

# Mission Summary

980925H Aircraft N42RF

## Scientific Crew (N42RF)

Flight Meteorologist	Stan Czyzyk
Doppler Scientist	Gamache
Workstation	Leighton
Dropwindsonde	Gamache
Visiting Observers	Popstefanija
Engineers	DuGranrut, Goldstein

### *Mission Briefing:*

This flight was the last tasked NOAA/AOC reconnaissance mission in Hurricane Georges. The hurricane, which had for several days been moving west-northwestward over Puerto Rico, Hispaniola, and Cuba, emerged off the Cuban coast and into the straits of Florida.

The hurricane was moving generally northwestward and was about to pass over the Florida Keys.

### *Mission Synopsis:*

N42RF departed Tampa International airport at 102957 UTC, and headed southward toward the storm center (see [Fig. 1](#) for a graphic representation of the flight track). Since the main purpose of this mission is to determine current storm location, intensity and radius of wind speeds, the radial legs are longer than in most inner-core research flights, averaging on the order of 100 nm from storm center, where possible. The aircraft began its descent to its assigned flight level of 5,000 ft PA, at 1102 (26.1N, 82.1 W), flew SE, finding a maximum flight level wind of 71 kts before making its first fix of **23.85N, 81.28W at 1141 UTC**. A single sweep from the lower fuselage C-band radar is shown in [Fig.2](#). The plane then continued to a point ESE of storm center (23.08N, 79.70W), arriving there at 1211 UTC, measuring a maximum wind along that radial of 79 knots.

The next flight leg was downwind nearly due N. The NE corner of the flight pattern was reached at 124030 UTC when the aircraft was at 25.45N, 79.72W. Flight level winds at this corner were 60 knots from the SSE. The aircraft then turned inward, reaching the center again at **1317 UTC (24.13N, 81.48W)**, after dropping 2 GPS dropsondes in the NE eyewall. Along this flight leg a maximum flight level wind of 98 knots was found at 130550 UTC (24.55N, 80.92W). The next flight leg was toward the SW, and along this flight leg the maximum wind was 50 knots. The aircraft turned east near the coast of Cuba at 1344 UTC (23.07N, 82.96W), and traveled along the coast until 140330 UTC (23.28N, 81.55W), where it turned northward. The highest winds along this run were 52 knots, just as the plane was turning northward toward the storm center. The maximum winds on the northward inbound leg were 65 knots at 140840 UTC (23.62N, 81.55W), a GPS dropsonde was dropped in the S eyewall at 141156 UTC, and the center was again fixed at

**1420 UTC at 24.15N, 81.65W.** The track continued northward, with a GPS dropsonde launch at 142840 UTC, until 144440 UTC (25.78N, 81.69W). The maximum flight-level winds on this outbound leg were about 95 knots at 143100 (24.84N, 81.68W). Next the aircraft turned southwestward, dropping a GPS dropsonde over buoy DRYF1 at 150720 UTC and continued until 1513 UTC (24.28N, 83.22W). It then turned eastward to do another penetration from west to east, fixing the center at **153820 UTC (24.29N, 81.93W)**. The highest winds were 61 knots. N42RF then made a long run outbound to the east, reaching 24.5N, 80.0W at 160900 UTC. A GPS dropsonde was released at 154811 UTC, and the highest winds on this leg were 92 knots at 154950 UTC (24.42N, 81.12W), or about 70 nm to the east of the center. The next flight leg was northwestward until 163610 UTC (25.74N, 82.06W), after which the aircraft tracked southward into the storm, fixing the center again at **165710 UTC (24.52N, 82.13W)**, and finding a wind-speed maximum of 98 knots along the way. A GPS sonde was launched shortly before this fix at 165641, and found a splash pressure of 978.7 mb. The aircraft then proceeded southward to 23.5N, 82.0W (171430 UTC), turning eastward to prepare for the last penetration. At 23.5N, 81.0W (172730 UTC) the aircraft turned northwestward into the center, finding the maximum winds of 88 knots at 173350 UTC (23.90N, 81.26W), (the last sonde was launched at 1735 UTC), and fixing the center at **175350 UTC (24.53N, 82.44W)**. A single sweep of the lower fuselage radar from this time is shown in [Fig. 3](#). The plane continued northwestward and eventually turned north toward MacDill AFB. The highest wind NW of the storm at flight level (5,000 ft PA) was 84 knots at 181340 UTC (25.52N, 83.00W) about 65 nm NNW of the storm center.

*Evaluation:*

This case is interesting since it shows Georges after it had emerged from a long period over Puerto Rico, Hispaniola, and Cuba. The flight had long stretches of hurricane force winds at flight level, but no particularly sharp peaks in wind speed. The longest stretches were in the major band to the SE of the storm. The west side of the storm was quite weak near the center, although NW of the center strong 80 knot winds were seen 60-70 nm out from the center. Actually, Georges never again got its act together fully.

*Problems:*

- 1) First sonde not transmitted to HAPS station, but stored on floppy for later research purposes.
- 2) Radar down from: 1124-1128 UTC  
1509-1513 UTC  
1624-162830 UTC

## GPS Sonde Drops

Drop #	Sonde ID	Time	Position	comments
1		130658	24.50°N, 80.98°W	Not on HAPS system, NE ew
2	981830007	1310	24.38°N, 81.13°W	NE eyewall
3	983310136	141156	23.83°N, 81.60°W	S eyewall
4	983310134	142840	24.70°N, 81.68°W	N eyewall
5	983310019	150720	24.60°N, 82.90°W	Over buoy DRYF1
6	983310152	154811	24.37°N, 81.22°W	E eyewall
7	983310133	165641	24.55°N, 82.13°W	Eye Drop (a little too soon)
8	982720362	1735	23.93°N, 81.43°W	SE eyewall (rainband?)

## Center fixes

Fix #	Time (UTC)	Latitude	Longitude	Center MSLP (mb)
1	1141	23.85N	81.28W	980
2	1317	24.13N	81.48W	980
3	1420	24.15N	81.65W	980
4	1538	24.29N	81.93W	980
5	1657	24.52N	82.13W	978
6	1754	24.53N	82.44W	979

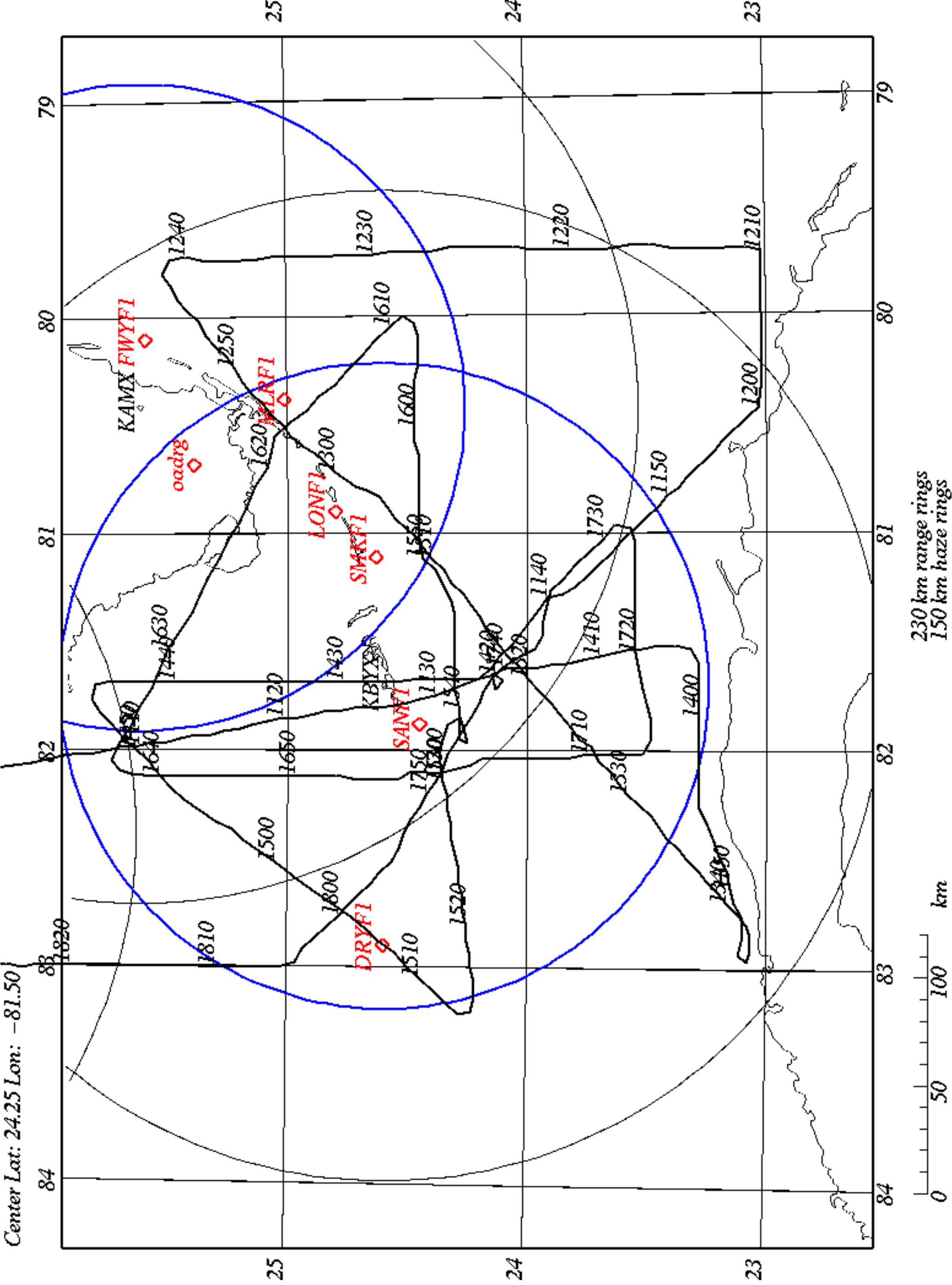


Figure 1. Flight track of N42RF during mission 980925H1 on 25 September 1998.

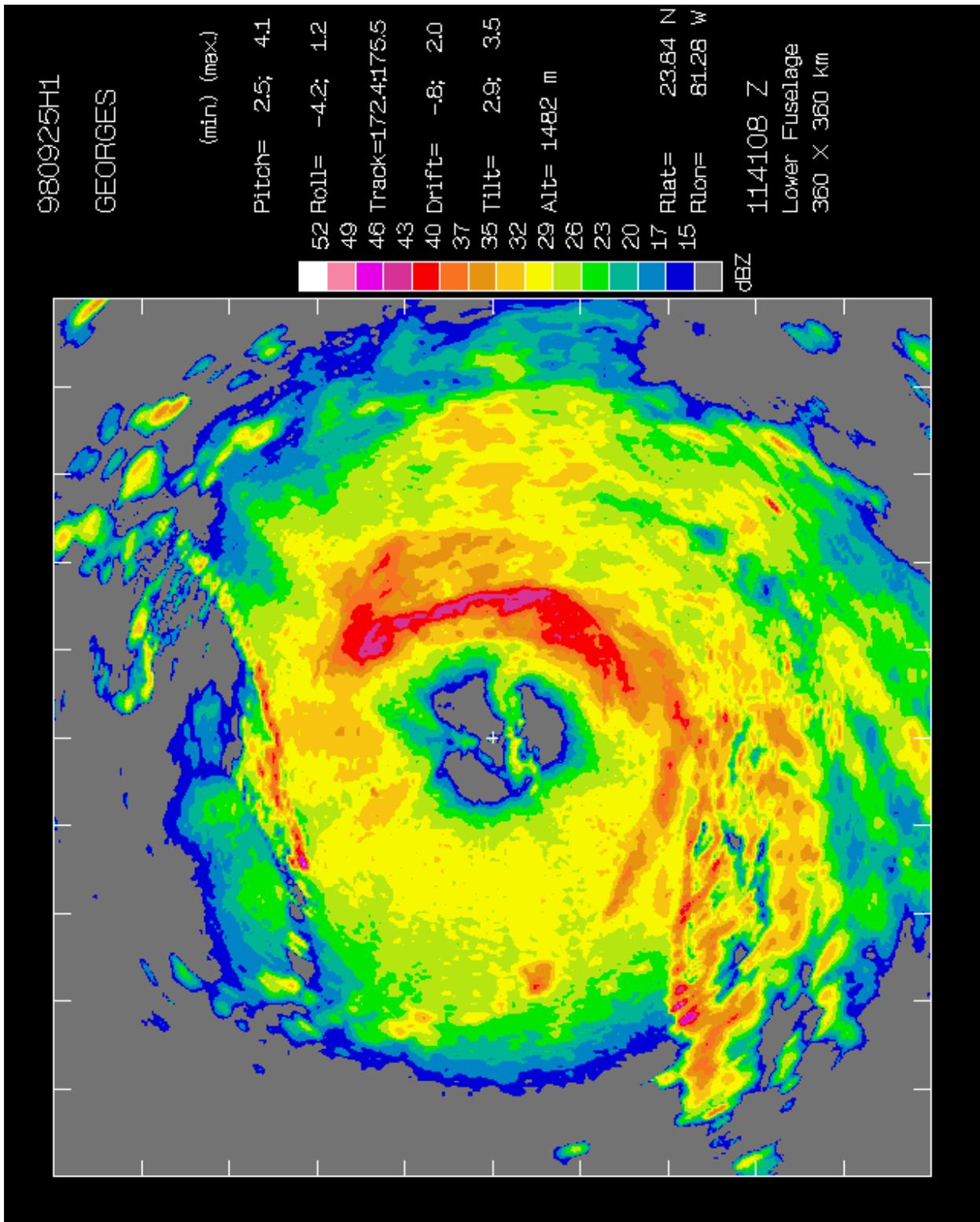


Figure 2. Single sweep of radar reflectivity from lower-fuselage C-band radar during first fix of center at 1141 UTC. Note Cuba and Florida Keys in the radar return.

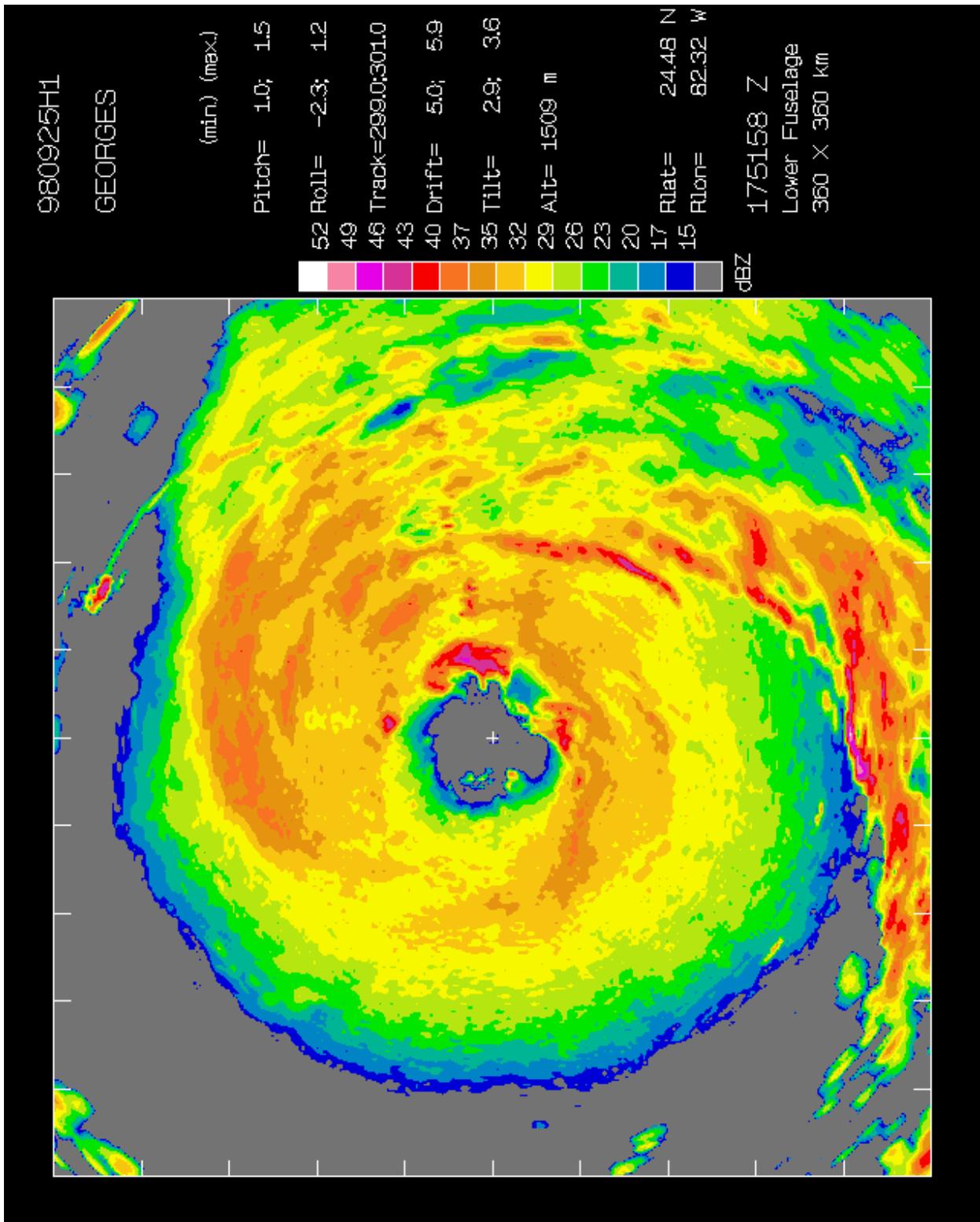


Figure 3. As in Fig. 2, except for 1751 UTC (sixth and last fix of hurricane center)