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MONTHLY REPORT

for

AUGUST 1977

**VISSR Atmospheric Sounder (VAS)
Development and Performance Evaluation**

Contract No.: NAS5-21965

Prepared by

**Space Science and Engineering Center
University of Wisconsin
Madison, WI**

for

**National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, MD**

I. General

During the month of July the contingent of NESS personnel from the Mesoscale Applications Branch completed their move to Madison. Development of data processing techniques to improve sounding data sets from polar orbiters continued. Work on the VAS antenna neared completion and work on a TIROS-N real time data reception facility was begun.

II. Data Processing System Development

The mechanical installation of the VAS antenna will be completed in September with the insertion of the hour drive into the system. Satellite signal reception will be delayed until delivery and installation of the RF feed. Improved vacuum seals and thermoelectric coolers in the raydome (at the focus of the antenna) are being installed to allow better signal reception.

The frame sync has been demonstrated successfully in real time operation. Design problems that caused noisy reception of visible pictures have been removed. The software to include all reception modes must still be developed (only mode A reception is operable now). The documentation for future maintenance and reproduction is now being written.

The video cassette tape archive displays of real time IR and visible VISSR data still have some flakes. Efforts are being made to clean up the tape playback and to eliminate as much phase distortion as possible.

The design of the electronics needed to acquire and preprocess TIROS-N data in real time has begun. Two antennas have been built and their frequency response is being tested and tuned. The design of a bit and frame sync for reception of TIROS-N sounding data is underway. The data handling electronics

is being assembled and work on the preprocessing software has begun. Also an analog to digital convertor for APT has been ordered.

III. Development of VAS Data Processing Techniques

In coordination with the newly arrived NESS personnel we are continuing to investigate the Nimbus 6 (HIRS and SCAMS) August 25, 1975 United States overpass. Techniques are being developed on McIDAS so that (1) the man can select potentially clear fields of view from inspecting visible images, the difference of the two window channel brightness temperatures, and the difference between conventional surface air temperature observations and 11 μm window brightness temperatures; (2) the man can compare temperature values predicted by regression from infrared radiances for a selected potentially clear field-of-view with colocated but lower resolution microwave brightness temperatures; (3) the man can achieve clear column radiances, where inspection was not satisfactory, by the adjacent field-of-view N* technique; (4) the man can perform a HIRS sounding retrieval where acceptable clear radiances have been achieved and fill in missing regions utilizing microwave data and surrounding valid HIRS soundings.



SPACE SCIENCE AND ENGINEERING CENTER

UNIVERSITY of WISCONSIN - MADISON
1225 West Dayton Street
Madison, Wisconsin 53706
TWX (910) 286-2771

10 September 1977

Mr. J. B. Connor
Contracting Officer, Code 289
NASA--Goddard Space Flight Center
Greenbelt, MD 20771

Dear Mr. Connor:

In accordance with Article III of Contract NAS5-21965, I am submitting the required Progress Report for the month of August, 1977.

If you have any questions or desire further information, please contact me at (608) 262-0118.

Sincerely,

Paul Menzel
Program Manager

WPM/rmk

Enclosure

cc: H. Montgomery, Code 942 (10 copies)