

Preliminary report  
Hurricane Gert  
11-23 September 1999

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Gert was a 130-knot hurricane that moved across the central north Atlantic Ocean. It briefly produced hurricane force winds at Bermuda and high waves along the southeast coast of Newfoundland.

a. Synoptic history

Gert originated from a tropical wave. When it moved from west Africa to the Atlantic on 10 September, there was already convective banding and some evidence of a low-level cloud circulation. The developing tropical cyclone's path was toward the west-northwest from the 10<sup>th</sup> to the 16<sup>th</sup> as it moved to the south of the subtropical high pressure ridge. The best track starts on the 11<sup>th</sup>, south of the Cape Verde Islands. This is when the system is estimated, using satellite imagery, to have reached tropical depression status. The best track is listed in Table 1 and is plotted in Fig. 1.

Gert reached tropical storm strength on the 12<sup>th</sup> and became a hurricane on the 13<sup>th</sup>. It continued to strengthen to 130 knots by the 16<sup>th</sup>.

There was a weakness in the ridge downstream ahead of Gert, an area over which intense Hurricane Floyd had just moved. While intensifying, Gert's movement responded to the weakness and slowly turned north and then north-northeastward during the 16<sup>th</sup> through 21<sup>st</sup>. Its center remained about 300 nautical miles to the northeast of the Leeward Islands of the Caribbean during this turn. With some fluctuation in intensity, winds remained near 115 knots through the 19<sup>th</sup>, after which weakening commenced. Gert passed about 115 n mi east of Bermuda on the 21<sup>st</sup> and moved to near southeastern Newfoundland by the 23<sup>rd</sup>. It then became extratropical and merged with another extratropical low pressure system.

b. Meteorological statistics

The best track pressure and wind speed time series curves are shown in Figs. 2 and 3, along with plots of the data on which the curves are based. U.S. Air Force Reserve Unit Hurricane Hunter aircraft monitored Gert on the 16<sup>th</sup> and 17<sup>th</sup>, while there was a potential threat to the Leeward Islands, and again on the 20<sup>th</sup> and 21<sup>st</sup>, while it threatened Bermuda.

Subjective Dvorak satellite wind speed estimates puts the time of Gert's peak intensity of 130 knots near 0000 UTC on the 16<sup>th</sup>. About 24 hours of reconnaissance data starting about 0800 UTC on the 16<sup>th</sup> indicates that the wind speed weakened to 120

knots and then reached 125 knots based on a GPS dropsonde measurement early on the 17<sup>th</sup>.

The center of Gert passed about 115 n mi east of Bermuda on the 21<sup>st</sup>. The maximum 10-minute wind speed reported from airport at Bermuda was 39 knots with a peak gust to 64 knots. A gust to 76 knots was reported from an exposed coastal location. There were three instances of one-min mean winds speeds between 66 and 70 knots from a harbour location during the period 1032 - 1135 UTC on the 21<sup>st</sup>. The rainfall total for Gert was 0.53 inches.

Gale conditions were also experienced on the Avalon Peninsula on southeast Newfoundland as Gert passed close by.

#### c. Casualties and damages

Bermuda experience some coastal erosion damage along the east and south sides of the Island.

There were news reports of 27-foot high waves sweeping over the coast near the southeast tip of Newfoundland. Three persons were swept into the water while trying to secure their boat. All were rescued. Two persons drowned on 20 September, when a large and unexpected wave swept them out to sea. They had been standing at the water's edge at Schoodic Point in Acadia National Park, Maine. The local Marine Patrol described the wave as a "rogue wave". This event is believed to be related to large swells generated by Gert, even though the hurricane was located more than 1000 n mi south-southeast of Maine at the time.

#### d. Forecast and warning critique

A hurricane watch and tropical storm warning were issued for Bermuda at 2100 UTC on the 19<sup>th</sup> and a hurricane warning was issued at 1500 UTC on the 20<sup>th</sup>. The hurricane warning was downgraded to a tropical storm warning at 2100 UTC on the 21<sup>th</sup> and all warnings were discontinued at 2300 UTC on the 21<sup>th</sup>.

Average official track forecast errors ranged from 56 n mi (41 cases) at 24 hours to 111 n mi (37 cases) at 48 hours to 188 n mi (33 cases) at 72 hours. These errors are considerably lower than the previous 10-year averages, which are 89-, 164-, and 242-n mi for 24, 48 and 72 hours and are due to excellent model guidance from the GFDL, Navy NOGAPS, and UKMET models. Also, there were synoptic-scale reconnaissance missions that provided data for initializing guidance model runs on the 15<sup>th</sup>, 16<sup>th</sup>, and 18<sup>th</sup> of September.

Prior to Gert's wind speed reaching 130 knots, there were some 72-hour official intensity errors of 35-knot under-forecasts. Later when Gert was weakening, there were some 35-knot over-forecasts of the wind speed at the 48- and 72-hour forecasts.

Table 1. Preliminary Best Track, Hurricane Gert, 11-23 September 1999.

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
11/1200	12.6	24.2	1006	30	tropical depression
1800	12.9	26.1	1005	30	"
12/0000	13.3	28.0	1006	30	"
0600	13.8	29.8	1005	30	"
1200	14.2	31.9	1001	35	tropical storm
1800	14.8	33.8	997	45	"
13/0000	15.1	35.6	995	55	"
0600	15.4	37.3	990	60	"
1200	15.9	39.2	984	65	hurricane
1800	16.1	40.8	979	70	"
14/0000	16.3	42.2	976	75	"
0600	16.6	43.5	973	85	"
1200	16.8	44.6	968	90	"
1800	17.1	45.8	962	95	"
15/0000	17.2	46.9	955	100	"
0600	17.4	47.9	948	110	"
1200	17.5	48.9	940	115	"
1800	17.7	50.0	933	125	"
16/0000	17.8	50.8	930	130	"
0600	18.0	51.7	933	130	"
1200	18.2	52.6	941	125	"
1800	18.6	53.4	940	120	"
17/0000	19.0	54.2	944	115	"
0600	19.4	55.0	942	125	"
1200	19.9	55.7	945	125	"
1800	20.4	56.3	950	115	"

Table 1. (continued)

Date/Time (UTC)	Latitude (°N)	Longitude (°W)	Pressure (mb)	Wind Speed (kt)	Stage
18/0000	20.9	56.8	953	110	hurricane
0600	21.6	57.1	954	105	“
1200	22.2	57.4	953	105	“
1800	22.8	57.8	950	105	“
19/0000	23.4	58.1	947	110	“
0600	24.1	58.7	946	115	“
1200	24.7	59.2	946	115	“
1800	25.5	60.0	946	115	“
20/0000	26.2	60.7	947	115	“
0600	26.8	61.4	947	110	“
1200	27.6	62.4	948	105	“
1800	28.3	62.7	949	100	“
21/0000	29.2	62.9	950	95	“
0600	30.1	62.8	952	90	“
1200	31.3	62.6	955	85	“
1800	32.7	62.1	958	80	“
22/0000	34.3	61.2	960	75	“
0600	36.2	60.4	961	75	“
1200	38.1	59.4	962	70	“
1800	40.3	57.9	963	65	“
23/0000	42.2	55.6	964	60	tropical storm
0600	44.6	54.5	968	60	“
1200	46.6	51.9	972	60	extratropical storm
1800	merged with another extratropical system				
16/0000	17.8	50.8	930	130	minimum pressure

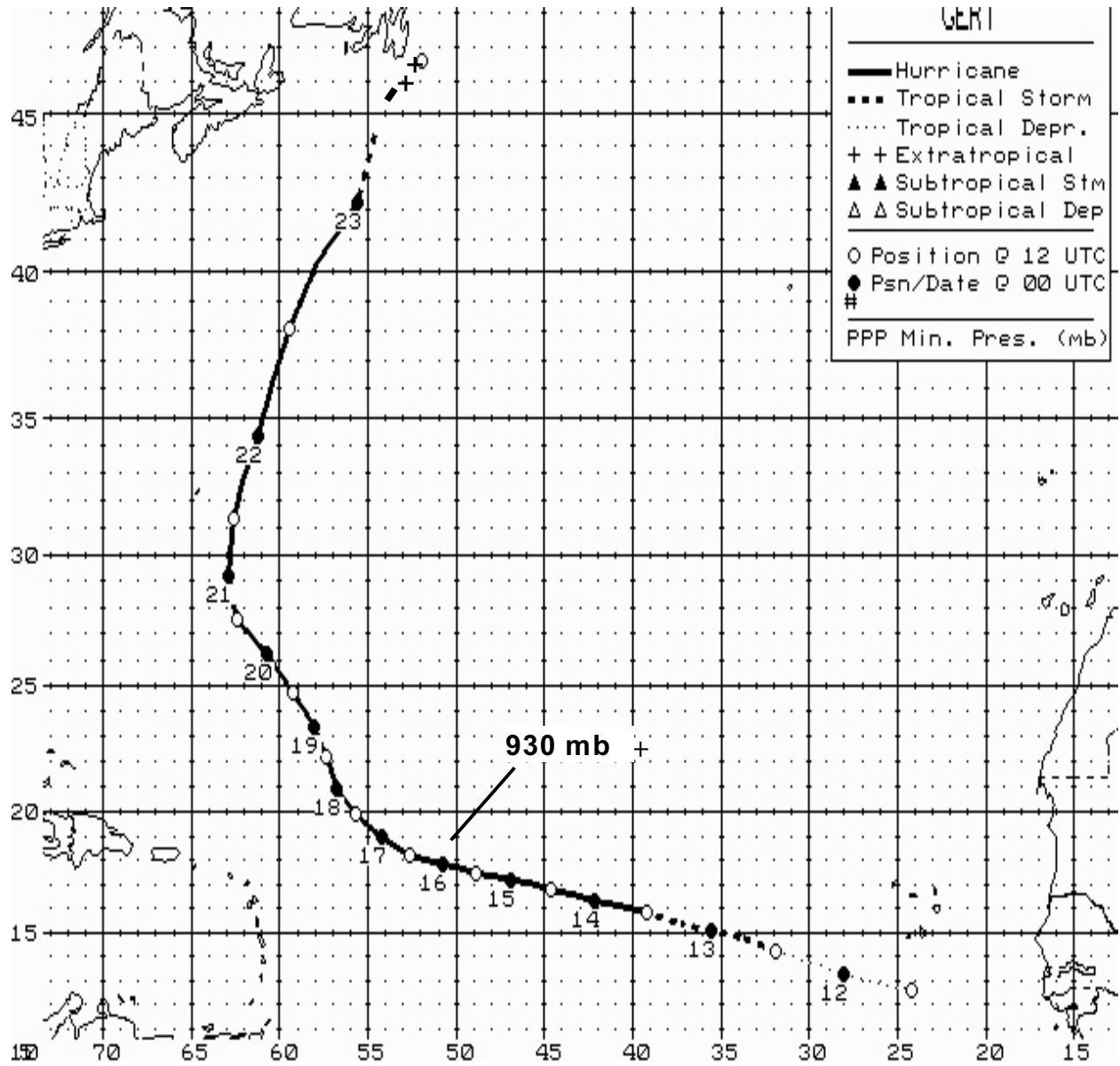


Fig. 1. Best track positions for Hurricane Gert, 11-23 September 1999.

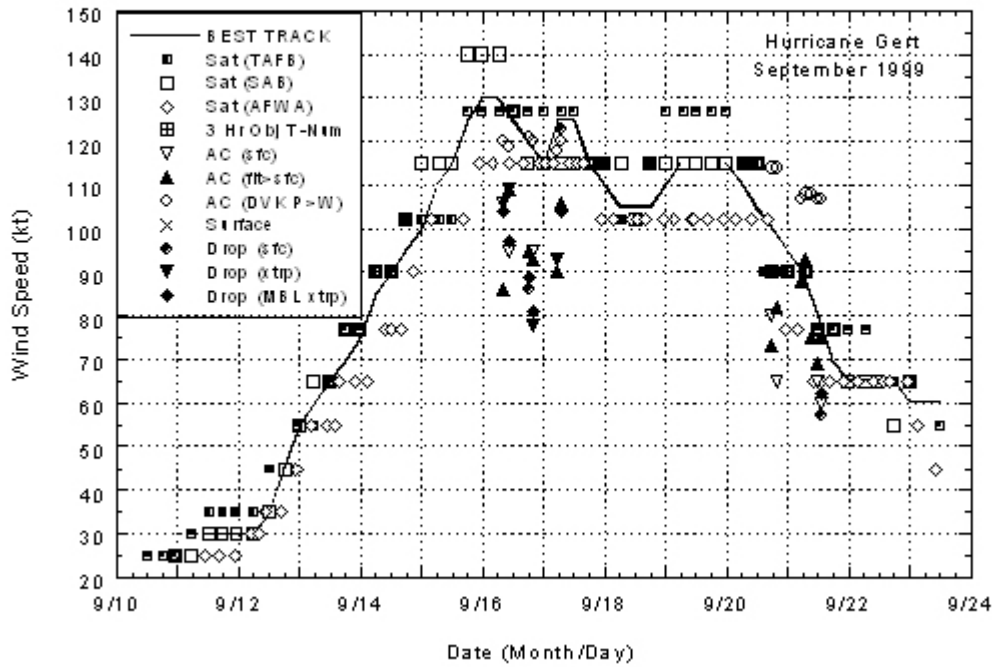


Fig. 2. Best track maximum-one-min-sustained-surface-wind-speed time series for Hurricane Gert, September 1999. Aircraft flight level wind speeds are adjusted to surface values as follows: 90% of 700-mb wind speed, 80% of 850-mb wind speed, and 85 % of 1500-foot wind speed.

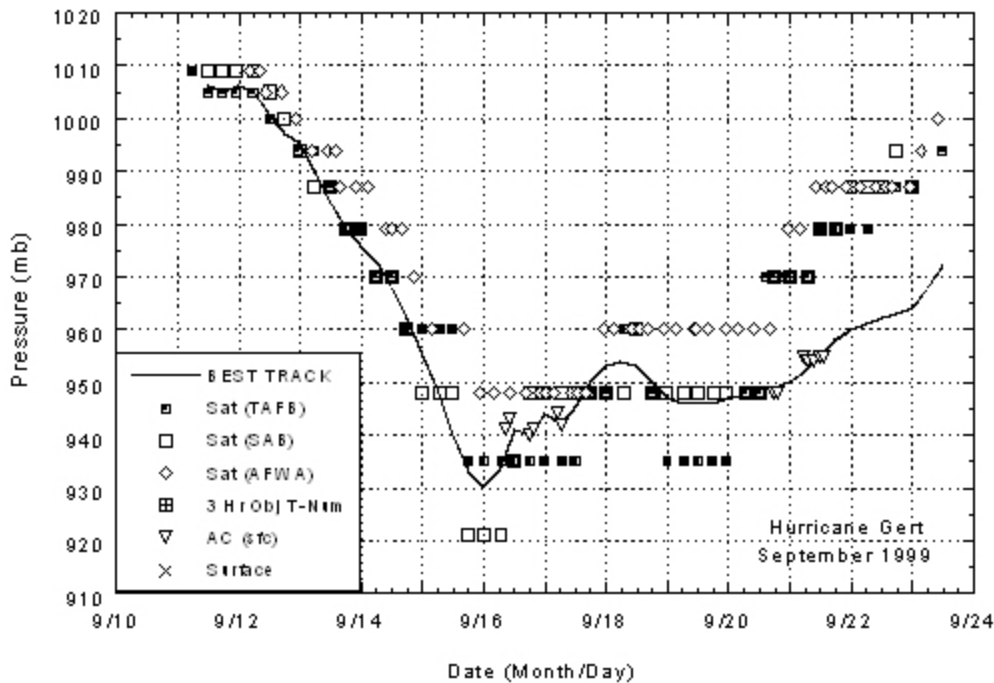


Fig. 2. Best track minimum-central-surface-pressure vs. time curve for Hurricane Gert, September 1999.