

## **AASC Annual Meeting at Logan Utah, August 6-9, 2000**

### **AASC Annual Meeting, Aug 6**

Preceding the start of the scheduled AASC meeting, a meeting was held on the evening of the Sunday Aug 6 in order to discuss the upcoming National Research Council meeting on 'Climate Services: A Vision for the Future'. The NRC meeting was scheduled for August 8-12 in Woods Hole and would overlap the AASC Annual Meeting. From the ranks of AASC, Kelly Redmond (currently with the WRCC) and Ken Crawford (SC for OK) did get invitations. Kelly came to Logan for this pre-meeting session and was to continue on to the Woods Hole. The membership hoped to help form ideas that Kelly would carry to the Woods Hole meeting on behalf of the AASC. Many issues such as communications and the definitions of services were brought up.

### **AASC Annual Meeting, Aug 7**

Steve Doty, NCDC: Publications will move to West Virginia in Oct 2000. All paper records will move to Kentucky for digitization and storage. The project to digitize all the pre-1949 data is completed up to Michigan. NCDC is also keying hourly precipitation and climate 'record books'. Surface weather obs are being imaged for 1949 forward (contact: Mark Siderman). More development is forthcoming on 'Climate data on-line'. On-line data orders have reached the number of off-line orders this year. Climate Atlas CD due out in Sept.

Richard Heim, NCDC, Climate Reference Network: Will be 'state of the art' with focus on temperature and precipitation for starters. Motivated by deteriorating monitoring worldwide and a US system which is inadequate. Sites sensitive to climate change and near or co-located with 100 year stations will be highest priority. 3 temperature sensor/shelters ventilated by a common system and a weighing heated gage will require AC power. A further discussion of other sensors, especially humidity and downwelling longwave radiation (important in climate change studies) as options to the basic observing system were discussed. The station will transmit data hourly via GOES. Some potential maintenance funding may pass to RCCs and on to SCs.

Bob Livezy, CPC: Showed an 'NWS Vision' and the 'Roadmap for 2005' which is comprised of a suite of climate forecast and data products and supported by a modernized COOP network with real-time access (in addition to ASOS and CRN). More skill is being shown in climate prediction products because it was realized that circulation features have more signal versus noise than was originally expected. Of growing interest are 'intra-season' scale variabilities; e.g. 20-25 day tropical oscillations which correlate well with west coast heavy precipitation in non-el Nino/la Nina years. Many feature may interact and superimpose. Non-stationarity in the observed records limits usefulness but models can take changes into account. Multi \$10s millions proposals for climate observations and services are now in

Congress. The COOP modernization proposal (\$10M in 2002) will ultimately bring complete real-time access. Regional assessments, education and outreach (\$4M in 2002), including training and tools for public and private meteorologists/climatologists will be provided for reaching customers locally. 'Professional Competency Units' were briefly mentioned.

Jim Ross, Meteorological Services, Canada: In Prairie and Northern regions, 3300 sites have been cut to 800. Much of the data is entered into the ONTAP data base on-line by observers using the COOL program. The COOL program uses TCP/IP for communication but does not require a 3<sup>rd</sup> party browser. The program provides graphical displays of the data to the users as well as tabular input capabilities.

Ray Motha, Joint Agricultural Weather Facility: The National Drought Policy Commission involved all levels of interests to improve 'preparedness' as a better approach than reactions or 'insurance'. It sought a better coordination of programs at all levels to reduce costs/damages through efficiency in meeting needs. The many observing networks need common quality control and user facilities. An aggregate of many products, the 'Drought Monitor' is a product of the commission. As the current president of WMO Ag Met, the current WMO effort to form a collection of case studies of operational programs for Ag Weather/Climate was mentioned (contact: Ray or [WBAIER@sympatico.ca](mailto:WBAIER@sympatico.ca)). Also, a 'Guide to Ag Met Practices' is being redone (contact: [kees.stigter@user.METAIR.WAU.NI](mailto:kees.stigter@user.METAIR.WAU.NI)).

New SCs were introduced; Russ Qualis for Idaho, John Neilson-gammon for Texas, and Stewart Foster for Kentucky.

Regional Climate Center reports were given.

Dick Reinhart for the WCC said that multiple gigabytes were served from their web pages. One popular page estimates water application rates for various watering devices. Their pages offer many real-time network monitoring products including metadata.

Ken Hubbard for the HPRCC said that the countrywide automated weather station survey will be available. The center is involved in numerous drought activities. Their web site had 300k hits last month and they are using a new mapping tool. Various symposiums and workshops were planned and held. Transformations using wind and solar data were formed for use with data from various temperature shelters.

Steve Hilberg for MRCC indicated that much effort went into upgrading computer systems. Suns were replaced with Pentium PCs running Linux. Increased security, more storage/power/redundancy were upgrade goals. An 'El Nino in the Midwest' publication was produced. New gridded data products (using grads) were formed. The region-wide project to develop older electronic data sets will be completed this year. A July 1999 heat wave study was done. New web products include 'Midwest

Climate Watch' and 'Energy Net', aimed primarily at schools, which follows degree day impacts on energy use.

Warren Knapp for the NERCC indicated that data processes at the center have been almost entirely transferred to UCAN-based technologies. Several new published research papers were described including one on estimating missing temperature extremes.

Mike Janis of SERCC described the data acquisition of a mesonet of automated stations composed of a dozen or more state and 100+ NOAA (hourly) stations. Quality control in near real-time is an issue. Attempts are being made to improve coordination of network efforts and overall coverage. Technology upgrades were described. CIRRUSweb was migrated to Oracle. LINUX is being used for UCAN metadata work. FTP and a new list-server have been established. The center also funded some local applied studies. The center seeks to fill several positions within the center, including the service climatologist.

Jay Grymes for the SRCC told of switching to NOAAport to replace the services of a now defunct Alden. The data supplied by SCs in mailed packets has been incorporated into UCAN metadata. The center has been involved in National Drought Policy activities. A new LSU Hurricane Center has been established in a multi-disciplinary group. Business rules for NCDC/RCC/SC cooperation were worked on. The Center has been very involved in UCAN development. Some work has been done on defining WMO information systems development.

The Nationally Recognized State Climate Office and the National Climate Services Partnership to improve climate services was discussed. SCs supply expertise, not just data. Grymes indicated that the new defining document got rid of hierarchy and emphasizes spatial representation, not organizational ranking. Jim Angel indicated that roles of various involved organizations are roughly based on geographic scale or scope. He pointed out that the capabilities necessary to meet obligations. Steve Doty indicated that NRSCOs need be a part of a land-grant university OR environmental agency OR governor's office and that private sector individuals are not eligible. George Taylor indicated that there was lots of discussion about the extent of activities reporting that was needed. Reinhart summed up the remaining issues as 'What's in it for me (SC)?'. He talked about access to data, software, and web pages. He indicated that NRSCOs could use UCAN as a user or as an associate if data was also provided. Increased communication, collaboration on proposals leading to increased funding, a more active role in climate issues, a common front presented to policy makers in DC, and improved climate service were all given as benefits. John James (SC for NV) asked the question 'why are we doing this?' and adds that he won't conform [to the activities reporting requirement].

John James of Nevada reported on the need for more cooperative and evaporation stations in Nevada. He talked about the many stations that he maintains in the state. The variability can be large; the greatest 1 hour precipitation is 8.06 inches which fell at Cloverdale Ranch in 1896. While the 8.06 was initially regarded as suspect, plenty of evidence supports it. Bob Lefler (NWS Coop Program Manager) indicated that a reevaluation of cooperative station spacing is needed and should include evaporation sites.

Leslie Ann Dupigny-Giroux, SC for Vermont, talked about drought planning in Vermont. She indicated that climate regions which actually represent divisions of the climate were important for issues such as drought. She also indicated that assessments of drought were needed more frequently than monthly; weekly is good.

Roger Pielke Sr., SC for CO, talked about data representativeness. He said that urbanization effects are land use change impacts that vary by biome. He pointed out that the variations in time trends observed in eastern Colorado vary from site to site. 'Urbanization' in Colorado may mean that an 'oasis' becomes established which could lead to cooling rather than the warming generally expected. Another look at effects uses Landsat images to show changes in irrigation patterns in some areas. Attempts to depict long term variations of land use impacts on climate have also been made.

## **AASC Annual Meeting, Aug 8**

### **Business meeting**

Discussions about the merits of Nebraska and Alaska as meeting sites were discussed. It was decided to vote on NE versus AK for the **next** meeting and the other state would be the site of the meeting 2 years hence. 15 votes were cast for NE, 7 for AK (it is not known how many abstained from voting). So the meeting will be held in Nebraska in 2001, Alaska in 2002.

Following Leslie Ann's suggestions from the nominating committee, Jay Grymes (LA) was elected President (elect) and David Stookesbury (GA) was elected Secretary-Treasurer.

A few details from the minutes from 1999 were discussed. It was pointed out that 3 committees were in place for the intervening year: business rules, Climate Research Network, and Normals. It was stated that informal committee mission statements were needed. Someone asked whether the constitution and bylaws committee still exists.

Awards were proposed given the recent passing of two noteworthy climatologists. Both Arnold Court and Amos Eddy died the last year. Much discussion ensued.

The NRSCO was briefly discussed.

Someone pointed out that DAPMs were scheduled for elimination with the money to be used for information technologists. They went on to point out that such a move would be inconsistent with an NWS statement that it would be providing climate services.

Someone proposed that a letter(s) be sent to 'influential' people to indicate that a climate services effort already exists in the country and that money for NWS climate services be better spent on enhancing existing services.

(Business meeting ends.)

Nolan Doeskin, Asst. SC for CO, talked about data quality and data representativeness. Efforts have been made to assess ASOS temperature and precipitation relative to long-term records. Andy Horowitz interjected that 'all weather' precipitation gages were currently being tested to replace heated tipping-bucket gage by 2004; he acknowledged that what is in place now is poor. Nolan went on to advise 'user beware' for ASOS precipitation now since many or most stations have exhibited a decrease in winter totals. On temperature sensors, if air flow to the shelters is gradually reduced, the results change; the radiation shields require uniform aspiration. Nolan also pointed out that contrary to what is desired, rooftop stations are actually increasing in number. Nolan went on to talk about pressures, from the tourism industry for instance, to not use the word 'drought'. He said the 90 times in a 100 year period some point in Colorado has moved into a drought state (defined as the lowest 15% of all 3 month precipitation values). The largest drought impacts come from multi-year events culminated by a dry winter and following by a hot and dry spring/early summer. Such significant episodes have only occurred in about 5 out of 100 years.

Mark Svoboda, International Drought Mitigation Center, talked about the 'Drought Monitor' web product. He described various roles that states play in mitigating drought. While most states have 'response' plans, the center is trying to encourage the formation of 'mitigation' plans. An early warning system is important for triggering mitigative actions. One form of mitigation which can be put into effect very early is training and education. Integrated climate monitoring systems need to be comprehensive and include climate, soil, and waters conditions. Also impact assessments need local interpretations as can be done best by local experts. No single parameter can be used for determining appropriate actions. The 'National Drought Monitor' is intended to be an assessment product, not a forecast. It tries to capture magnitude (duration and intensity), spatial extent, and probability or recurrence of events. The product relies on many partners, reviewers, and contributors. The product will continue to change and continues to require local expertise. Many source information (for the formation of the Drought Monitor

product) examples were shown such as PDSI, SPI, soil moisture models, and many others.

Richard Heims, NCDC Operational Climate Monitoring, talked about many drought depiction products formed by NCDC. Monthly drought products such as PDSI use data resources such as divisional temperature and precipitation data, SSMI satellite data, and GHCN. The climate division database for PDSI and SPI is temperature and precipitation data from 1900 for the conterminous US. Animated maps of those data sets have been created.

A drought panel consisting of Heim, Svoboda, and Doeskin continued discussing drought. It was said that NCDC would like to use additional data such as radar to produce more horizontal resolution than point data. Bob Lefler indicated that 'sector specific' weighting of indices would be useful. Nolan replied that such an approach could produce a very large number of permutations and the finite number of SPI choices could meet a large number of user needs but that the user must choose which are appropriate.

Phil Pasterius discussed UCAN as a system of interfaces and software for metadata and data. Phil gave an extended demo to demonstrate both the generality and speed of the system. He pointed out that UCAN needs properly coded SHEF data. He indicated that a program library and documentation is online.

Jan Curtis, Fairbanks AK Climate Center (?), stated that global warming should be greater in Alaska than points farther south. He showed Fairbanks temperatures that have risen about 4.5C in 50 years in winter and lesser warming in all other seasons except summer. He also indicated that the time of [day of] maximum temperature has 'shifted to the right' at Fairbanks.

Elwyn Taylor, Iowa State, talked about 'Index Use'. He started by asking how much, where and 'how come' climate changes. He pointed out that heavy precipitation events have dramatically increased in Iowa over that last 8 years. Elwyn checks multiple indices to estimate **next** season's corn yields. He notes that there are no stressful years (for corn) in El Nino years. He finds much skill in a measure he calls the 'RI index', a measure of the chance of precipitation in the midwest. He noted that drought moves into the midwest from the east.

Paul Waite, former SC from Iowa and founding member of AASC, presented notes on the history of AASC. In 1976 the NWS was planning to shut down the cooperative climate network. The 12 SCs who then were the members of the new AASC wrote a letter to the Secretary of Commerce asking for preservation of the COOP program. The request for a climate program was turned back by Congress in 1977 but passed in a form more suitable to NWS in 1978. However, it resulted in no benefits to the AASC. In 1938, with 'airwaves' observations starting, climate observations work became essentially a clerk job of low esteem among

meteorologists. In 1954 Helmut Landsburg came to the system and implemented state climatologist positions in NWS. Paul recapped: 1870 start observations under the Signal Corps which led to Weather Bureau observations starting in 1890. The system flourished until the 1930s at which time the new airwaves observing system brought 'disgrace'. The system was rejuvenated under Landsburg starting in 1954 but was abolished on Friday, April 13, 1973.

Paul Knight, SC for PA, indicated that although last year his program had no funds, funds did become available starting January 2000. Paul is a producer of a 15 minute public TV weather program. He showed videos of some special segments of that show. The PA web site has many features. The office also produces a weather page for the New York Times every day.

Greg Schuler, Dynamic Predictables in Missouri, Presented results of multi-year precipitation prediction work.

Don Jensen, Utah SC, talked about a space-time analysis of climate data for Utah. He used gridded data to estimate all missing values in daily records to form serially complete time series. To grid temperature data he had to adjust all data to a common level by applying a lapse rate correction which was driven by a digital terrain model. After gridding, the lapse rate was re-added to the grids before using the grids for lookup of missing values.

Harry Hillaker, SC Iowa, talked about data concerns. He used to have to deal with only one NWS office about cooperative data matters. Now he has to deal with 5 offices and perhaps 25 people, none of which has more than perhaps 10% of their time devoted to the cooperative program. He finds that this has led to a less focused work force who have no particular reason for the maintenance to the network.

Bob Lefler, National COOP program manager (NWS), talked about the 'Future of the Coop Program'. He notes that that a reorganization has occurred in the organization. A database for B44 information is being redone and will be web based. MMTS are hard to maintain and all existing replacement computer chips have been acquired but they constitute only a 2 year supply thus a coop program 'rescue' is needed. The consistency of WFOs support is lacking; regional staff have been cut from 3 FTE to the equivalent of 0.3 FTE and support varies with MICs. Near real-time uses are not always appreciated by WFOs. Adherence to standards in cooperative observing system will be increased. Mechanisms for including non-standard equipment data are being considered. The MMTS replacement, DASH-7, will have some overlap. Electronic transfer of data will replace ROSA and B91; CompuWeather (COMPUWX), CompuROSA, and web-based data entry will be used. Fisher-Porter spares are down to 2 units. Bob asks if anyone knows if 'monel' evaporation pans have differences in observations from stainless steel ones; would switching introduce a data discontinuity (monel pans cost \$2500 vs. \$500 for

stainless steel)? New information technology positions will be used heavily in updated coop system; the impact on DAPMs is uncertain. Overnight travel and comp time are issues. With the number of mesonets growing, only NWS is perceived as an 'honest broker'. As part of updated coop program, snow boards should be supplied. The HCN data set is largely unknown to NWS field personnel. To increase adherence to standards: relocate rooftop stations and increase published information about station's institution and exposure. Rooftops, with low precipitation and warm temperatures, may not be very representative of their neighborhoods. What is COOP rescue? Answer: MMTS and FP gages are becoming obsolete and discontinuance at some sites could lead to discontinuities – so, White House intervention will help 'rescue' such sites. It is time to reexamine network spacing requirements – old studies need to be updated. With the CPMs gone from the NWS, 'corporate knowledge' of the cooperative network is eroding – reductions in dedicated staffing makes the problem worse. With a \$10M budget, new positions are out of the questions. No FTEs are allocated for modernization. (see current information at [coop.nws.noaa.gov](http://coop.nws.noaa.gov)) Bob asks for help with 1) network spacing study, 2) measurement standards, 3) rooftop exemptions, and 4) interagency on-going coop management.

Andy Horowitz pointed out that the US cooperative observing program is the world's premier network. He says that modernization will provide real-time access for about 8000 sites. The NRC finds much value in the network. Modernization will produce 20-40% fewer errors, improved forecasts, 30-50 gages per radar site, and will eliminate data handling at WFOs. In FY02 \$10 is proposed out of a total of \$93 for the whole project. Implementing modernization will allow a phase-out of the 'Rescue' in FY02. The modernization will be done over the years FY03-06.

Changes to the NRSCO definition were presented by a group of members who met during lunch to work out various points that were preventing acceptance by the members. After presentation of the proposed changes in wording, a vote was taken and the membership approved adoption of the revised NRSCO document.

## **AASC Annual Meeting, Aug 9**

Claude Williams, NCDC, talked about the calculation of new (1971-2000) normals. He indicated that the methodology will be much the same as that used for the 1961-90 normals. Missing data will be estimated. Normals will be calculated for the current time-of-observation and adjusted to midnight. Monthly heating and cooling degree days will be calculated by Thom method since various data adjustments can be applied to monthly values but not to daily values. Daily normals will be calculated using spline fits to the monthly values. Adjustments to ASOS data will be attempted if a 5 year homogeneous ASOS period exists. On-line means will be available. The web-based product will be ready by December 2000 and will be followed by all other products by December 2001. To process the USHCN; time-

of-observation corrections are applied, discontinuities are identified using various methods and the results are merged with the station history files, homogenizing corrections are applied, other cooperative data is used to verify homogenizing results. A 'quality of homogenizing correction' measure will be made and the identity of composite stations will be found. To date, 150 of the original 1200 HCN stations are no longer observing. Claude asks for help in identifying 'bad' combinations of stations by communicating through the list-server or directly to [cwilliams@ncdc.noaa.gov](mailto:cwilliams@ncdc.noaa.gov).

Ken Hubbard, HPRCC Director, talked about an 'Evaluation of Air Temperature Measurements in Weather Stations'. Many observations of temperature in various shelters were run simultaneously to determine the errors of the shelters. An energy balance approach involving  $T_{air}$  (with RM Young device as the standard), radiation, and wind were used devise correction equations for corrections. Unaspirated shelters tended to be .5C or more biased only during the daytime. Results indicate that the bias could be largely removed but the standard deviation of the errors was largely unaffected.

Dave Toronto, NWS Salt Lake City, talked about the 1999 downtown SLC tornado. Unlike midwest tornados which 'drop down' and can often be seen in such incipient stages even 10s of minutes in advance, many 'non-descending core' tornadoes develop all-at-once from the ground to cloud with essentially no pre-existing radar or visual clues.

Bill Mork, SC for CA, talked about history of wet and dry spells in California. The recent wet spell of 6 years is the longest of this century. This year's patterns are typical of 'la nina' patterns so far. Bill pointed out a long-term downward trend in April-July flows in the Sacramento River. Bill also points out that upwelling along the California coast is as strong as any time since 1947.

Mike Nelson, Waterlog, talked about the Waterlog Rain gage, specifically the Wireless SDI-12. He indicated that tipping bucket gage results **can** be improved by use of a microprocessor. Such a processor can identify high intensity events (very frequent tips) and 'augment' to increase the rate. For example, in a test 120 tips were expected but 80 were actually 'caught' but that condition could be corrected. Also, 'double tips', which occur when the bucket bounces can be identified by the processor as occurring too fast to be real and can be eliminated by the processor. The SDI-12 is a Fisher-Porter style weighing gage which has been upgraded. The paper puncher is pulled out and replaced with a new mechanism with a .01 resolution (old mechanism had .10 resolution). A data logger or radio transmitter is added to the assembly to gather or transmit the data.

Glen Conner and Stewart Foster, former and current SCs for Kentucky, talked about various aspects of the Kentucky program. Glen showed a history of past counterparts in Kentucky. He indicated that among the high goals of the Kentucky

Climate Center is an emphasis that encourages considerable undergraduate research. He also indicated that funding has been pretty good recently. The center is looking for graduate students to work in the center. Stewart indicates that a renewed emphasis will be made on the public service initiatives of marketing, education, and public relations. He will emphasize student research. The center is assembling a climate analysis GIS which will include many supporting data themes.

Dev Niyogi, Asst. SC for NC, talked about the importance of soil moisture (SM) observations. He stated that surface fluxes (ala 'sea breeze' circulation) may be induced by SM geographical variations. He also indicated that when used with SSTs, long-term seasonal temperature predictions can be improved dramatically. He went on to describe the North Carolina AgNet system of soil moisture measurements at 22 automated sites. He pointed out that it is difficult to generalize point SM to areas. Attempt have been made to use drought indices to model SM. Raw PDSI looks good at times but is inadequate overall – bi-weekly SPI values worked pretty good. 'SMASH', a heuristic statistical soil moisture model estimates values across the landscape. SM controls many other related climate feature such as surface/plant gas (CO<sub>2</sub>, Water, etc.) exchanges and it has dramatic effects on CO<sub>2</sub> uptake efficiency.

Ken Hubbard, HPRCC Director, talked about a high plains soil moisture monitoring and modeling system which is used to estimate crop impacts.

Poster sessions for next year's meeting were suggested as a way to reduce the congestion of 'SC reports' during the meeting.

Jim Obrien, Florida SC, talked about using ENSO for climate forecasting. He showed satellite based wind fields which he indicated he is trying to get available routinely. Jim indicated that strong patterns can be attributed to ENSO across the country (see web site). Probabilistic forecasts are better than 'percent chance of' for precipitation; results are presented in percentile-style categories.

Pam Nabor-Knox, former SC for WI, indicated that a part time position still exists at Wisconsin to partially fulfill SC duties. Attempts are being made to improve funding there. Quality control problems still exist in Wisconsin data.

David Stookesbury, SC for GA, talked of rejuvenating the SC program as well as reforming the teaching program. The SC position is not in Extension per se but is a 'service position' in the engineering program; he works with many programs. David has been very busy putting out drought press releases. He finds that small newspapers are eager to use an already written article. An agricultural meteorologist program exists and is spread over several departments.

Hal Klieforth, NV, talked about snow observing in Nevada. Many materials were presented at the April Western Snow Conference in Port Angeles. He presented a

bit of the history of snow observing in Nevada including airplane photos of snowsheds. Hal has made mesonet scale snow observations in the Lake Tahoe basin; snow depth and water content are measured after every event. Both a 'liquid only pan style' gage and a snow board are deployed at each site; the greatest amount of liquid measured between the two devices is taken as the observation. Rain often is part of a snow event; for instance on 87" snow event occurred with 37" of water content [correct?]. Hal has convinced the Forest Service, state and local parks that many climate stations should be kept operating year-round. Hal says that we need to document clouds better now that ASOS doesn't do as thorough a job. He asks that we take pictures of lots of stuff, including avalanches, floods, and drought.

Meeting was adjourned.

Zandlo note to AASC list-server:

Service climatologists should have more influence in the AASC and be included in the decision making process of the organization.

- start a new membership class: 'Service climatologist'
  - subject to same 'rules' as NRSCO with similar 'access' privileges
  - can vote on all AASC items EXCEPT changes to constitution or bylaws
  - typical candidates
    - Assistant SCs
    - Extension and/or agricultural climatologists
  
- candidates
  - Mark Seeley, MN Ext clim
  - Bill Bland, WI
  - Elwyn Taylor, IA
  - Etc.