

AASC meeting covers topics from new satellite observing systems to new perspectives on data streams.

These comparisons do not show us, nor are they intended to show, which is the more accurate. However, the new system (which could very well be the more accurate of the two) could easily introduce a change in our records; a change that will not be due to the climate, but the result of the introduction of the MMTS or "beehive" into our climatological networks. In order to determine the effect of this new system, the two methods of temperature measurement should be recorded side by side for several years at a number of stations so that an adjustment factor can be determined and introduced into the records. In this way, there will be less chance for a false climate "change" to become a part of our historical climatic records.

Donald G. Baker
David L. Ruschy
University of Minnesota

AASC Meeting

The 1989 meeting of the American Association of State Climatologists was opened July 8, 1989, at Bar Harbor, Maine, by the Association's president Wayne Wendland. Through the course of that first day Wayne, and on the second day president-elect Kelly Redmond, introduced speakers from several branches of the National Oceanic and Atmospheric Administration, the United States Department of Agriculture, the Drought Information Center, the six Regional Climate Centers, and State Climatology Offices. The topics ranged from new satellite observing systems to new perspectives on data streams never intended for climate studies. For PCs, there will be "QC on the fly" as well as a reincarnated (but

improved) "TP40". Sandwiched between presentations, the Association's business meeting saw to matters requiring the decisions of its members.

The speaking program was started off with Ken Kunkel, who discussed some measures of variability recommended for use in addition to "normals". Alan Hecht of NCPO pointed out the administration-dependent uncertain future of climatology and the NCPO, and emphasized SC and RCC involvement in impact studies and risk assessment. The Regional Climate Centers each made presentations with many common themes including CLICOM use and training, and user services including special calculations on real-time information systems. Kelly Redmond explained an iterative quality control process involving NCDC, the Western Climate Center, and Oregon. Steve Doty of NCDC suggested possible award/recognitions and "focal" points for the Centennial Cooperative Observer Program. Tom Blackburn brought listeners up-to-date on a number of Coop issues including a return to a government-run Coop station maintenance program and the status of several MMTS issues. John Ball of OAR talked of a developing interest in climate within the research structures of NOAA and suggested that Mike Pall at 301-443-8415 could give further information on NOAA/OCAR overview of emerging high-tech sensors and associated acquisition hardware. Ken Hadeen of NCDC rounded out the first day by describing the reorganization of NCDC; new division heads needed; heavy PC use linked by LAN; international definitions, standards, and archival; and major pricing changes.

Kelly Redmond, introduced by Wayne Wendland (at that moment becoming the current

John Ball of OAR talked on a developing interest in climate ...

"past president") as the Association's president for 1989-90, started and presided over the business meeting held on the morning of the second day. Minutes and resolutions from the last meeting were dealt with briefly as the members turned to new business.

The formal decisions of the business meeting are presented here in the order in which they occurred. The Constitution (Title IV.2) was changed by the members to redefine voting members to also include "designated representatives of Regional Climate Centers." A legislative Study Group was formed to review existing and emerging legislation regarding global climate change and to recommend action to the executive committee and to members. Pat Michaels will chair that committee composed of the (new) executive committee and Claude Duchon, Harry Hillaker, John Purvis, Jim Laver, George Bomar, and Bob Muller. New Associate members Paul Croft, Bob Bermowitz, John Zeitzman, Ron McCall, and Frank Quinlan were approved by a voice vote. The only nomination for president-elect, Mark Shulman, and the recommendation that the Secretary-Treasurer, Jim Zandlo, be continued were unanimously approved. In a vote for preference, Atlantic City as chosen over Fort Worth as the site of the 1990 meeting (first half of August, a Tuesday through Thursday).

Other new business not resulting in any formal action included Tom Blackburn's suggestion that the AASC Secretary-Treasurer receive private contributions to a "Centennial Weather Station Fund." Kelly Redmond brought up long-term station continuity

problems to which was appended problems with data not originally designated for climatic use and problems associated with the replacement of traditional observations with automated devices. Kelly concluded this discussion by stating that as president he WILL write appropriate letters. Finally, insufficient interest was shown in holding the 1991 meeting in Hawaii during the time of a total eclipse of the sun.

Norton Strommen of USDA restarted the topical sessions by talking of viewpoints and activities associated with USDA's strategic plan including an expression of need to solve problems on an international cooperative scale. Again Ken Hadeen presents, this time about CLICOM system benefits, a new CLICOM version due this fall, and a CLICOM USERS' group. Greg McCurdy of Utah described his state's considerable and continuing investment of efforts within that system. Ian Barrie of the UK AG Weather Program gave some insights into another country's data systems and data requirements and into its budgetary milieu. Jim Laver of CAC described a broad range of activities and products designed to describe impacts of the climate. Norm Canfield told us everything we wanted to know (or is possible to know) in terms of numbers, dates, etc., about the imminent ASOS system. Steve Williams described a high-tech, global scale interdisciplinary NASA effort known as "Mission to Planet Earth." Finally, John Vogel of the NWS Office of Hydrology brought us back to the surface with new studies of probable maximum precipitation and other hydrologic studies which in one form will run on PCs and make TP40 a thing of the past.

In closing, Kelly Redmond notes

Dr. Mark Shulman named President-elect.

Atlantic City will be site of 1990 AASC annual meeting.

*A strong need
for a state level
SC style services
will continue in
spite of emerging
regional services.*

*Twenty-four
Satellite
Analysis Charts
are now available
from NCDC.*

that Doug Clark, SC-Wisconsin, will be on sabbatical in Denmark for the next year and that a half-time student will attempt to keep things going there. Also, Oregon may lose funding for its SC position this year. Kelly urges that a strong need for state level SC style services will continue in spite of emerging regional services. Kelly also urges members to read, comment on, and respond to HR1880.

Wayne Wendland declared the 1989 meeting closed.

Jim Zandlo
Secretary, AASC

Satellite Analysis Charts

The National Climatic Data Center (NCDC) in Asheville began processing subscription orders for Satellite Analysis Charts in January 1989. These charts had formerly been available from the Satellite Data Services Division of NCDC. Seventeen weekly or monthly sea surface temperature and snow and ice charts from seven different series were available initially. These charts, produced by the Ocean Products Center, the Navy/NOAA Joint Ice Center, and the Synoptic Analysis Branch of the National Environmental Satellite, Data, and Information Service are sent to Asheville for distribution. In May 1989, NCDC began a subscription service for seven additional weekly or bi-monthly charts formerly distributed by the Ocean Products Center.

Since usefulness of the charts is time-critical to a large number of users, especially in the fishing industry, efforts to shorten the length of time from production in Washington to mailing from Asheville are

on-going. Most charts are sent via overnight mailing, and two sets of charts (Gulfstream and Thermal Analyses) are FAXed to Asheville on the day of production. Sets of the Gulfstream and Thermal Analyses are mailed from Asheville weekly. Other charts are mailed semi-monthly or monthly depending upon production times. Charts can be FAXed from Asheville to customers, but presently fees are very expensive: \$55.00 for a one-time FAXing or \$25.00 per week for a period of at least 3 months or longer. Work on making FAX available for customers to access on a daily basis is on-going.

Back issues for all of the subscription charts plus discontinued charts are available for varying periods from the archives which were transferred to NCDC at the same time as the subscription service. Back issue charts are \$1.00 each. Mailed chart size varies from 8 1/2 x 11 inches to 11 x 17 inches.

For more information, contact NCDC's user services or send for the brochure "Satellite Analysis Charts Available from the NCDC - June 1989."

Federal Meteorological Handbooks

The National Climatic Data Center is now servicing requests from the private sector for new Federal Meteorological Handbooks (FMH). Currently, two new FMHs are available for \$20.00 each plus shipping and handling.

FMH No. 2 - Surface Synoptic Codes

FMH No. 10 - Meteorological Rocket Observations

Contact NCDC user services for details (704-259-0682).

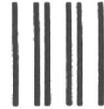
The U.S. delegation to the CCI-X meeting held in Lisbon, Portugal included (L-R) Ken Kunkel, Jay Fein, Ken Hadeen, and Dave Rodenhuis.



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The State
Climatologist

1989 American Association of State Climatologists Annual Meeting Bar Harbor, Maine, July 7-9, 1989

70 persons sailed on a Frenchman Bay Co. ice-breaker tour on the evening of July 7, 1989. While it had thundered and rained earlier and then again later in the evening, we had a dry tour in terms of rainfall.

Meeting 7/8/89

Wayne made opening welcome and brief comments primarily concerned with logistics of the next two days.

Ken Kunkel as first presenter talked about normals and data standards. It was pointed out that alternative measures of the climate such as medians and variability are desirable and should be calculated and used to augment traditional 'normal' representations. Some discussion indicated that 'normal' is an 'official' standard which must be maintained but that other measures can be useful in addition to them. It was asked whether AASC would like to review the document before submission for publication. It was pointed out that it will be published under the authors names but could also be viewed as a statement FOR the Association. Some interest in (re)reading the paper was expressed and it was agreed to distribute once more based on requests.

Alan Hecht started his talk by stating that the NCPO is in a period of transition of interest to AASC. NCPO's stated interests which would drive development would be emphasizing new factors such as a heightened interest in climate change. However, some conflicts exist between directions (in NOAA). In fact, one result could be that NCPO is eliminated in a move away from research to applied/impact climate studies. WHAT should be the emphasis?

NOAA's views = divergent views. Current (outgoing) administration has 'lost ground' in climatology. (As a result?) Hecht is going to EPA.

Climate services and applied climatology is taking on an international emphasis. Activities include collect and analyze, use, link to other data, restoration of emphasis on history, impacts, climate change. Regional Climate Centers are attempt to further goals as part of NOAA family of services. Interaction with other (federal) agencies is being enhanced. Regional special activities involving regional entities undertaken.

Global climate change: a frenzy. The ability to be responsive locally is important goal. Climate impact studies are an opportunity. Risk analysis will be important. Local involvement essential!

NOAA future: New administrator, new resources. Needs to be competitive AND develop partnerships. What will NOAA do? Well, they need to be made aware of user needs. Discussion centered on questions on myriad of emerging global warming legislation. Hecht responded that many with zero chance of being passed. Also duplication ('reinvention of wheel') a problem.

Don Wilhite 'introduced' the Drought Info Center started last September and which he heads. He stated that governments have tended to react to rather than plan for droughts and that they need to take a bigger role in planning. Science and Policy must be brought closer. From an earlier symposium on drought planning came the organization of a network. Funding has allowed developing regions planning (with travel funds) and

meeting in third world countries. Rather brief discussion pointed out need to plan BEFORE event (while 'wet'). Noted that CO2 discussion has stimulated drought planning.

Warren Nape [sic, Knapp] of the NE Regional Climate Center pointed out that their center at Cornell was established in 1983. Their activities enhance federal-state-local climate program activities from Virginia to Maine.

Purvis of the Southeast Regional Climate Center delineated services provided/planned by their center. The center also has a news letter. Their objectives included data base and user service development, and research. They have/are undertaking use of and training for CLICOM.

Ken Kunkel of the Midwest Climate Center pointed out the center's emphasis on their 'real-time' information system which can provide standard climate variables as well as unique derivative forms. Some discussion followed on crop model calibration importance and techniques. It was pointed out that some areas calibrate better than others. Some discussion of probability distribution construction ensued. It was wondered how important crop/soil moisture products were to (commercial entities) commodity houses.

Ken Hubbard of the High Plains Climate Center pointed out the varied activities of the Center for Agricultural Meteorology including remote sensing, climate impact, crop models, Extension and State climatology. The entire group consists of 6 faculty and about 12 graduate students. The center is currently implementing CLICOM and continuing involvement in instrumentation and computing activities. The center has achieved signed agreements with cooperating states with both administrative and technical representatives from each of the states. They maintain links to various federal agencies. Their facilities include a local area network with several different types of computers linked. They receive about 50 calls/day (FREE) to their WEATHER program (AGNET replacement). The center is running CLICOM 'experiments' (AFOS data is transferred to state data base) - every member will tryout system and report. Via Zephyr-Unidata images and maps are routinely received. Quality control, archiving, etc. are provided for 72 CRxx station are maintained on variously cropped sites to improve ET estimates (60-90% variance explained). Other current activities include soil moisture work including use of many factors to improve on accumulated precipitation or Palmer measures. CLICOM training sessions are being held. Drought assessments are being produced. (Agriculture bias to activities so crop indices are important.) Finally, irrigation scheduling program is still active. Ogallala impacts briefly mentioned in discussion. Importance of crop specialization of water based models pointed out. State involvement emphasized.

Dick Reinhardt of the Western Climate Center explained the centers attempts to get NCDC to deal with data 'in a modern way'. The center receives preliminary data from NCDC and runs its own validation checks on the data. The data may also be examined by one of the member SCs. The data which was 'flagged' by NCDC may be recommended for change or not as locally decided or additional changes may be recommended. The changes are supplied to NCDC for incorporation into 'final' product which is then returned to the center for center and member use. The center is also running seminars on CLIMON. Finally, the center is involved in archiving Fire Center automatic station data. A brief discussion asked of snow data acquisition. E15 (coop data form) distribution was

brought up.

Bob Muller represented the interest in the Southern Climate Center. He pointed out that it doesn't exist yet. He talked of the need for a SYSTEM of climatic indices; a one number index such as Palmer is not adequate. Suggested products include regional water balance statistics, heavy precipitation event analysis, and tropical event analysis (examples were shown).

Kelly Redmond spoke on the local process for the quality control of Cooperative data. NCDC receives E15s and within 20-25 days following month end supplies a preliminary version of the data with flags pointing to 'problem data'. Methods for creating 'suggested corrections' are being developed by region; corrections are returned to NCDC for incorporation into SOD tapes. Final version of SOD tape is turned back again to WCC and in turn to the member states. Because regional checking procedure development is independently derived some errors in addition to NCDC flagged values are found; changes are suggested to NCDC. Some additional data types are being ingested/archived by WCC including RAWS (400-800 sites? in west) which tends to be located at relatively high sites and SNOTEL data (550 sites in west transmitted daily by meteor burst broadcasts) consisting of snow depth, precipitation and temp from mostly very high sites/ridge tops. It was pointed out that these constitute an important 'alternate' data set. It was stated that alternate data sets should be used in verification efforts. Graphical support for error assessment would be helpful (better than tabular only) and CLICOM graphics are also desirable. Some discussion on SNOTEL problems/service.

Ken Hadeen, Director of NCDC, started by stating that quality control is an attempt to treat symptoms of the entire data system. NCDC collects 8000 monthly forms of 25 types. Ken worked through flow charts depicting the process steps and timing covering the reception of data forms to printing and distribution of data publications. Following the data entry procedure, 1.5% of errors are 'flagged' but only 0.5% end up changed nationwide. He estimates that 95% of errors are keying errors! About 15% of stations have been identified as 'problem' stations with repetitive errors. He asks, is it worthwhile to continually check and fix this smallish subset? There has been a gradual decrease in the number of Coop stations through time. He stated that the real problems/needs are for automatic station data, digital transmissions, regular station visits which requires more Cams and other details. In the future, NCDC will correct key-punch errors 'up front' rather than later by the use of PCs: 'QC on the fly'. Data visualization so that stations can be differentiated by elevation, time-of-ob, 1st order status, etc. can also help accuracy. At one time NCDC had 47 validators but that the resultant quality was not necessarily better. He is still looking for suggestions for improvements in NCDC's system.

Steve Doty talked on the Centennial Coop Observer program and the Historical Climate Network. He delineated the factors for 100+ year (relatively complete) station identification. Activities to be associated with the milestone were mentioned as were award focal points which could include SCs, NWS area managers, or Experiment Station Directors. Some awards/recognition suggestions were a document for service signed by President Bush, all-weather plaque for the station, a Rose garden ceremony, Congress declaring a 'National Weather Observer Day' (May 4, 1991), a commemorative stamp, and other PR fostered by a press kit to involve broadcasters, the Weather Channel, and AAWO. Each station will receive a (simple) standard summary. Steve pointed out the

opportunity for impetus to digitize daily data. The effort to digitize needs grass root and Experiment Station Directors and NOAA support. He suggested that we should 'do it right' by completing data for perhaps a 'few thousand' stations using CLICOM capabilities. Also EarthInfo (formerly US WEST) is interested. Preliminary of funding requirements include \$20k for certificates and frames, \$35k for all-weather plaques, \$15k for summaries, \$250k to \$3m for digitizing daily data, and unknown costs for award ceremonies. Aside from formal monies from NOAA and USDA it was suggested that a private fund, say 'AASC Centennial Fund' could attract more private contributions than an agency.

Kelly Redmond has examined data which HAS been digitized for the Historical Climate Network. With 'data-in-hand', products are relatively easy. He demonstrated some of the products which can be readily generated. Kelly briefly discussed the specific digitizing problem that is pervasive in some periods of transposing the day of the data automatically when it was digitized. The "Key to Meteorological Records and Documents" was cited as a source to help in resolving this discrepancy.

Tom Blackburn pointed out that the 'Observing Handbook' is essentially never a finished product; 'No.2' has been in a review process for three years now. He also highlighted details of his high density network analyses. For COOP data he pointed out that a change from a 15th of the month deadline to the end of the month has helped improve data completeness at publication time. In other business, he welcomes local use of old wind accumulators since parts are scarce, maintenance is difficult and they will have to dismantle anyway. On the general matter of coop equipment maintenance, contracting did not work well; spare parts were scarce. Equipment warehouse and service has been returned to government and backlog of service is now reduced. He points out that AASC and AAWO can help direct efforts of potential observers (volunteers outnumber NWS need). On the matter of MMTS: comparisons with Cotton region shelter temperatures are continuing. Wind, sky, and snow cover conditions are noted effects. He notes that aging/yellowing of shelters may affect temperatures. Tom is looking for existing MMTS/Cotton data sets for large scale studies. Calibration plugs are now available; user can use to make MMTS read 77.1F (and if not call NWS). A new calibration attempt is being made by use of a large mercury thermometer which is inserted into the core by a technician (greatest error found so far has been .4F). As far as lightning problems: not much change. To date, about one half Cotton shelters have been replaced with MMTS. The replacement will continue except at designated 'long-term' stations.

John Ball (301-443-8344, Boulder) of the Office of Atmospheric Research talked about some components of NOAA. The Environmental Research Lab does climate related and oceanographic research and interpret their results for varied audiences. Other branches such as OCAR (Office of Climate and Atmospheric Research) and Sea Grant are developing interests in climate. John, as 'constituent affairs specialist' puts 'needers' and producers together. John pointed out that 'Global change' research money will be made available by NOAA/OCAR for university research ('support going up dramatically!'). Call ('dialing-for-dollars' a la Michaels) at 443-8415 and talk to Mike Pall or Dick Grant for information. New funding (with zero based on 'local problem' perspective) accompanies new viewpoints.

Bob Mahler started by saying that the differences between meteorology and climatology and between meteorology and the chemical composition of the atmosphere is confusing but is discussed. He gave overviews of

several new observing/acquisition systems planned or starting. NEXRAD (by UNISYS) radar is still being tested in Norman, Oklahoma and is perhaps 3-4 weeks to acceptance. NEXRAD will have 3 modes of scanning; reflectivity, quantitative precipitation, and motion. ASOS is on the way. AWIPS workstations will allow integration of data systems (a la PROFS) in 3 to 4 years. From new generations of satellites, water vapor channels will be useful. Lightning detection data will become available (SUNY project). Commercial jet wind and temperature data will become available. Wind profilers are being tested/used which provide 3d profiling (runs at 405 MHz, supplies 6 minute and hourly data). Thermodynamic properties are possible with microwave profiler. RAS? Infrared Pulsed Doppler Lidar will be available on Japanese satellite as Laser Atmospheric Wind System. Systems are being tested (have already started with STORMS project) and are building to a very dense observation network over Kansas by 1995 (up to 86k observations/day). On Atmospheric chemistry: 4 major sites are observing CO2 for variability in both time and space (examples shown). Methane is also showing about 1% increase per year. Observation lead to understanding and thence to modeling. Some progress? Should not be surprised by 'El Nino' again (as in 1983). Other findings: two modes of Atlantic circulation possible: northern circulation cutoff from south which leads to general coolness or northern circulation linked to south which leads to warmth (as it is now). Bob stated that GCM models have received too much press but they are needed to steer/guide the observing program. On Ozone: Chemical, solar, or dynamical possibilities existed for Antarctic variations. Their conclusion was that the '82 dip was due to chemical forcing. In the future: data rates will expand RADICALLY, the ability to integrate data sets into unique products will develop (with such features as loops of images), and far better models with better resolutions will exist.

Ken Hadeen talked about the reorganization taking place in NCDC. Four divisions, including climate services, will exist, some of which need new heads. NCDC has new Local Area Networks; 3 special purpose subnetworks link 85 PCs (Novell network) and also connect directly to their VAX. They hope to extend their connections further afield, say to CAC, in the future. NCDC is spending more effort on global climate changes and global systems. They are involved in interagency working groups for data definitions and standards. Have been working with satellite data use concepts such as relating 'greenness' to the Palmer index. Their charge as World Data Center A for Meteorology is a focal point for worldwide data set archiving. All told, NCDC has 341 different data sets! Another emerging program, MAPSO, provides for PC input of 1st order station data on site and then transfer by diskette to NCDC. There have been changes in pricing policies; cost of reproduction for public sector users, 'fair market value' (what is that?) for others. Even with increased prices and fewer calls, net income is up (one recent month ~5000 requests, ~\$200k). The 'emphasis for the 1990s' will be on reference data sets, data from automated systems, research community support, and the definition of standards. However, even though changes are accelerating at the center, continuity with old data sets will remain very important. In the future NCDC will receive data directly in digital form, obtain data real-time, process increased data rates for new observation systems, and rescue historical data (bunch of old stuff in basement still not digitized). Of particular interest to SCs are "The State Climatologist" as an aid to communication and the on-line retrieval system.

7/9/89

(Kelly Redmond takes over meeting as new president.) Kelly thanked B. Detheir for his site searching efforts, and thanked W. Wendland for his

activities as president, especially for his correspondence with many on AASC issues. It was noted that the business meeting to immediately follow would not have the benefit of the day's presentations.

Business meeting

The motion was made by Kelly that the minutes of the last meeting, as published in "The State Climatologist", be approved by the membership. Unanimous approval was given by a voice vote.

Old business

The status of five resolutions as delineated in last year's meeting minutes were briefly discussed.

AASC would exert pressure to reestablish measures to ensure NCDC quality control, including legal action if necessary. The membership had been concerned with cuts related to the 'A76' process. At this meeting, it was concluded that this had become a moot point.

It had been recommended that the necessary steps be taken to encourage activity on senate bill relating to Marine Centers. This point was not actively rediscussed.

Another resolution by Pete Robinson with amendments by Bernie Detheir on the Centennial program was also not actively discussed since many activities are underway.

The resolution to approve a statement on climatic statistics, specifically on 'normals' as coordinated by Ken Kunkel was not extensively discussed. Ken had earlier presented some contents of this paper. Arnold Court asked that copies be distributed.

The resolution charged to the data availability and quality committee that the quality and quantity of data be improved was also not extensively discussed.

In a final item of old business, Charles Wax asked if meeting registration included dues. No, they do not.

New business

Pat Michaels with modifications made primarily by Arnold Court suggested that a change be made to the AASC Constitution. He recommended that Title 4.2 which reads 'Associate Members: any person currently shall become a voting member.' be modified to read '....currently the director or designated representative of a Regional Climate Center...'. After a brief discussion for clarification purposes, the motion for the change was put to a voice vote. The measure passed unanimously. Pat Michaels requested that a count of hands of voting members be made. 23 were counted.

Tom Blackburn suggested that the Centennial weather station fund raising needed a place where private contributions could be sent that would be a non-federal agency site, such as the Sec.-Tres. of the AASC. A brief discussion with no dissention indicated that this would be OK. No formal motion was made.

Pat Michaels brought the fact that currently 8 bills pertaining to greenhouse warming, some scientifically based, were being worked on by Congress. He suggested that we should write letters in support of Sen. Moynahan's bill; there is a need to establish a proper research trust (noted to be a similar approach to acid rain). Pat moved that: The

president of AASC should write a letter to Sen. Moynahan stating that the aasc supports the provisions of his bill and that he is willing to discuss the issues further with him.

Ken Hadeen suggested that we (AASC) should discuss the other side of the argument: 'by the time scientists decide whether the greenhouse effect will be as developed as the models suggest, it will be too late to do anything about it'. Pat Michaels stated 'there IS no other side' suggesting that observed rises are way too small (only about .15 degrees) compared to what should have occurred if, indeed, the greenhouse effect were operating this century. Pat disagreed with Sen. Boschwich's approach of 'acting first'. Hadeen responded that assessment of the temperature rise to date may be too small.

Dave Miller suggested that the author of EACH bill be contacted to talk with them about their proposals and that an AASC statement is needed.

Kelly Redmond suggested that the AASC does support efforts relating to archival, storage, etc. as related to data but not policy, per se.

Michaels suggested that 8 bills is too many for no AASC involvement.

Muller stated 'they're not OUR bills'. But both Redmond and Miller responded that we need to put in our '2 cents worth'.

Strommen interjected that the NCPO has assembled and evaluated the relevant bills and that AASC should look over their assessment.

Redmond reiterated the we have universal AASC concerns. Court suggested that before contact with Congress, AASC needs to have consensus on some statements; what will we discuss? Miller said that Redmond has already stated our primary concerns. Michaels followed by stating that while data 'schleping' is our business, climate impacts are also our business.

Redmond expressed concern with the primary greenhouse question: 'Is it real?'

John Ball suggested that we pass along our collective wisdom: 'what are this group's BELIEFS?'

Michaels moved that a Legislative Study Group be formed. The move was seconded and carried.

McKee asked for clarification: When and where? Will it be more focused on the next 6 to 8 months?

Michaels suggested that the committee review all 8 existing bills to compare with stated AASC goals. Results would be passed to AASC executives for decision on actions. Redmond added that the committee would focus AASC involvement.

McKee thought that the general thrust was OK but that policy should address observation issues verses forecast issues.

Michaels suggested that availability of dollars is BASED on forecast issues.

Wendland added that non-committee members should also have access to copies of the bills. To which Redmond added that anybody was welcome to review. Miller suggested that copies be mailed to members.

Michaels brought up the possibility of establishing an office in DC (presumably as other lobbying groups do).

Purvis suggested more of individual contact with people who propose legislation since AASC takes a long time to decide on issues. Redmond suggested that this would be a way to voice our general concerns now. Bermowitz suggested that such contacts be coordinated with his office (???). Laver interjected 'don't interview without a resume' meaning we need a formal statement of 'this is our position'. Miller added that we need it FAST. Redmond agreed we need our concerns 'on paper'.

Michaels restated his original motion: 'to establish a committee to study all existing bills on atmospheric warming and to write a white paper on the bills' content for use by the AASC executive committee'. He followed up by stating that the bills are LONG.

Hadeen continued by saying that we 'can't be too milk-toast'; that we have to build data bases TODAY. Michaels that the committee must act fast as a preview to legislative actions. Duchon suggested that without a draft (of AASC position?) no action will result. He pointed out that the committee results should lead to judgments on actions. Michaels emphasized that recommendations should accompany the white paper and that we need to exercise out 'collective wisdom'.

Muller pointed out that the media is still hyping greenhouse.

McKee suggested that the committees efforts should not be just a one-time effort but that they should continue to alert the executive committee as to bill changes. Michaels followed up by stating that even if the AASC never writes to representatives that the SCs will be informed as to the content of Legislative documents.

Redmond asked for a vote on the establishment of a committee to (1) review existing bills (relating to global warming) with respect to the interests of AASC, (2) continue to review emerging or changed bills, (3) make recommendations for action for the executive committee and members. The voice vote resulted in passage of this motion. It was also added by Redmond that the executive committee will be asked to comment and respond to members. Redmond then suggested that Pat Michaels chair the committee, that the executive committee automatically be included in the committee, and then asked for volunteers. Duchon, Hillaker, Purvis, Laver, George Bomar, and Muller volunteered.

In other new business ...

Redmond discussed the reorganization of the Weather Service. Some long term stations were being cut out, radiosonde stations were being moved, already few high elevation sites but they are being eliminated (they are relatively low cost to man but monetary excuses are given and no political resistance given). We have a need to keep reiterating to the weather Service on the continuity problem.

Blackburn suggested that NCDC should be contacted with recommendations on continuity.

Canfield suggested that (Kelly) should take advantage of new regional (West) director status. While new administration being formed, influence it possible since, in reality, it is at the local level where decisions take place. Mork questioned whether it wasn't (as it appears) that cuts

are done in Silver Springs. But Canfield suggested that the regions recommends and the administration 'rubber stamps'. Canfield did go on to say that the money crunch does occur at the regional headquarters.

Muller wanted to do something stronger; to establish 'climate network station' designation. Court said its being done. Michaels added that some bills also propose that.

Court commented on original purpose of some data (not climatic). Redmond emphasized that for much data climatic use is a by-product. Further even though the original need for a specific observation may no longer exist, the climate use continues.

Strommen stated that the best stations should be identified and to let the administration know. Redmond responded that the decision to cut, however, is often found out late by SCs. Strommen reiterated that modernization will go forward but the administration must be made aware of what is essential in old systems.

Ball suggested that AASC needs a standing committee to assess data need and quality.

Hadeen suggested that this station continuity problem is happening all over the world. He mentioned the concept of picking up stations as 'natural resources'. He stressed the need to IDENTIFY climate network stations and suggested that AASC has the ability to influence bill writers on these preservation issues.

McKee pointed out that the Weather Service sold modernization to its users with the closings known and deliberate. Court asked whether McKee meant closings or simply conversion to auto stations. McKee said closings were to happen.

Redmond lamented that at least human observations were trustable.

McKee emphasized the need for a list of stations to protect. Reinhart suggested that regional centers keep and handle such lists.

Court wondered which observing system is better (manual vs. auto). To which McKee noted that, for instance, snow is not measured at auto replacement sites.

Wayne Wendland (always the voice of reason) called on those in attendance to FOCUS their discussion.

Michaels suggested we concentrate on 1st order stations and squawk at closings. Redmond said that the needed letters will be written.

More new business ...

Redmond's call to select new year's meeting site (Des Moines in 87, Oregon in 88, and Bar Harbor in 89) was temporarily tabled.

A call for new member nominations was made. Paul Croft (by ???), Bob Bermowitz (by Michaels), Jon Zeitzman (by Griffiths), Ron McCall (by Wendland), and Frank Quinland (by Wendland) were all nominated as Associate Members. A voice vote unanimously approved the nominations.

Michaels was called on to suggest nominations for president-elect (as selected/screened by the nomination committee). Michaels said that 7 or

8 possibilities had originally existed but the committee would recommend only one candidate, Mark Schulman. The committee also recommended that the Sec.-Tres., Jim Zandlo, be continued.

Schulman stated that he would be busy as he recently became Dean of Cook College (Rutgers Univ.) but would have chance as president-elect to test the rigors of the position and would endeavor to meet the requirements.

Griffiths pointed out that no prior president has had the stature of Schulman; Schulman would be ideal.

More unfocussed discussion followed. Molanau noted to Schulman that help was always available from members.

McKee moved to close the nominations, a second was heard, and a voice vote ensued. The nominations were approved unanimously.

The discussion on next year's meeting place was reopened.

Schulman (since, apparently, the president-elect is supposed to organize the next meeting) suggested that the next meeting be held in Atlantic City. He would have a meeting committee at his disposal to aid in planning.

Molanau questioned whether such a site would constitute a 'middle-of-the-country' site.

Michaels, in support of the site, pointed out ease and cost advantage of taking air to Philadelphia and then a train to Atlantic City.

Steve Doty suggested that the next meeting be held in Fort Worth since the NWS (Manning?) there had offered to host the AASC. He pointed out the advantage to the centennial program and contact with Cams which would result from such NWS contact.

Wendland said 'good idea' in support of continuing the traditional geographical scheme: east-central-west.

Wise suggested that we go to Anchorage (while he's still there) in 1991 (two years hence/rather than Hawaii).

Court asked why should we necessarily have the meeting in July/August. Molanau said don't move meeting time since many have other seasonal commitments.

Molanau suggested Michigan (as a midwest site). Michaels suggested that we take advantage of Schulman's staff support. Hillaker countered that the Fort Worth Weather Service involvement was a good thing to consider. Bermowitz noted that the eastern site would attract NOAA 'higher ups'.

A vote was called for Atlantic City verses Fort Worth. 21 votes were for Atlantic City, 4 for Fort Worth. It was decided by default that the meeting dates should be Tuesday through Thursday in the first or second week of August. It was suggested that if 'NOAA types' could be induced to attend that the meeting should officially cover perhaps 2 1/2 days to accommodate additional talks.

Ball suggested that because of the meetings proximity to GFDL, that a tour might be arranged there.

The site of the 1991 meeting was discussed. Because a total eclipse would be occurring over Hawaii in July 1991, Hawaii became a suggested site. Discussions revealed logistics problems (costs, most rooms already booked). Alaska was also suggested but no planning exigencies existed so suggestion was tabled. A preliminary hand poll was taken to find 'who would attend a Hawaii meeting (at time of total eclipse)'. The poll revealed only about 10 would go. The motion fell apart.

Wise moved to adjourn the business meeting. The motion was carried.

Resumption of talks

Norton Strommen talked of USDA viewpoints, activities, and actions. He mentioned organizational entities such as the Weather and Climate Coordinating Committee and the Committee on Earth Science which according to their strategic plan, NCPO should establish policy on global climate change. The USDA strategic plan (revised each year) is approved by the OMB. It calls for USDA to assess UVB effects on plants and for long term monitoring of climate, acid rain, etc by the Forest Service. Another entity in which he is involved is the Intergovernmental Panel on Climate Change.

Norman stated that the USDA 'can't afford to have environmental groups dictate policy'. Issues of concern include forestation/reforestation, agricultural fertilizer use, and cows: a threat to the ozone. There must be assessments of what those issues mean both locally and regionally. US actions are not enough to solve problems, international cooperation is required. To complicate the situation, we don't have ample data on conditions. for instance, yield data variability had been 30-40% in early records. The variability dropped to a few percent in the '60s but is now again 30-40%. There is a need to adjust agricultural planning/response to NATURAL variability. We need to understand to plan to implement. The USDA seeks to increase long term stability and to increase reserves (food supply). Some adjustments in practice are possible. Crops do not use all the chemicals which are applied. Also less energy input can be exercised without yield problems. The use of advisories can save money by reducing the applications of chemicals and reducing energy use.

Discussion starts with Michaels. He states that there is evidence for an anthropogenic signal of warming of night time temperatures relative to day time temperatures. He suggests that relative to overall rising temperatures, this is not such a bad result, and asks whether USDA considers the possible implications of such a result? Strommen replies that, yes, such results are incorporated.

Strommen adds that the EPA report (on global warming) is seriously flawed.

Michaels asks if Strommen believes that there is any chance of reducing CO2 output by more than, say, 25%? Strommen answers no. To which Michaels follows, then why try? Strommen talks of encounter with (verses) Hansen before Congress at which he points out discrepancies in Hansen's presentation but concludes that there are no good counter arguments.

Strommen ends by adding that SCs' analyses are useful contributions.

Hadeen talks next on the CLICOM system. He points out the benefits of the system: standardization for data exchange, application software and quality control, and centralized technical support. CLICOM can be used

to 'back' enter and check data. It can also be used for Marine data entry.

So far NCDC has provided training for 55 users and has provided foreign support.

The 3.0 version of CLICOM, to be released in the fall, will use features of the newest version of DataEase. It will be more user responsive with improved graphics, etc.

Where do we go from here? NCDC will continue technical support and training. A USER's group is officially formed. Recommendations on directions are being accepted (from members Reinhart, Purvis, Ashcroft, Bark, Miller, Bissinger-NCDC).

Hadeen says that additional improvements are needed in graphics, quality control, and automatic station data ingest.

(Florida) suggests that Lotus 123 can be very useful for data display purposes.

Greg McCurdy talked about Utah's use of CLICOM. Utah has been using CLICOM since version 1.0 and is currently using 2.0. They have developed a pre-CLICOM data handling code. Utah has also back-punched daily data to 1932 which has resulted in a quick method for record condition searches. Some other activities include quality control efforts including the ingest and use of 'remote' data (SNOTEL, BLM data). Utah also interacts with NCDC on quality control measures.

Greg notes how it is valuable to 'jump' out of and into CLICOM (shell) and that feature is apparently limited to version 3.0. He notes further that versatility is very good in report writing using DataEase. He suggests that graphical devices and mapping based quality control is very useful.

Discussion starts with Wendland asking whether user generated updates/applications to CLICOM are incorporated by NCDC. Hadeen replied that NCDC checks out the suggested revisions and supplies them to users if they are useful. Redmond adds that 'our' (Oregon's) validation method would be useful IN CLICOM. He also notes the sharing of 'centennial' data can be facilitated by CLICOM. Hubbard adds a congratulations to SCs who are already running CLICOM. McCurdy finishes by noting that many alternatives exist in CLICOM to accomplish tasks.

Ian Barrie talked on the Agricultural Weather Program in the UK. He delineated the regions which act to deliver information to users. He also showed the distribution of stations and explained the grid system on which calculations are done to produce a variety of derived quantities relevant to agriculture. The standard grid system features a soil moisture sub-model. One product class, Insect Activity prediction, uses daily data to-date model output temperatures for the ensuing week and climatology thereafter to estimate onset dates. A number of other specialize services are available to various agricultural sectors.

Unfortunately the special climate services offices are being closed and regional offices are being reduced drastically. He sees a need to seriously retrench since 100% of costs for agromet services MUST be recovered. That amount comes to about \$400 per person per day. Some possible solutions include the integration of services and more aggressive marketing.

Bermowitz asked if using model output temperatures really help accuracy of insect model. Ian answered yes.

Jim Laver started by pointing that a defensive mode will not accomplish as much as actively pursuing something. He notes that we need recommendations on long term (especially HCN) stations.

Jim went on to describe CAC activities. He showed a list of impact studies (from regional centers) being pursued: agriculture, water resources, transportation, energy, business/commerce, environment, and tourism.

Jim described recent changes to CAC's Palmer Index calculations. When the state of a region is not 'wet' or 'dry' with 100% certainty, two series are being calculated; one for 'wet sequence' and one for the 'dry sequence'. CAC had been releasing the sequence result corresponding to the one with the highest probability of being 'correct'. Unfortunately when the probability is hovering around 50%, the sequence may 'flip-flop' from week to week, say from -2 to +2 and back again. By averaging the two sequence values a more stable result can be published.

Jim also mentioned or showed other specialized products such as a Palmer drought index analysis which extended into the Canadian provinces. Some other products generated or being worked on include a forest fire index for land management, and improved weighting scheme for degree days, and cumulative precipitation and soil moisture anomalies as aids to hydrology and agriculture. CAC is also working on communications, especially the open architecture network of AWIPS 90.

Norm Canfield talked about ASOS deployment. Some of the features of this modernization/automation system include consistency in such variables as visibility and sky conditions, many basic variables observed, observations are 'round-the-clock', instruments for a given site can be dispersed spatially.

NWS will be deploying 250 (at 1st order sites), FAA 592 to 956, DOD 86 to 284 (with low number attributable to Navy and high to Air Force participation). Currently there are two competing contractors, Qualimetrics (CA) and Belfort (MD). Production starts in April 1990, 55 stations will be placed in central by mid 1991, and by late 1993 into 1994 the 250 NWS stations and most others should be deployed.

An ASOS Operational Planning Group exists with Steve Short as an important figure. The working groups include climatology, risk reduction activities, operations planning, and integration of complementary technologies. Norm pointed out the significance of the inclusion of a climatology working group. However, he continues that FAA's own system, AWOS, will only archive a portion of the data as planned (2/3 will go automatically into circuit, other 1/3 is scheduled now to be voice only auto pilot broadcast).

Early stages of the program have their own acronym; MARD or Modernization and Restructuring Demonstration. Starting in June 1990 stations will be placed at Colorado (7), Kansas (19), Missouri (6), Nebraska (5), Oklahoma (13), and Texas (2).

Norm brought up the need to preserve traditional data sets. In particular he mentioned the existence of long term ecological research

sites and recommended that the data produced there be found and archived.

Returning to ASOS, recommended actions exist from the Instrumentation and data standards committee. The 1989-90 chairman is from a MARD state. The ASOS climatology working group includes such representatives as Rob Quale (WCDE) and Dave Rodehuis (CAC). The Special Engineering Office in Kansas City is involved. Two subcommittees exist to deal with the issues of statewide data acquisition from AWOS, NASAO and automatic network differences such as ASOS-AWOS vs. RAWS vs. states.

Mccurdy points out that 'nobody knows' how states might be able to interact with this new data source. Redmond wondered how data flow might be structures, once and hour? coded? To which Canfield responded 'yes, like AIRWAVE'. Hadeen offered that NCDC will be archiving the data. Redmond was assured that an LCD like publication would follow. Other comments led to Hubbard commenting that AWOS should be archived too. Williams pointed that devices have 'rollover' recorders for short term storage which could be use following an accident.

ASOS maintenance should have 50-100 mobilized technicians and distributed supply and spare parts and rapid response. Also, the system should have built-in diagnostics, redundancies, 24 hour maintenance monitoring, and backup systems.

Redmond asked about overlap of traditional observations with ASOS for calibration, etc. Canfield said that 1 to 3 years overlap has been proposed.

Williams talked on Earth System Science (ESS), NASA's 'Mission to Planet Earth' as an interdisciplinary effort. Some features of the effort include global changes of uncertain impact already observed, earth SYSTEM concept emerging, technology is now achievable, international cooperation is now growing, and there is a favorable political climate. ESS is a part of the International Geosphere-Biosphere Program (IGBP). It includes 2 polar platforms, tropical rainfall, 3 geostationary satellites, and technical development. Many examples of new platforms and sensors were shown and new resultant data sets were briefly explained. A short discussion confirmed that a 'ground truth' program exists.

John Vogel from NWS Office of Hydrology talked about efforts to reassess Probable Maximum Precipitation (essentially redo of HR 43). In reviewing the data, his group have found some one hour values which are in error. John points out that past precipitation frequency studies are a 'hodge-podge' with many publication covering the topic. He is working alternative presentations (currently for W Virginia and Pennsylvania) which will be more unified and will result in manuals but also will exist in an interactive PC based form.

John suggests that if SCs have hydro-climatic problems that they can call him. Also, his group is building an event list of large rainfalls; John welcomes calls from SCs who observe extreme rainfalls in their state.

Redmond notes that Wisconsin will have only a half-time student in the coming year while Doug is on sabbatical in Denmark. Also the soft monies which have supported the Oregon SC may NOT be replaced by firm legislative commitments. With Kelly's departure, the program may fade.

Kelly points out that even with regional offices, a strong need will continue to exist at a state level for SC style services.

Redmond suggested that HR1880 be read, commented on, and responded to.

Wendland declared the meeting closed.