Preliminary Report
Hurricane Allison
3-6 June 1995

Richard J. Pasch
National Hurricane Center
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Allison was an early season hurricane that formed over the northwest Caribbean Sea, the typical genesis area for tropical cyclones in June. It weakened to slightly below hurricane strength just before making landfall in north Florida. Allison was responsible for one death (in western Cuba).

a. Synoptic History

Satellite images and rawinsonde data show that a tropical wave passed over the Windward Islands on 28 May. When the wave entered the western Caribbean Sea on 1 June, it was accompanied by a broad mid-level cyclonic circulation, which rawinsonde observations indicated was particularly distinct at 700 mb. Convective cloudiness acquired sufficient organization to warrant an initial Dvorak satellite classification at 0000 UTC 2 June. At that time, the cloud cluster was located a few hundred miles to the east of Honduras. The system moved north-northwestward, and gradually became better organized during the daylight hours of the 2nd. The first reconnaissance flight into the area revealed that the system became a tropical depression around 0000 UTC on 3 June, centered 230 n mi east of Belize City. Table 1 lists the best track, which is displayed in Figs. 1a and 1b.

Continuing on its north-northwestward heading, the cyclone strengthened into Tropical Storm Allison at 1200 UTC on the 3rd. The intensifying storm turned northward, and moved through the Yucatan Channel. The storm deepened even though southwesterly upper-level winds were creating a shearing environment. In fact, by 1200 UTC on the 4th, Allison became a 65-knot hurricane over the southeast Gulf of Mexico, centered 240 n mi west of Key West. However, the strengthening trend soon ceased and Allison never developed beyond minimal hurricane intensity. Moving northward near 15 knots, Allison headed for the Florida panhandle.

Early on 5 June, as the system drew nearer to the coast, it turned northeastward, and weakened slightly, apparently in response to south-southwesterly vertical shear. Allison's winds dropped just below hurricane force by 0600 UTC 5 June. Landfall occurred at 1400 UTC 5 June on the coast of north Florida, near Alligator Point, and again (after a very brief time over water) at 1500 UTC near Saint Marks. Maximum winds at landfall are estimated at 55-60 knots. The storm weakened further as it headed inland to Georgia, but tropical storm force winds persisted over Apalachee Bay until 2100 UTC on the 5th. Allison diminished to a tropical depression over southern Georgia by 0000 UTC 6 June.

By 0600 UTC on the 6th, the system acquired extratropical characteristics as it interacted with a warm frontal zone to the northeast. Gale force winds developed along the Georgia and South Carolina coasts as the cyclone's isobaric pattern expanded and the pressure gradient increased well east of the low center. During the day on the 6th, the low moved northeastward over the coastal plain of the southeastern U.S., emerging into the Atlantic a little north of Cape Hatteras just after 0000 UTC 7 June. The low, with an associated area of gale to storm force winds over its southeastern semicircle, moved rapidly northeastward, skirting the eastern shore of Nova Scotia on the 8th, as it headed for Newfoundland. After passing over Newfoundland on the 9th, the gale center turned northward, and then north-northwestward, crossing the Arctic Circle to the west of Greenland on the 11th.

b. Meteorological Statistics

Figures 2 and 3 show the post-analysis best track minimum central pressure and maximum one-minute wind speed for Allison, respectively, versus time. These were derived from: 1) U.S. Air Force Reserve Unit Hurricane Hunter aircraft data; 2) analyses of satellite images, using the Dvorak technique, performed by meteorologists at the Synoptic Analysis Branch (SAB) and the Tropical Analysis and Forecast Branch (TAFB, formerly the Tropical Satellite Analysis and Forecast unit, TSAF, as in the figures) and at the Air Force Global Weather Central (AFGWC); and 3) surface reports (including analyses from synoptic charts).

The maximum wind speed recorded in Allison was 74 knots at 700 mb from an Air Force Hurricane hunter plane on 0019 UTC on 5 June. The highest surface wind estimated by the aircraft crew was 65 knots. The highest observed sustained (8-min) winds were reported from the NOAA Data Buoy 42003, 52 knots. The minimum observed central pressure was 987 mb, from the Hurricane Hunters, at 1346, 1527, and 2224 UTC on 4 June. It is presumed that Allison was at its peak intensity at 1200 UTC 4 June, since this was the only time that aerial reconnaissance data showed any kind of eye structure (a partial wall cloud). The peak observed flight-level winds at 850 mb were 69 knots around that time.

In Cuba, Allison produced winds of 40 to 45 knots in Pinar del Rio. Stronger gusts, 55 knots, were reported at the weather service office in Havana. Rainfall totals to as high as 18 inches were observed.

The highest reported wind speed observation in Florida was a gust to 50 knots at Cedar Key. A 1-minute sustained wind speed of 37 knots with a gust to 47 knots was observed at Turkey Point. A 30-minute sustained wind speed of 35 knots with a gust to 49 knots was measured at the St. George Island Causeway. A 1-minute sustained wind speed of 34 knots with a gust to 39 knots was observed at Apalachicola.

The outer rainbands of Allison spawned a number of tornadoes, waterspouts and funnel clouds. A waterspout was sighted, at 2005 UTC 4 June, five miles east of Ponte Vedra Beach FL, moving north. A probable tornado struck in eastern Polk County, FL, from 0245-0315 UTC 5 June; a funnel cloud was spotted by two observers but no tornado was seen. However, 75 homes and mobile homes near Haines City apparently received some damage, and trees were down and storage sheds were damaged near West Lake Wales.

There were several tornadoes reported in the northeast Florida/southeast Georgia area on 5 June. A tornado at Jacksonville Beach in Duval County, FL, around 0738 UTC, downed power lines and trees, flipped over two vehicles, and caused minor damage to fences and houses. A northward-moving tornado was sighted over extreme northern Nassau County, FL, at 0810 UTC. This twister moved over Saint Marys in Camden County, GA around 0420 UTC. Damage in Nassau County was light, but heavier damage was incurred in Camden County, where an elementary school in Saint Marys sustained building damage and facilities at the Kings Bay Naval Submarine Base were damaged. Numerous trees were downed at the base as well. At 0930 UTC, a waterspout moved onshore near Brunswick in Glynn County, GA, causing minor damage to structures. From 0945-1000 UTC, waterspouts were sighted from Fernandina Beach in Nassau County, FL. A funnel cloud with a possible brief touchdown took place at 1000 UTC near Everret City, also in Glynn County, GA. Two tornado touchdowns occurred south of Brunswick, GA at 1045 UTC. A tornado was reportedly sighted near Gainesville, Alachua County, FL at 1251 UTC. There was also a possible tornado east of Interlachen in Putnam County, FL, around 1340 UTC.

Rainfall totals were generally between 4 and 6 inches near the path of Allison, from Florida through North Carolina.

Storm surge heights of at least 6.8 feet above National Geodetic Vertical Datum were measured in Apalachee Bay (Turkey Point). Maximum storm surge heights were estimated at 6 to 8 ft from Wakulla through Dixie counties, 4 to 6 ft in Franklin County, and 2 to 5 ft from Levy through Hillsborough Counties.

c. Casualty and Damage Statistics

Heavy rains caused the collapse of 32 structures in western Cuba. One person was killed and three injured due to these collapses. Overall, economic losses were apparently not large.

In the U.S., there were no direct deaths due to Allison. Damage was greatest in the coastal sections of Dixie, Levy, Taylor and Wakulla counties, mainly from storm surge effects, with 60 houses and businesses damaged. A house collapsed at Bald Point in Franklin County. About 5000 people evacuated from the coast. Other coastal effects included mostly minor beach erosion, damage to sea walls and coastal roadways, and the sinking of several small boats. Otherwise, minor wind damage to roofs, signs, power lines

and trees occurred over most of the north Florida peninsula. Some relatively minor crop damage was also reported.

Total damage in Florida is estimated at $860,000, and the tornado near St. Marys, Georgia, caused about $800,000 in damage, bringing Allison's overall U.S. damage figure to $1.7 million.

d. Forecast and Warning Critique

Overall, the path of Allison was well forecast, but initially there was a slow bias. Mean official track errors were 35, 66, 100, 126, and 234 n mi at 12-, 24-, 36-, 48-, and 72-hours, respectively. All of these errors are between 21 and 35 per cent lower than the most recent ten-year means. In general, the average official forecast errors were about equal to, or smaller than, any of those from the objective track models. The exception was at 72 hours, wherein the GFDI, BAMD, and A90E models had mean errors that were 55, 44, and 41 n mi lower, respectively than the mean official forecast.

Allison's strengthening to a hurricane was not anticipated because of the presence of southwesterly shear, and this necessitated the upgrading of a tropical storm watch to a hurricane warning. Landfall occurred roughly at the center of the hurricane warning area.

Acknowledgements

Jim Lushine, at the National Weather Service Office (NWSO) in Miami, Florida, summarized damage and tornado reports. Al Sandrik at NWSO, Jacksonville, also provided information on tornadoes in Florida and Georgia.

Table 1. Post-analysis best track, Hurricane Allison, 3-11 June, 1995.

Date/Time (UTC)	Position Lat. (°N)	Position Lon. (°W)	Pressure (mb)	Wind Speed (kt)	Stage
03/0000	17.4	84.3	1005	30	Tropical Depression
0600	18.3	84.9	1004	30	" "
1200	19.3	85.7	1003	35	Tropical Storm
1800	20.6	85.8	1001	40	" "
04/0000	22.0	86.0	997	50	" "
0600	23.3	86.3	995	60	" "
1200	24.7	86.2	987	65	Hurricane
1800	26.2	86.2	988	65	"
05/0000	27.6	86.1	988	65	"
0600	28.5	85.6	990	60	Tropical Storm
1200	29.6	84.7	990	60	" "
1800	30.7	83.8	993	45	" "
06/0000	31.8	82.8	993	30	Tropical Depression
0600	32.7	81.5	994	35	Extratropical
1200	33.6	80.0	995	35	"
1800	34.5	78.1	995	40	"
07/0000	35.6	75.9	992	40	"
0600	37.1	73.6	990	45	"
1200	38.5	71.0	988	45	"
1800	39.8	69.2	984	45	"
08/0000	41.0	67.7	982	50	"
0600	42.4	66.0	984	50	"
1200	43.8	63.7	989	50	"
1800	45.2	61.2	993	45	"
09/0000	46.5	58.5	995	40	"
0600	48.1	55.9	996	40	"
1200	50.0	53.0	997	40	"
1800	53.0	52.0	1000	40	"
10/0000	57.0	52.0	997	40	"
0600	60.0	52.0	990	40	"
1200	62.0	53.0	992	40	"
1800	64.0	55.0	992	35	"
11/0000	65.0	56.0	993	35	"
04/1200	24.7	86.2	987	65	Minimum Pressure (as a tropical cyclone)
05/1400	29.9	84.4	991	60	Landfall near Alligator Point, Florida
05/1500	30.1	84.2	991	55	Landfall near Saint Marks, Florida

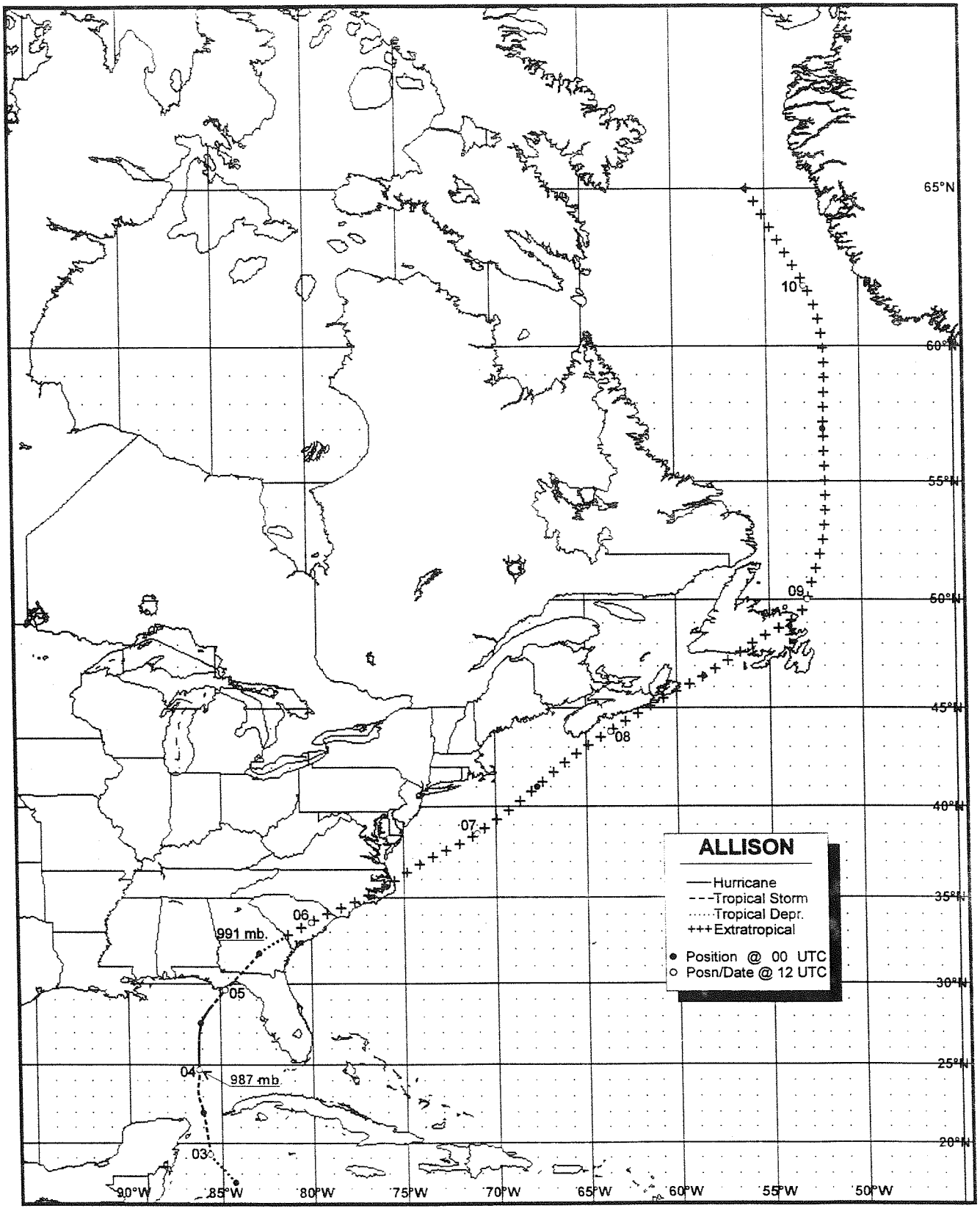

Figure 1a. Post-analysis best track positions for Hurricane Allison, 3-6 June, 1995.

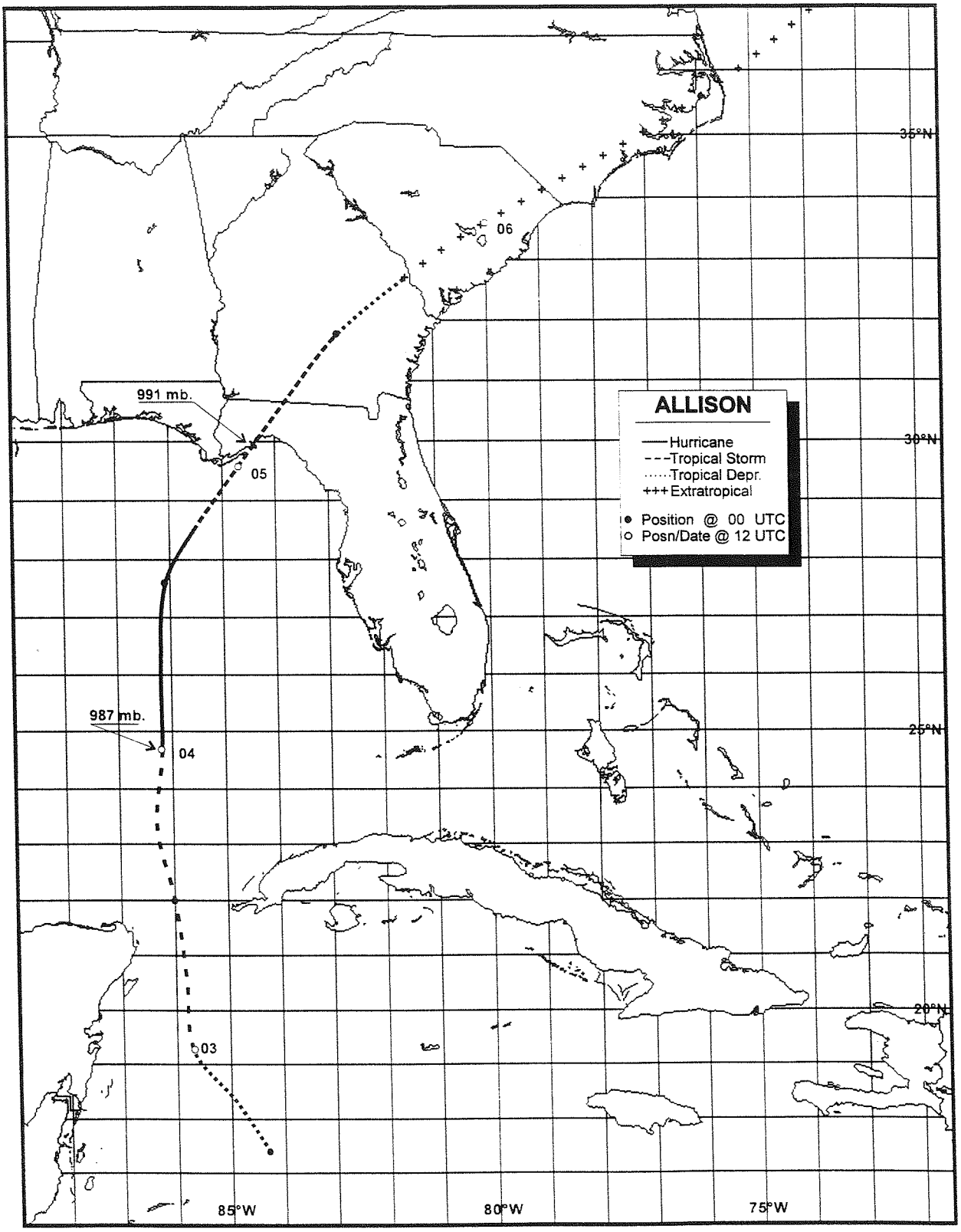

Figure 1b. A close-up of the post-analysis best track positions for Hurricane Allison, 3-6 June, 1995.

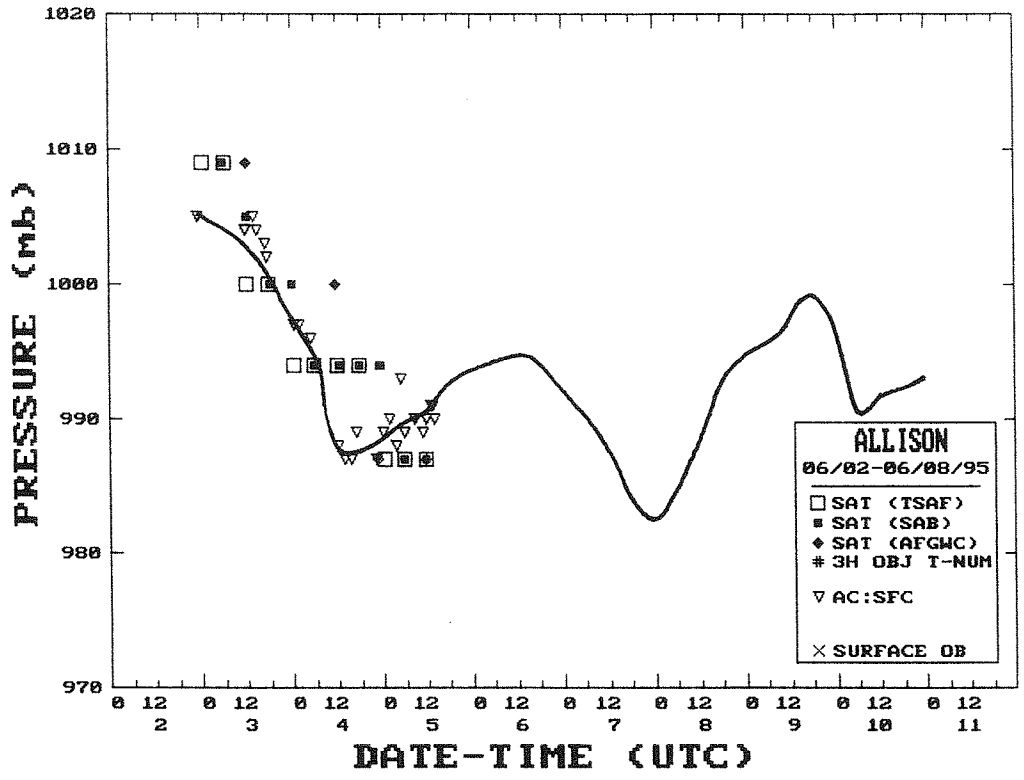

Figure 2. Best track minimum central pressure curve for Hurricane Allison, 1995.

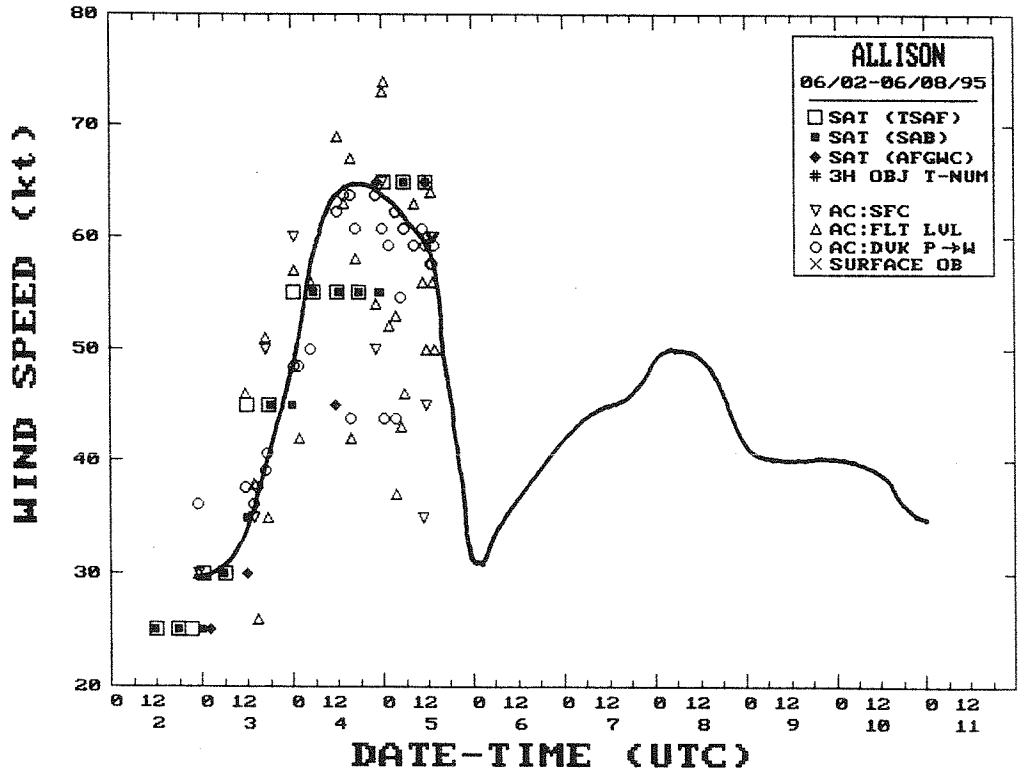

Figure 3. Best track maximum one-minute wind speed curve for Hurricane Allison, 1995.