



MECHANICAL HAND DRAWS WEATHER MAP IN THREE MINUTES

METEOROLOGY

Tiros II Weather Reporting

See Front Cover

► TIROS II, the latest United States satellite, is traveling in the "best circles" of any space vehicle launched to date, while it takes the temperature of the earth's atmosphere and cloud cover with special infrared sensors.

The circular orbit, "the best ever obtained from any satellite," varies by less than 25 miles, Dr. Morris Tepper, chief of the meteorological satellites program of the National Aeronautics and Space Administration in Washington, D. C., reported.

Special orientation equipment also makes it possible for TIROS II to keep a position relative to the earth that provides highest efficiency in taking and relaying data and pictures.

The meteorological satellite whirls through space at 16,767 miles per hour, circling the earth every 98.2 minutes.

The innovation of infrared equipment, not in TIROS I, promises to provide "the most fundamental data necessary to understanding what makes weather," Dr. F. W. Reichelderfer, chief of the U. S. Weather Bureau, reported.

"The atmosphere is the earth's heat engine. The sun pours its heat on the earth and this heat is reflected back into the atmosphere. It is this circulation and exchange that makes for variation in weather," Dr. Reichelderfer said.

Ten years of observation and temperature recordings may be needed, he said, before it will be fully understood by scientists how the heat engine works.

But the data that will come from the infrared equipment in TIROS II marks an important step forward in achieving the

understanding necessary for accurate long-range weather prediction and ultimately weather control.

The pictures and data are being transmitted to Suitland, Md., for experimental use in the Weather Bureau's computer for numerical weather prediction.

"The satellite information will fill in the gaps that now handicap the operation of the computer," the U. S. weather chief said. "This will help us fit together the tremendous jigsaw puzzle we call weather."

Calibration of the focus and field of view of the Tiros II television cameras was made with the aid of large "targets" at RCA's Astro-Electronic Division, Princeton, N. J., where the Tiros TV system was developed.

Tiros rotates on its mount for calibration of its wide-angle TV camera in the picture seen on the cover of this week's SCIENCE NEWS LETTER.

To provide information from the weather satellite to the world as rapidly as possible, 14 nations have joined with the United States in supplemental weather observations. These then will be compared by each country with TIROS cloud cover photos, to be forwarded by the U. S. to each participant.

Invitations to participate were sent by the Weather Bureau and NASA jointly to countries with national space committees or membership in the international Committee on Space Research called COSPAR.

Participating countries are Australia, Belgium, Denmark, England, West Germany, France, India, Japan, Mexico, the Netherlands, South Africa, Switzerland, Norway and Sweden. Those who have not yet responded include the Soviet Union, Czechoslovakia, Italy, Poland, Canada and

Spain. The world weather data center ultimately will be able to supply the scientific data from TIROS, "including the cloud cover photos," Dr. Reichelderfer said.

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METEOROLOGY

Weather Maps Are Now Drawn Electronically

► MORE ACCURATE weather forecasting in less time is now possible through the use of an electronic device that draws weather maps from data supplied it on tape.

A complete weather map of the Northern Hemisphere can now be drawn in less than three minutes, compared to 20 minutes by the hand-drawn method.

Weather information on magnetic tape is fed into the electronic device. The mechanical hand of the plotter then automatically draws contours or isobars, representing lines of equal barometric pressure, on a map of the Northern Hemisphere.

Reproductions of this map are sent immediately to the major Weather Bureau stations throughout the country for use in local and regional weather forecasting.

The weather information fed into the computer is gathered from more than 500 weather observation stations throughout the Northern Hemisphere.

Dr. George P. Cressman, director of the National Meteorological Center, Suitland, Md., where the new device was demonstrated, believes that this automation "is another link in the fundamental technological changes now occurring in the science of meteorology."

The computer-plotter was developed for the U. S. Weather Bureau by Electronic Associates, Inc., Long Branch, N. J.

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METEOROLOGY

China Weather Control Experiments Analyzed

► CHINESE COMMUNIST experiments with weather control, primarily using cloud-seeding, have not yet entailed any basic research, the U. S. Department of Commerce reported.

Surveys of available Chinese Communist information, analyzed in "Chinese Communist Weather Control Experiments," indicate that the Chinese have chosen to bypass the research phase and use techniques the West and the Soviet Union have used with some success.

The report discounts Chinese claims of 70% to 80% success in cloud-seeding and estimates it at the 10% to 15% of United States experiments. However, the report said, even a small increase in precipitation would be economically significant if it occurred at crucial times.

The Chinese Communists have been actively engaged in weather control experiments since a 1958 drought. Research will probably be included in future programs.

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