

PICTURE OF THE MONTH

A “Tehuantepecer”

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Ships traversing the Gulf of Tehuantepec on their way to and from the Panama Canal have often encountered strong winds and heavy seas during the winter months. These winds called “Tehuantepecers” are the result of both the synoptic situation and the topography.

The Sierra Madre Range quickly decreases in elevation at the Isthmus of Tehuantepec and provides a natural pass from the Gulf of Mexico to the Pacific Ocean. During winter, cold continental outbreaks often penetrate southward into the Gulf of Mexico and into the Bay of Campeche. When the cold air mass is deep enough, it spills over the isthmus and rushes down the western slopes into the Pacific.

On Feb. 3, 1970, a strong outbreak of polar air brought freezing temperatures to the northern Gulf Coast. The front in advance of this cold air pushed rapidly southward across the gulf. The trailing edge of this frontal cloud band (F in fig. 1) rested along the Sierra Madre Range when this ESSA 9 photograph was taken. Throughout the day, winds of 20–30 kt and low (15°C) temperatures were reported at Puerto Mexico located at the head of the pass.

The passage of cold air through the pass was well established by the time the satellite picture was taken.

With the passage of the front, the 500-mb temperatures at Houston and Brownsville, Tex., dropped to -32° and -17°C , respectively. Further south at Merida, Yucatan, the cold air intrusion brought an 18°C temperature drop at the 1000- and 850-mb levels.

Hurd (1929) noted that the onset of the Tehuantepec may be marked by an arched squall line followed by quickly clearing skies. In this ESSA 9 photograph, a semicircular area of clouds can be seen west of the gulf at G. This squall line or miniature cold front, which marked the forward edge of the cold air, moved quickly westward. The position of this cloud line, as seen in successive satellite photographs, is shown in figure 2. Figure 1 depicting the arched squall line thus provides a graphic tool for forecasting this mesoscale phenomena.

REFERENCE

Hurd, Willis E., “Northers of the Gulf of Tehuantepec,” *Monthly Weather Review*, Vol. 57, No. 5, May 1929, pp. 192–194.

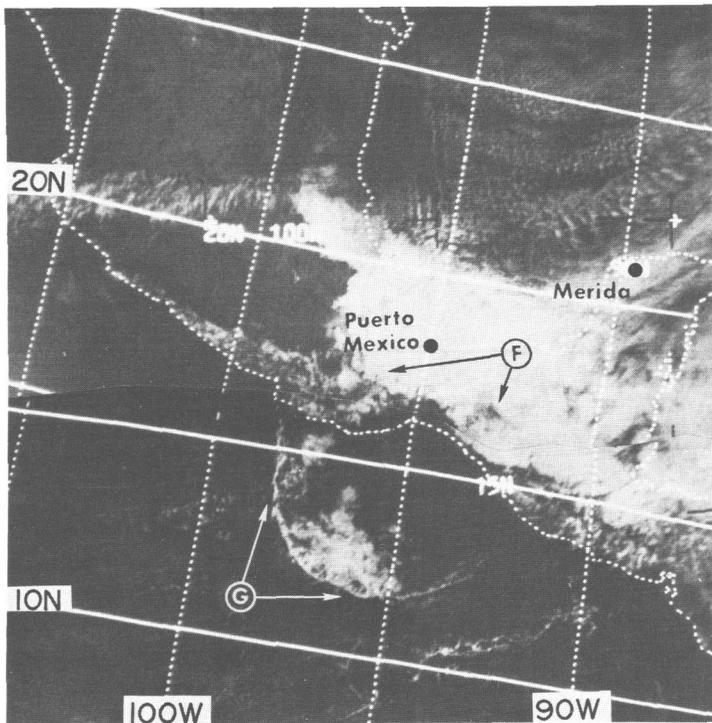


FIGURE 1.—ESSA 9 photograph on Feb. 3, 1970, at 2053 GMT.

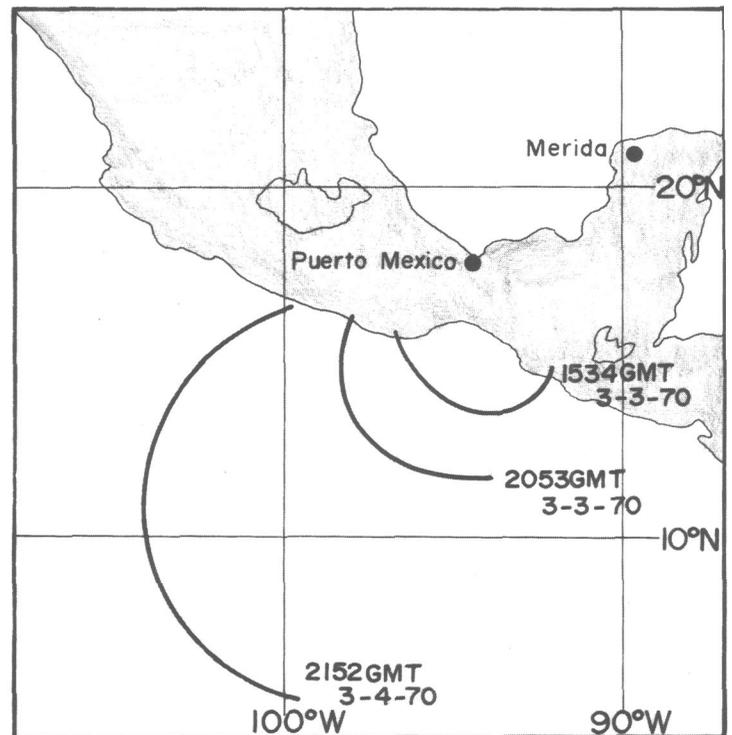


FIGURE 2.—Position of the Gulf of Tehuantepec squall line.