SATELLITE

TIROS-N IS WORKING!

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TIROS-N, after numerous delays, was launched from Vandenburg, AFB, CA on 13 October 1978 aboard an Atlas launch vehicle. The wait was well worthwhile as is shown in Figure 1. One of the first pictures drecived from TIROS-N, Channel 1, Orbit 104, 28 October 1978, it was received at Goddard Space Flight Center (analysis performed by the authors). The infrared sensor was not turned on as of Orbit 104.

TIROS-N, the third generation polar satellite system (Hussey, 1977), conains new or greatly improved environmental instruments and is four times heavier than previous ITOS satellites.

The TIROS-N spacecraft, which will be designated ITOS-2 following operational acceptance has a design life of two years.

The four primary spacecraft instrument systems are the Advanced Very High Resolution Radiometer (AVHRR), the TIROS Operational Vertical Sounder (TOVS), the Data Collection System (DVS), and the Space Environment Monitor (SEM).

The Advanced Very High Resolution Radiometer will provide image data for realtime transmission to both Automatic Picture Transmission (APT) and High Resolution Picture Transmission (HRPT) users, and for storage on the spacecraft tape recorders for later playback.

The AVHRR instruments are sensitive in four spectral regions or channels (see Table 1). Channels 1 and 2 will discern clouds, land-water boundaries, snow and ice extent, and when data from the two channels are compared, an indication of ice/snow melt inception. The data from channel 4 will measure cloud distribution, day and night, and to determine the temperature of the radiating surface. Channels 3 and 4 will determine the sea surface temperature, making it possible to remove an ambiguity introduced by clouds filling a portion of the field-of-view.

The TIROS-N spacecraft was launched into an afternoon orbit with the local equator crossing ascending at 3 p.m. local time. It is in a near polar, sun-synchronous orbit at an average altitude of 854 kilometers, as compared with the average 1511 kilometers altitude of previous NOAA-5. The orbital period will be 102 minutes for TIROS-N as compared with NOAA-5's 115 minutes, allowing 14.2 orbits per day.

Table 1

TIROS-N AVHRR CHANNEL CHARACTERISTICS

Channel	Resolution at Subpoint	Wavelength (um)	Primary Use
1	1 km	0.55 - 0.9	Daytime cloud and surface mapping
2	1 km	0.725 - 1.1	Surface water delineation
3	1 km	3.55 - 3.93	SST
4	1 km	10.5 - 11.5	SST, day/night cloud mapping
5*	1 km	11.5 - 12.5	SST

*Channel 5 will not be included on early flights, but will be added later to further enhance Sea Surface Temperature (SST) meaurements in the tropics.

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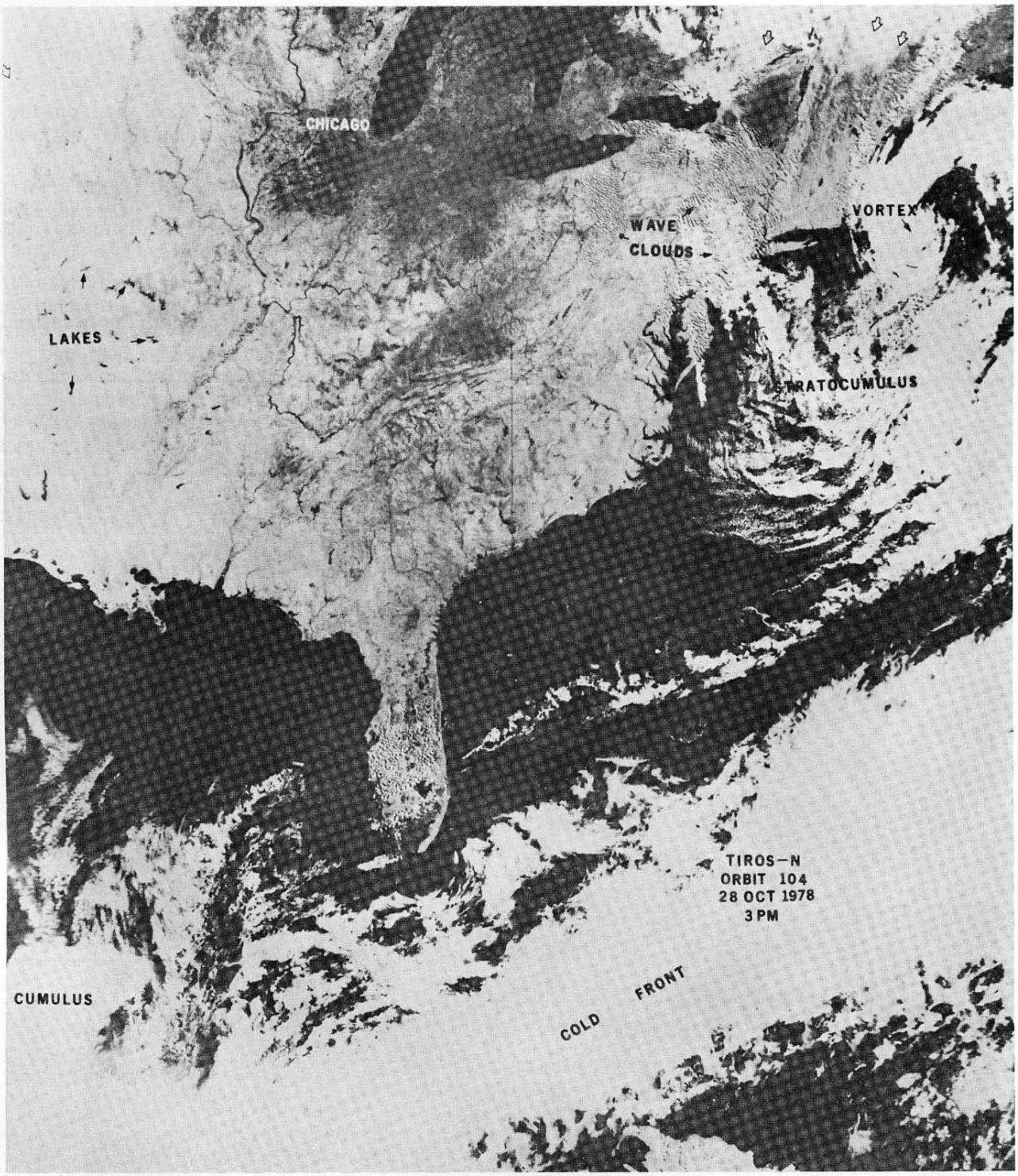
CHICAGO
WAVE
CLOUDS
VORTEX
LAKES
STRATOCUMULUS
TIROS-N
ORBIT 104
28 OCT 1978
3 PM
CUMULUS
COLD FRONT