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MONTHLY REPORT

for

AUGUST 1978

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

Most of the efforts on the VAS program for the past month centered in three areas: preparation for reception and processing of TIROS-N data at launch, evaluation of calibration initialization parameters necessary at the Wallops S/DB, and implementation and testing of data base management software.

II. Data Processing System Development

Circuit board construction for the Data Base Manager (DBM) is complete. The asynchronous interface to the peripherals (card reader, line printer, CRTs, ...) is complete and working. The attached tape unit has stopped functioning properly and repair efforts are underway. The synchronous interface to the Applications Processor (AP) is constructed and the communications hardware between the two CPUs is working. The data base management software has been subdivided into three levels of communication between the DBM and the AP; (1) the intertask buffer interchange, (2) the file record input/output, and (3) the symbolic data request response. Software for levels (1) and (2) is mostly written but untested. Software for level (3) is still being conceptualized.

The TIROS-N receiving system will be ready within the week for real time reception of TIP data. The last hardware element, the input formatter and frame synchronizer, is being wired and will be incorporated in time for launch. The software for orbit determination and antenna pointing is resident in the microprocessor and is working. The antenna elevation and azimuth angle orientation is being calibrated. The ingest software for tape archive is in the final stages of development, where microprocessor checks

of TIP status, parity error, and validity of spacecraft time codes will be possible. Preparations for TIROS-N tape archive processing and subsequent analysis on McIDAS are also nearly complete.

III. VAS Instrument Support

In response to the action item generated in the last VAS Working Group Meeting, determinations of a typical set of non-redundant calibration initialization parameters were made where relevant data was available. Reduction in the number of non-redundant coefficients was achieved by assuming (1) that separate radiance polynomial coefficients for same filter - different detector are unnecessary except for wide bands 8, 10, and 12 where the different detectors may show different spectral responses, and (2) that separate non-linearity polynomial coefficients were required only for different gain - different detector combinations (gains for band combinations 1,9; 2, 3, 4, 5, 7, 10; 8; 5, 11; 12 are different).

The thermal gradients expected in the Hughes spacecraft were investigated and some observations were made. The anticipated VAS telescope fore optics radiance correction to internal blackbody radiance ranges from .8 ergs/etc in winter to 2.1 ergs/etc in summer. More than half of this correction arises from contributions of the secondary mirror shield. This is consistent with predictions based on previous data.

IV. Development of VAS Data Processing Techniques

Adaptation of Nimbus software to TIROS-N is continuing. In addition investigations are underway to improve the short wavelength reflected sunlight correction using the two short wave window channels available on TIROS-N.



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10 September 1978

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 1978.

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)