

**PRELIMINARY REPORT**  
Tropical Storm Agatha  
11-16 June 1998

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**a. Synoptic History**

A poorly defined tropical wave crossed Central America during the 7th and 8th of June, accompanied by cloudiness and a few thunderstorms. The wave moved westward, and a broad low to middle level circulation developed a few hundred miles south of the Gulf of Tehuantepec, Mexico. However, the convection was disorganized and well removed from the smaller centers of circulation which were embedded within the system. Gradually, a dominant center of circulation became better defined and banding features developed and it is estimated that the system reached tropical depression status at 1200 UTC 11 June. Historically, the median day for the formation of the first eastern North Pacific tropical depression is around 31 May.

The depression did not change much in organization for the next couple of days. Thereafter, another tropical wave merged within the circulation of the depression and strengthening occurred. The system then reached tropical storm status. Agatha's peak winds were estimated to be 55 knots at 0000 UTC 14 June, just before the cyclone moved over cooler waters. This estimate was based on intensity estimates of 3.5 on the Dvorak scale from the Tropical Analysis and Forecast Branch (TAFB). Thereafter, gradual weakening began.

A very strong middle level ridge was anchored from the Gulf of Mexico and extended westward across the Baja California peninsula. This ridge provided a pattern which steered Agatha on a general west northwest track through most of its lifetime.

Agatha's track is shown in Fig. 1. Table 1 is a listing, at six-hourly intervals, of the best-track position, estimated minimum central pressure and maximum 1-minute surface wind speed.

**b. Meteorological Statistics**

The best track pressure and wind curves as a function of time are shown in Figs. 2 and 3 and are based on satellite intensity estimates from TAFB, the Satellite Analysis Branch (SAB) and the Air Force Global Weather Agency (AFGWA).

### **c. Casualty and Damage Statistics**

There were no reports of casualties or damage associated with Agatha.

### **d. Forecast and Warning Critique**

Agatha was a tropical storm for only two days. Therefore, an evaluation of the average forecast errors would not be meaningful.

Global models, specifically the Aviation Model, forecast the development of another tropical cyclone to the east of Agatha. Consequently, models which were based of the Aviation output for steering showed a leftward track bias during the days when the Aviation Model was developing the unrealistic storm. Also, there was a possibility that the tracking algorithm gathered one of the spurious vortices not related to Agatha resulting in an incorrect forecast track. The GFDL model insisted on weakening the storm too quickly while SHIPS forecasts were more realistic. SHIPS wrongly brought Agatha to hurricane strength but it was able to capture the rapid weakening due to the influence of cool waters.

### **Figure Captions:**

- Fig. 1. Best track positions for Tropical Storm Agatha, 11 - 16 June 1998.
- Fig. 2. Best track one-minute surface wind speed curve for Tropical Storm Agatha.
- Fig. 3. Best track minimum central pressure curve for Tropical Storm Agatha.

Table 1. Best track, Tropical Storm Agatha, 11- 16 June, 1998

| Date/Time<br>(UTC) | Position  |           | Pressure<br>(mb) | Wind<br>Speed<br>(kt) | Stage               |
|--------------------|-----------|-----------|------------------|-----------------------|---------------------|
|                    | Lat. (°N) | Lon. (°W) |                  |                       |                     |
| 11/1200            | 12.0      | 104.6     | 1009             | 25                    | tropical depression |
| 1800               | 12.1      | 105.4     | 1008             | 30                    | "                   |
| 12/0000            | 12.1      | 106.3     | 1008             | 30                    | "                   |
| 0600               | 12.0      | 107.0     | 1007             | 30                    | "                   |
| 1200               | 12.0      | 107.9     | 1006             | 30                    | "                   |
| 1800               | 12.3      | 108.9     | 1005             | 30                    | "                   |
| 13/0000            | 12.8      | 110.1     | 1005             | 30                    | "                   |
| 0600               | 13.6      | 111.5     | 1000             | 40                    | tropical storm      |
| 1200               | 14.5      | 113.0     | 995              | 45                    | "                   |
| 1800               | 15.4      | 114.7     | 994              | 50                    | "                   |
| 14/0000            | 16.3      | 116.2     | 993              | 55                    | "                   |
| 0600               | 17.1      | 117.6     | 994              | 55                    | "                   |
| 1200               | 17.8      | 118.8     | 994              | 50                    | "                   |
| 1800               | 18.4      | 119.7     | 995              | 50                    | "                   |
| 15/0000            | 18.8      | 120.4     | 1000             | 45                    | "                   |
| 0600               | 19.2      | 121.1     | 1003             | 40                    | "                   |
| 1200               | 19.4      | 121.7     | 1005             | 35                    | "                   |
| 1800               | 19.6      | 122.2     | 1007             | 30                    | tropical depression |
| 16/0000            | 19.8      | 122.7     | 1008             | 30                    | "                   |
| 0600               | 19.9      | 123.0     | 1008             | 25                    | "                   |
| 1200               | 19.9      | 123.0     | 1009             | 25                    | "                   |
| 1800               | 19.9      | 123.0     | 1009             | 20                    | dissipating         |
| 14/0000            | 16.3      | 116.2     | 993              | 55                    | minimum pressure    |

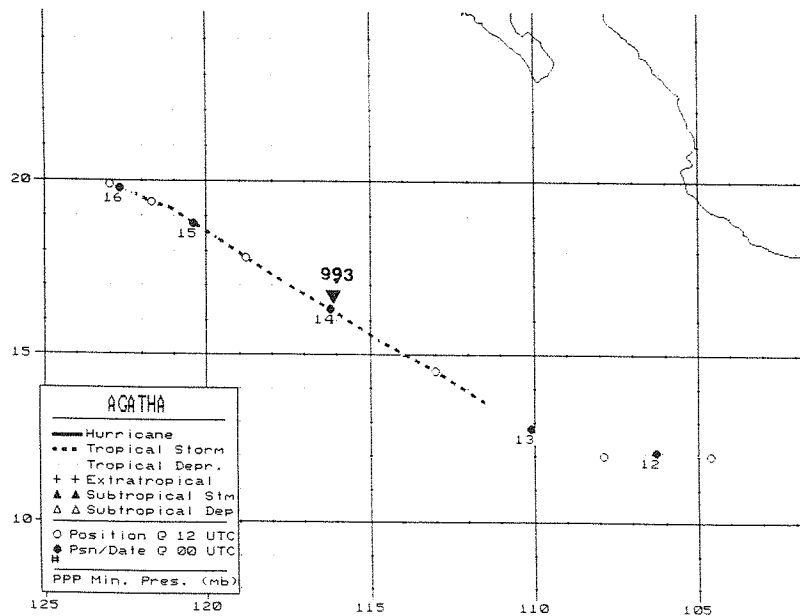


Fig. 1. Best track positions for Tropical Storm Agatha, 11 - 16 June 1998.

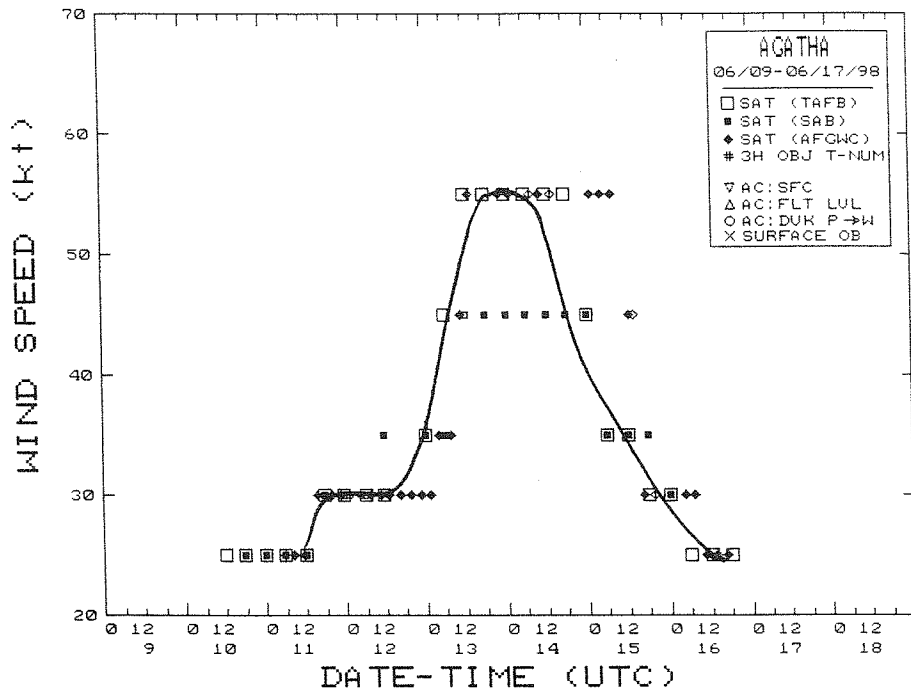


Fig. 2. Best track one-minute surface wind speed curve for Tropical Storm Agatha.

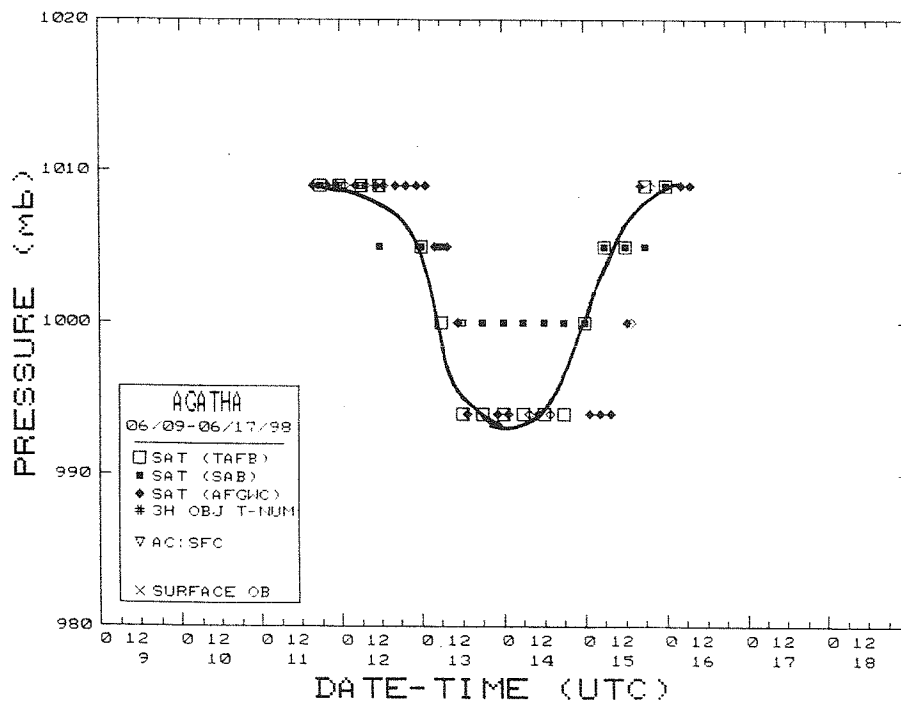


Fig. 3. Best track minimum central pressure curve for Tropical Storm Agatha.