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MONTHLY REPORT

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VISSR Atmospheric Sounder (VAS)
Development and Performance Evaluation

Contract No.: NAS5-21965

Prepared by

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

for

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

I. General

During the week of February 12, 1979 R. Schlesinger of UW and G. Kelly of ANMRC were in Boulder, Colorado to work on the CRAY computer at NCAR. They are in the process of implementing a sub-synoptic scale model on this computer.

On February 20, 1979 the VAS Working Meeting was held in Greenbelt, Maryland. R. Daly, R. Dedecker, and P. Menzel of SSEC and W. Smith and C. Hayden of NESS travelled to GSFC to attend. The plans for SSEC VAS instrument evaluation were presented. Also the SSEC to GSFC computer to computer linkup was discussed.

Also on February 20, 1979 at the Symposium on the Early Assessment of the Impact of VAS Data on Meteorological Problems W. Smith spoke for V. Suomi about UW/NESS thoughts on the VAS Assessment. This included discussion of several phenomena and their associated physical processes for which the diagnostic capability of VAS could be assessed.

II. Data Processing System Development

The Data Base Manager-Applications Processors-User Terminals (DBM-2AP-3UT) configuration continues to support VAS scientific research and to handle real time inputs from two VISSRS, TIROS-N, and conventional weather stations. Some problems with ingestor hardware have cropped up when simultaneous reception from two VISSRS is attempted. Corrective measures are under investigation. Analyses of present performance are indicating what DBM and AP expansion is desirable. Necessary procurements will be made soon.

The video cassette archive is now equipped with a search track capability, which facilitates location of a particular data segment. The search speed is 3.75 ips which is 3.6 times faster than the playback speed. The data segments are described by satellite identifier, scan number, julian day, hour, and

minute. Video display and computer interface of the search track capability are working.

In conversations with GSFC personnel at the VAS Working Group Meeting modifications of internal communications protocol at GSFC and UW were suggested in both systems to achieve greater compatibility. Numeric details were discussed. Further work is planned.

The TIROS-N receiving system is now functioning with two antennas. The eastern VHF antenna is enabling better eastern US coverage in addition to providing backup for the western VHF antenna. However the gain in the eastern antenna is not as high as desired and possible causes are being checked out. The main microprocessor has been modified to allow data transfer to and from the high speed digital RS232 cassette recorder. This allows more efficient software storage and facilitates software development.

III. VAS Instrument Support

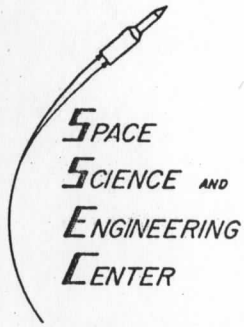
At the VAS WGM meeting, the plans for SSEC VAS instrument evaluation emphasized three areas of study - noise, calibration, and registration. Pre-launch activities were summarized to include a) an update of past studies to reflect current status of the instrument, b) thermal vacuum test data analysis (eg. calibration coefficient determination, raw data tape studies), c) studies with VISSR and TIROS-N data (eg. calibration of VISSR from intercomparison with TIROS-N), and d) submission of a written performance study 6 months after vacuum test. Post launch activities were categorized by performance verification (eg. signal to noise gain, stability of calibration, registration parameters of all detectors, link error budget) and comparison with other instruments (eg. use HIRS to calibrate VAS).

IV. Development of VAS Data Processing Techniques

Work is continuing on the implementation of the Australian Numerical

Meteorology Research Center's (ANMRC) semi-implicit numerical weather prediction model on the CRAY-1 computer at NCAR. First sections of the limited area model package are in the CRAY; this set of programs processes observational data from conventional rawinsondes, ships, and TIROS-N using Cressman objective analysis and "variational blending" to interpolate and smooth the data for initializing fields on the uniform model grid. A remote job terminal to NCAR is facilitating some of this work.

The generation of data sets has begun. With the man interactively editing the data, internal consistency of these sets is beginning to emerge. Techniques have been refined so that winds from cloud tracking on VISSR images, geostrophic winds from TIROS-N soundings, and raob winds can be simultaneously displayed on polar or geostationary coordinates. Quality control via man interaction is being exercised. Height fields (300, 500, and 850 mb) from TIROS-N data are being archived and wind files are being saved. This work is progressing so that up to 4 TIROS-N orbits a day will be processed in near real time.



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THE UNIVERSITY OF WISCONSIN

10 March 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 February, 1979.

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

Sincerely,

Paul Menzel
Program Manager

WPM/jal

Enclosure

xc: H. Montgomery Code 942 (10 Copies)