

E.2 Lead Project Scientist (On-Board)**E.2.1 Preflight**

- _____ 1. Participate in general mission briefing.
- _____ 2. Determine specific mission and flight requirements for assigned aircraft.
- _____ 3. Determine from CARCAH or field program director whether aircraft has operational fix responsibility and discuss with AOC flight director/meteorologist and CARCAH unless briefed otherwise by field program director.
- _____ 4. Contact HRD members of crew to:
 - a. Assure availability for mission.
 - b. Arrange ground transportation schedule when deployed.
 - c. Determine equipment status.
- _____ 5. Meet with AOC flight crew at least 90 minutes before takeoff, provide copies of flight requirements, and provide a formal briefing for the flight director, navigator, and pilots.
- _____ 6. Report status of aircraft, systems, necessary on-board supplies and crews to appropriate HRD operations center (MGOC in Miami or FGOC at remote recovery location).

E.2.2 In-Flight

- _____ 1. Confirm from AOC flight director that satellite data link is operative (information).
- _____ 2. Confirm camera mode of operation.
- _____ 3. Confirm data recording rate.
- _____ 4. Complete Form E-2.

E.2.3 Postflight

- _____ 1. Debrief scientific crew.
- _____ 2. Report landing time, aircraft, crew, and mission status along with supplies (tapes, etc.) remaining aboard the aircraft to the appropriate HRD operations center (MGOC or FGOC).
- _____ 3. Gather completed forms for mission and turn in at the appropriate operations center. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]
- _____ 4. Obtain a copy of the 10-s flight listing from the AOC flight director. Turn in with completed forms.
- _____ 5. Determine next mission status, if any, and brief crews as necessary.
- _____ 6. Notify the appropriate operations center (FGOC or MGOC) as to where you can be contacted and arrange for any further coordination required.
- _____ 7. Prepare written mission summary.

On-Board Lead Project Scientist Check List

Date SEPT 25 1998 Aircraft ~~4492~~ N42RF Flight ID 980925A1

A. Participants:

HRD		AOC	
Function	Participant	Function	Participant
Lead Project Scientist	_____	Flight Director	<u>CZYZYK</u>
Cloud Physics	_____	Pilots	<u>TAGGART, PHILLIPSEN</u>
Radar	<u>GAMACHE</u>	Navigator	_____
Workstation	<u>LEIGHTON</u>	Systems Engineer	<u>DUGANRUT, GOLDSTEIN</u>
Photographer/Observer	_____	Data Technician	_____
Omegasonde	_____	Electronics Technician	_____
AXBT/AXCP/Guest	<u>POPSTAFANIA</u>	Other	_____

Take-Off: 102957 Location: TAMPA INTERNATIONAL
 Landing: 185420 Location: TAMPA INTERNATIONAL Number of Eye Penetrations: 6

B. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

C. Mission Briefing:

D. Equipment Status (Up, Down, Not Available, Not Used)

Equipment	Pre-Flight	In-Flight	Post-Flight
Aircraft			
Radar/LF			
Radar/TA (Doppler)			
Cloud Physics			
Data System			
Omegasondes			
AXBT/AXCP			
Workstation			
Videography			

REMARKS:

E. (I) Proposed Flight Pattern (sketch or designate by number)

E. (II) Actual Flight Pattern

Lead Project Scientist Event Log

Date SEP 25, 1998

Flight 98025HI

LPS RECON
(GAMACHE)

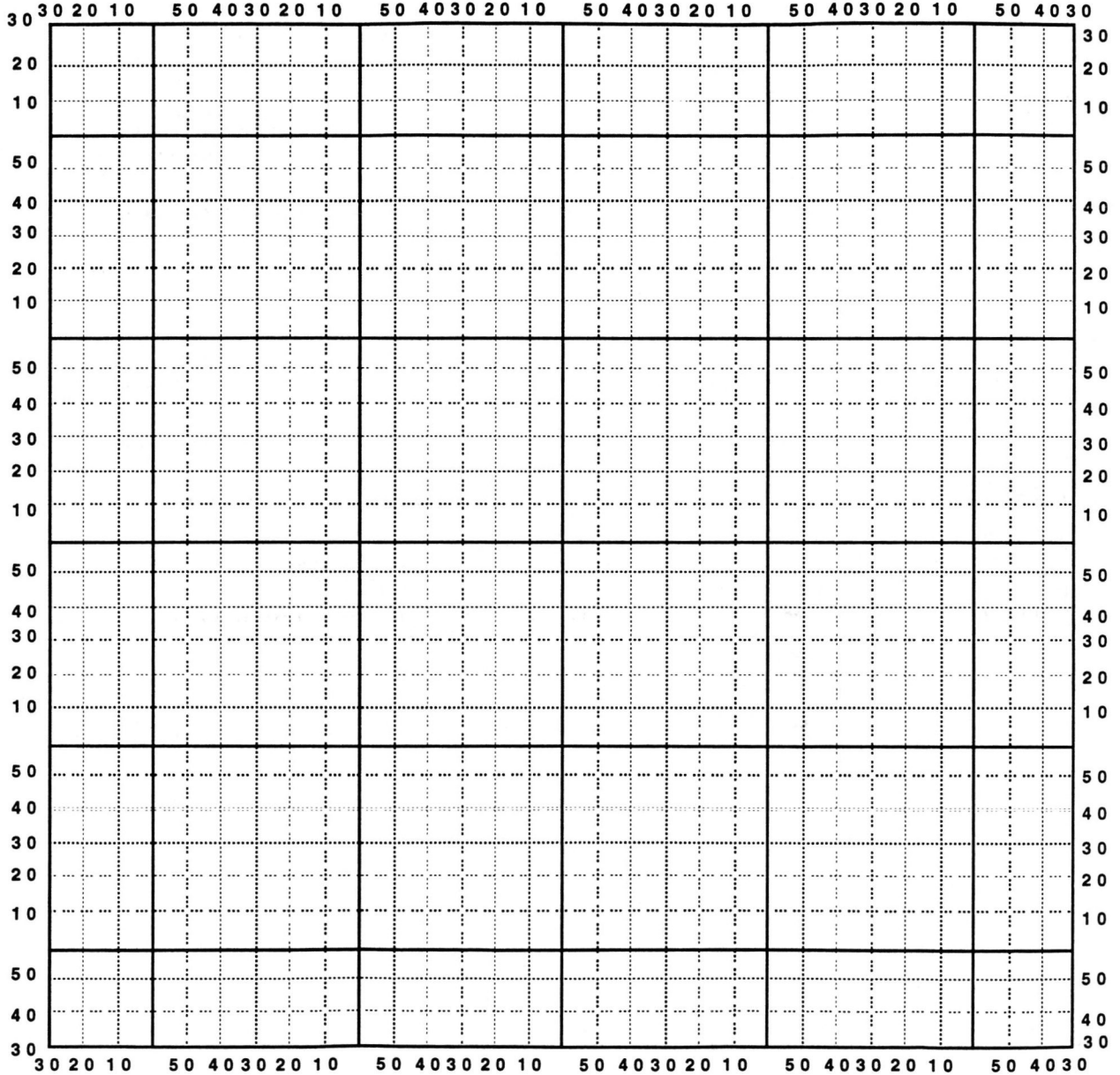
Time	Event	Position	Comments
1102	DESCENT TO IP	26° 7' 82° 4'	TO 5000 FT
1141	⊙	23° 50.8' 81° 16.9'	
120950	TURN	23° 1' 79° 43'	ESE of center 187/49 kts
122718	Wind	24° 25' 79° 42'	159/70 kts
1334			Max wind in NE eyewall ~ 110 kts flight level & second sonde
1345		23° 7' 82° 58'	W. END bridge E after reaching 35 kt contour
1317	⊙	24° 8' 81° 29'	980 mb
1420	⊙	24° 9' 81° 39'	
1446	⊙	25° 49' 81° 48'	turn after N run 111/62 kts
⊙			
1657	⊙	24° 32' 82° 08'	
1719		23° 32' 81° 35'	~ 35-40 kts here
1723		23° 33' 81° 18'	65 nm to SSE of Ⓞ
1804	END PATTERN	25° 1' 83° 0'	But here about 80 kts
1822	TURN N END PATTERN	26° 0' 83° 0'	65 kts from 100 still

Bomb
on
East side

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Flight ID _____ LPS _____

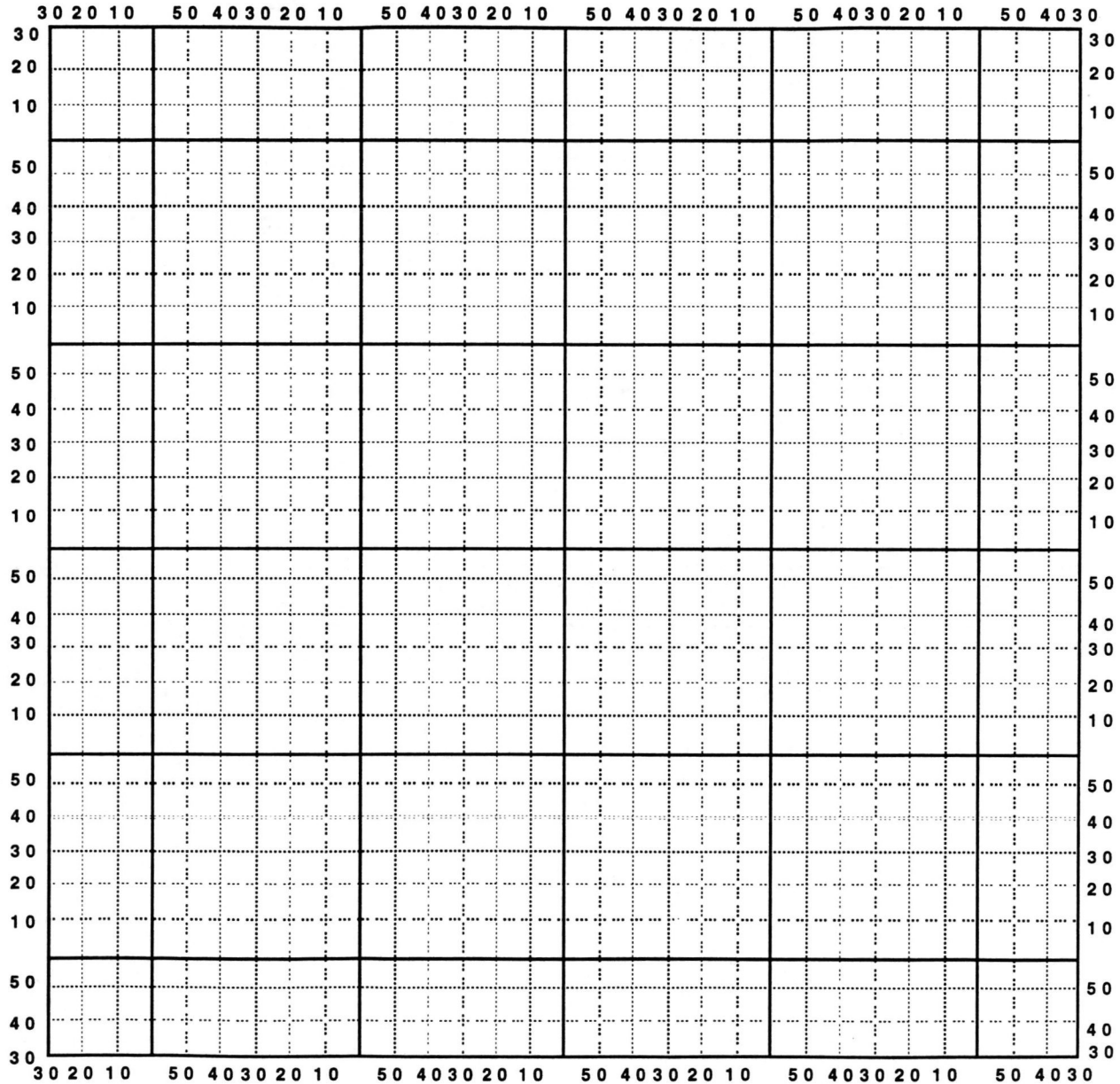


Note : Label full degrees according to location of the flight area.

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Flight ID _____ LPS _____



Note : Label full degrees according to location of the flight area.

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 23.55N, 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:

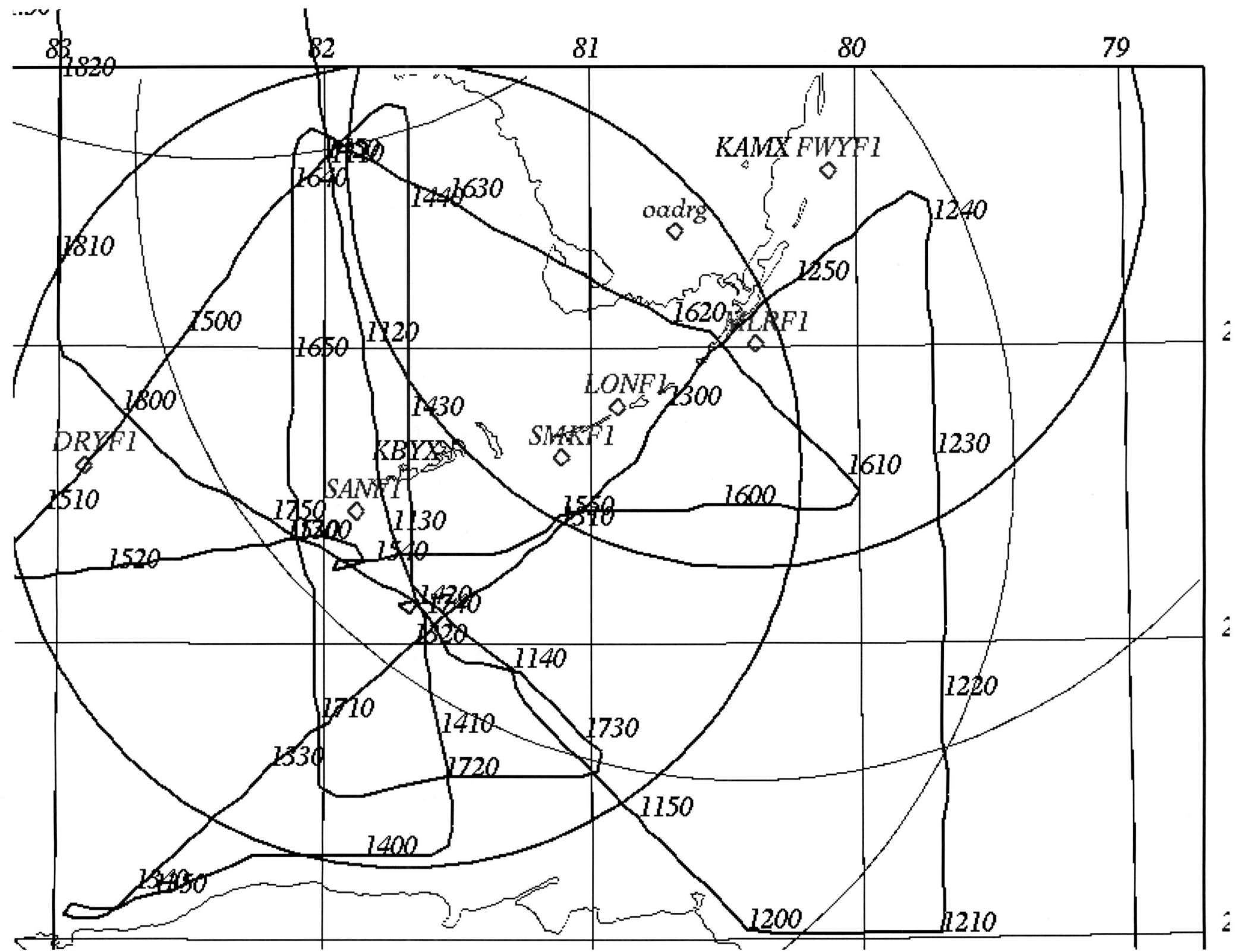
- 1) First sonde not transmitted to HAPS station, but stored on floppy for later research purposes.
- 2) Radar down from: 1124-1128 UTC
1509-1513 UTC
1624-162830 UTC

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?)

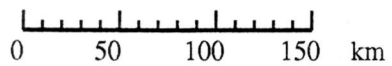
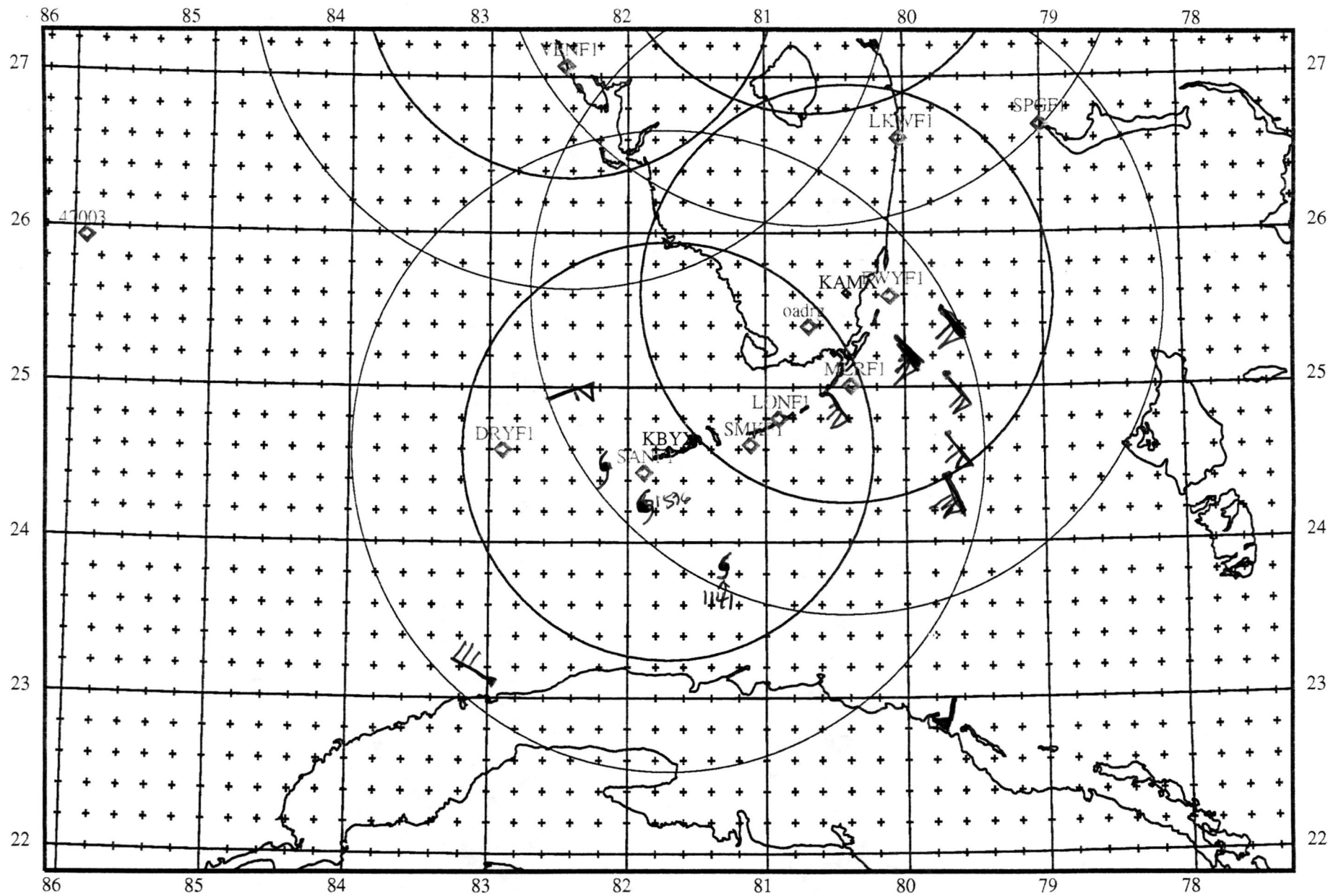
Center fixes

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

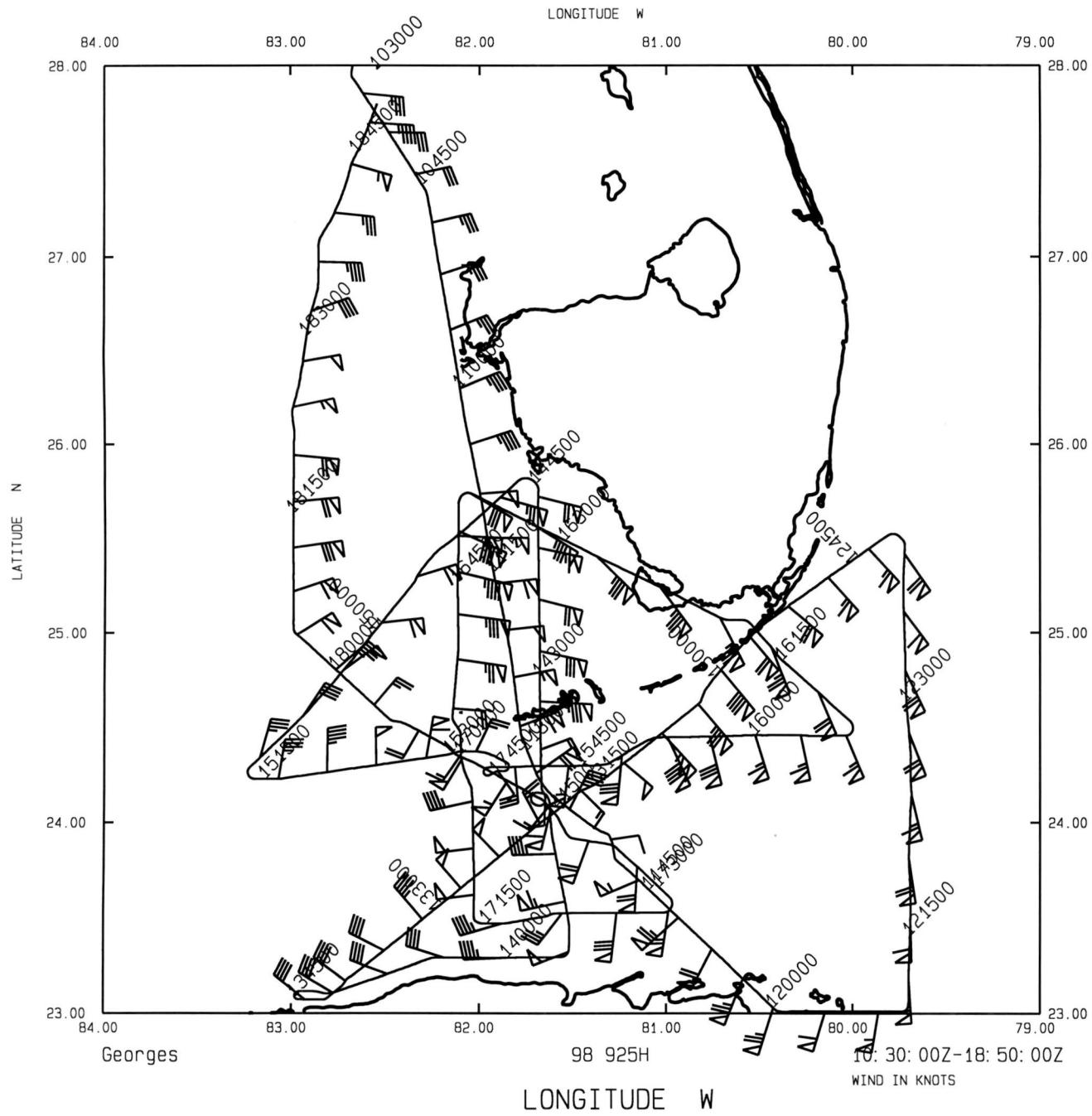


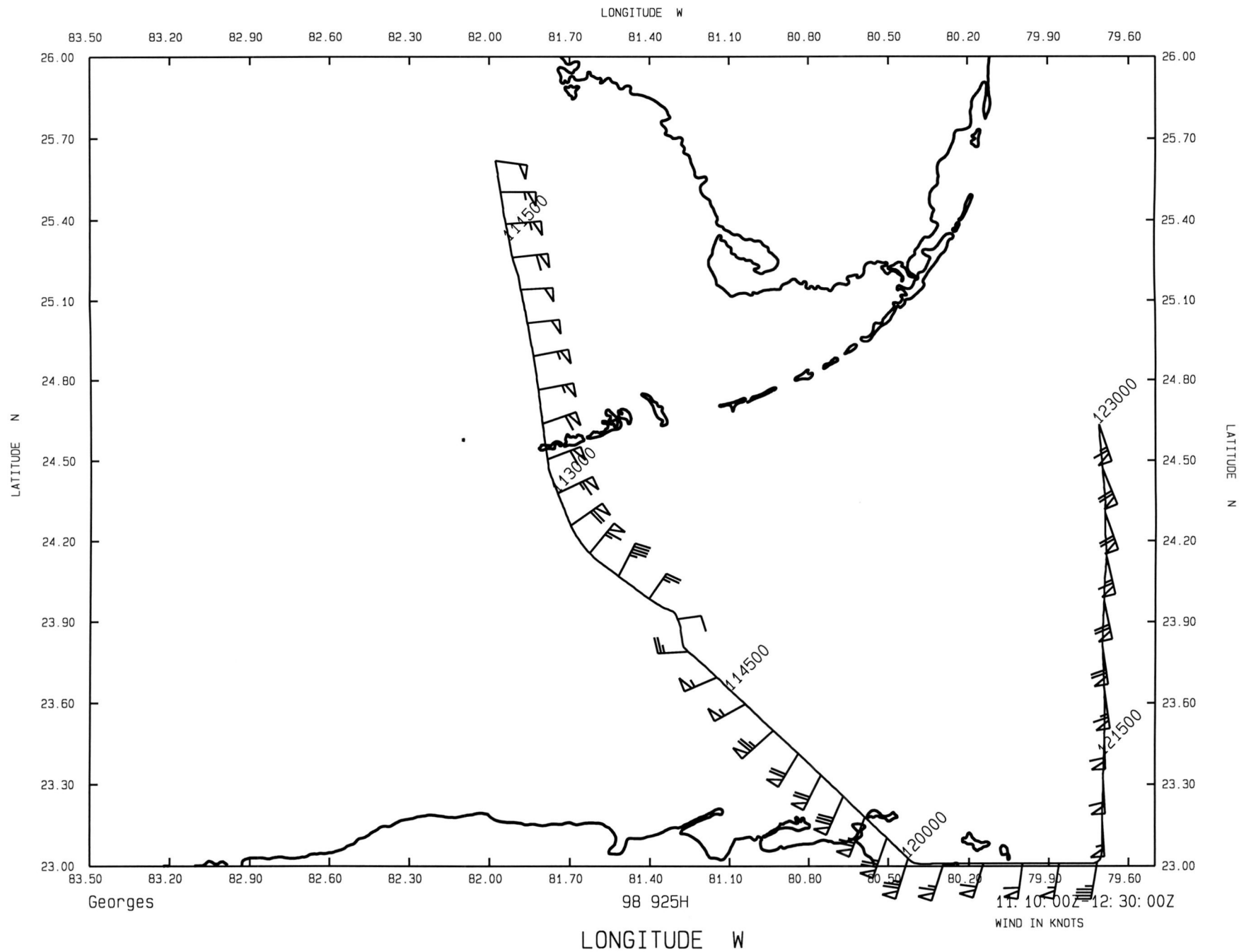
5000 ft

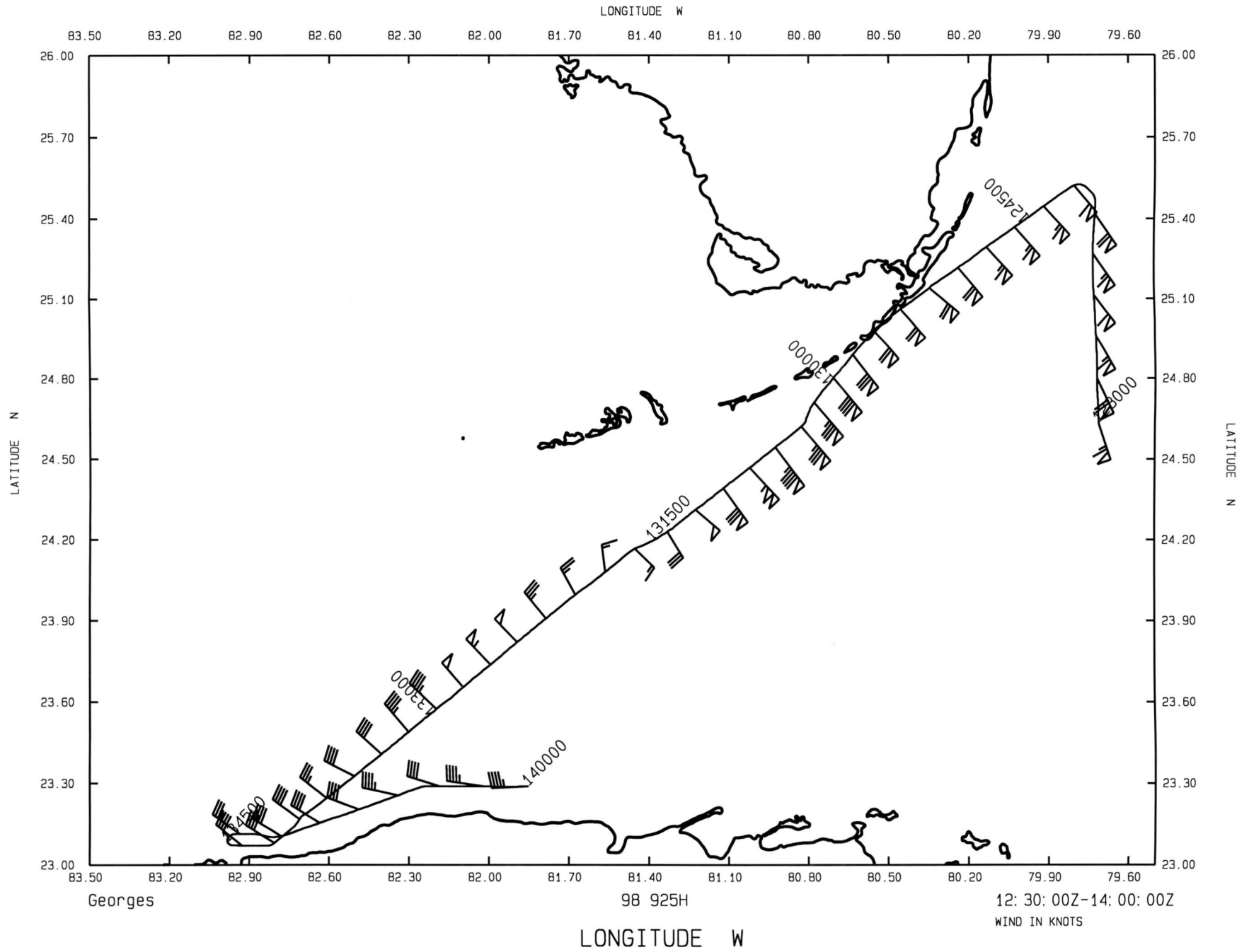
Center Lat: 24.60 Lon: -81.70

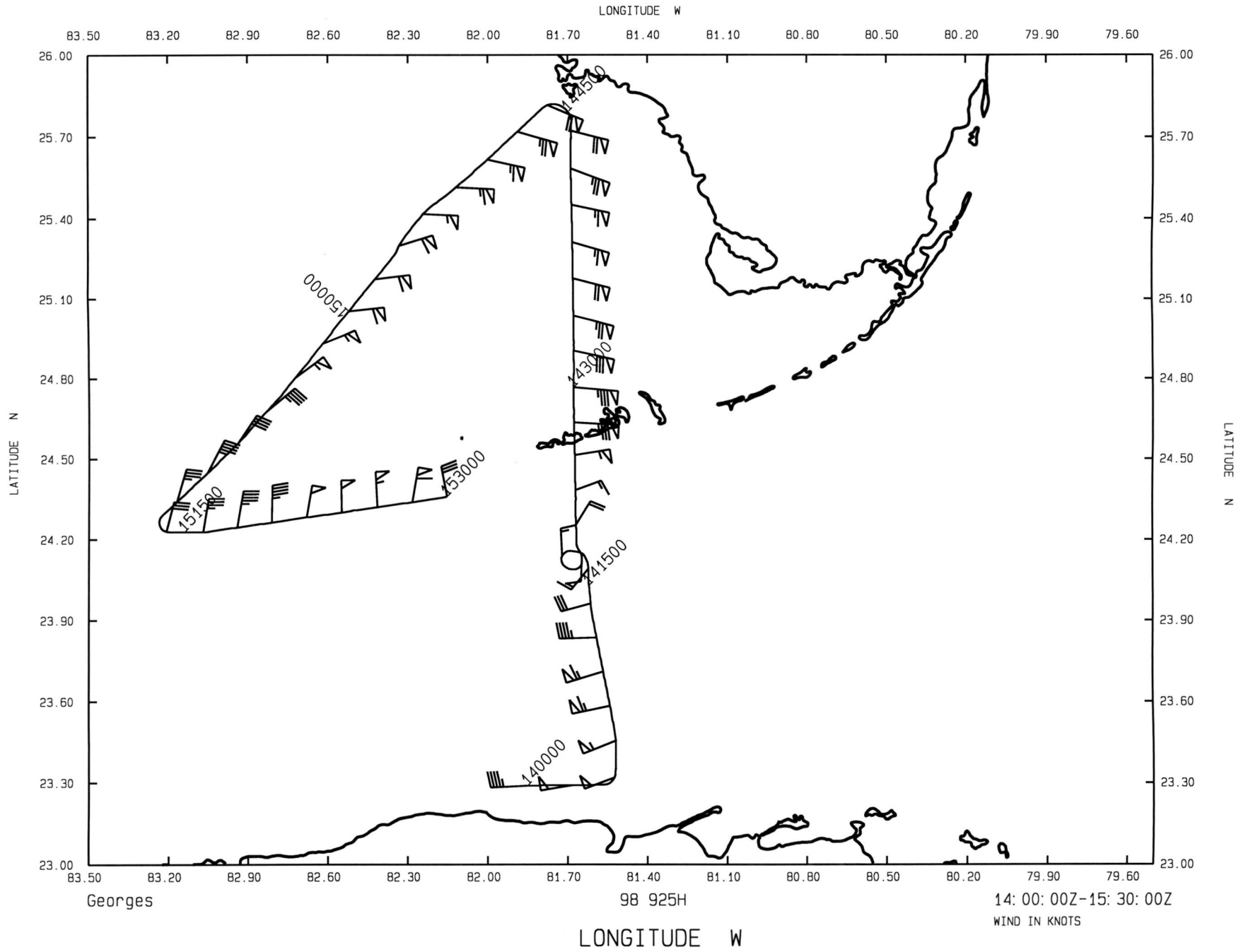


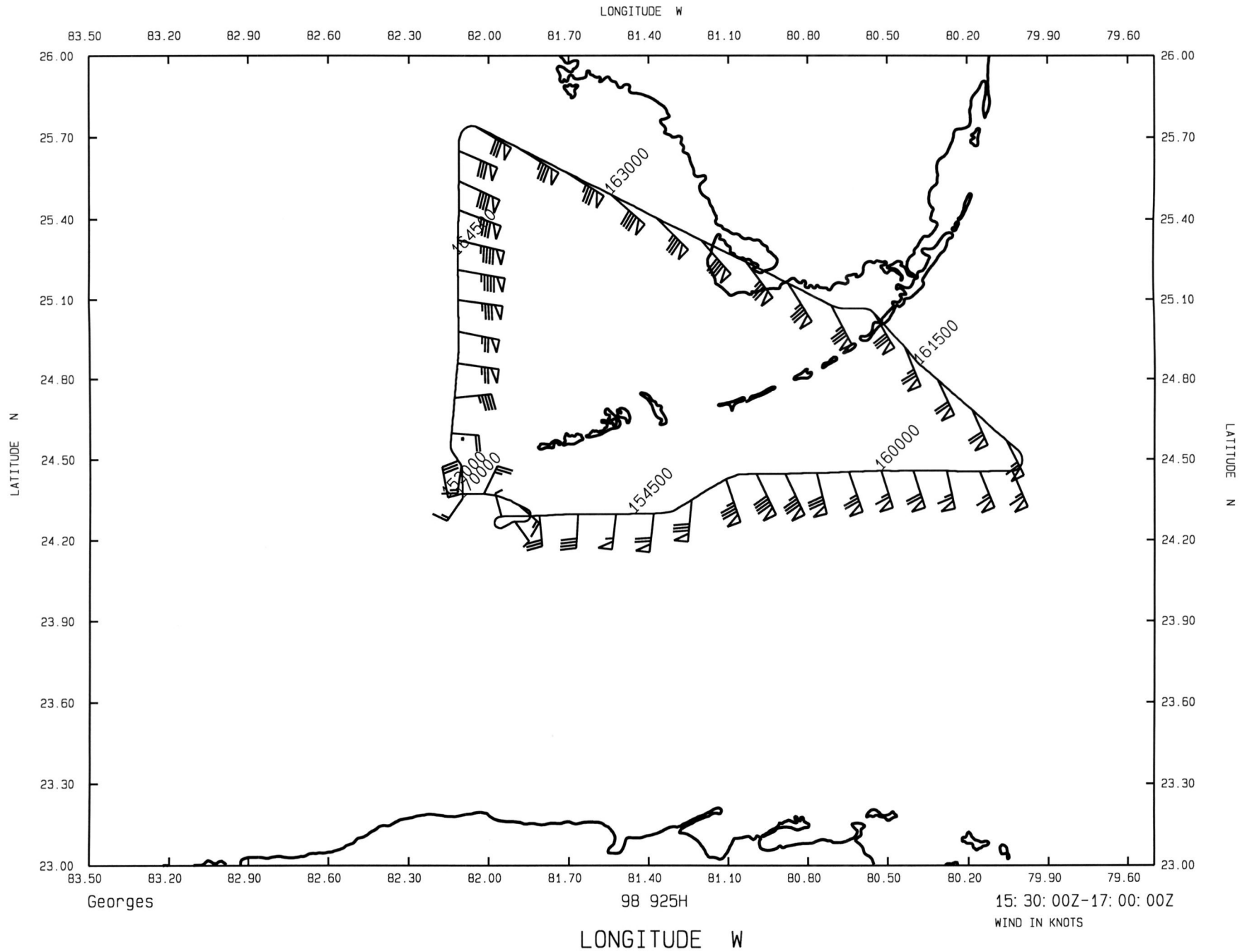
230 km range rings
150 km haze rings

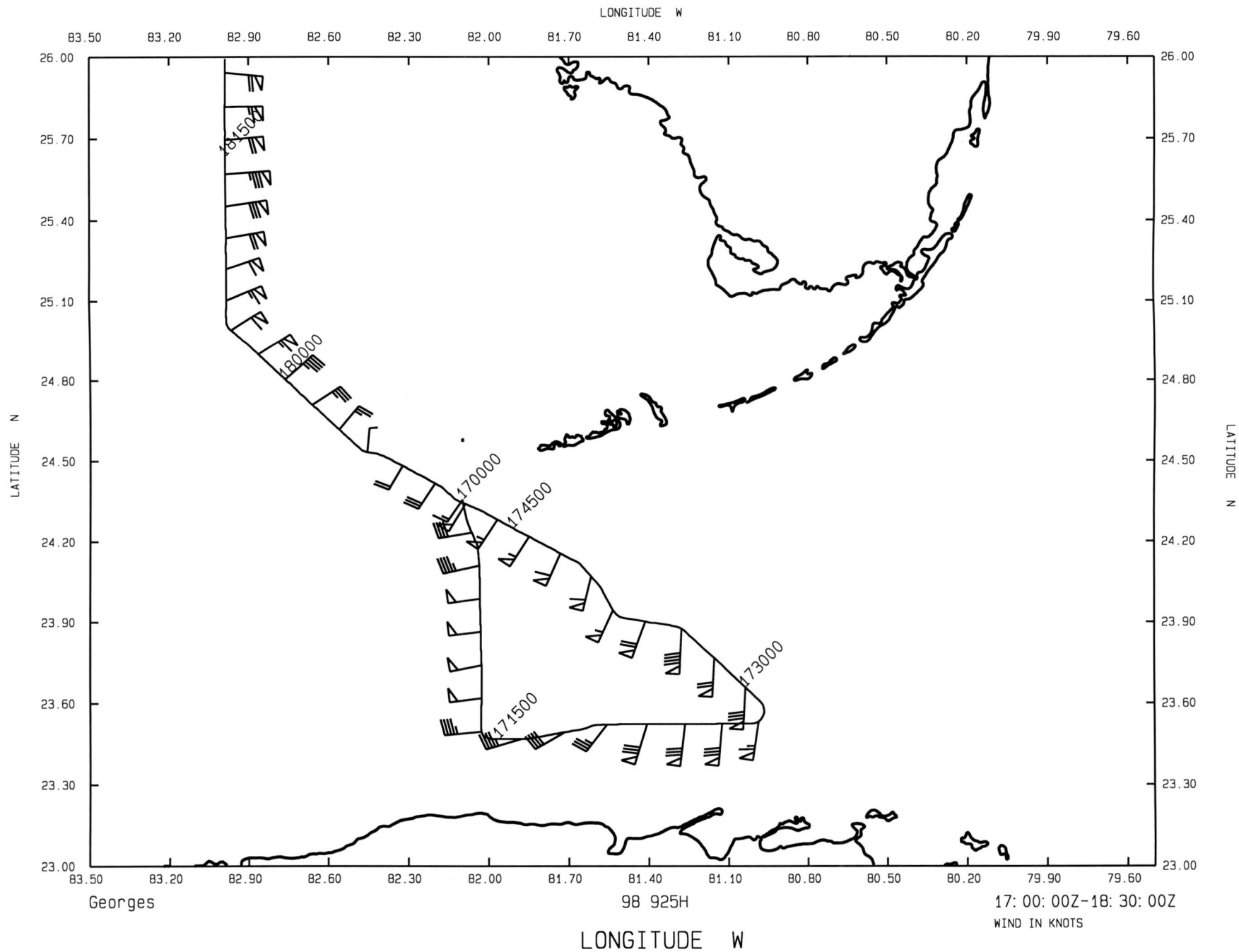


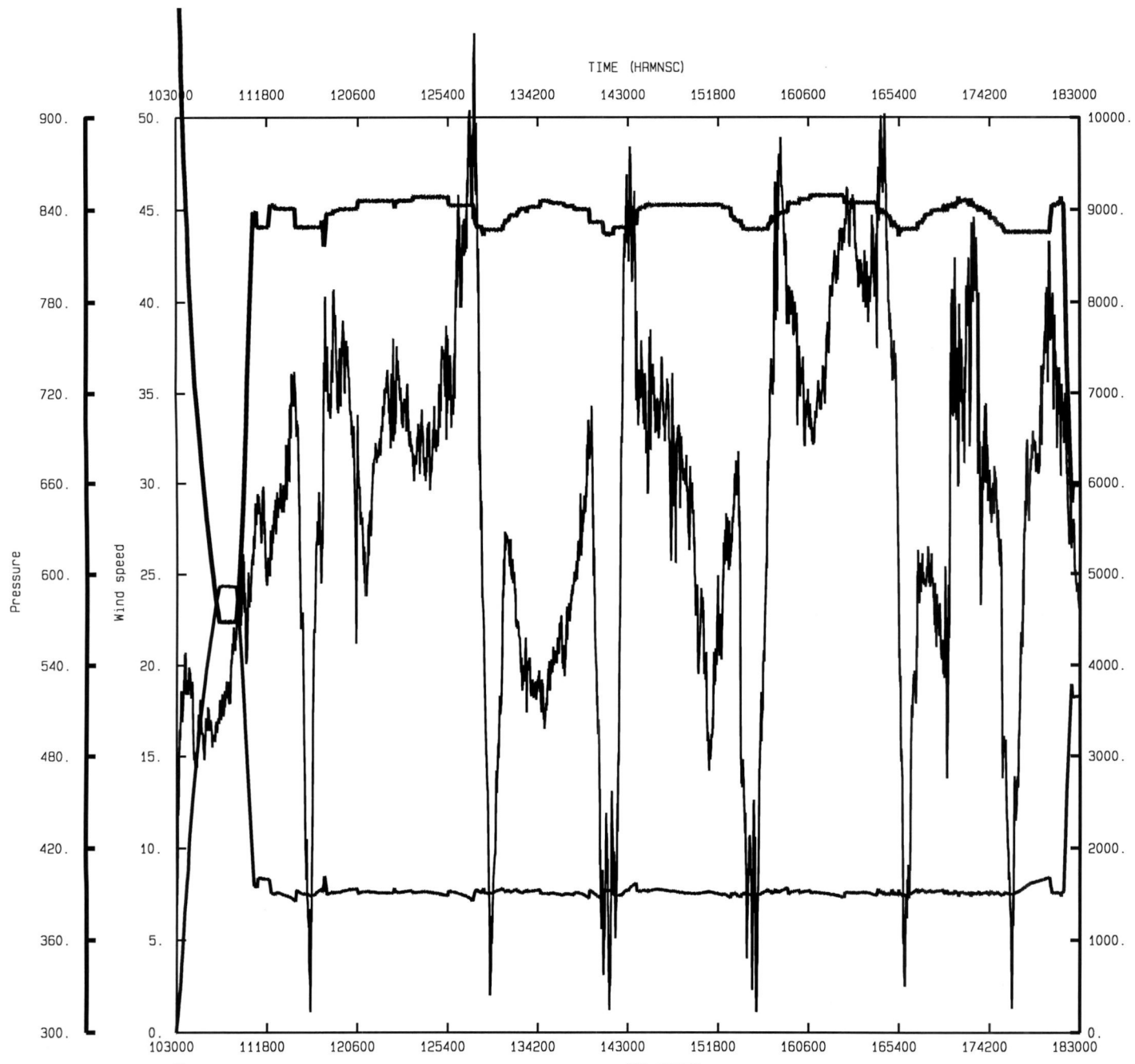












Georges

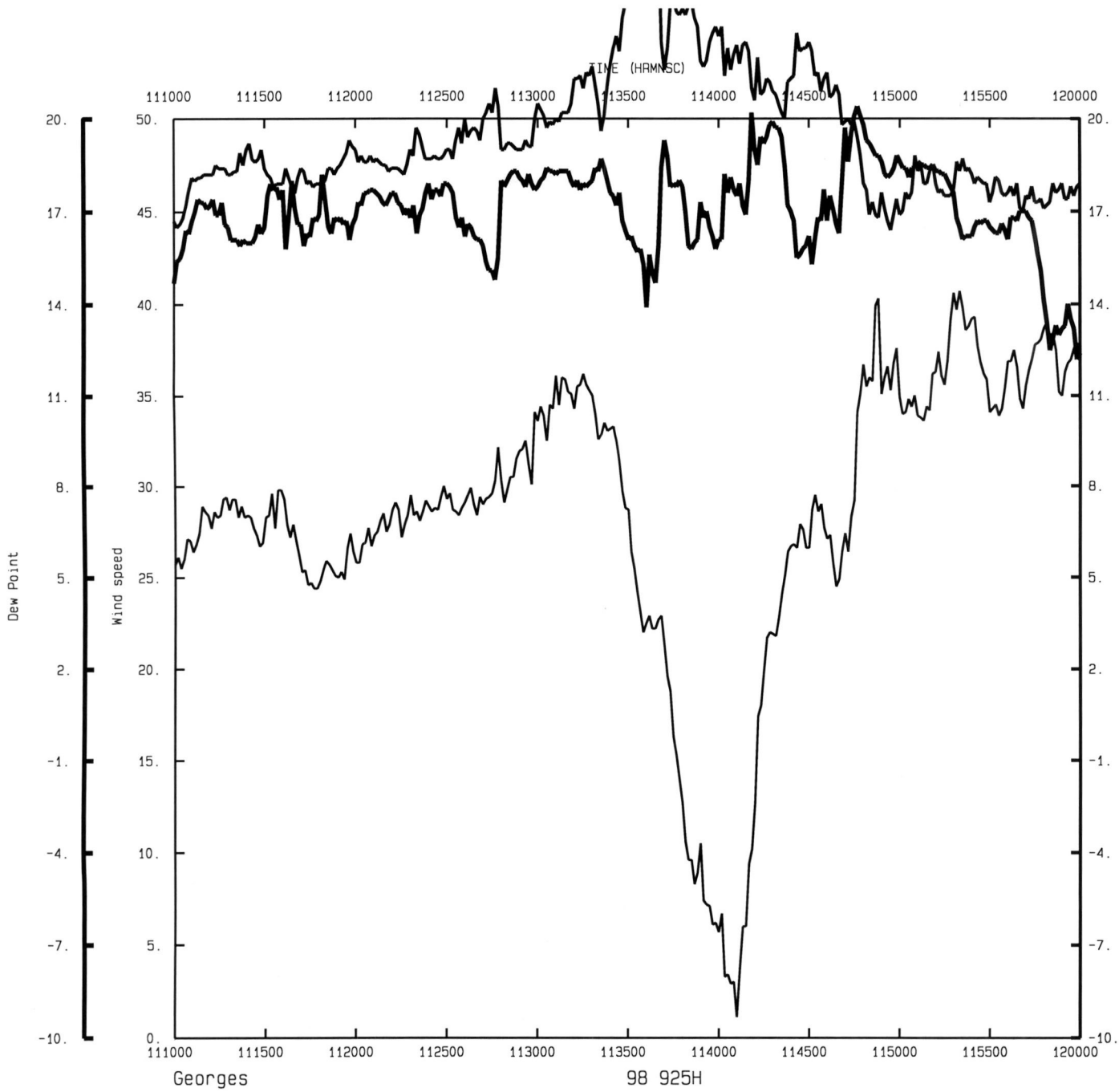
98 925H

TIME (HRMNSC)

Radar altitude



NOAA/HRD



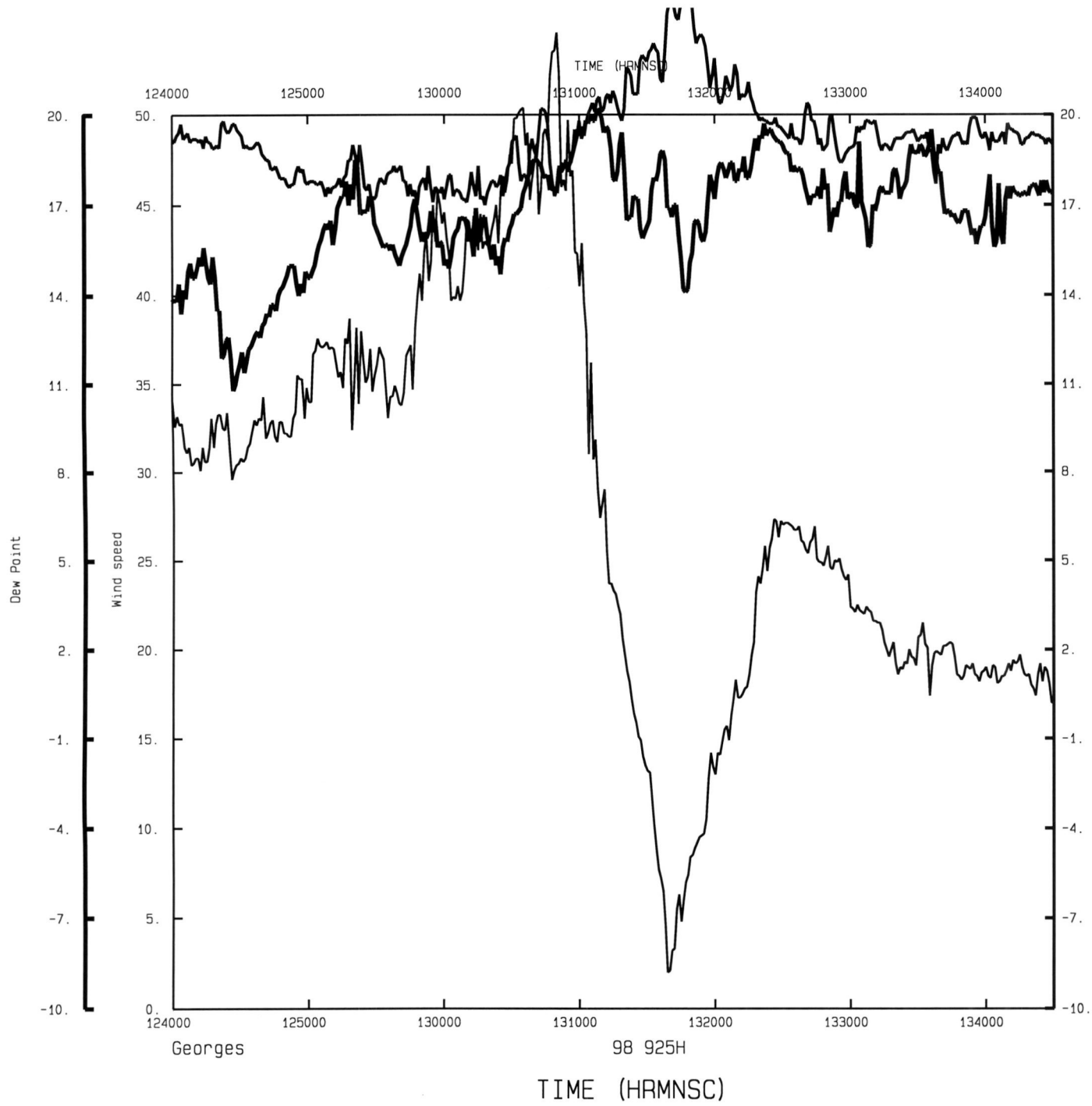
Georges

98 925H

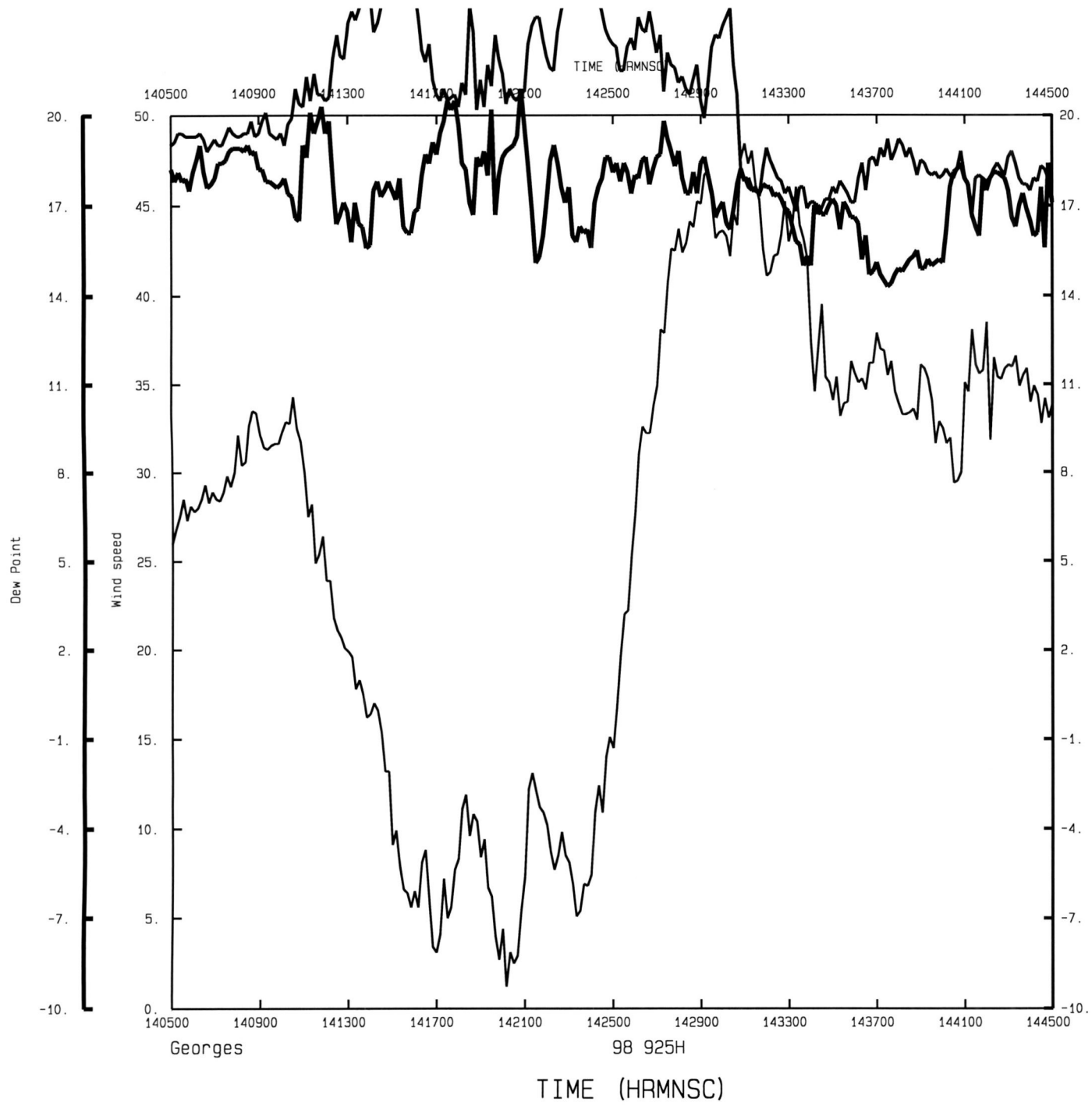
TIME (HRMNSC)



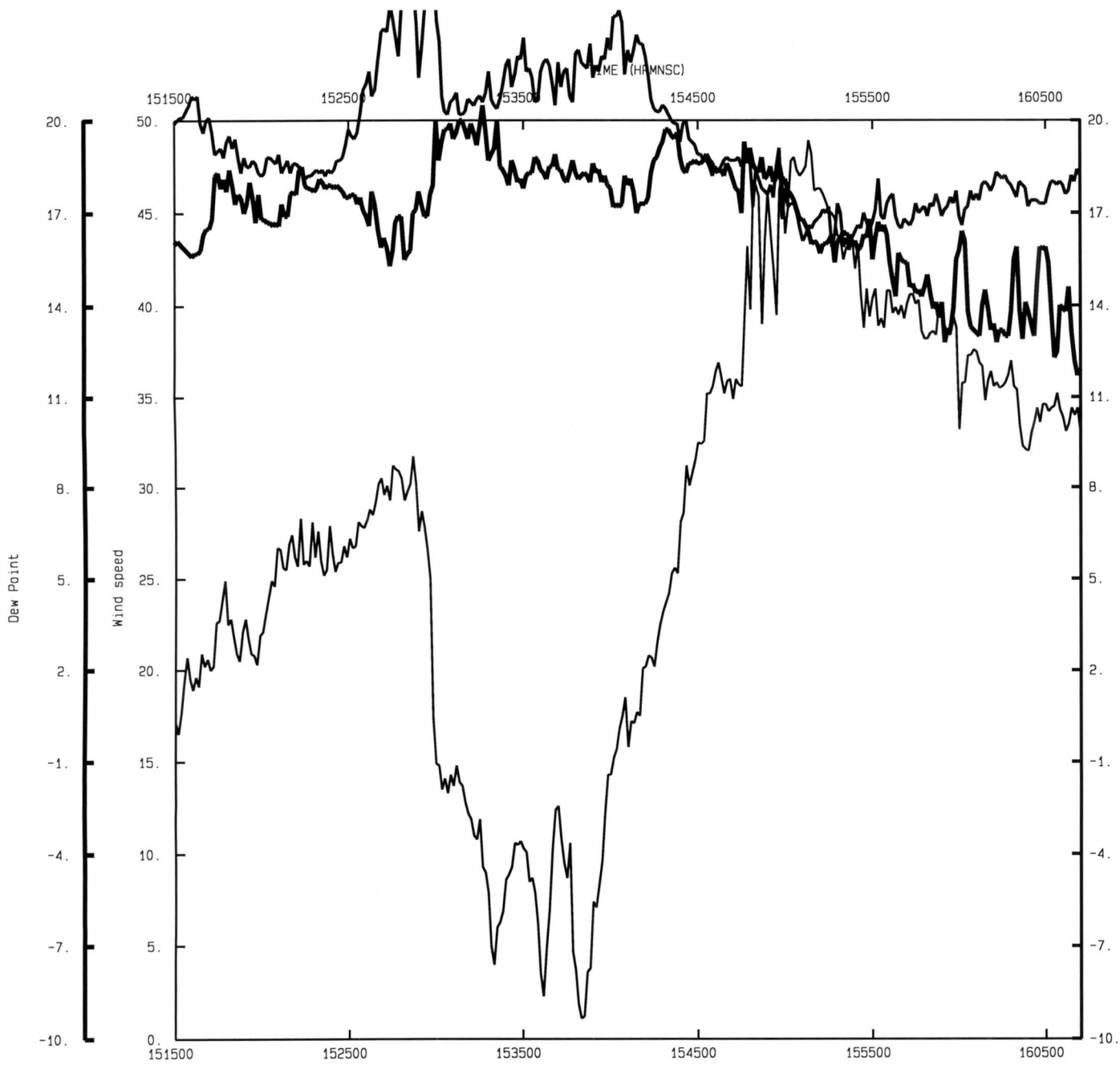
NOAA/HRD



NOAA/HRD



NOAA/HRD



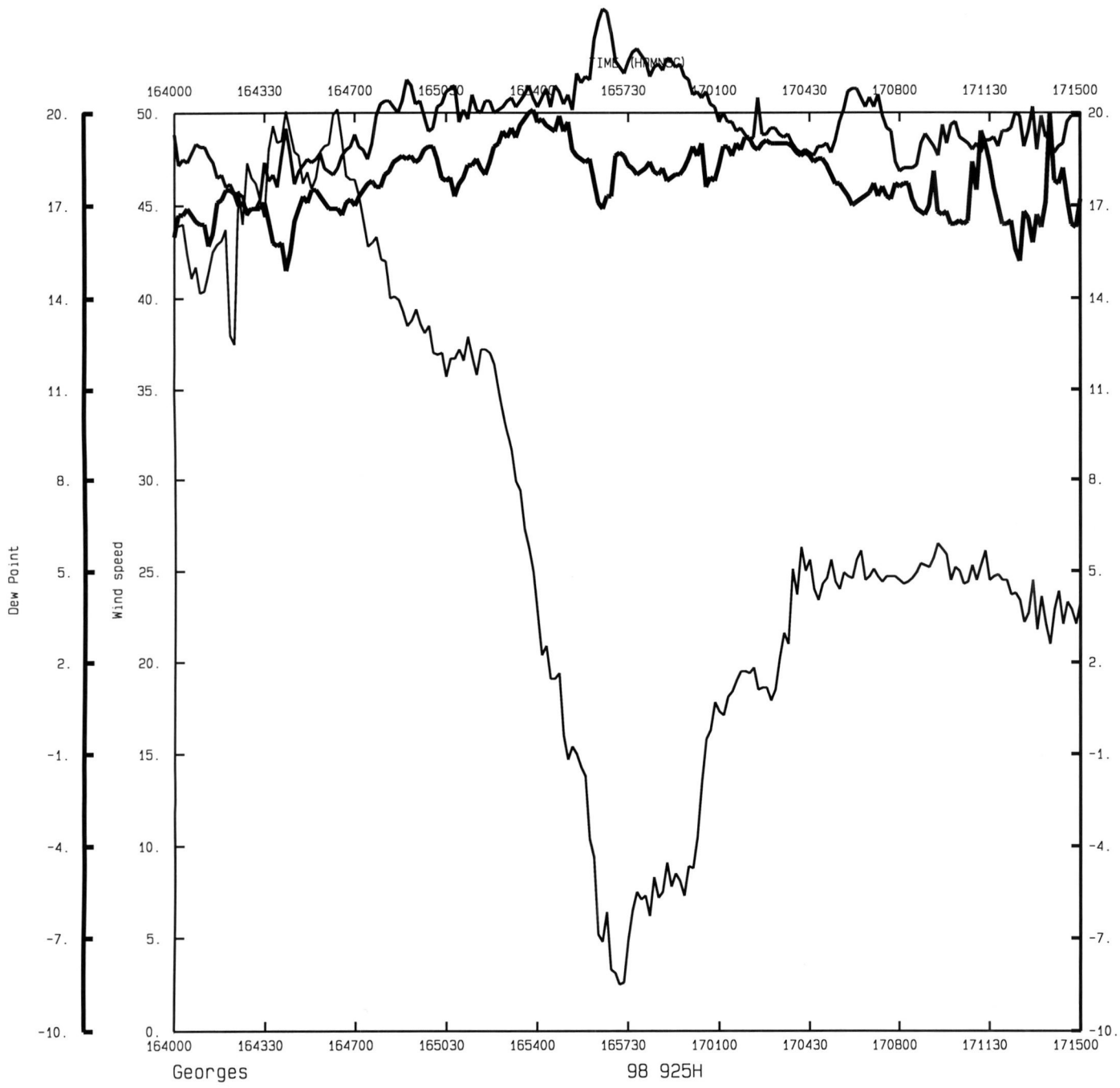
Georges

98 925H

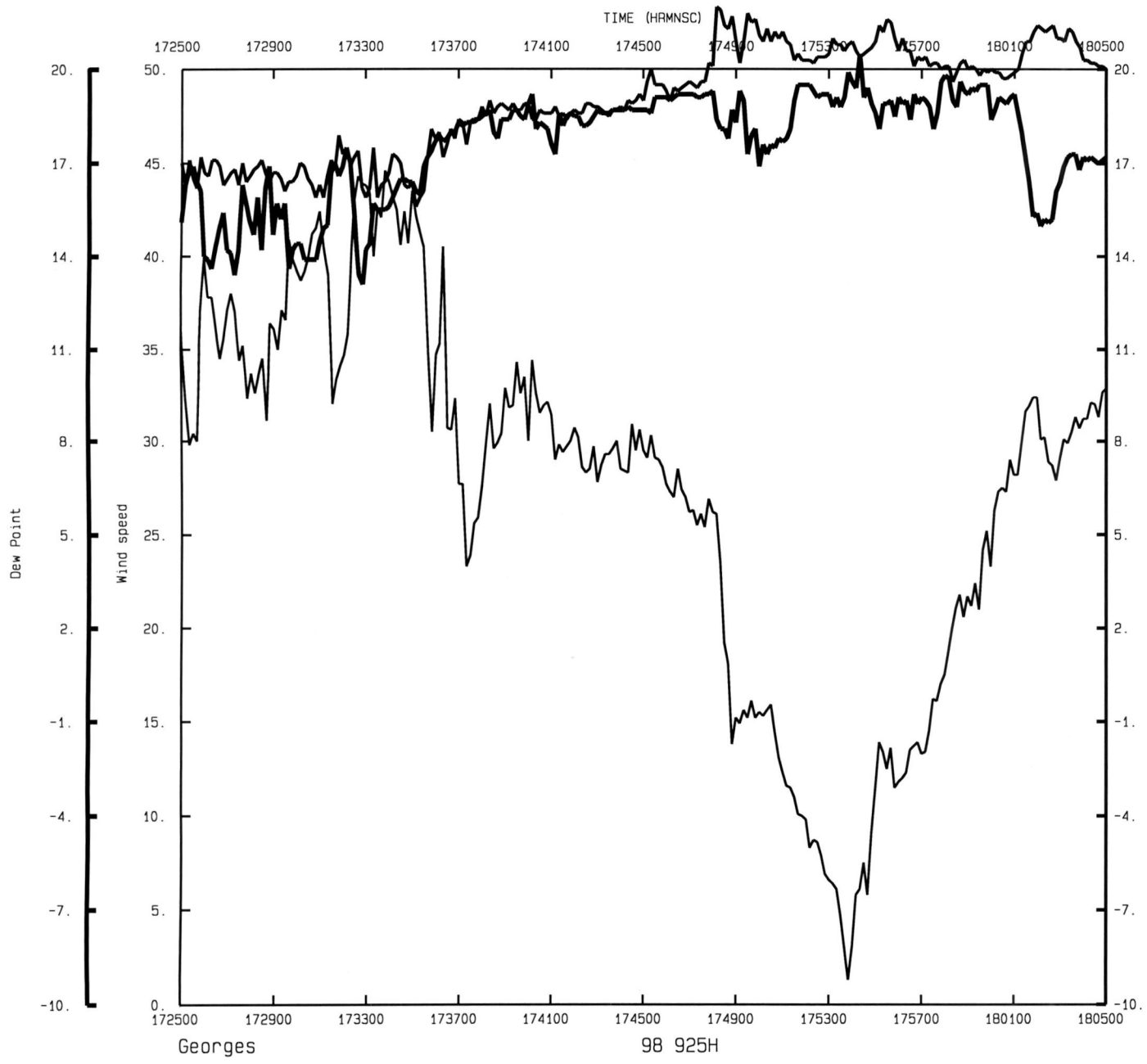
TIME (HRMNSC)



NOAA/HRD



NOAA/HRD



NOAA/HRD