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Smithsonian National Air and Space Museum Archives

Technology Review, November 1961

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[[image]]

Signature clouds of a vigorous young cyclonic storm. The clockwise flow lines show it is from the Southern Hemisphere.

[[image]]

A mature cyclonic storm in the southern Indian Ocean. Clear (dark) wedge in foreground is characteristic at this stage.

-gine running between the solar heating of the earth as boiler and the thermal (infrared) emission of the atmosphere as condenser, understanding of the heat budget is basic to understanding (and perhaps controlling) the weather. Each of the five scanning optical sensors makes about one million observations per day. Understandably, some time will pass before the data will have been even partially digested.

TIROS II is still operating at this writing. It is to be followed by TIROS III, and later by TIROS IV. These will be minor modifications of the same basic experimental satellite.

Next Year: NIMBUS

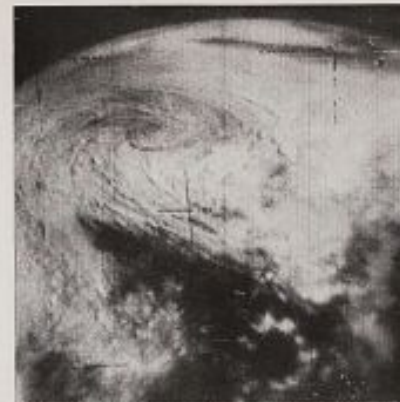
Scheduled for launch in 1962 is NIMBUS, an advanced experimental system featuring earth stabilization and near-polar orbit.

This stabilization will permit its cameras to always point downwards, so that essentially complete coverage of the earth can be obtained once each 12 hours. Television coverage will be provided on the daylight sides of the orbits, while infrared scanning will permit cloud identification on the nighttime sides.

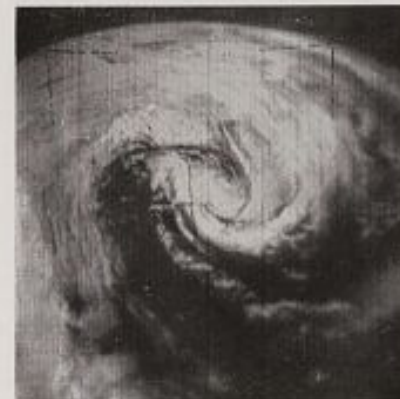
A special data-acquisition station is being established north of Fairbanks, Alaska, where it will be in position to receive satellite-stored television and infrared information from nearly all orbits. A special high-capacity communications link will speed the pictures and other atmospheric data to weather centers in the continental United States. Future models of NIMBUS may include weather radars and detectors of "sferics," radio frequency emanations from thunderstorms and other disturbances.

Even the advanced features of NIMBUS will not meet all the requirements of a satellite suitable for taking observations for operational forecasting purposes. One difficulty will be the 24-hour interval between similar pictures of the same area. While such an interval is suitable for general forecasts, particularly in "under-observed" areas, it provides too coarse a time resolution for the detailed weather forecasting we have learned to expect.

An obvious solution to this problem is to increase the number of satellites functional at any time. But the cost of launching a 650-pound satel-



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