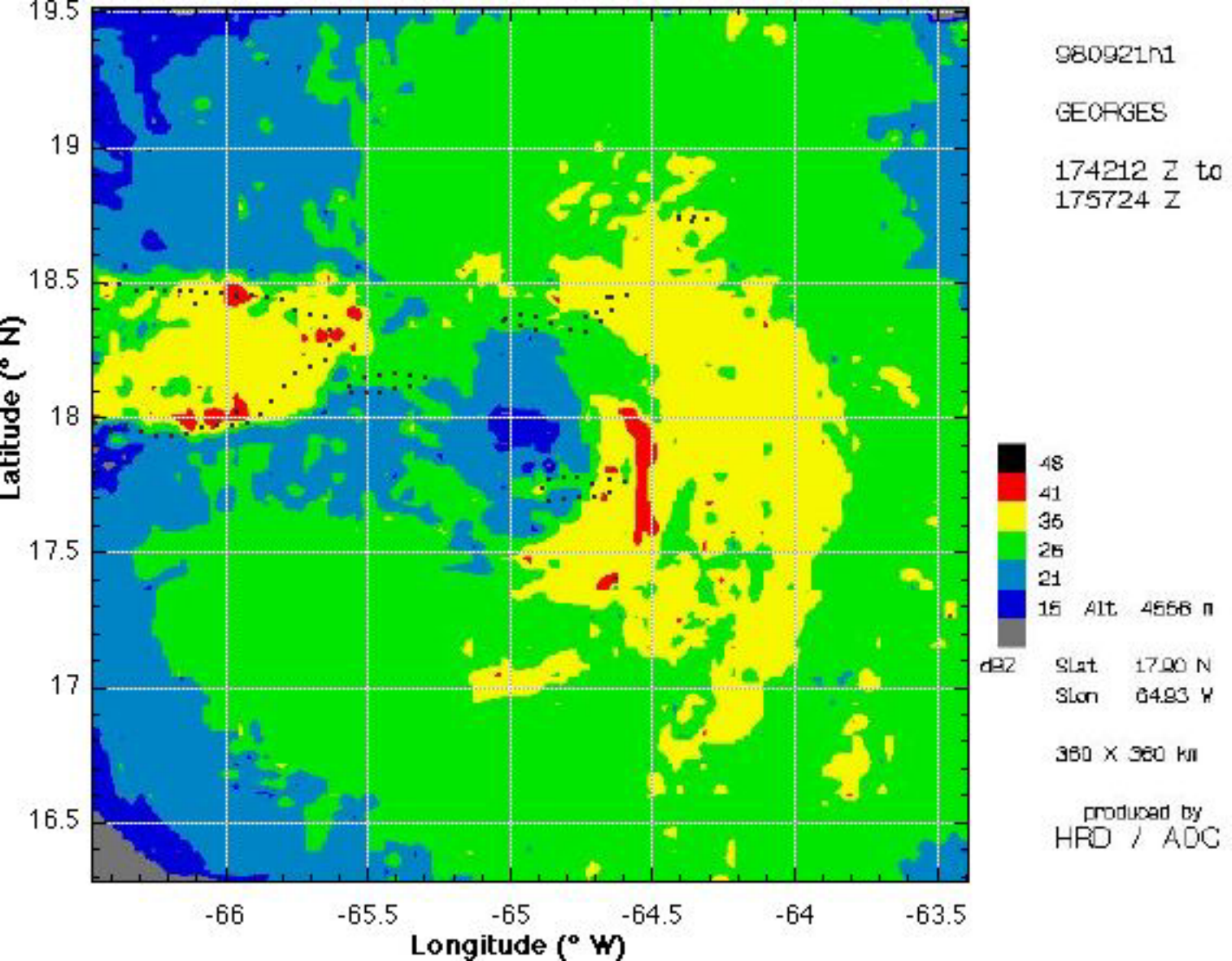
Evaluation:

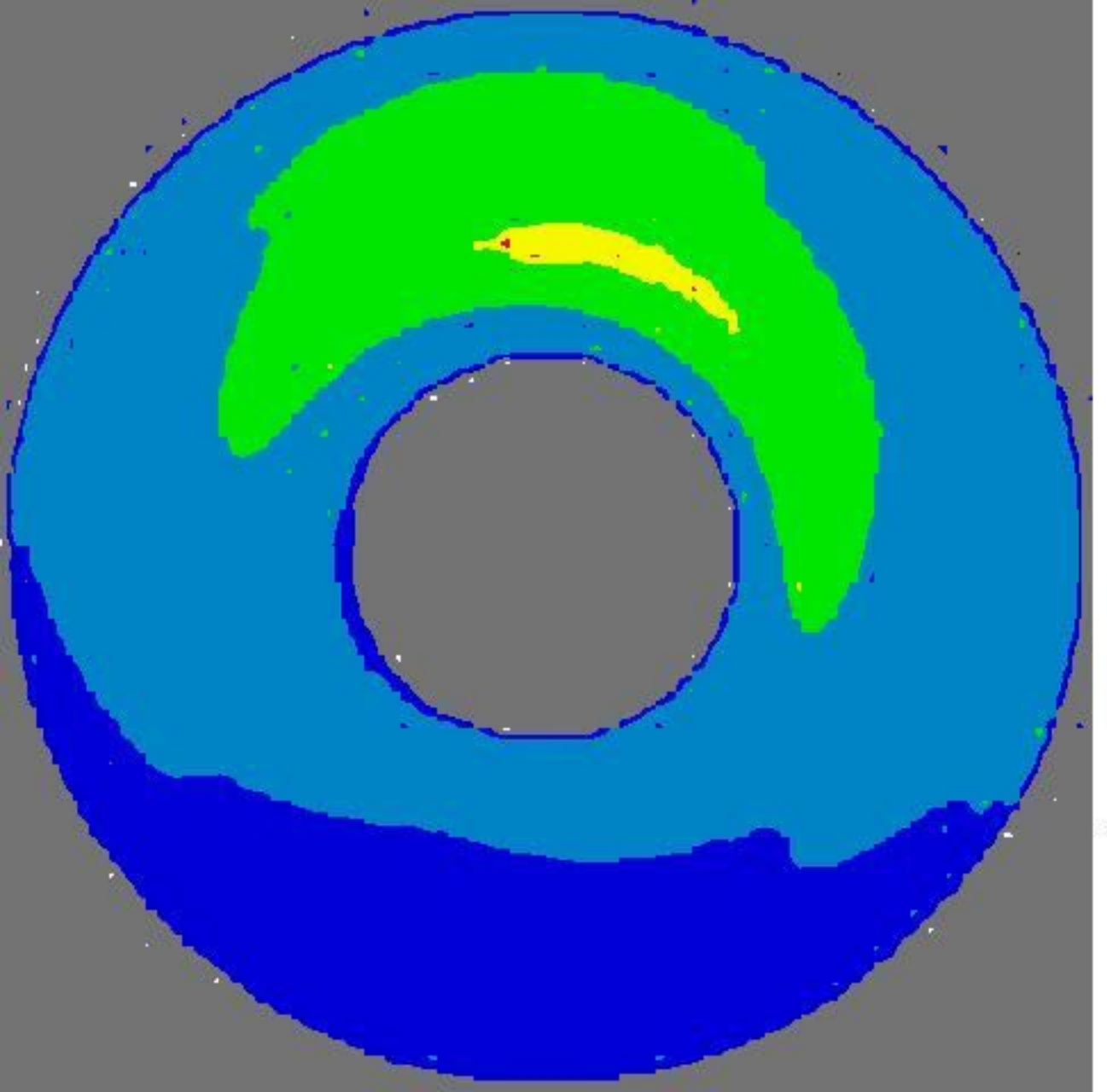
This flight is part of a 5-plane synoptic flow experiment for determining the environmental flow structure of the atmosphere around a weakening, landfalling TC while also determining the inner core structure.

Problems:

All systems functioned nominally.

Peter G. Black


980921h1
GEORGES
174212 Z to
175724 Z
48
41
36
26
21
15 Alt 4556 m
dBZ
Slat 17.90 N
Slon 64.93 W
360 X 360 km
produced by
HRD / AOC
Latitude (° N)
19.5
19
18.5
18
17.5
17
16.5
-66
-65.5
-65
-64.5
-64
-63.5
Longitude (° W)



980921h1

GEORGE

163556 Z to
191402 Z

69
59
51
43
33
18 Alt 1000 m

m/s

Slat 17.84 N
Slon 65.01 W

150 X 150 km

produced by
HRD / AOC