

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
WASHINGTON

November 21, 1963

IN REPLY, PLEASE ADDRESS
CHIEF, U. S. WEATHER BUREAU
WASHINGTON 25, D. C.
AND REFER TO
C-3.1

MEMORANDUM

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

FROM : Director, Climatology

SUBJECT: Climatological Services Memorandum No. 102

1. AREA CLIMATOLOGISTS' MEETING, 1963: The meeting (held on October 16 and 17, 1963, at Suitland, Maryland) was chaired by Mr. H. B. Harshbarger, Chief, Climatic Field Service Branch, Office of Climatology.

Opening Talk by Dr. Landsberg

Dr. Landsberg welcomed the group, consisting of Area Climatologists for the Southeast, Central, Southwest and Northwest Areas.

He pointed out that under the new Chief of Bureau, Dr. Robert M. White, no radical changes were to be expected within the next several months. He indicated that this would provide a period for soul searching as to just what were the Weather Bureau's functions and, in cases of overlapping responsibilities, an opportunity to clarify the questions of who does what. He stressed Dr. White's desire to give No. 1 priority to service to the customers.

Some of the things which the Climatologists should be concerned with, and which do not now have answers, are such queries as:

Are data obtained in the best possible way? Do we need additional data in all present areas (for example, since we now have 10 years of hourly data for many elements would it be satisfactory to go to 3 hourly data for climatological purposes)?

Dr. Landsberg said that it was important to have evidence of the value of the State Climatologist program. What does he do? How does he pay his way? State Climatologists' programs, which may vary greatly from state to state, have not been fully implemented in all states.

He indicated that there would likely be no material increases in S&E Climatology funds for FY 65. This, however, does not preclude from shifting

FILE: 922

MEMO

(Climatological Services Memorandum No. 102)

WASHINGTON, D. C.
11-21-63

emphasis on various programs. R&D money will also be restricted. Budget people are particularly concerned with the amount of Federal spending on R&D, since the national rate is some \$15 billion annually. A congressional committee has been set up to review and investigate the whole Federal research program.

The current R&D budgetary program for Climatology is in good shape; however, we would like more contract money. The Bureau has requested for FY 64 a \$90,000 increase in R&D for Climatology; this would be mainly contract money.

The Weather Bureau has appealed for FY 64 funds for two State Climatologists (Arkansas and Minnesota) and is supported by the Bureau of the Budget in this appeal.

As a general rule it will be easier to get money than to get positions during the next 2 to 3 years.

There is a widespread feeling that pay raises can be absorbed by continually increasing efficiency at a rate of about 3% per year. This is difficult to do in Climatology except in the case of certain limited activities at NWRG.

Area Climatologists' help is needed and the Area Climatologists are urged, when suggesting new programs, to also suggest some parts of the current programs which can be cut out or reduced. Examples - should we continue to print LCDs for stations with small mailing lists; do we need to publish all the information now carried in CD and is it the best information that we can furnish? An analysis of our operations must be carried on continuously.

Area Climatologists can render a real service by obtaining information on services not properly rendered, or on services that are well rendered, and advising the Office of Climatology.

We should not feel that just because something has been done in a certain way that it is necessary to continue that method although continuity (especially in a data series) is particularly valuable. Area Climatologists are invited to suggest desirable changes in our existing programs. There is some flexibility in the climatological funds - now some \$3,000,000 in S&E and \$300,000 in R&D.

Climatology has done a good job in research and we are proud of it and of the worthwhile results produced.

Our research should be mission-oriented; that is, it should be in line with what we are supposed to do. There is a certain amount of re-emphasis on the practical results of our research.

A question and answer period followed Dr. Landsberg's talk.

Decennial Census Publication

Mr. Lippmann described the current status of publications being produced in the Decennial Census series. This includes the Summary of Hourly Observations, Bulletin W Supplement, the various Normals publications, Climatic Division Averages, Climatic Summary of the United States, and World Weather Records.

It was generally agreed that the Decennial Census series was worth the approximate cost of \$450,000. The value of the LCD Supplement was queried. Mr. Dale felt that since 10-year recaps are available the Supplement could be one of the first items to be discontinued; Mr. Magnuson felt publication of the frequency distributions in the summary could be delayed but that the publication of the daily observational data was very necessary.

Mr. Blanc felt that Climates of the States was most disappointing to users who, by the title, were led to expect much more; and that this was one place where we really could have expanded our publications. He agreed, upon request of Dr. Landsberg, to write out a report on this.

The question also was raised whether all states should be treated alike in a series such as the Climates of the States - e.g., should an identical publication be prepared for North Dakota and for Florida or should they be more selective and tailored to the needs of the customers.

Mr. Schloemer pointed out that in December 1969 we would have to start budget action on the next Decennial Census if we continue the series, and that information on the value of the series would be very useful.

The question of the value of sequential tables in our data publications was raised. It was pointed out that users frequently want to see a whole series of data, and that one persistent criticism of Bulletin W Supplement was that it did not present sequential temperature data.

The question of the number of copies of publications to order was discussed. Information from State Climatologists on their needs was felt to be important, and Area Climatologists will work with State Climatologists to keep the Office of Climatology informed on this.

The point was made that the availability of Weather Bureau publications is not well known; that the Decennial Census promised some continuity and regularity and that we should consider well before we change its format. The importance of documentation of uses of Decennial Census publications for budgetary purposes was emphasized.

The NWRC has been recalculating certain first order station daily and monthly normals and these will probably be ready by January 1964.

Mr. Harshbarger spoke on records security and the long-range plans to obtain funds to microfilm weather records and store the film underground, as well as make film available to State Climatologists. However, budgetary considerations now offer a choice to push ahead with the records security program or

the project of publishing Southern Hemisphere data. Dr. Landsberg felt that there was both research and prestige advantage to publishing the Southern Hemisphere data; however, some effort will still go into the records security program.

It was brought out that film of substation records for the period 1951-1953 that was distributed to State Climatologists is not organized in the best manner, and that additional film would be arranged in station-year order.

International Considerations

Mr. Harshbarger described the beginning of consideration of world-wide weather data centers, which occurred at the third WMO Conference on Climatology (CC1-III) in London in 1960. The thought was that a number of countries geographically related would combine their efforts to machine process data, making information generally available. This was followed by a recommendation of the Interagency Group for International Programs in the Atmospheric Sciences (IGIPAS) for three data centers.

Then Dr. Hollomon, Assistant Secretary of Commerce for Science and Technology, asked for specific plans for one center, and these were prepared for a South American data center. A conference on this project is planned at the NWRC with representatives of South American meteorological services to discuss ways and means and the protocol involved.

It was brought out by Dr. Landsberg that a continuous flow of international weather data is vital in order that up-to-date world-wide information be available to answer queries such as the extent of drought in various parts of the world or the extent of tropical storm damages in affected areas. If the Center is established it will involve some personnel recruiting.

Mr. Blanc described the work of the WMO Committee for Agricultural Meteorology (CAGM). The Guide to Agricultural Practices has recently been published, as well as a technical note on frost. United States members on CAGM are Dr. Darell McCloud of USDA and Mr. E. M. Vernon and Mr. M. L. Blanc of the U. S. Weather Bureau.

Mr. Harshbarger said that the 4th meeting of the Conference on Climatology (CC1-IV) was tentatively scheduled for April 1965. Six to eight months before that the Weather Bureau would need to prepare a description of the status of climatology in this country, including publications produced since CC1-III.

In the discussion that followed points brought out about WB publications were that a copy should always be sent to the WB Library; that 80 copies of each publication of general interest prepared by the Weather Bureau and Experiment Stations or similar groups are now needed by the Office of Climatology for general distribution, instead of 60 copies as before. Apparently there is no international distribution of experiment station publications, and State Climatologists are urged to pass this information along to the Experiment Stations.

Mr. Blanc and Mr. W. C. Palmer are on the review board of a new Journal, Agricultural Meteorology, to be published quarterly in the Netherlands.

WRPC Consolidation

Dr. Barger pointed out that it was necessary to handle WRPC operations at the former level and using the former procedures and people for the first several months after consolidation just to keep up. However, beginning with September 1963 the data are now programmed on the H-800, and this should help in timing and quality of processing. Mr. Bosen outlined the details of both old and new procedures. CD tables will be produced from the H-800 at the rate of 900 lines per minute. Machine and labor cost will both be reduced greatly, and deadlines equaled or beaten. All State Climatologists will now receive arrays for review.

There was general agreement that the present 6-week delay after the end of the month before CDs are published can be tolerated. The problem of getting information back to State Climatologists and to RSMUs about missing or malfunctioning stations was discussed - also the question of how best to let the RSMUs know of supplies needed by the observer.

Other Items

Mr. Lippmann then described the tubular shield proposed in lieu of shelters. Tests so far have been disappointing since the dial thermometers used would not hold their calibration.

He described a thermometer probe used by the Ohio State Climatologist to check soil thermometers in the field. Such an instrument would be valuable not only in checking thermometers but in determining where to locate a soil temperature station. F&SR Division has developed specifications for a new soil temperature measuring system consisting of sensors attached to a recorder which make a pressure mark against paper every 7-1/2 minutes. This will be used by the AAMs, will not be operated according to standard Weather Bureau procedures, and no plans have been made for collecting the data. Another system is being developed in Florida, and we are to be kept informed of this.

Mr. Lippmann also described new equipment planned for bench-mark stations. This will include instruments to obtain daily integrated resultant wind and solar radiation.

He spoke about the new Fischer-Porter precipitation gage now being installed at a number of substations. The gage measures precipitation to the nearest tenth inch in 5-minute time increments. The first tapes are now reaching the NWRC, and the Fischer-Porter tape-to-card translator will soon be in operation. Hourly amounts to the nearest tenth inch will be published in Hourly Precipitation Data. Frequency distributions for smaller time intervals may also be published. This gage has not been accepted as a climatological gage for first order stations, but is replacing the weighing rain gage at some substations. Data will be flagged in the HPD publication.

Mr. Lippmann and Mr. Bosen then described some new instruments for first order stations. These included the AMOS V and Cardion wind system in which the sensing element is the 3-cup anemometer; this turns a shuttered cylinder which interrupts a light beam. The system counts the impulses in fixed time intervals and presents this as an average; it will compare all 1-minute values with all similar values for the day and print each minute's information on a printer. Climatology will preserve the record in microfilm form.

A precipitation-occurrence sensor has been developed for AMOS V. It consists of a rotating heated disc which first melts precipitation (if frozen) and spins it to the edge of the disc where it forms a conductor, thus recording whether or not precipitation is occurring.

At present the Weather Bureau must continue the F-102 system in order to obtain fastest mile. The operations recorder, which requires chart changing only once or twice a month does not present digital data, so, in order to permit discontinuance of the triple register we have been asked to eliminate our requirements for the fastest mile. H. C. S. Thom has agreed to evaluate records from the Cardion systems where the F-102 system is also in operation to see if he could recommend use of the highest 1-minute wind speed instead of the fastest mile. (Mr. Magnuson has already done some comparisons.)

Mr. Harshbarger described work done by the urban network committee of which he is a member. We should measure the climate where the people live, in addition to data from airports. The Weather Bureau plans to provide a nucleus of stations over the country (one or two in about 190 cities of over 100,000 population) which could be supplemented by other organizations, public or private.

The network would start (but not for at least 3 years) with surface observations, with tower observations to be added. Elements to be measured would include wind, temperature, precipitation, humidity and solar radiation.

Dr. Landsberg spoke on specific R&D programs, and re-emphasized that Climatology R&D would stay mission- and customer-oriented. Climatology would like to concentrate on climatic changes, fluctuations and periodicities. Other important programs are consideration of the larger economic problems country-wide, probability studies and bio-meteorological problems. We would like to continue contract work and even increase it slightly, and also develop equipment needed for climatological purposes. However, progress would be slow, and dependent upon funds.

Mr. Schloemer reported on the status of the National Atlas. The Office of Climatology goal is some 150-160 maps in this series. Charts will include those of probabilities of days with snow 1" or more, and dates of first snowfall.

Mr. Lippmann described the satellite data and how some work had been done in compacting it. The difficulty with TIROS data is that it is fragmentary. This will also be the difficulty at first with any operational type data that we will receive. The Office of Climatology has been trying to locate a physicist to work on the data, but has been unsuccessful so far.

The bench-mark program was discussed briefly. The goal is some 50 stations eventually; 17 stations are now fully qualified after evaluation of their records.

The Agricultural-Meteorology program and State Climatologist relations to that program were discussed briefly.

The forthcoming productivity report and the reasons for it were discussed. It was made clear that this report was not an effort to account for a State Climatologist's time, nor to compare one State Climatologist with another. Its need was brought about by the philosophy that increased salaries should result in increased productivity, and the report will serve as a basis for comparison between different periods of time for an individual. It may also stimulate some self-evaluations and possible re-alignment of emphasis. Some changes in the proposed reporting form were suggested. The first report from State Climatologists will be for the first quarter of calendar year 1964, and instructions and forms will be issued by the end of this year.

A considerable portion of the conference was devoted to a report by each Area Climatologist of his problems and plans. Some of the items touched were:

- Assistance at State Climatologists' offices.
- Moves to University locations.
- Separate vs integrated locations for State Climatologists.
- Program expansion without financial support.
- Availability of adequate supplies of climatological publications at State Climatologists' offices.
- Uses of the Student Trainee.
- Weather Bureau scholarships for State Climatologists.
- Substation Summaries.
- Cooperation with Advisory Agricultural Meteorologists.
- Review of arrays by State Climatologists.
- Earlier release date for local Weekly Weather and Crop Bulletins.
- SELS reports for State Climatologists (these reports, discontinued since Kansas City WRPC closed, will be resumed with distribution from O/C).
- State Climatologist travel.
- Office equipment for State Climatologists.
- Freeze bulletins and other publications.
- The need for mountain climatology.
- Esprit de corps among State Climatologists.
- Relief for leave for State Climatologists.
- Budget problems.

Dr. Landsberg spoke on grade structure for State Climatologists. He pointed out that we consider the grade structure as somewhat flexible depending on the individual, and not intended to put a definite ceiling on anyone. In the State Climatologist positions there can well be a 3-grade spread for a given job depending upon the qualifications and experience of the individual.

2. USDA-WEATHER BUREAU CONFERENCE ON RESEARCH IN METEOROLOGY: The October 18 Weather Bureau-USDA Conference on Research in Meteorology convened at 9:30 AM with Dr. H. E. Landsberg as chairman.

After a brief welcome by Dr. Robert M. White, Chief of the Weather Bureau, Dr. Landsberg explained the organization and research activities pertaining to agriculture within the Bureau. He then introduced Dr. E. C. Elting, Deputy Administrator, Agricultural Research Service and Chairman of the USDA Research Council, who outlined the general types of meteorologically related research carried on by the USDA.

Two officials of the Weather Bureau, Mr. Donald H. Pack and Mr. Lawrence C. Ranieri and two USDA officials, Mr. T. W. Edminster and Dr. Darell E. McCloud, summarized the micro- and meso-meteorological programs in progress in their respective agencies.

Mr. Pack discussed the AEC and HEW sponsored projects in environmental research and Mr. Ranieri explained some applications of this work to agriculture. Dr. McCloud discussed the several types of micro-climatic studies underway by the Agricultural Research Service.

Mr. Wayne C. Palmer outlined a drought index technique developed in the Weather Bureau for the purpose of delineating drought severity.

Mr. Jack Riley, Weather Bureau, gave a slide-illustrated summary with examples of current agricultural meteorological work.

Mr. D. M. Hershfield, Agricultural Research Service, discussed water budgets and the effective water available for plant growth.

Dr. T. L. Noffsinger discussed the new data loggers with an infrared sensor to measure soil surface temperature. These have been obtained for selected Advisory Agricultural Meteorologists.

The afternoon session consisted of a panel discussion ably lead by Mr. T. W. Edminster. This consisted of reports by Weather Bureau and USDA officials on agricultural requirements for weather data of all sorts.

This was the first of a planned series of meetings designed to promote increased cooperation between the Weather Bureau and the Department of Agriculture. It uncovered several areas in which closer cooperation would be beneficial. Those in attendance were agreed that the conference was a success and that similar exchanges should take place in the future.

3. AGRICULTURAL METEOROLOGY: Two copies of this book, by Jen-Yu Wang have been ordered for each of the five Area Climatologists on the mainland (one for the Pacific Area Climatologist). One copy is for retention and one for circulation to State Climatologists. We do not plan to order it for individual State Climatologist's offices.

4. REVIEW OF ARRAYS: As the responsible climatologist for a given state it is obvious that each State Climatologist should feel some concern that the

published data for his State are accurate. This does not mean that a State Climatologist must re-examine the arrays in a duplicate operation to that performed by NWRC. On the contrary, he should first regularly apply a real quality control technique; i.e., examine the data in a general way first in the array and later in published form to note any obvious irregularities. Then a small sample of the data should be closely reviewed, with a different sample inspected each month.

Such an inspection might well include noticing the precipitation pattern with particular attention to a station that consistently does not follow the pattern, as well as inspecting temperatures for unlikely extremes and for the smaller changes that might indicate a defective instrument.

5. LIST OF STATE GEOLOGISTS: We have received a copy of the above list from the U. S. Geological Survey, dated September 12, 1963.

We will be glad to furnish any State Climatologist with the name of the State Geologist for his or any other states upon request.

6. SUBSTATION SUMMARIES: In some cases State Climatologists may find it difficult to "sell" the Substation Summary idea since they do not yet have any printed summary for a location in the state.

One possible approach would be to work up the data and prepare the formats for a station where there is some prospect that a cooperator might publish it. From the formats we could make reduced copies and then make a few copies of these by Xerox to be used in soliciting cooperation in the printing.

One of the prime advantages to this program is printing by the cooperator, and we do not want to get the Weather Bureau involved in this phase of the Substation Summaries.

7. STUDENT TRAINEES: State Climatologists who have had Student Trainees working in their offices this past summer are encouraged to try to maintain the Trainees' interest in the Weather Bureau. An occasional letter during the school year or copies of appropriate publications or reprints may help.

8. STORM DATA MAILING LIST: A recent (October 4, 1963) breakdown of the Storm Data mailing list showed it to be one of our more popular publications with the following distribution:

<u>Paid Recipients:</u>	Regular domestic mail	293
	Regular Canadian mail	4
	Regular foreign mail	8
<u>Free Recipients:</u>	Regular domestic mail	447
	Regular Canadian-Puerto Rico mail	16
	Foreign (via Smithsonian Institution)	23
	Foreign (air mail)	1
	National Weather Records Center (total)	204
	TOTAL	996

9. COMPUTER WORK: We now budget a small amount of money at the NWRC each year for climatological computer work. If any State or Area Climatologist has a project that could be done effectively on the NWRC computers, a request for computer time should be made to O/C, with an explanation of the work to be done.

10. 16TH MEETING OF THE ADVISORY COMMITTEE: The Committee on Climatology Advisory to the U. S. Weather Bureau will meet for the 16th conference at Suitland, Maryland, on December 12 and 13, 1963.

11. DISTRIBUTION OF SELS LOG: Re Item 7, CSM 101. Replies to the referenced item indicate that the SELS logs were of value to State Climatologists. Arrangements have therefore been made to have the logs duplicated and distributed to State Climatologists from the Office of Climatology. The log for October 1963 was the first one distributed.

12. PUBLICATIONS DISTRIBUTED TO STATE AND AREA CLIMATOLOGISTS SINCE CSM 101: "Frequency Distribution of Winds Aloft over South Carolina", South Carolina Agricultural Experiment Station, Agronomy and Soils Research Series No. 42.

Agricultural Meteorology - V. I. Vitkevich.

"Climate of Minnesota - Part II, The Agricultural and Minimum-Temperature-Free Seasons". Donald G. Baker and Joseph H. Strub, Jr.

Heating Degree Days - Northeast Regional Research Publication, Bulletin 483T, West Virginia University Agricultural Experiment Station.

"Selective Guide to Published Climatic Data Sources Prepared by U. S. Weather Bureau", J. R. Swartz, Key to Meteorological Records Documentation series 4.11.

H. E. Landsberg
H. E. Landsberg

GUIDE TO CLIMATOLOGICAL SERVICES
MEMORANDUM NO. 102

<u>Item</u>		<u>Page</u>
1	AREA CLIMATOLOGISTS' MEETING, 1963.	1
2	USDA-WEATHER BUREAU CONFERENCE ON RESEARCH IN METEOROLOGY.	8
3	AGRICULTURAL METEOROLOGY.	8
4	REVIEW OF ARRAYS.	8
5	LIST OF STATE GEOLOGISTS.	9
6	SUBSTATION SUMMARIES.	9
7	STUDENT TRAINEES.	9
8	STORM DATA MAILING LIST	9
9	COMPUTER WORK	10
10	16TH MEETING OF THE ADVISORY COMMITTEE.	10
11	DISTRIBUTION OF SELS LOG.	10
12	PUBLICATIONS DISTRIBUTED TO STATE AND AREA CLIMATOLOGISTS SINCE CSM 101.	10