

PICTURE OF THE MONTH

FRANCES C. PARMENTER

National Environmental Satellite Center, ESSA, Washington, D.C.

Distinct sharp-edged cloud patterns, such as the one appearing in the ESSA 3 photomosaic in figure 1, have frequently been observed to be associated with jet stream maxima. A number of studies (Reiter [2], Kadlec [1], Whitney et al. [3]), have established the use of this type of cloud pattern for positioning jet streams.

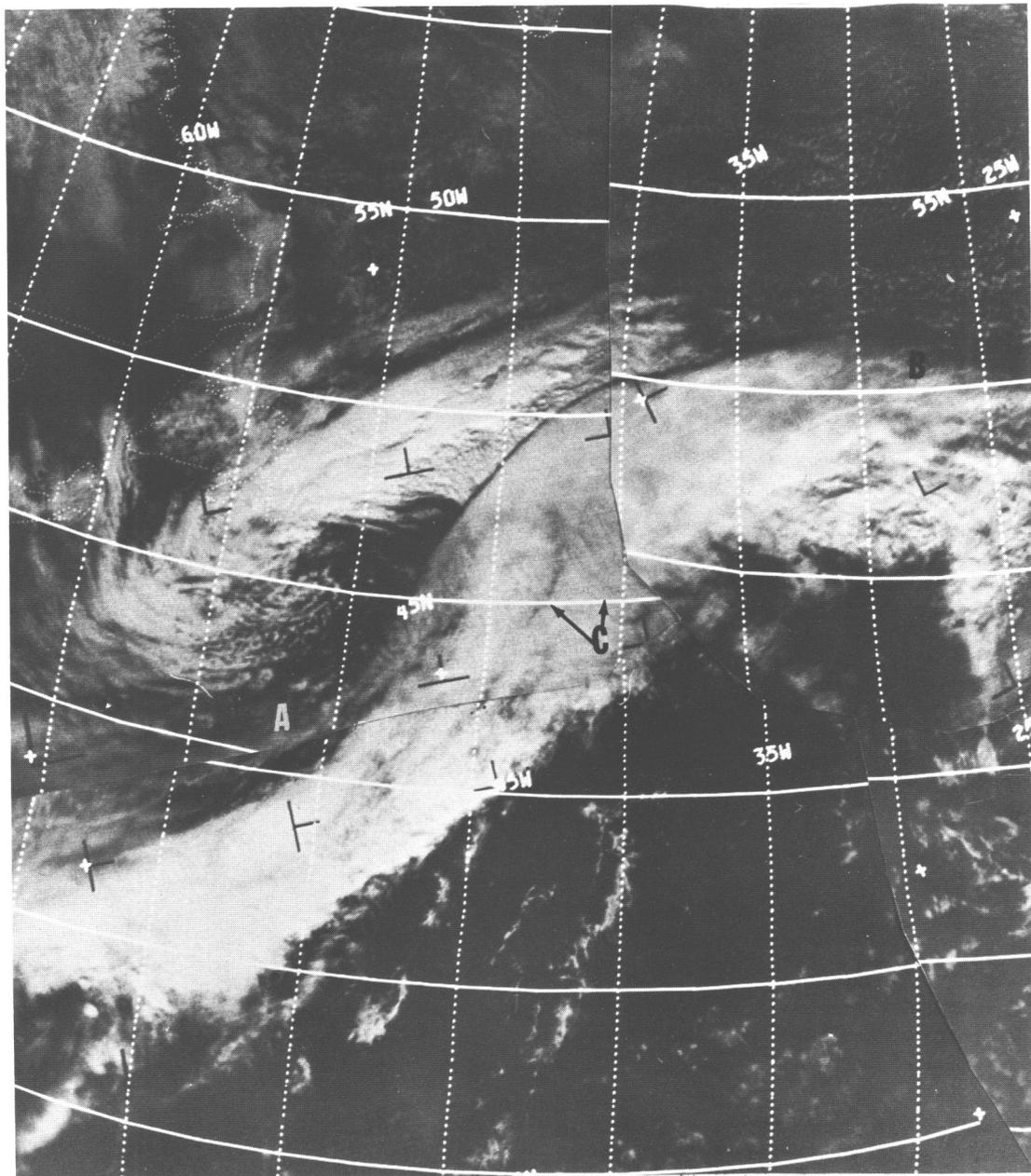


FIGURE 1.—ESSA 3, passes 4849, 4850, 1302-1502 GMT, October 23, 1967.

A large cirriform cloud shield appears to the south of A, B. Embedded in this cloud mass are small-scale transverse bands (C). At the jet axis, the cirrus shield ends abruptly, producing the rather smooth anticyclonically curved edge seen in the picture. The shadow cast by the cirriform clouds can be seen on the lower, more textured cloud deck between 48°N., 46°W. and 51°N., 38°W. These cloud characteristics are used to position the jet stream on the nephanalysis.

The accuracy of this method was recently tested by the Applications Group of National Environmental Satellite Center. The positions of the jet axes throughout the world, obtained from the 200- and 300-mb. computer drawn National Meteorological Center maps, were compared with the jet positions derived independently from the satellite pictures. The 677 cases tested for the period January 1 to June 5, 1967, showed a mean poleward displacement of the

satellite derived jet position (shown by arrows on the nephanalyses) of 1.0° of latitude or 60 n.mi. from the computer jet axes. The standard deviation of this mean displacement was 3.0° of latitude. Thus far no systematic patterns for these deviations have been noticed.

REFERENCES

1. P. W. Kadlec, "An Inflight Study of the Relation Between Jet Streams, Cirrus and Wind Shear Turbulence," *Final Report*, Eastern Airlines Meteorology Department, (Cwb 10356), 1963. 48 pp.
2. E. R. Reiter, *Jet Stream Meteorology*, University of Chicago Press, 1963, 515 pp.
3. L. F. Whitney, Jr., A. Timchalk, and T. I. Gray, Jr., "On Locating Jet Streams from Tiros Photographs," *Monthly Weather Review*, vol. 94, No. 3, Mar. 1966, pp. 127-138.