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Title: WetNet Operations

Investigators:

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Significant Accomplishments in the Past Year:

WetNet is an interdisciplinary Earth science data analysis and research project with an emphasis on the study of the global hydrologic cycle. The project goals are to facilitate scientific discussion, collaboration, and interaction among a selected group of investigators by providing data access and data analysis software on a personal computer.

Support for the WetNet project in FY91 is provided by both RTOP funding and the Earth Observing System Data and Information System (EOSDIS) project. The RTOP funding covers WetNet research and applications development, while the EOSDIS funding supports data access, personnel costs, and system hardware procurement.

WetNet has many similarities to the design of EOSDIS. The WetNet system fulfills some of the functionality of a prototype Product Generation System (PGS), Data Archive and Distribution System (DADS) and Information Management System (IMS) for the Distributed Active Archive Center (DAAC). The PGS functionality is satisfied in WetNet by processing the Special Sensor Microwave / Imager (SSM/I) data into a standard format (McIDAS) data sets and generating geophysical parameter Level II (e.g., marine wind speed, total precipitable water, etc.) browse data sets.

The DADS functionality is fulfilled when the data sets are archived on magneto optical rewriteable cartridges and distributed to the WetNet investigators. The WetNet data sets on the magneto optical cartridges contain the complete WetNet processing, catalogue, and menu software in addition to SSM/I orbit data for the respective two week time period.

The WetNet menu and catalogue serve as a form of the IMS. Although the WetNet menu is not the model for the EOSDIS IMS it does provide an easy to use and learn interface. The menu utilizes function keys to step through the menu tree structure. The menu permits complicated or lengthy command structures to be

represented by a single key stroke. Despite the usefulness of the menu, it is not possible to provide all of the WetNet functionality within the menu, therefore, a command line interface is available for those procedures which cannot be conveniently represented within the menu.

The major accomplishments in FY91 (to date and near future) are:

1. Increased support to 39 WetNet science investigators. The following scientists are now apart of the WetNet project.

Dr. Bob Adler/GSFC	Dr. John Alishouse/NESDIS
Dr. Philip Arkin/NMC	Dr. Richard Armstrong/NSIDC
Dr. Eric Barrett/RSU	Dr. Francis Bretherton/U. Wisconsin
Dr. Bob Brown/U. Washington	Dr. Donald Cavalieri/GSFC
Dr. Al Chang/GSFC	Dr. Alaine Chedin/Ecole Polytechnique
Dr. Bhaskhar Choudhury/GSFC	Dr. Robert Crane/PSU
Dr. James Dodge/HQ	Dr. Robert Eli/WVU
Dr. William Emery/U. Col	Mr. Gerry Felde/AFGL
Mr. James Ferriday/U. Col.	Dr. Kevin Gallo/NCDC
Dr. Catherine Gautier/UCSB	Dr. Steven Goodman/MSFC
Dr. Ken Hardy/Lockheed	Dr. Tony Hollingsworth/ECMWF
Mr. Greg Hunolt/HQ	Mr. John Janowiak/NMC
Dr. Tim Liu/JPL	Dr. Alberto Mugnai/Inst. di Fisica Atmos.
Dr. Chis Neale/Utah State U.	Dr. Bill Olson/U. Wisconsin
Dr. Pete Robertson/MSFC	Dr. Barry Rock/U. New Hampshire
Dr. Dick Savage/Hughes	Dr. Akira Shibata/MRI
Dr. Eric Smith/FSU	Dr. Roy Spencer/MSFC
Dr. Jeff Star/UCSB	Dr. Graeme Stephens/CSU
Dr. Fran Stetina/GSFC	Dr. Frank Wentz/RSS
Dr. Ed Zipser/TAMU	

2. Begun production of WetNet data sets on magneto optical cartridges. In FY91 the project has produced and distributed 3 magneto optical data sets (a fourth is a week away). Each data set contains approximately 500 MB of data, software, and documentation. The original goal of producing a data set every two weeks has not yet been achieved. At the present MSFC can generate a data set in about 3 weeks. The generation of a data set includes updating and improving the user interface, analysis software, and documentation. The combination of continually improving the software and documentation package and a one week (5 working days) turnaround for copying the data sets to the individual magneto optical cartridges (45 copies) is the cause of the 3 week data set production cycle.

3. Convened a WetNet Users Workshop at UCSB in February 1991. The workshop was attended by approximately 75 people. This attendance included WetNet principal investigators, supporting scientists, interested observers, EOSDIS

representatives and MSFC personnel. The workshop participants redefined the content of the data sets. The first data sets produced in FY90 and early FY91 contained both SSM/I antenna temperatures and geophysical products for each individual orbit. At the workshop the participants decided to change the content of the data sets to SSM/I *brightness* temperatures for individual orbits and geophysical products at the *browse* (i.e. reduced spatial resolution) resolution. The scientists also requested that the ability to produce geophysical products at full orbit resolution be provided within the WetNet menu and command structure.

The WetNet principal investigators also defined the several science topic working group affiliations. The following groups and their team leaders were identified:

Precipitation:	Eric Barrett
Winds:	Bob Brown
Water Vapor/Clouds	Frank Wentz
Snow and Ice	Al Chang
Land Processes:	Jeff Star and John Heinrichs
Ocean Processes:	Tim Liu

These groups are identifying consensus algorithms as well as joint scientific investigations for the application and validation of the algorithms.

4. Training workshop at Huntsville, AL on 5-7 June 1992. The fourth user training workshop will be held next week. The purpose of the training workshop is to introduce new WetNet participants to the hardware, software, and WetNet operating procedures.

5. McIDAS communications developed for use with the TCP/IP protocol. The University of Wisconsin was funded to develop the McIDAS communications software to work with the TCP/IP protocol. TCP/IP is a *de facto* standard for computer communications and is presently utilized by the NASA Science Internet (NSI). NSI is providing network communications to the WetNet investigators as well as communications to the Australian Bureau of Meteorology and NOAA/NESDIS.

Focus of Current Research and Plans for Next Year:

The primary emphasis for the remainder of FY91 is to generate WetNet data sets at an increased frequency. Operational bottlenecks have been identified and solutions are being devised and/or procured. Although all of the WetNet principal investigators have been trained (by 7 June 1992), not all have received the WetNet workstations. This is due to government procurement regulations of automated data processing (ADP) equipment. Those investigators who do not have their WetNet workstations should receive them within the next couple of months. Additional software and circuit boards will also be provided in FY91.

WetNet is currently ingesting the SSM/I data via tapes from Remote Sensing Systems. With the addition of the TCP/IP software on the MSFC computer system (expected in August 1991), WetNet will be able to ingest SSM/I data from NOAA/NESDIS in near real time and distribute the browse data sets over NSI circuits (bandwidth of 56 kbps) to the WetNet investigators. The use of the TCP/IP protocol will also allow WetNet to utilize the connectivity to the Australian Bureau of Meteorology for the ingestion of the GMS geostationary satellite images. Geostationary data (GOES, GMS and Meteosat) is not the cornerstone of the WetNet data sets but it an important auxiliary data set.

In FY92 additional investigators will be added to the research groups. User support at MSFC (documentation, help, connectivity) should be enhanced with the addition of new hire. The increase in the support personnel is necessary due to the volume of data sets and the number of investigators. Additional requirements will also be levied by the EOSDIS project. The increased user support and distribution of data sets should provide the investigators with the opportunity to conduct their planned research activities.

Another significant step that is currently being planned for FY92 is to move the WetNet processing at MSFC to a Unix-based platform owned by the project. This will give WetNet and the MSFC DAAC the flexibility to manage and operate the project in a manner that is consistent with the goals of WetNet and EOSDIS. Currently the institutional computer system is not Unix-based (a desire of EOSDIS) and too restrictive in its user connectivity and interface system. The effect of moving to a Unix-based computer for processing at MSFC will be the need to transport the WetNet code to Unix platform and to interface that to the OS/2-based WetNet computers. This effort will utilize McIDAS-Unix which is currently due for initial release at the end of FY91.

Publications:

Goodman, H. M., M. Smith, C. V. LaFontaine, F. LaFontaine, D. Moss, 1991: Earth Science Data Processing, Archiving, and Access at NASA/MSFC in the EOS era. *Seventh International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography and Hydrology*, New Orleans, LA, pp.219-223.

WetNet Data Set 87187 - contains SSM/I and auxiliary data and analysis software for the period 9 July 1987 through 19 July 1987.

WetNet Data Set 87201 - contains SSM/I and auxiliary data and analysis software for the period 20 July 1987 through 2 August 1987.

WetNet Data Set 87215 - contains SSM/I and auxiliary data and analysis software for the period 3 August 1987 through 16 August 1987.