EASTERN REGION TECHNICAL ATTACHMENT
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March 10, 1980

EDITOR'S NOTE: This Technical Attachment was originally published in March 1969. It has been reprinted because it so aptly described the major snowstorm which affected the Middle Atlantic states over the weekend of March 1 and 2, 1980. Coastal portions of North Carolina and Virginia received more than two feet of snow from this storm. Figure 7 shows the elongated surface low which is typical in record-breaking East Coast snowstorms. At the time of this surface chart (0000Z, March 3), heavy snow was falling in the area of maximum curvature of the surface low. The 500 mb chart, valid at the same time as the surface chart, may be found in Figure 8. The elongation of the surface low appears to be a reflection of the upper-level low.

A Unique Characteristic of Major East Coast Snowstorms

(This Technical Attachment was prepared from a study by Mr. Eugene Hoover of WBFO Washington, D.C.)

A winter snowstorm that struck New England on February 24-27, 1969, resulted in a reported snowfall of 32 inches within a 24-hour period at St. Johnsbury, Vt., and up to 38 inches for a longer period at some Boston suburbs. The official snowfall of 26.3 inches recorded at Boston's Logan Airport is the greatest amount on record for a single snowstorm at Boston. Figure 1 presents the unusually heavy snowfall area, shaded, and surface isobaric pattern associated with this storm.

The isobaric pattern had a unique feature that was common to that of previous great snowstorms studied by the Washington Forecast Office. This unique feature is a stagnated or slow-moving elongated isobaric pattern which apparently had the following effects:

1. **A moisture inflow area in that part of the storm that has minimum isobar curvature and closely packed isobars;**

2. **Heaviest precipitation area near that part of the storm that has maximum curvature of isobars downstream from the moisture inflow area.**

Figures 2 through 6 are surface isobar patterns for all storms since 1928 in which 30 inches or more of snow fell in some location in the eastern states between South Carolina and New York City. The unusually heavy snowfall area for each storm is shown with shading. Figure 5 illustrates a storm which deposited slightly less than 30 inches of snow but is included here because the 26.4 inch snowfall that was recorded in New York City is a record snowfall at that location for a 24-hour period.

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Figure 1. Surface chart for 0000Z February 25, 1969. St. Johnsbury, Vt., reported 32 inches and some Boston suburbs up to 38 inches. 36 hours later, at 1200Z, February 26, 1969, an east to west elongated low was centered near 41°N 66°W with little change in the area of maximum curvature of isobars downstream from the moisture inflow area.

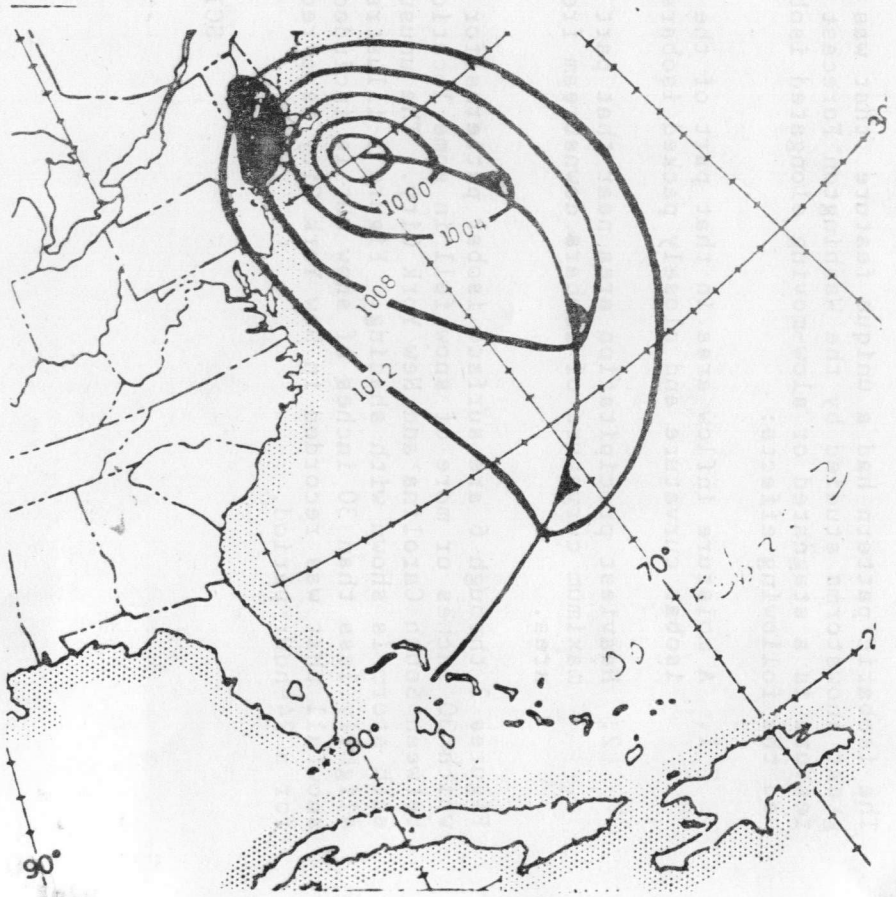


Figure 2. Surface chart for 0600Z March 6, 1962. The storm of March 5-9, 1962, has come to be known as the "Great Atlantic Coast Storm." Widespread heavy snow occurred with this storm and Big Meadows, Va., reported 42 inches which was a new state record for a single storm. Waynesboro, Va., and Spruce Knob, W. Va., reported about 3 feet of snow and Picardy, Md., recorded 32 inches. All are believed to be record snow depths for the local areas from a single storm.

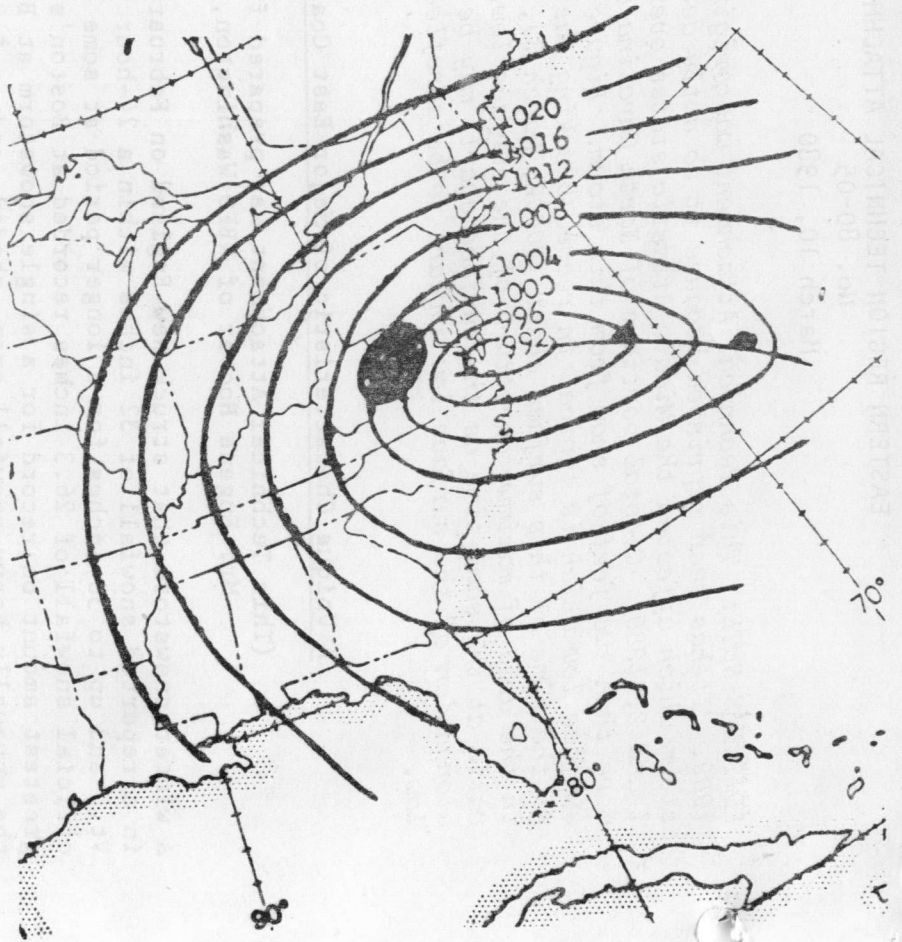


Figure 3. Surface chart for 0600Z March 20, 1958. This is an example of a heavy precipitation case where the surface low is elongated to the east. This storm produced 3-5 inches of precipitation in the form of rain and wet snow in the Washington, D.C. area. The precipitation was all snow farther north and amounted to around 30 inches on the Pennsylvania Turnpike near Morgantown in southeast Pennsylvania.

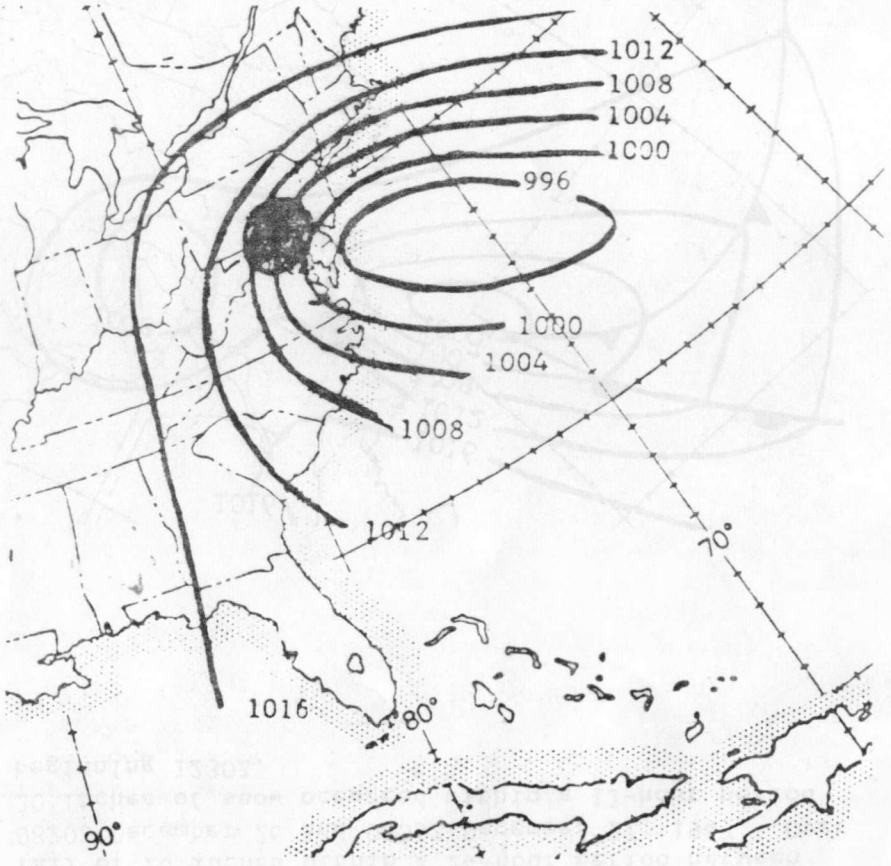


Figure 4. Surface chart for 0030Z November 25, 1950. In this storm heavy precipitation occurred where the surface low was first elongated to the south as shown here, but later as the low proceeded northward, it was more open to the east. The storm produced over 2 feet of snow over most of West Virginia and western Pennsylvania and a new record for West Virginia for a single storm with 57 inches at Pickens.

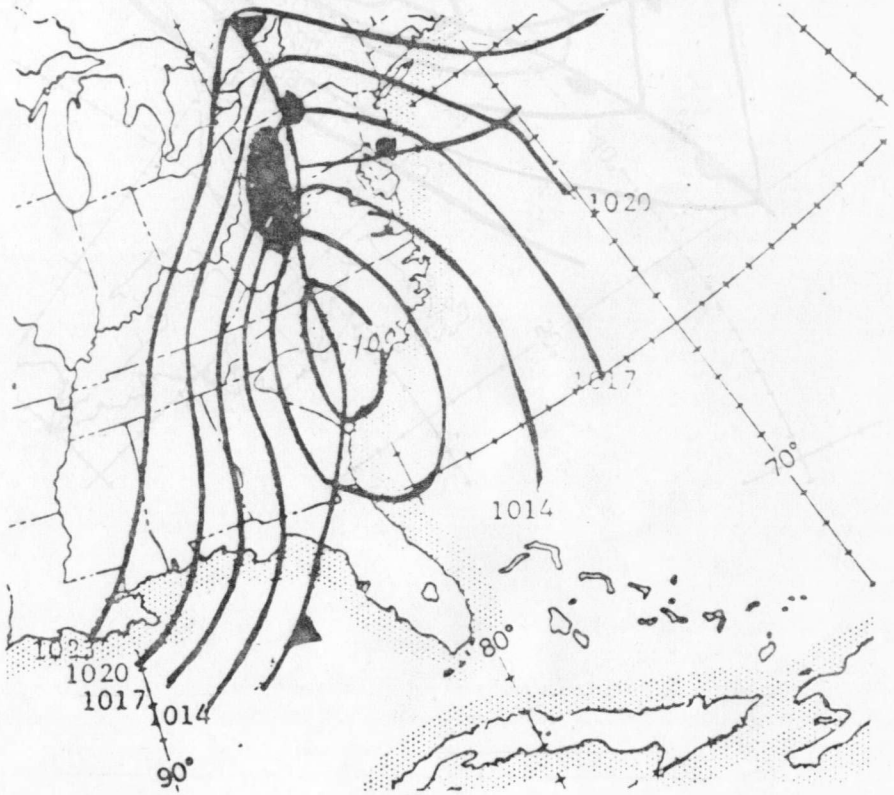


Figure 5(a). Surface chart for 1230Z December 26, 1947. The New York City area had a new record snowfall of 26 inches within a 24-hour period between 0820Z December 26 and 0805Z December 27, 1947. Over 20 inches of snow occurred within a 12-hour period beginning 1230Z.

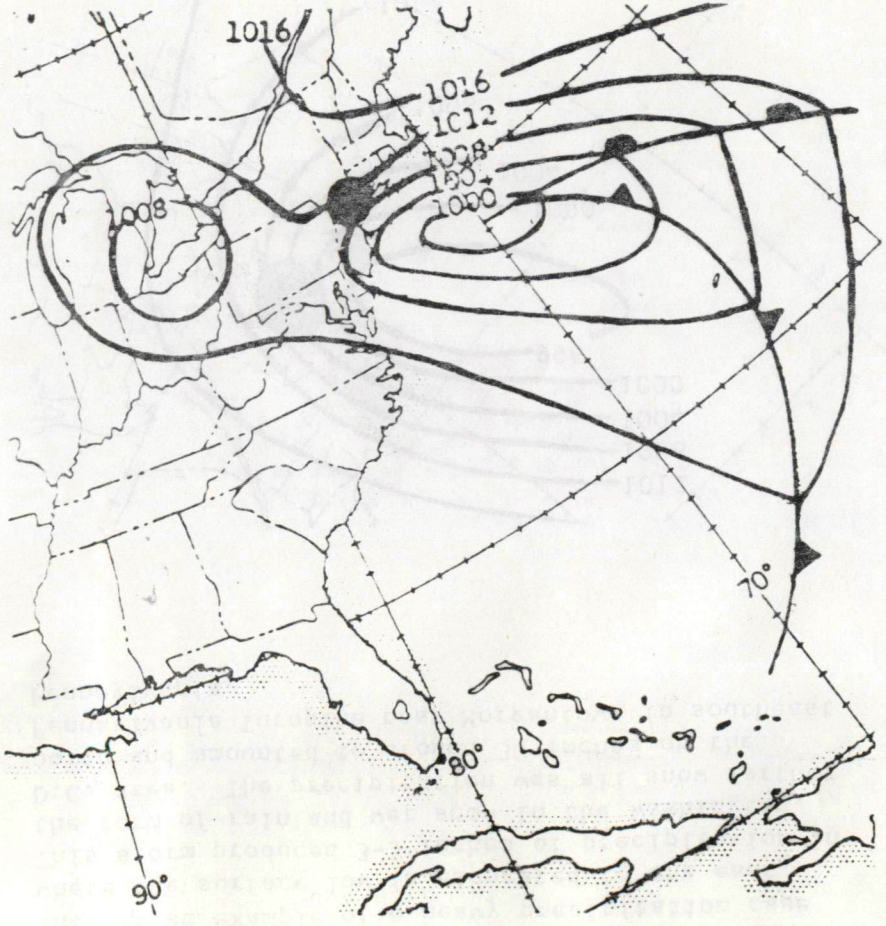


Figure 5(b). Surface chart for 0030Z December 27, 1947.

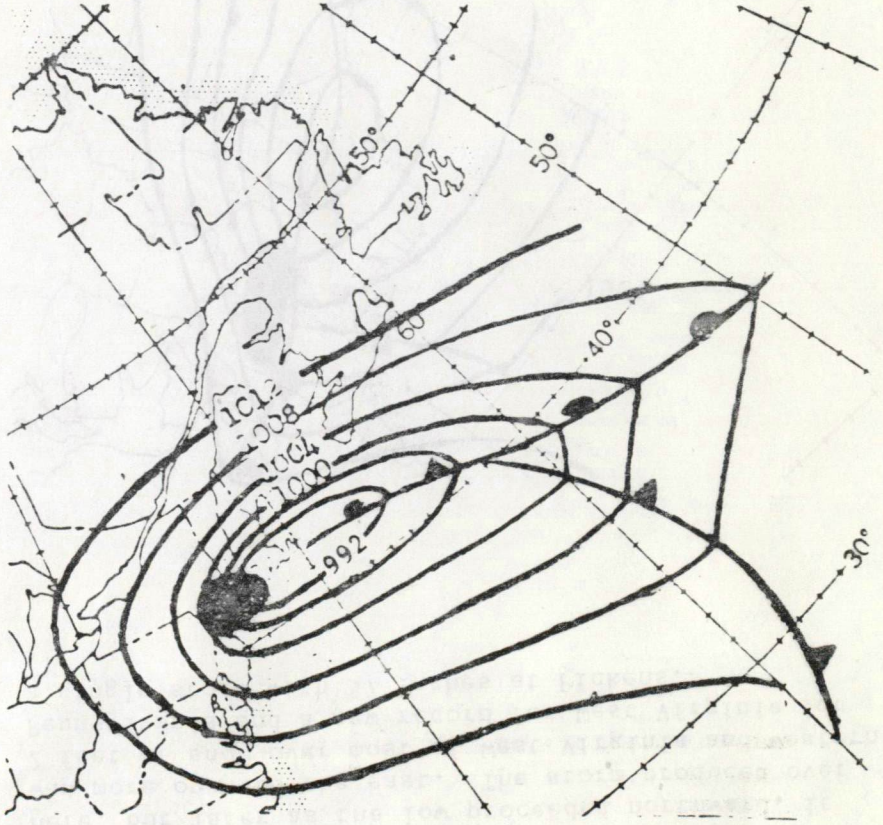
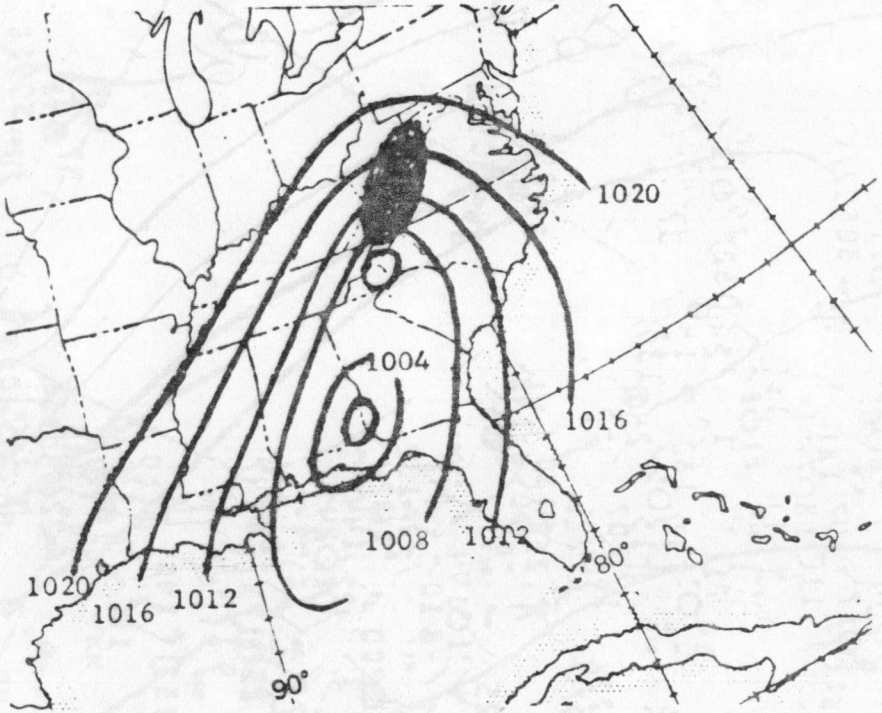


Figure 6. Surface chart for 1300Z, April 27, 1928. This storm produced up to 30 inches of wet snow at Elkins, W. Va., and 40 inches just east of Elkins.



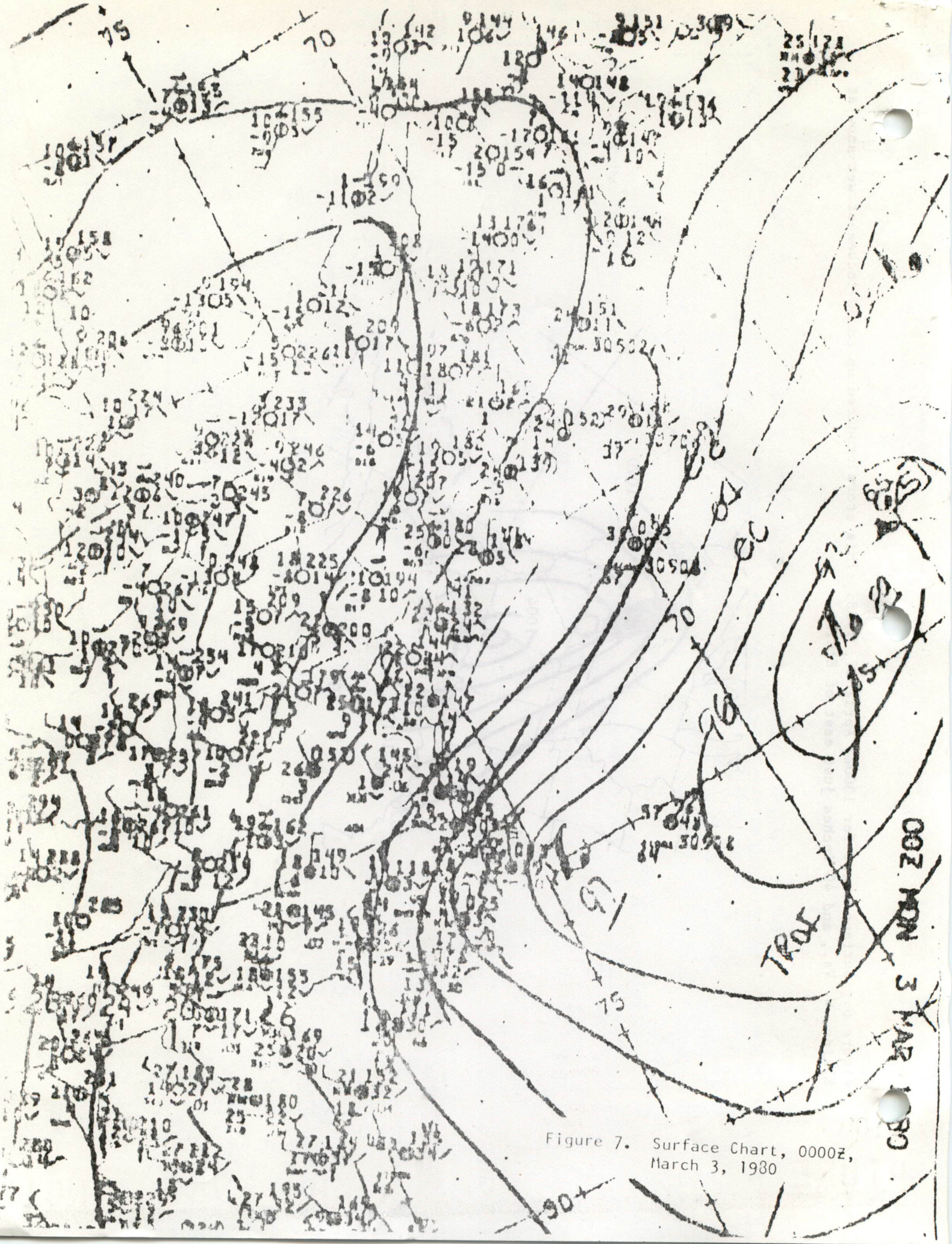


Figure 7. Surface Chart, 0000Z, March 3, 1980

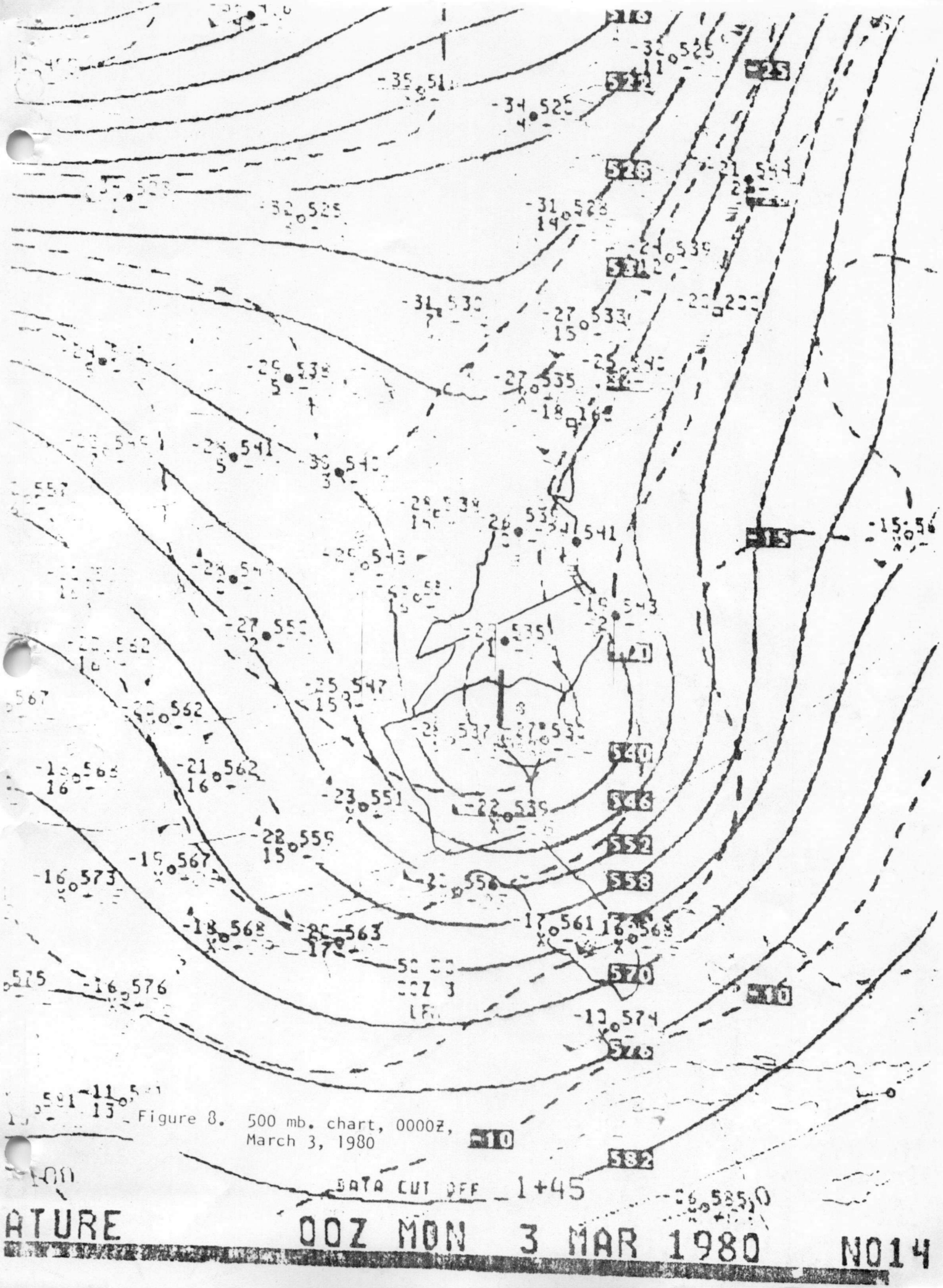


Figure 8. 500 mb. chart, 0000Z, March 3, 1980