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MONTHLY REPORT

for

MAY 1979

VISSR Atmospheric Sounder (VAS)
Development and Performance Evaluation

Contract No.: NAS5-21965

Prepared by

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

for

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

I. General

Two months of support to the Sesame '79 Regional Sub-Program have been successfully completed. Design work is progressing for expanding the VAS processing system to its full capability. Preparations for UW participation in the VAS Thermal Vacuum Test are underway.

II. Data Processing System Development

The improved wideband communications link from the Data Base Manager (DBM) to the Applications Processors (AP) is under construction. The wire wrapping has begun and the necessary software is being written. Testing should begin in a month.

The VAS cassette archive design is now completed. Hardware has arrived and construction is beginning. This new design allows the cassette to determine automatically whether mode A, B, or AA is being received and to archive each with the same facility and accuracy.

The VAS User Terminal is being modified to accommodate more image frames. By incorporating an analog disc, a total of 260 frames will be available to the user. The improvements that will allow faster frame loads and faster graphics construction are still in the preliminary design stages. Sizing and designing this special capability forecast user terminal will continue through the summer.

Evaluation of the VAS processing system performance during the last two months of operational support has indicated the need for an assistant Data Base Manager (ADBM). The ADBM will handle the slower communications such as model outputs from NMC and NCAR, intercomputer communications with GSFC, conventional weather data from service A and C, and polar orbiter data from TIROS-N. It will reformat the various communications protocols to be compatible with the VAS processing system and will free the DBM to perform the high speed ingest of data from two VISSRs and a VAS. Addition of this midicomputer is scheduled for this

fall.

The Terminal Communications Switch that will route user communications to a given Applications Processor is being designed. This will allow a user at a given UT to access the most appropriate AP, and hence adds necessary flexibility to the VAS processing facility. Completion by fall is expected.

III. Development of VAS Data Processing Techniques

Several case studies have been initiated to assist with the ANMRC (Australian Numerical Meteorology Research Centre) model initialization. Efforts are continuing to assimilate internally consistent data on a temporal and spatial scale that is meaningful to the model.

To accommodate operational needs, software is being segmented into smaller packages. Thus, more programs will be able to coexist in one CPU. Also, software has been written to ingest and display LFM (limited fine mesh) model outputs on the VAS User Terminal.

Thesis research has been completed that studies the problem of inferring surface skin temperatures from satellite brightness temperatures. Using a model for temperature corrections due to atmospheric attenuation, satellite derived temperatures were found to be in good agreement with conventional measurements. In this way, a mesoscale view of skin temperature patterns can be generated and used as a tool for isolating locations favorable for convective activity.

IV. VAS Instrument Support

Work continues on the VAS calibration problem. VISSR and TIROS-N radiances are being compared and a statistical correlation is emerging. Software for on site support at the Thermal Vacuum Test is being reviewed and tuned.

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10 June 1979

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 May 1979.

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

Sincerely,

Paul Menzel

Paul Menzel
Program Manager

WPM:kmp

Enclosure

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