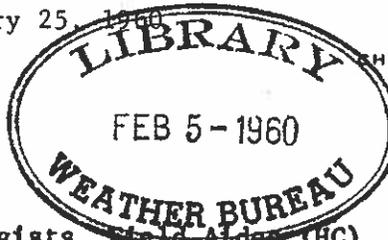


UNITED STATES DEPARTMENT OF COMMERCE  
WEATHER BUREAU  
WASHINGTON

January 25, 1960



IN REPLY, PLEASE ADDRESS  
CHIEF, U. S. WEATHER BUREAU  
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FILE: 922 MEMO

(Climatological Services Memorandum No. 78)

WASHINGTON, D. C.  
1-25-60

MEMORANDUM

TO : Area and State Climatologists, ~~Field Aides~~ (HC), Field Aides, WRPCs, River Forecast Centers, River District Offices, and Area Engineers (with copies to Regional Offices for information)

FROM : Office of Climatology

SUBJECT : Climatological Services Memorandum No. 78

GENERAL

1. INFORMAL MINUTES OF NINTH MEETING OF ADVISORY COMMITTEE ON CLIMATOLOGY NATIONAL RESEARCH COUNCIL: The meeting was held on November 16 and 17, 1959, at the National Weather Records Center (NWRC), Asheville, N. C. It was the second meeting of the Committee at this facility.

All members of the Committee were present, as follows:

- Dr. J. H. Longwell, Chairman - Director, Division of Agricultural Science, University of Missouri
- Dr. William E. Reifsnyder - School of Forestry, Yale University
- Dr. E. Wendell Hewson - Department of Civil Engineering, University of Michigan
- Dr. George S. Benton - Department of Civil Engineering, Johns Hopkins University
- Dr. D. H. Miller - Pacific Southwest Forest and Range Experiment Station

The Office of Climatology was represented by Dr. H. E. Landsberg, Mr. Roy Fox, Director of NWRC, acted as host.

During the morning of November 16, 1959, from 10:30 to 12:15 the Committee made a tour of the NWRC building. Various staff members showed the archival, machine and filming facilities of the Center. Working rooms of various sections, the printing plant and administrative areas were also visited. The Committee expressed its concern about the safety of records and card storage. They were briefed on the results of recent safety inspections and the plans for duplicate storage of important data sources in filmed form.

In the afternoon the Committee received a general briefing on functions of work in progress at and future plans for NWRC. Mr. Roy Fox, the Director of NWRC stressed the primary aim of rapid and reliable service. The Center is striving to maintain its reputation for cooperativeness. He indicated briefly the present funding arrangements with about 1/3 of the support coming from

the Weather Bureau. The major customers are the Navy, Army Electronics Proving Ground and Army Ballistic Missile Agency. Many other federal agencies have work performed at the NWRC. Among them are the Fish and Wildlife Service, the Forest Service, the National Bureau of Standards, and the National Science Foundation (IGY). State and local governments as well as private organizations utilize NWRC through trust fund arrangements.

Dr. Barger, Deputy Director of NWRC, outlined the methods of work coordination of an organization of 400 people and the dovetailing of machine work with analytical tasks. A brief discussion on the availability of data ensued and the procedures for making it generally known that certain tabulations exist were briefly reviewed.

The broad marine program was outlined by Mr. Canfield. Among unfulfilled needs is the checking of 1/2 million yearly marine observations. The various programs, including in particular the Navy Marine Climatological Atlas, were presented. The progress and schedule for the Weather Bureau-Hydrographic Office Climatological and Oceanographic Atlas for Mariners were briefly outlined for the Committee. The problems of the Arctic Ocean Atlas, the ocean weather ship climatic summaries, and the need for homogenization of the marine card decks were commented upon.

The program in Synoptic Climatology was presented by Mr. McMurray. The historical Northern Hemisphere charts up to the IGY period are now completed. The IGY world series is in the plotting stage. Handicaps exist because of slow receipt of microcards (at present surface synoptic data are 53%, upper air data 57%, upper wind data 31% complete). Exchange of IGY and IGC data is quite satisfactory. A start has been made on 80th meridian pole-to-pole daily cross sections for the IGY period. The arguments in favor of the policy to draw these to the observations were presented to the Committee, which commented in favor of the procedures that had been adopted.

The far-flung activities of the Information and Reference Section were briefly reviewed by Mr. Brewster. For example, last year over 6,000 records were certified and 275,000 publications were sent out in answer to 8,600 specific, separate requests. The quality control program was touched upon and the records storage program was presented. Among jobs not-so-well-done because of lack of funds is the records retirement program through microfilming. This is serious in the face of current monthly accumulation of 180,000 to 200,000 documents per month. A total of 25 million records is back-logged for microfilming. Samples of MIMIC film were given to Committee members. The problem faced by the Center in the future with rocket and satellite data was briefly discussed.

Dr. Crutcher and Dr. Essenwanger gave brief descriptions of some of the developmental work under way. Particularly interesting are the upper wind statistics for northern meridional cross sections for each 10 degrees of longitude from equator to pole. Samples of these were exhibited. The analysis of upper winds according to weather situations, as represented by the mean flow in the low troposphere was shown. A synoptic climatology of Eurasia in terms of cloud and precipitation systems as related to active centers is in preparation for one of NWRC's customers.

Mr. Joiner indicated the progress made in the FOSDIC program. The present camera, on a two-shift basis, can handle 40 million cards per year. This is approximately the annual accretion of cards. Up to now 1830 reels of acceptable FOSDIC film have been produced so that 22 million cards can be retired. Return of film, mostly because of development flaws, was needed only for 3% of the material. A second filmer is an urgent need if the full potential of storage reduction through the FOSDIC system is to be realized. At the moment NWRC is "computer bound". The 2 IBM 650's and the Alwacs cannot handle the volume of work. The intention is to alleviate the situation by rental of a Minneapolis-Honeywell 800 computer system.

The Climatography work of the Center was described by Mr. Elam who presented each member of the Committee with a book of samples of the various publications prepared by his section (Monthly Climatic Data for the World, Climatological Data National Summary, Storm Data; Bulletin W Supplement; Climates of the States, Summaries of Hourly Observations, Climatic Guides). It was gratifying to learn that the last section for Bulletin W Supplement 1931-1952 - Hawaii is now ready for printing. Climates of the States can also be expected to be completed during the current fiscal year.

In the general discussion on the various presentations the members of the Committee stressed the need for a master list of Weather Bureau publications. This should contain all articles and serial and non-serial publications of all Weather Bureau divisions. The possibility of bringing out a current list of this type was discussed. Publication in the Monthly Weather Review was indicated as a possibility. Dr. Landsberg indicated that he would take the matter up informally with the Director of Meteorological Research, the Weather Bureau Librarian, the Editor of the Monthly Weather Review and other interested groups in the Bureau.

Dr. Barger gave a status report on the Bibliography of Agricultural Meteorology. There is a possibility that the University of Wisconsin Press will publish this provided some revisions are made. If this should prove impractical further consultations with other presses will be explored.

The Committee noted with approval the new awards which have been authorized by the Department of Commerce for substation observers.

The proposed new format for the Local Climatological Data Supplement was laid before the Committee. The changes in contents and lay-out were favorably noted. The question of publication of soil temperature and radiation data in suitable form perhaps separate from CDNS or State CD's was raised.

The problems arising from the planned decennial census of climate for the interval 1951-1960 were discussed. The Committee asked the chairman to reiterate to the Chief of the Weather Bureau the importance it attaches to this task.

In preparing 10-year summaries of hourly observations the Committee pointed out the desirability of seasonal and annual tables, in addition to monthly values.

Regarding the problem of 30-year normals for periods shorter than one month, opinions were somewhat divided. It was finally suggested that some cases be worked out as examples using 5, 7, and 10-day intervals both for summer and for winter and that these be compared with data obtained from interpolation methods. It was thought that mid-month to mid-month interpolation, as previously used, might be too crude but that interpolations using 4 or even 6 month intervals might give more adequate representations. The question of whether normals should also be supplemented by ranges and possibility quartiles to educate the users to the problems of climatic variability was raised. Standard deviations, while very useful for technically trained persons, are too sophisticated for the average recipient of climatic information.

The staff query of the Appropriations Committee of the House of Representatives as it related to the number of climatic observations was quoted to the Committee. It was felt that the minimal costs were probably a convincing argument but that Weather Bureau expense in this connection, if compared with the voluntary contributions of time, effort, and often equipment, placed this program truly into the category of matching programs which the Federal Government maintains in other areas. The importance of the program for scientific, technological, resource development plans, and, last but not least, local information purposes should lift it out of the sphere of controversy.

On the question of a reading course in climatology the Committee recommended, that aside from some basic books, lists and abstracts of important papers be circulated by the Office of Climatology at regular intervals. Several possibilities seemed to suggest themselves. Among them was use of material from Meteorological Abstracts and Bibliography. Possibly the microcard library prepared by the Directorate of Climatology of Air Weather Service could be used or a similar one prepared by the Weather Bureau Office of Climatology.

2. EMPLOYMENT AND OTHER CHARACTERISTICS OF METEOROLOGISTS: 'American Science Manpower' issued by the National Science Foundation, and based on the years 1954 and 1955 presents some interesting information on scientific and technical personnel.

The number of meteorologists is listed as 1838 or 1.6% of the total number of scientists reporting. Not all of the 1838 meteorologists reported in the categories listed below but of those who did 11% were employed by colleges or universities, 72% by governmental organizations, 2% by non-profit organizations and 15% by private industry.

By type of function 31% were engaged in research, development or field exploration, 20% in consulting (or clinical) practice, etc., 20% in management and administration, 7% in teaching, 2% in technical writing, 2% in inspection and testing, 18% in production, operation etc., with fractional percentages engaged in design and in technical sales and services.

Under level of education 72% of the meteorologists report a bachelors degree, 20% the masters degree, and 8% the doctors degree.

The breakdown by age groups shows 1% of the meteorologists in the 20-24 year group, 10% in the 25-29 bracket, 25% 30-34 years old, 31% 35-39 years old,

16% 40-44, 12% 45-49, 5% 50-54, 2% 55-59 with smaller percentages in the higher age groups.

The median annual salary reported by all types of meteorologists was \$6,012. Those employed by colleges or universities reported \$5,662, by governmental organizations \$5,882, by nonprofit organizations \$6,666 and by private industry \$7,033.

Distribution of the 1838 meteorologists by specialty showed 1241 in synoptic meteorology, 122 in climatology and 475 in all other specialties. Of the 122 in climatology, 21 were employed by colleges or universities, 91 by federal and international governments, 2 in private industry (self-employed) and 2 in private industry (not self-employed) with lesser numbers in other categories. For the same 122 climatologists, types of function were broken down into 36 in research, development, or field exploration, 10 in consulting, clinical practice etc., 29 in management or administration, 3 in teaching, 12 in technical writing, editing, etc., 6 in production operation etc., with 26 not reporting.

3. KENTUCKY WATER RESOURCES STUDY COMMISSION REPORT: Mr. O. K. Anderson, Kentucky State Climatologist, has received an honor award from the Kentucky Department of Conservation for his work on the climate committee in the preparation of the Kentucky Water Resources Study Commission Report. A copy of this report will be sent to nearby State Climatologists.

4. PHENOLOGICAL SOCIETY: The Wisconsin State Climatologist has advised us that a formal Wisconsin Phenological Society is being organized, and that he understands a number of such groups are being formed in various states, with the possibility that a national organization may be formed within a few years. There is a lack of phenological data and State Climatologists are encouraged to support such organizations.

5. LAND CAPABILITY CLASSIFICATION (SEE ALSO CSM #71): Mr. Robert Dale has called attention to Soil Conservation Service Memo #30, dated Aug. 11, 1959. This memo lists some climatic guides for placing soils in land capability subclasses. The climatic information required is:

1. Length of "growing season" (only two classifications - above and below 120 days).
2. PE index (above or below 44), and
3. Wind speeds exceeding 30 mph for 3-hr. periods during "critical" times of the year.

For the PE index SCS refers to page 102 in "Climate and Man", but Dale points out that this is outlined better on page 131 of "Climatology", by Haurwitz and Austin, 1944.

The wind speed criterion is based on ARS investigations and refers to winds of 30 mph or greater at a height of 30 ft. above the surface. When wind information is supplied to Soil Survey, it should of course be identified as to

height of observation. If this height differs markedly from 30 ft., the users should be advised that an adjustment is in order. The adjustment may be made by the relationship,

$$\log V_L = \log V_U - a \log(Z_U/Z_L),$$

where V refers to wind speed, Z is height and the subscripts U and L indicate upper and lower level. Various experiments have produced various values for the constant, "a"; but for this purpose a reasonable approximation to the wind at 30 ft. can be computed by letting "a" = 1/5 in cases where the anemometer is below 30 ft. and letting "a" = 1/7 when the anemometer is above 30 ft.

6. WORLD WEATHER RECORDS, FOURTH VOLUME: This volume has been distributed to Area Climatologists, and to selected State Climatologists' offices.

7. PRESS CLIPPING SERVICES: Reports from Area Climatologists indicate that most State Climatologists are reasonably well satisfied with the existing press clipping services. Clipping service is not used in 10 states.

We feel that, where the service is properly operated, it is a valuable tool for the State Climatologists in keeping them advised of severe storms, and we encourage its continuation. If, however, satisfactory press clipping service is not available, a less-than-satisfactory service should not be accepted.

8. NEW STATE CLIMATOLOGIST, CONNECTICUT-RHODE ISLAND: Mr. Joseph J. Brumbach has been selected as the Connecticut-Rhode Island State Climatologist. He will enter on duty at Windsor Locks about the middle of February, after a six weeks detail to the Office of Climatology.

9. PUBLICATION ON FITTING OF DATA: "Fitting of Data to the Two Parameter Gamma Distribution with special Reference to Rainfall Data" has been issued by the Computing Group, Statistical Laboratory, Iowa State University of Science and Technology, Ames, Iowa, as 650 Program No. 6.008ISU. The authors are H. O. Hartley and W. T. Lewish.

10. ARCHIVAL FILING OF NEGATIVE FOSDIC MICROFILM: WRPC, Chattanooga, Tenn., reported on December 18, 1959, that 1,492 rolls of negative FOSDIC microfilm had been received from the NWRC for archival filing. This was the initial shipment of what will be a continuing program providing for the safekeeping of our punched card file. A positive print of each roll will remain at the NWRC for operational use on FOSDIC, and additional positive prints will be made when this becomes necessary. Thus, as far as the FOSDIC program is concerned, the Chattanooga WRPC has become an extension of the Asheville archives.

This file of negatives represents approximately 19,500,000 IBM cards, or the contents of 390 standard 20-tray card file cabinets. These cabinets would occupy the space of 6,385 cu. ft., whereas the microfilm (including cabinets) occupies a space of 22.3 cu. ft.

It should be noted that this file of microfilm represents about five months of operation of the FOSDIC filmer, that at this rate about 40,000,000 cards

would be filmed annually, and that this is our approximate rate of accession of new cards.

11. PUBLICATIONS DISTRIBUTED TO STATE AND AREA CLIMATOLOGISTS AND WRPCS:

On the Relationship of Soil Temperatures to Soil Moisture Measurements, M. L. Blanc.

Analysis of Weather Data Pertinent to Grain Drying, J. D. McQuigg.

Defining Agricultural Seasons in the Middle Latitudes, Newman and Wang (reprint from Agronomy Journal).

'Whats in the Weather', by H.C.S. Thom. Reprint from May 1948 Iowa Farm Science.

*for* *R. W. Schloemer*  
H. E. Landsberg  
Director, Office of Climatology

GUIDE TO CLIMATOLOGICAL SERVICES MEMORANDUM NO. 78

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