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The State Climatologist

Contents

Wyoming State Climatologist

In June of 1988, Dr. Victor Hasfurther, Associate Director of the Wyoming Water Research Center, was appointed as the official State Climatologist for the State of Wyoming. Dr. Hasfurther is a Professor of Civil Engineering at the University of Wyoming and his background is hydraulics and hydrology. He has worked on many research projects associated with the hydrology of mined lands, alluvial valley floors, stream channel restoration, evaporation and evapotranspiration, storm hyetographs and surface-groundwater interactions.

As supervisor of the Water Resources Data System (WRDS) housed at the Wyoming Water Research Center (WWRC), Dr. Hasfurther is directed to provide assistance to state, federal, county and city agencies as well as academic researchers and the public on water resources and climatological data and their analysis to help foster a better knowledge and understanding of our climate and water resources environment.

WRDS is a computerized data storage and analysis system housing the largest single repository of hydrological and climatological data for the State of Wyoming. Data from more than 80 different collecting agencies are housed on the system, and offer requestors a high degree of reliability and fast response time to user queries. All data and computer programs are resident on the University of Wyoming VAX cluster computer system. WRDS is cooperatively funded through the Wyoming State Engineer's Office.

The system is composed of six unique data bases, including: SURFACE WATER QUANTITY, comprised of daily and monthly streamflow data, instantaneous peak data, and reservoir contents data from approximately 1,500 sites; WATER QUALITY, containing daily and grab samples from approximately 16,000 water quality monitoring sites (both groundwater and surface water); CLIMATE, including daily and hourly climatological observations encompassing temperature, precipitation, snowfall, snow depth, wind speed, wind direction, and evaporation data from approximately 600 sites;

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER IN COOPERATION WITH AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS

WELL LEVEL, including yields and geologic formations from approximately 6,500 sites; SNOW COURSE, containing snow depth, snow density and water equivalent data for approximately 230 manual snow survey sites; and the WYOMING WATER BIBLIOGRAPHY, containing over 12,000 literature citations dealing with the development, management, and use of Wyoming's water resources, including ground and surface water hydrology, water quality, water law, water development, water management, fish and wildlife, energy development, economics, recreation and various other disciplines related to water.

WRDS strives to maintain currentness, continuity and quality in its data and computer program capabilities by recognizing the importance of these factors in reaching meaningful research conclusions. Updates are performed to the above data bases as data become available from the major data sources (USGS, NOAA, SCS, etc.), with an extensive amount of data verification being performed before loading new data to the respective data bases. Discrepancies are resolved through scrutiny of both the published and digital data, in addition to personal contact with the collecting agencies.

More than 250 requests for data retrieval an analysis are processed each year...

Both listing and analysis programs exist for the data bases with output generated to a variety of media devices including: hard copy printouts and plots, soft copy files, floppy diskettes, magnetic tapes, microfiche, and 35mm color slides. Additional capabilities include a dial-up mainframe account where requesters with microcomputer and modem can retrieve data, a connection to the Bitnet communications network which allows data to be electronically transferred across the country, and a fax machine for sending text and graphics images over phone lines.

WRDS also serves as a user assistance center for the National Water Data Exchange (NAWDEX), and can access several other data systems including the Water Storage and Retrieval System (WATSTORE) of the USGS, the Centralized Forecasting System (CFS) of the Soil Conservation Service, the Earth Sciences Data Directory (ESDD) of the USGS, and the NAWDEX data system itself. Additional sources of data or information available to requesters include the Hydro data compact disk system of US West Optical Publishing, USGS microfiche and water supply papers for Wyoming and surrounding states, NOAA monthly cooperator reports (E-15s) and NOAA local climatological observations for selected Wyoming sites on microfiche, and an extensive water library with more than 20,000 holdings. More than 250 requests for data retrieval and analysis services are processed each year by WRDS. Limited data entry and custom programming services are available to Wyoming state agencies.

The Wyoming Water Research Center, under the direction of the State Climatologist, works cooperatively with the High Plains Climate Center and the Western Regional Climate Center. Mr. Greg Kerr, Research Associate, handles most of the work associated with the High Plains Climate Center, and Dr. John Bellamy is presently doing data evaluation of Wyoming data for the Western Regional Climate Center.

Cooperation between the Agricultural Extension Service and the Agricultural Experiment Stations at the University of Wyoming and the State Climatologist is presently being developed.

The State Climatologist can be reached through the Wyoming Water Research Center at the address and telephone number below:

State Climatologist
Wyoming Water Research Center
P.O. Box 3067
University Station
Laramie, WY 82071
(307) 766-2143

Centennial Cooperative Weather Station Program

Statement of Purpose. For over 100 years, Americans have been volunteering their time and talents to observing and recording the weather. These weather records now make up the backbone of the United States climate program. In conjunction with the 100th anniversary of the civilian weather service in America, the Centennial Cooperative Weather Station Program (CCWSP) seeks to honor the system and the stations that have contributed so greatly to this country's history.

...the Centennial Cooperative Weather Station Program seeks to honor the system and the stations...

Proposed Actions. Representatives from NOAA, USDA, and the AASC participated in the effort to develop the framework of a two-year CCWSP. What follows is an outline of the program. Starting with these ideas and goals, it is hoped that those of you in the "field" will bring your own ideas and actions into play. There are several activities that need to be national in scope, but the bulk of the program will be designed and implemented at the local level.

The CCWSP will exist from July 1990 through June 1991. The focal point for awards and ceremonies will be a troika made up of NWS area managers, the State Climatologist, and the Director of the State Experiment Station (USDA). Letters will be sent to these people in a few weeks. A subcommittee chaired by Doug Brown, NOAA, has been established to address the area of awards, certificates, plaques, National Weather Observer Day, a commemorative stamp, and perhaps a Rose Garden ceremony.

A key to the CCSWP is the selection of the Centennial Stations. The starting point has been NCDC's Historical Climatology Network. Selection criteria are being developed by a subcommittee headed by Kelly Redmond, AASC. Potentially, some 400 stations seem to be eligible and others may well be added to ensure that all 50 states are represented. Also, one extraordinary station will be selected (by the troika) from each state to serve as the state's representative to National ceremonies (e.g., Rose Garden).

Also, a climatic summary based on the station's 100 years of observations would make a great addition to the program. Nolan Doesken, Colorado, is heading up this subcommittee. To make these summaries really meaningful daily data for the full 100 years need to be digitized. Plans are being developed to bring this effort to fruition.

If you're interested in more details, and especially if you're willing to "take up the banner," please contact Steve Doty, NCDC, chairman of the Steering Committee, or one of the subcommitte chairmen.

NCDC Retirees

Two stalwarts of the NCDC have recently announced plans to retire. Mr. Grady F. McKay, Chief, ADP Services Division, and Mr. Frank T. Quinlan, Chief, Climatological Analysis Division, say that a combined 60 years at NCDC is enough.

Grady F. McKay

Grady entered duty at the National Weather Records Center in June 1956. Since 1960, he has directed the operational support of all ADP equipment at the Center. He has had extensive experience in coordinating meteorological/climatological data exchange involving international, federal, academic, and research communities. He has been awarded the Department of Commerce Silver and Gold Medal Awards. The inscription on the Gold Medal seems to sum it up: *"For outstanding leadership and ability in data processing procedures, techniques, and practices in the World Meteorological Community and at the National Climatic Data Center."* Upon retirement, he plans to do extensive traveling, fishing, and whatever.

Frank T. Quinlan

Frank arrived at NCDC in 1962 (its' interesting to note that both Grady and Frank were weather observers in the Air Force prior to coming to NCDC). He has held various positions as a meteorologist, being Division Chief since 1974. Frank is no stranger to the International Climate Community, having served on several WMO commissions. Asked what fond memories he would like to share with readers of *The State Climatologist*, he answered, *"In particular, I leave fond memories of Helmut Landsberg who did more than anyone else to promote applied climatology. On the day he died, we had a discussion about his plans for WMO training to promote applied climatology in developing countries."* Frank insists he's too busy to plan for retirement.

Thanks guys, you'll be missed!

Selections Announced

I am pleased to announce the selectees under the 1989 NCDC/NCPO State Climatologist Exchange Program. This makes the fifth year of the program under which nearly one-half of the States have participated. This year seems to bring a certain amount of maturity to the program as you can tell by the chosen topics. I encourage all the State Climatologists to consider the 1990 program. The official announcement will be issued in November 1989.

The 1989 State Climatologist Exchange Program Selectees are

1. Greg McCurdy, Utah -

"To convert programs used on NCDC's mainframe computer for calculating derived climatic elements to programs that can be run on a PC through the CLICOM data management system."

2. Dr. John Cristy, Alabama -

"Analysis of Hourly Surface Temperature using first-order and coop station data."

3. Nolan Doesken, Colorado -

"To investigate clear-day diurnal temperature patterns in Colorado and the Rocky Mountain region and evaluate the feasibility and a need for a nationwide analysisof this type."

Kenneth D. Hadeen
Director, NCDC

A-76 Study

Validation functions will continue to be performed by government employees.

The NCDC Data Operations A-76 study has been completed. The data processing and validation functions will continue to be performed by government employees within a newly organized Data Operations Branch. Staffing will be reduced somewhat from current levels. Work now performed by about 37 full-time equivalent staff will be performed by between 30 and 33. The actual number will vary depending upon workload and the availability of student employees. Work will be restructured so that individuals will specialize in a particular function for many systems (e.g., validating marine, upper air, coop, and surface hourly data). (e.g., checked in mail, validated data, entered corrections, and produced data for products). Restructuring has already begun. Formal reorganization of the Data Operations Branch and the rest of NCDC is targeted for summer 1989.

Recent LCD Publication Terminations/Interruptions

Station	Date Opened	Terminated/ Interrupted	In CD
Burns, OR	1931	09/87	Yes
Atlantic City, NJ	1893 10/88	No	
Cairo, IL	1897	10/87	Yes
Red Bluff, CA	1892	08/88	No
Walla Walla, WA	1893	01/88	No
Havre, MT	1893	02/88	No
Barter Is., AK	1947	01/89	No
Blue Canyon, CA	1899	12/88	No
Kansas City, MO (City)	1889	02/89	Yes
Johnston Is.	1942	11/84	Yes
Sexton Summit, OR	1931	12/88	Yes

Block Is., RI (February and March 1989 data interrupted)

Several other stations have reduced hours or temporarily closed during periods of staff shortages.

NEXRAD

Operational NEXRAD is just around the corner.

Would Christian J. Doppler ever be surprised! He could hardly have envisioned in the early 1800s that his "effect" was to become one of the most important features of weather forecasting in the 1990s.

NEXt Generation RADar (NEXRAD) has traversed a rocky road of development that sometimes seemed to parallel the obstacle course encountered in the video game "Pitfall." Through it all, however, the Joint Systems Project Office (JSPO) has kept the project on track. Operational NEXRAD is just around the corner.

The potential value of NEXRAD information in saving lives and property has been stated over and over again in both the popular press and various scientific journals. Not as well known is the behind-the-scenes planning that has been going on

to ensure data availability for retrospective users.

Coordination of operational and archival programs for NEXRAD ushered in a new era of cooperation between NWS and NESDIS. More importantly, the needs of all users have been considered and the taxpayer gets "more bang for the buck." It is quite possible that economic and research benefits that accrue through use of archived NEXRAD data may equal operational benefits.

NEXRAD is the first of the new surface observing platforms expected to produce an overwhelming amount of data.

Already faced with the dilemma of "data inundation" from satellites, NEXRAD is the first of the new surface observing platforms expected to produce an overwhelming amount of data. Two aspects are immediately evident, 1) it would be impossible to capture all of the data for archival purposes, and 2) it is essential that new data storage technologies be utilized to their fullest.

The NWS NEXRAD stations will send monthly disks to the NCDC. These disks will contain sufficient RADAR information to satisfy most all customer needs. They will also contain some additional sophisticated approach to studying specific events. For example, there will be precipitation information that has never been available before. Study of long term information may have a significant impact on hydrological knowledge and programs.

All Centers are dedicated to the implementation of a CLICOM capability in each state...

The JSPO will provide NCDC with the appropriate hardware and software to respond to users' needs for NEXRAD products. This will include the ability to extract information for specific products. Many of these items will be available in color.

NCDC is also trying to secure support and funding to enhance the NEXRAD capability by being able to utilize some of the event specific raw data that will be captured for intensive performance. This would be very useful to the research community.

Dick Davis
Data Administrator, NCDC

Don Sarreals, Chief
Operations Branch, JSPO

Regional Climate Meeting

The leaders of the Regional Climate Centers and Heads of allied NOAA agencies met (Anaheim, CA, January 27-28), in conjunction with the AMS Annual Meeting, to review progress, to develop plans, and to consider future activities. There was at least one representative from each Regional Center, two representatives from NCDC, one from CAC, and one from the NCPO. The leaders of Regional Climate Centers and NOAA Climate Centers meet twice a year to facilitate planning and communications amongst them. The Anaheim meeting was chaired by Howard Hill of NCPO and Stan Changnon, Acting Executive Secretary of the Regional Climate Centers.

Each Regional Center reported on its basic activities in data management, climate services, and applied climate research. All Centers are dedicated to the implementation of a CLICOM capability in each state in their region, including the provision of facilities (where needed) and training in CLICOM usage. At this stage, 37 states have achieved a CLICOM capability.

An area of primary concern of the Centers has been data-related communications and data exchange between Centers. The

RCC leaders formed in 1987 a Technical Committee on Data Management Facilities. The initial assessment of this subcommittee has been completed, and subsequently has been developed as a joint report. Ken Hadeen, Director of NCDC, reported with a focus on development of formal Memoranda of Understanding with RCCs, as did David Rodenhuis, Director of CAC who focused on future interactions on climate impacts. Howard Hill of NCPO discussed the continuing needs for uniformity in services and research amongst RCCs. Ken Jones of the SCS presented an interesting report about SCS plans to enhance climate data management and expertise within SCS, with options to involve the RCCs and the Federal Centers in various ways.

...SCS plans to enhance climate data management and expertise...

Several major climate data and information issues were discussed. These included problems with the National Climate (substation) Network; concerns over the eroding quality of climate data; institutional issues including the future home for the RCCs in NOAA; and climate data management systems. This included a report of the group's data subcommittee; discussions about CLICOM and the need for sharing CLICOM software developed at different states and Regional Centers; and the common means for data communication between RCCs, CAC, and NCDC. It was decided that an adequate system would be NSFNET and that each Regional Center should work to achieve a tie to this system, as funding permits. Another issue discussed was the digitization of the daily historical data (pre-1948). The Centennial Weather Station concept being developed by NCDC was described by Steve Doty of NCDC - it is a possible means to accomplish a part of this data entry endeavor.

Applied research activities, both ongoing and planned, were discussed. These fell within four general areas: studies of soil moisture and development of drought indices, climate change, the 1988-89 drought, and applied climatological (impact) research. The applied research discussions addressed ongoing efforts at the Centers and research being funded for scientists within the region.

It was agreed that three reports would be generated on behalf of the Regional Climate Centers. One would include all drought-related papers prepared and presented by the Regional Climate Center staffs at the recent AGU, AAAS, and AMS meetings. A second report would focus on applied climatological research and be based on papers appearing in the preprints of the 1989 Applied Climate Conference. The third report concerns the data management facilities at the Regional Centers, CAC, and NCDC. (These reports have now been prepared and copies can be obtained either from any of the Regional Climate Centers or from Stan Changnon.) It was also agreed that beginning in 1989, the Regional Climate Centers, in concert with their SCs, would prepare monthly summaries of climate impacts" in their region. These would be submitted to CAC. These reports will also serve as a basis for a year-end report.

Stanley A. Changnon
Midwestern Climate Center

If there were really any doubt as to why we seek to honor our Cooperative Station Network, this statement from a 35-year observer should set the record straight. See Centennial article on page 3.

Being a Cooperative Weather Observer (Gratis) is my way of paying my country for all the good and Riches that I have Received as an American Citizen.. I won't do it (Even for Pay) for a Private Company or a Contractor.

Sincerely,

Rudy A. Villarreal

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