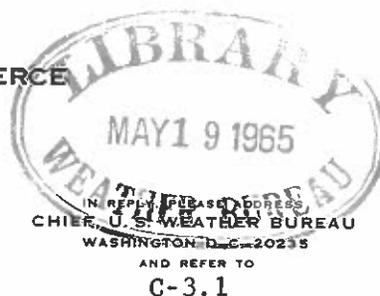


UNITED STATES DEPARTMENT OF COMMERCE  
WEATHER BUREAU  
WASHINGTON

May 3, 1965



FILE: 922 MEMO

MEMORANDUM

TO : Regional and State Climatologists, NWRC, Field Aides (HC), Field Aides, River Forecast Centers, River District Offices, Regional Substation Management Units, and Regional Hydrologists (with copies to Regional Offices, Agricultural Service Offices, and Agricultural Forecast Offices for information)

FROM : Director of Climatology

SUBJECT: Climatological Services Memorandum No. 107

1. 18th MEETING OF THE COMMITTEE FOR CLIMATOLOGY (NAS-NRS) ADVISORY TO U. S. WEATHER BUREAU

The meeting was held at Suitland, Maryland, on March 29, 1965. Committee members present were: Professor A. Vaughn Havens, Chairman; Dr. Reid A. Bryson; Dr. Arnold Court; Dr. Kenneth R. Knoerr; and Dr. John R. Mather.

Mr. Frederick demonstrated to the Committee the Barnes infrared radiometer. He showed some of the data observed on soil surface temperatures during snow cover and discussed some of the problems encountered. It is contemplated to purchase two more radiometers for the research work of Mr. Blanc in Arizona and Mr. Price in Hawaii.

Dr. Knoerr had asked at the 17th meeting of the Committee to have more information on the micrometeorological station network of the Weather Bureau and this was furnished. It was noted that the energy exchange at the surface is not measured. This will also be a problem at the Benchmark Stations. The components of the heat flux should also be established there.

Dr. Bryson informed the Committee of the installation of equipment at Canadian stations, where a ventilated radiometer of the Suomi type and three Eppley pyranometers (directed up, down, and up with sunning) are installed. The Office of Climatology will obtain details.

The Committee stressed the importance of measuring the key quantities of the heat flux at Benchmark stations, both those to be operated by the U. S. Weather Bureau and the Geological Survey.

The Committee also urged that consideration be given to establish the soil heat flux, the albedo, and the roughness parameter at Benchmark stations.

Items to be presented by the U. S. Delegation to the 4th meeting of the Commission for Climatology of WMO were discussed. The progress report on

(Climatological Services Memorandum No. 107)

WASHINGTON, D. C.  
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U. S. climatology will be circulated to Committee Members, when submitted to the President of the Commission (around the end of April).

The U. S. Delegation will also submit a report on the problems of satellite climatology, even though only future plans can be presented in such a report.

Dr. Court reminded the group of the problem of sign conventions, especially for wind data, that should be internationally adopted. Some ambiguity also exists for lapse rates.

The Committee recommended that the U. S. present to CCl-IV working papers to establish an international standard for wind direction signs, using S and W as positive, and a positive sign for temperature laps (decrease with height).

The National Atlas was discussed. The editor is working closely with the Weather Bureau in the selection of climatic charts to be shown.

Dr. Court stressed the desirability of a pamphlet giving charts of normals for the U. S., superseding the out-of-date maps from Climate and Man still being distributed by the Superintendent of Documents. The new charts which have appeared during the past year on the back of the Daily Weather Map would make a good collection. Dr. Landsberg assured the Committee that such a pamphlet will be included in the FY 1966 program of the Office of Climatology.

The Committee noted the changes that had taken place in the publication program and future plans. There is need for further scrutiny of the new LCD, particularly with reference to the explanatory notes.

The Selective Guide should be reviewed before reprinting. Improvements in the index system could be made. A need exists for a pamphlet, not included in a publication series, listing climatological reference material to be used by reference librarians. (O/C will look into the feasibility of preparing such a publication.)

The "new look" of the Weekly Weather and Crop Bulletin was praised. Consideration should still be given to replace present precipitation figures in the weekly planning guide by a probability value (50%?).

The question of an economic weather reporting system was discussed. Such a publication will fill a useful purpose. It might also take the form of a rearrangement of material in the WWCB and Storm Data. The WWCB might include economic weather material of general nature (perhaps by states or classes of economic activity). Storm Data could include fuller reports of damages from particular storms. Useful sources of information were mentioned: Department of Labor unemployment figures in certain weather-dependent occupations, Public Utility data on gas and electricity consumption, snow removal costs, home insurance damage claims. This will be further explored and a survey of opinions of State and Regional Climatologists is being made. A further report to the Committee will be made at the next meeting.

Dr. Landsberg briefed the Committee on the organizational changes made in the climatological field services as part of the Weather Bureau reorganization. The only major change was the reassignment of Mr. Blanc to the Laboratory of Climatology. The plans for new State Climatologists' positions and for additional field personnel were discussed. The long-range possibilities of cooperative assistance from States for the Climatologists were also mentioned. Career development will remain a very important objective.

The matter of joint computer use by the Weather Bureau and the Air Force at the NWRC, Asheville, N. C., is still pending before the Federal Coordinator for Meteorology. It is hoped that an arrangement, mutually satisfactory and beneficial, can be worked out.

The World Weather Records for 1951-60 is making steady progress. A summary of Volume I was shown. This volume representing North American data is to be finished by the time CCL-IV meets. The status of other volumes can be noted from the following table (listing numbers of countries):

	<u>Data ready</u>	<u>Data incomplete</u>	<u>No information</u>
Africa	29	9	8
Asia	14	7	4
Australian area	2	17	1
Europe	21	4	2
South America	8	4	1
Central American area	8	10	2

The worst problem will remain the countries behind the "bamboo curtain." Mr. Bailey suggested that Dr. Harold Coolidge (Pacific Science Board) may be of assistance in this respect.

The format and future of the World Weather Records was discussed, including the possibility of adding such derived values as standard deviations to the observations.

The Committee expressed the opinion that the value of World Weather Records for research justifies long-range planning for indefinite continuation of the series.

Considerable discussion centered around the climatological records that could and perhaps should be obtained from automatic stations. While the present records are in part unsatisfactory for climatological purposes and generally not standardized, O/C recognizes the problem. The matter will be looked at again and the Committee will be kept informed on the status of this problem.

The Committee noted the new Budyko radiation Atlas and the translation of the text. In view of the small number of copies and the value of this Atlas the Committee urges that further attempts be made to reproduce the charts of this Atlas.

The suggestion was made that black and white microfilm through suitable filter photography may perhaps produce satisfactory results.

Dr. Landsberg informed the Committee of the questions regarding Climatology raised by the Committee on Government Operations ("Government Weather Programs", 89th Congress, 1st Session, House Report No. 177, 1965):

"What are the long-range plans for the archiving of weather data? Is this program eternal or will a point be reached where further accumulation of data will not be required? Can empirical formulas or other analytical techniques be devised to reduce the need for infinite data storage? Who coordinates climatology studies on overseas areas?"

Except the last question, which addresses itself to an administrative detail, these queries strike at the core of climatological practice. They deserve scientifically well-founded, meaningful answers. The discussion brought out that as long as climatic change is a matter of concern data have to be kept and stored. Also the problems of man-made modifications of climate can only be kept under surveillance if comparative, long-record information is available.

The Committee decided to formulate a statement designed to answer these questions. The Chairman will prepare a draft for circulation and comment.

The Chairman, in the absence of Dr. Carter, introduced on his behalf another new item. This concerns the measurement of air quality at benchmark stations in order to establish values at locations away from primary sources of air pollution. Dr. Landsberg informed the Committee of the plans of the Weather Bureau's Air Resources Laboratory.

The Committee underlined the importance of air quality observations at benchmark stations, including turbidity, gaseous composition and other relevant measurements.

The Committee discussed plans for a meeting in Autumn to receive, among other things, a report on CCl-IV. Date and place will be kept open until a later date.

2. STATE CLIMATOLOGIST-ADVISORY AGRICULTURAL METEOROLOGIST TRAINING CONFERENCE: A State Climatologist-Advisory Agricultural Meteorologist Training Conference was held at the Regional Office in Kansas City March 17-18, 1965.

The purpose of the conference was to stimulate State Climatologists and Agricultural Meteorologists toward the pursuit of broader service through free exchange of experiences with critical review by Regional and Central Office officials responsible for the program.

Each participant selected a phase of his program for presentation to the group. This was followed by discussions and recommendations. The broad range of topics discussed generated a high degree of interest and enthusiasm

and the Regional and Central Office officials were afforded an excellent opportunity to appraise the effectiveness of the field programs involved.

3. WB FORM 612-14A - SUPPLEMENTARY RECORD OF CLIMATOLOGICAL OBSERVATIONS: Ref: CSM 100, Item 17; CSM 77, Item 7; CSM 58, Item 1. This is to remind State Climatologists of the availability of this form. Form 612-14A is especially valuable for stations where air, wind and/or soil temperatures are observed. It is also useful for almost any type of observational data that can not be readily accommodated on WB Form 612-14. For these reasons we would like to have you encourage those observers now making such observations to use the form. In this way it will be possible for you to collect a copy of the data for eventual contribution to the Meteorological Archives.

4. PRODUCTIVITY REPORT: The following table was prepared from the State Climatologists' four Quarterly Productivity Reports rendered in 1964:

	Quarter				Total
	1st	2nd	3rd	4th	
(1) SCS Summaries completed	29	18	21	21	89
(2) Consultations on Cooperative Technical Projects	607	456	526	482	2071
(3) Visits to WBOs (non-local)	65	88	81	65	299
(4) Schedules or Special News Releases	361	372	417	344	1494
(5) Radio and Television Broadcasts					
a. Technical	6	7	4	2	19
b. Popular	9	5	8	10	32
(6) Professional Conferences, Meetings, etc.					
a. An invited participant	50	50	29	38	167
b. Other	55	40	39	36	170
(7) Speaking Engagements					
a. Professional groups	38	10	18	19	85
b. Lay groups	26	44	45	29	144
(8) Substation Summaries Published	26	17	31	36	110
(9) Inquiries Answered (est.)	3075	3000	2975	3250	12,300
(10) Publications Distributed (est.)	2675	2650	2825	2950	11,100
Articles published in popular and scientific publications	12	20	10	12	54
Articles published by others with assistance from State Climatologists	13	10	5	7	35

5. MAILING OF COMMENTS ON ARRAYS TO NWRC: When mailing comments on the temperature and precipitation arrays to the NWRC, State Climatologists are asked to mark the envelope "Attention: Climatography Section." This will expedite their delivery to the Climatography Section. Since data are in the final stages of processing by the time the comments are received a delay of only a few hours could mean that any changes suggested would have to be made by hand on the finished formats. This is more time consuming than routine machine corrections.

6. AIR POLLUTION CONTROL PROGRAMS: The U. S. Public Health Service is now making grants to local, State and regional governmental agencies to help them initiate or strengthen programs for the control of air pollution. It is possible that some State Climatologists will be contacted to participate in some of the study phases of those programs. Among the first States receiving grants (during November and December 1964) were West Virginia, New Jersey, Indiana, Illinois and Pennsylvania for improvement of their programs and Oklahoma, Alabama, Texas, New Mexico, and North Dakota, for development or establishment of new programs. In addition a number of cities and counties have new grants. These grants range from as little as a few thousand dollars to as much as a quarter million dollars.

7. REVIEW OF TEXT IN SCS SOIL SURVEY SUMMARIES: Some State Climatologists have commented that the county climatic summaries prepared for the SCS Soil Surveys are edited and printed without any opportunity for final review of the edited changes by the State Climatologists.

This has been called to the attention of the head of the editing group. He advises that the edited manuscript in every case is sent back to the state official responsible for coordinating the survey (usually the State Soil Scientist) for final review. State Climatologists should keep this in mind, and request an opportunity to look over the edited changes before printing.

8. CLIMATIC SUMMARIES FOR SCS SOIL SURVEYS: In order to update our information on the above subject we would like to have the following items from each State Climatologist:

- (1) Number of SCS climatic summaries completed with names of counties or areas.
- (2) Number under way but not yet completed, with names of counties or areas.
- (3) Number and names of counties or areas requested by SCS with scheduled dates when completed summaries are desired by SCS.

9. AVAILABILITY OF PUBLICATIONS: The publication listed below may be obtained upon request to:  
Prof. Walter H. Dickerson  
Agricultural Engineering Bldg.  
West Virginia University  
Morgantown, W. Va. 26506

Bulletin 497T "Influence of Selected Rainfall Characteristics on Runoff Volume", West Virginia University Agricultural Experiment Station, in cooperation with U. S. Department of Agriculture, June 1964.

10. NO. OF PAGES IN CLIMATOLOGICAL PERIODICALS: Re: Item 11, CSM 92 and Item 5, CSM 100. The following table shows the number of pages of each of the climatological data publications printed during calendar years 1960-1964, with estimated figures for 1965:

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>
Storm Data	150	115	119	106	123	123
Miscellaneous	179	100	351	465	999	999
Mariners Weather Log	240	240	240	240	240	240
Weekly Weather and Crop Bulletin	416	416	416	416	416	416
Monthly Climatic Data for the World	527	498	459	412	451	451
Climatological Data, National Summary	705	740	696	638	734	834
Hourly Precipitation Data	4,286	4,608	3,808	3,800	4,570	4,570
Local Climatological Data, Monthly and Annual	4,652	5,045	5,648	4,235	5,130	7,950
Local Climatological Data, Supplement	5,246	10,232	10,824	12,096	11,376	0
Northern Hemisphere Bulletin	9,406	8,674	10,737	8,226	7,675	0
Climatological Data, States	<u>9,433</u>	<u>10,645</u>	<u>8,914</u>	<u>8,006</u>	<u>11,505</u>	<u>10,821</u>
TOTAL	<u>35,240</u>	<u>41,313</u>	<u>42,212</u>	<u>38,640</u>	<u>43,220</u>	<u>26,404</u>

11. CLIMATOLOGICAL SUBSTATION SUMMARIES: This cooperative program continues to make excellent progress with over 800 summaries published. Of these, 110 were printed in 1964. All but ten states have participated.

A number of the earlier summaries have been revised and reprinted; these are not included in our count.

A list of summaries by states follows:

Arizona - 113	Massachusetts - 7	Oregon - 19
Arkansas - 6	Michigan - 71	Pennsylvania - 3
California - 31	Minnesota - 18	South Carolina - 18
Colorado - 11	Mississippi - 2	South Dakota - 5
Connecticut - 1	Missouri - 2	Tennessee - 3
Florida - 13	Montana - 14	Texas - 27
Georgia - 40	Nebraska - 13	Utah - 26
Illinois - 3	New Hampshire - 7	Vermont - 5
Indiana - 46	New Mexico - 35	Virginia - 1
Iowa - 8	New York - 7	Washington - 85
Kansas - 2	North Carolina - 25	West Virginia - 1
Kentucky - 2	North Dakota - 16	Wisconsin - 67
Louisiana - 1	Ohio - 8	Wyoming - 13
Maine - 4	Oklahoma - 12	Alaska - 15

The substation summary program is an important one, and a substantial economic contribution, made without a great deal of effort on our part.

12. PAPERS SUBMITTED FOR REVIEW: We are making an effort to speed up review of climatological papers submitted to the O/C, so as not to unduly interfere with publication schedules. Authors can help us by thoroughly planning their papers (poorly organized papers require more review time). They should also make sure that copies of all figures and samples of all tables that are to be used are included with the text. If provisions in the Weather Bureau Manual are followed less time is consumed.

13. NARRATIVE TEXT IN LCD ANNUAL: Ref: Item 12, CSM 92 and Chapter C-05, Vol. III, WB Manual. State Climatologists are reminded that they should review the narrative summaries in the LCD annuals each year well before the September 1 date mentioned in par. C-0502a of Chapter C-05. Suggestions for changes should go to the MIC of the station.

14. FIVE-DAY PER WEEK STATIONS: In December 1964 there were 65 weekend temperature and precipitation stations published in CD. DATAC has been attempting to reduce these and a recent count shows that 10 stations have been removed from the publication and 19 former part-time stations have been converted to 7-day per week stations. Thus, only 36 of the original 65 are still published on a part-time basis. We have asked DATAC to continue their efforts to correct this.

15. WATER RESOURCES INSTITUTES: Public Law 88-379 was passed in July 1964 and provides for a Water Resources Institute in each state. Partially supported and monitored by the U. S. Department of Interior, the Institutes would be at, or associated with, the Land Grant Colleges. They will perform surveys, research, or training in the area of water resources. The basic charter is very broad and could include almost any item related to hydro-climatology, hydrology, or water balance problems.

It is expected that a number of Water Resources Institutes will be established in the current fiscal year with others to follow later on. State Climatologists may be contacted during the planning stages and may be able to suggest climatological problems such as rainfall or drought frequency, snow density, topographic and elevation influences, etc. Punched card programs could be initiated or augmented. Additional measurements such as evaporation, soil moisture, dewfall, etc. could be suggested.

In some cases rather close cooperation between the Weather Bureau and a particular institute may be developed. Regional Climatologists have additional information on the program and should participate in planning sessions or negotiations where appropriate and feasible.

16. JEFFERSON AND HOLM NOMINATIONS: Sixty-one nominations were received for these awards this year. Selections of recipients, establishment of a release date, preparation of press releases and distribution of the certificates will follow in due time.

An excellent job was done by all concerned with the nominations, and the subcommittee concerned with the program wishes to thank Field Aides (HC), State Climatologists, MIC's, RSMU's, and the NWRC for their fine assistance.

18. PUBLICATIONS DISTRIBUTED TO STATE AND REGIONAL CLIMATOLOGISTS SINCE CSM 105:

"Climatic Variability and Crop Production" by W. C. Palmer and "A Critical Appraisal of Periodicities in Climate" by J. M. Mitchell, Jr. From Weather and Our Food Supply, CAED Report No. 20, the proceedings of a conference, May 3-6, 1964, sponsored by the Center for Agricultural and Economic Development, Iowa State University, Ames, Iowa.

"Normals of Evapotranspiration (in Inches) in Wyoming", U. S. Weather Bureau and Soil Conservation Service.

List of Names and Addresses of State Geologists - U. S. Geological Survey, Geologic Division.

"A Microclimate Sampling System for Field Plot and Ecological Research", by N. J. Rosenberg and R. W. Allington, reprinted from Ecology, Vol. 45, No. 3, Summer 1964.

"Synoptic Weather Types Associated with Critical Fire Weather" - Pacific Southwest Forest and Range Experiment Station, Berkeley, Calif., USDA, 1964.

"Low Temperature Probabilities in North Carolina", A. V. Hardy, Bulletin 423, Agricultural Experiment Station, North Carolina State, Raleigh, N. C., September 1964.

"Late Spring and Early Fall Freezes in Kentucky", Doyle Cook, Progress Report 139, University of Kentucky, Agricultural Experiment Station, Lexington, Kentucky.

"Prediction of Design and Operating Wind Velocities for Large Steerable Radio Antennas", H. C. S. Thom, reprinted from Annals of the New York Academy of Sciences, Vol. 116, Article 2, Pages 90-98, June 26, 1964.

"Lightning Fatalities in South Carolina", J. C. Purvis, South Carolina Civil Defense Agency, August 1964.

"Daily Changes in the Maximum and Minimum Temperatures and Atmospheric Pressure at Columbia, South Carolina", U. S. Weather Bureau, by John C. Purvis, December 1964.

"South Carolina Growing Degree Days", Agricultural Weather Research Series No. 3. U. S. Weather Bureau and South Carolina Agricultural Experiment Station, Clemson University, Clemson, S. C., October 1964.

"Total Energy Budget of the Plant Canopy and its Relationship to Evapotranspiration from Corn", Wayne L. Decker, Research Bulletin 854, University of Missouri, March 1964.

NOTS Guide to Effective Technical Presentations by Earle E. Kirkbride, U. S. Naval Ordnance Test Station, China Lake, Calif., September 1963.

"Precipitation Probabilities in Wyoming", Clarence F. Becker and John D. Alyea, Bulletin 416, Agricultural Experiment Station, University of Wyoming, Laramie, June 1964.

"Regional Weather Summary of Pennsylvania", Climatic Series 1, Southeastern Area, Progress Report 254, January 1965, Pennsylvania State University.

"Agricultural Meteorology", R. F. Dale, reprinted from Science, December 18, 1964, Vol. 146, No. 3651, pp. 1601-1602.

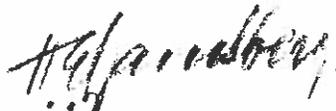
"The Prediction of Soil Moisture for the Winter Period in Iowa", R. H. Shaw, Iowa State Journal of Science, Vol. 39, No. 3, February 15, 1965, pp. 337-344.

"Probability of Sequences of Wet and Dry Days in Kansas", by A. M. Feyerherm and L. Dean Bark, Kansas State University of Agriculture and Applied Science, Manhattan, Kansas.

"Moisture Variability and Drought Severity", W. C. Palmer. Reprint from Proceedings - Thirteenth Annual Meeting of the Agricultural Research Institute, October 12-13, 1964, Washington, D. C.

Annotated Bibliography of Weather Bureau Publications of Hydrometeorological Interest by Office of Hydrology, U. S. Weather Bureau, 1965.

"Meteorological Drought", Wayne C. Palmer, U. S. Weather Bureau Research Paper No. 45.



H. E. Landsberg

GUIDE TO CLIMATOLOGICAL SERVICES  
MEMORANDUM NO. 107

<u>Item</u>		<u>Page</u>
1	18th MEETING OF THE COMMITTEE FOR CLIMATOLOGY (NAS-NRS) ADVISORY TO U. S. WEATHER BUREAU. . . . .	1
2	STATE CLIMATOLOGIST-ADVISORY AGRICULTURAL METEOROLOGIST TRAINING CONFERENCE . . . . .	4
3	WB FORM 612-14A - SUPPLEMENTARY RECORD OF CLIMA- TOLOGICAL OBSERVATIONS. . . . .	5
4	PRODUCTIVITY REPORT . . . . .	5
5	MAILING OF COMMENTS ON ARRAYS TO NWRC . . . . .	5
6	AIR POLLUTION CONTROL PROGRAMS. . . . .	6
7	REVIEW OF TEXT IN SCS SOIL SURVEY SUMMARIES . . . . .	6
8	CLIMATIC SUMMARIES FOR SCS SOIL SURVEYS . . . . .	6
9	AVAILABILITY OF PUBLICATIONS. . . . .	6
10	NO. OF PAGES IN CLIMATOLOGICAL PERIODICALS. . . . .	7
11	CLIMATOLOGICAL SUBSTATION SUMMARIES . . . . .	7
12	PAPERS SUBMITTED FOR REVIEW . . . . .	8
13	NARRATIVE TEXT IN LCD ANNUAL. . . . .	8
14	FIVE-DAY PER WEEK STATIONS. . . . .	8
15	WATER RESOURCES INSTITUTES. . . . .	8
16	JEFFERSON AND HOLM NOMINATIONS. . . . .	8
17	PUBLICATIONS DISTRIBUTED TO STATE AND REGIONAL CLIMATOLOGISTS SINCE CSM 105. . . . .	9