UNITED STATES DEPARTMENT OF COMMERCE WEATHER BUREAU Washington, D. C.

April 30, 1956

MEMORANDUM

TO:

Area and State Climatologists, Substation Inspectors, Field Aides, WRPC's, River District Offices, and Area Engineers. (With copies to Regional Offices for information)

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Office of Climatology FROM:

SUBJECT: Climatological Service Memorandum No. 53

GENERAL

Servi MEETING OF THE ADVISORY COMMITTEE ON CLIMATOLOGY: The second meeting of 1. the National Research Council's Advisory Committee on Climatology was held on @ November 9-10, 1955, in the office of the National Weather Records Center at Asheville, North Carolina. Dr. Thomas F. Malone, Chairman of the Committee presided and all members were present, as were Dr. H. E. Landsberg, Director, orandum Office of Climatology in Washington, and Mr. Leslie Smith, Director of the National Weather Records Center. Members of the Committee are:

> Dr. Thomas F. Malone - Travelers Weather Service, Hartford Dr. Werner Baum - Florida State University, Tallahassee Dr. Phil Church - University of Washington, Seattle Dr. A. O. Kuhn - University of Maryland, College Park, Md. Dr. J. H. Longwell - University of Missouri

The purpose of the meeting was to inform the Committee as fully and explicitly as possible of the objectives, methods, and production of the NWRC. This was done in statements by Section Heads or other similarly informed persons of the NWRC, and by question-answer discussion between the committee and the Weather Bureau personnel.

Dr. Malone, introduced Mr. Smith who presented a short history of the establishment and growth of the NWRC and a summary of current facts relating to employment: number, types, and grades of personnel; sources of manpower; flexibility and limitations of hiring and firing regulations; and the staffing situation in general. To help the committee's understanding, each member was given a chart showing the number, type, and grade of employees in each unit; and Mr. Smith emphasized the convenience of the WAE ("while actually employed") pool of local people available for irregular periods of employment.

Following a brief diversion to consider percentages of machine utilization WASHINGTON (approximately 25% to Weather Bureau projects, 75% to working fund projects July 1954 - June 1955), the discussion turned to the general subject of training - available college courses, on-the-job training, essential classes is in the office (3 in progress now and a new one (on the ALWAC computer) just is beginning, need for continuous training in the machine section, plans for

installing roof instruments for an observer course, and the helpful attitude of the local Civil Service Board towards the aims and program of the NWRC.

Following a brief account of how original records are received from Navy, Air Force and Weather Bureau sources, and how these records are placed on punch cards and integrated into the NWRC program, Mr. Smith explained the inventorying of these records and gave each member of the Committee sample copies of the reference manual containing this inventory. He also discussed the WBAN (Weather Bureau - Air Force - Navy) numbering system, including its acceptance by Canada as a means of station identification, and gave the Committee further details on the NWRC system of inventories, such as that for raobs on punch cards, for blank cards, for paper supplies, etc.

Mr. Sherman Brewster followed with a discussion of the functions of the Records Service Section, beginning with the receipt, indexing, and office distribution of the records. A reference by Dr. Baum to a difficulty he had encountered in trying to get data for short periods for selected areas led to a discussion of record-filing methods (e.g., microfilm, microcard) and devices such as the hurricane data packages for making portions of the archives available. Filing methods and preservation of records were also discussed.

Mr. Robert Dickson then outlined the functions of the Climatic Information Section - to anser requests for data ranging in scope and type from the simple questions of school children to inquiries needing professional treatment. The number, over-all, amounts to about 400 a month and most of these are answered within 24 hours, many of them simply by supplying publications (1 sheet or more), sample copies of which Mr. Dickson gave to the Committee. Describing the reference file of non-periodical and foreign publications and their uses in answering public requests and facilitating project work, Mr. Dickson exhibited types of requests for data and Dr. Landsberg distinguished for the Committee three principal categories of inquiry: 1) the simple request usually satisfied with data or publications readily available for issue; 2) inquiries from non-government sources requiring data-analysis and interpretation, for which the inquirer is referred to a non-government consultant; and 3) public-agency requests requiring consultant service, which NWRC supplies for appropriate reimbursement.

On Dr. Kuhn's inquiry about the respective roles of NWRC and the Office of Climatology in Washington, Dr. Landsberg also explained that Asheville has authority to handle all routine requests, but cases that require policy decisions or special liaison are often handled in Washington, with necessary assistance from the NWRC.

From this point until recess for lunch the discussion considered several points, among them: i) the good quality of NWRC's work; ii) how well known, publicly, the Center is; iii) the 4 cents a year per capita cost of climatological service for the U.S.; iv) legal certification of data for court use, v) correspondence aids for answering routine inquiries (20% from schools) vi) issue-time for regular publications; vii) relation of the NWRC job-classification grades to work-responsibilities, and efforts to have these grades raised; viii) problems in availability of good personnel; ix) policy of trying to fit people to jobs.

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During the afternoon, following a tour through the various Sections of the Center, discussion was resumed and was carried mainly by project-planner R. L. Joiner, who described and discussed several of the major projects now in process at the NWRC. These were: 1) Weather Bureau projects such as Bulletin W, the 5-year summary Supplement to LCD, the Hourly Precip Bulletin, upper-air summaries for revision of temperature frequencies, the Northern Hemisphere listings, routine processing of upper-air-data; 2) projects supported by other agencies, such as the Federal Civil Defense Administration fall-out studies, the Bureau of Standards (Boulder) radio-wave refraction project, the drought hazard summaries for North Carolina State College, and the Los Angeles Air Pollution Board study of fog and smoke occurrence in California; and 3) Navy projects (which represent the largest amount of NWRC's work) such as the Marine Atlas, tabulations of sea-, swell-, and current-data for the Hydrographic Office, Summaries of Monthly Aerological Records (SMAR), the wind-aid project, the "Applied Research; Operational Weather Analyses" project, and the projects for study of high-wave duration and gustsonde turbulence.

In reference to the SMAR summaries Mr. Smith emphasized an advantage they embody in the correlation of all elements with wind direction; and Mr. Joiner, during discussion of the turbulence project, made the point that the lately procured ALWAC computer reduced considerably the number of needed operations in the project-work.

The day ended with an extensive tour of the Center's machine facilities, with special attention given to the ALWAC computer.

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The second day's session (Nov. 10) began with a comparatively thorough consideration of the Northern Hemisphere Project. Mr. Wm. McMurray described the project, with a short history of its progress to date and discussion of i) our attempt to fill in the war-years gap, ii) needed form-changes in the tabular data listing, iii) data sources and methods of gathering the data from overseas, and iv) the possible advantage of WMO sponsorship. Copies of the new daily bulletin for July 2, 1955, were distributed to the Committee and the supplement (containing explanation of codes) was considered briefly.

Following Dr. Baum's comment that the Northern Hemisphere Daily Data Bulletin was a very satisfactory answer to a long-felt synoptic need, the possible addition of 300 and 200 mb charts was considered, with their probable cost (est. \$40,000/an.) and the need for additional project-funds to prevent slow-down of present work if these levels were added.

Dr. Landsberg stated that a 300 mb chart would have the best chance of approval because it would not require too much extrapolation and manipulation of data since many raob soundings now extend to 300 mb.

A sea-level chart with additional stations - over and above those available from teletype reports - was then considered and the point brought out that the average of these additional stations (from such sources as the code data sheet and from publications) is about 330 - which constitutes a substantial back up of the teletype data. Next considered was a chart of additional stations plotted at 500 mb over and above those plotted from teletype on current synoptic charts. The number of additional reports at this level was 29, all in strategic positions.

Because of the Committee's interest in these charts, Mr. Smith furnished photostats to all members. Dr. Malone, commenting on their usefulness in illustrating the work of the project, suggested publication of a Northern Hemisphere project status chart in the American Meteorological Society Bulletin.

After a brief discussion of "Ptarmigan" flights conducted near the North Pole by USAF, consideration of the Northern Hemisphere Project was concluded with comment (a) on the advantages of its being located at NWRC, (b) on its importance as a research contribution, (c) on some past difficulties, and (d) on the general efficiency of Mr. McMurray's supervision.

Functions of the Climatic Publications Section were summarized next - first the National Summary Bulletin containing nationwide treatment of storm and flood conditions, upper air data, and solar radiation data; and secondly, the Monthly Climatic Data for the World, containing surface and upper air data selected and arranged in accordance with WMO specifications. Subsequent discussion dealt mainly with the demand for the average radiosonde data. Specified examples of this demand are (a) for long-range forecasting studies and (b) requirements of research organizations such as Bureau of Standards. Dr. Landsberg made the point that continued accumulation of these data will enable us eventually to construct a set of normals.

The work of the Project Engineering Section was surveyed next. This section handles a large amount of time-consuming non-routine project work in addition to its work with the key-punch, machine tabulation, and special projects units. The job of the Special Projects Unit is to perform a variety of tasks before and after machine processing, viz: coding data for punching if not on cards, verifying punched cards, checking completed tabulations, plotting data on graphs, analyzing data, drafting graphs, tables, etc. Examples of projects now underway or recently completed are the Ocean station records survey, the surface temperature and precipitation normals project, wind-aid scaling, "cold-wet" climate compilation, pilot charts of North Atlantic, pressure and relative humidity normals, the Baltimore Climatic Guide, radioactive fallout, gustsonde turbulence.

The Marine Atlas (Marine Climatic Atlas of the World) project of the Navy was then discussed. Salient points were (a) the two main types of climatic information, presented by graph, are (i) cumulative percentage frequencies, and (ii) correlation of climatic elements with wind direction; (b) the project utilizes practically all facilities at NWRC; (c) the North Atlantic volume is now being printed, the North Pacific is in production, the Indian Ocean, South Atlantic, South Pacific and finally a Polar volume will follow; (d) about 20,000,000 punched cards will be involved in the production; (e) the completed Atlas will offer an excellent opportunity and guide to production of an abstract version for Merchant Marine use; (f) the Navy liaison at NWRC has facilitated essential interagency cooperation on this job in an extremely helpful fashion.

Following an executive meeting of the Committee, Dr. Malone conveyed to Mr. Smith and his staff the thanks and congratulations of the Committee for the excellent quality of their presentations.

2. <u>STATE CONSERVATIONISTS AND STATE SOIL SCIENTISTS</u>: We have recently furnished the Soil Conservation Service a list of State Climatologists, and this has been widely distributed within the Service. They have furnished us an up-to-date list of State Conservationists and State Soil Scientists and those lists are reproduced here, since State Climatologists will have many problems in common with these officials.

The primary purpose of the Soil Conservation Service is to assist farmers and ranchers to develop and apply basic soil conservation plans fitted specifically to the soil and water resources involved. It extends this onsite technical assistance for soil, water and plant management and sound land use to owners and operators primarily through soil conservation districts. In addition, the Service provides technical and financial assistance to local organizations in small watershed protection and flood prevention.

LOCATION AND ADDRESSES OF STATE CONSERVATIONISTS

Olin C. Medlock Soil Conservation Bldg. Alabama Polytechnic Institute Campus P. O. Box 311 Auburn, Alabama

Robert V. Boyle 223 New Post Office Building Phoenix, Arizona

Hollis R. Williams 323 Federal Building Little Rock, Arkansas

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John S. Barnes Second Floor, Tioga Bldg. 2020 Milvia Street Berkeley 4, California

Kenneth W. Chalmers Room 321, New Custom House Denver 2, Colorado Robert N. Irving Annex B - Western Idaho State Fairgrounds P. O. Box 2709 Boise, Idaho

Bruce B. Clark Nogle Building 605 S. Neil Street Champaign, Illinois

Charles E. Swain 215 E. New York Street Indianapolis 4, Indiana

Frank H. Mendel Iowa Building - 4th Floor, USDA, SCS 505 - 6th Avenue

Des Moines, Iowa

Fred J. Sykes Public Utility Building 114-1/2 W. Iron Street P. O. Box 600 Salina, Kansas

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N. Paul Tedrow College of Agriculture Bldg. University of Connecticut Box U-105 Storrs, Connecticut

Richard S. Snyder 503 Academy Street P. O. Box 418 Newark, Delaware

Colin D. Gunn 35 N. Main Street P. O. Box 162 Gainesville, Florida

Cecil W. Chapman Old Post Office Bldg. P. O. Box 832 Athens, Georgia

Arthur B. Beaumont Cook's Block 6 Main Street Amherst, Massachusetts

Everett C. Sackrider Michigan State College Wells Hall, Unit E East Lansing, Michigan

Herbert A. Flueck 517 Federal Courts Building St. Paul, Minnesota

Charles B. Anders Room 400 - Milner Building Lamar & Pearl Streets P. O. Box 610 Jackson 15, Mississippi

Oscar C. Bruce Room 22, Federal Building 6th and Cherry Streets P. O. Box 180 Columbia, Missouri

Truman C. Anderson 26 East Mendenhall P. O. Box 855 Bozeman, Montana Hubbard K. Gayle Production & Marketing Building 231 W. Maxwell Street Lexington, Kentucky

Harold B. Martin Svebeck Building 1517 - 6th Street Alexandria, Louisiana

William B. Oliver University of Maine East Annex Bldg. Orono, Maine

Edward M. Davis 228 Agriculture Building University of Maryland College Park, Maryland

Irving B. Stafford Byrns Building 238 W. Genesee Street Syracuse, New York

Earl B. Garrett 213 PMA Building State College Station P. O. Box 5126 Raleigh, N. C.

Lyness G. Lloyd Professional Building Fifth & Rosser P. O. Box 270 Bismarck, North Dakota

Thomas C. Kennard 222 Old Federal Building 3ra& State Streets Columbus 15, Ohio

Ray Walker 2800 Southeastern Ave. SCS, USDA, State Office Stillwater, Oklahoma

Harold E. Tower Ross Building 209 Southwest 5th Avenue Portland 4, Oregon Harvey G. Bobst Room 604 134 S. 12th Street Lincoln 8, Nebraska

George Hardman 1485 W lls Ave., Room 19 Reno, Nevada

Allan J. Collins 29 Main Street Durham, New Hampshire

Frank C. Edminster Feher Building 103 Bayard Street P. O. Box 670 New Brunswick, New Jersey

Robert Andrew Young Office Square Building 1015 Tijeras Ave., N. W. P. O. Box 1348 Albuquerque, New Mexico

Henry N. Smith First National Bank Building 16-20 South Main Street P. O. Box 417 Temple, Texas

Josiah A. Libby 222 S. W. Temple Street Room 220 Salt Lake City 1, Utah

Lemuel J. Peet 481 Main Street P. O. Box 736 Burlington, Vermont

Sam W. Bondurant 900 N. Lombardy Street Richmond 20, Virginia

Paul C. McGrew 301 Hutton Building S. 9 Washington Street Spokane 4, Washington Ivan McKeever Dauphin Building 203 Market Street Harrisburg, Pennsylvania

N. Paul Tedrow (Rhode Island combined with Connecticut)

Thomas S. Buie Federal Land Bank Building 1401 <u>Rempton</u> Street Columbia, South Carolina

Ross D. Davies Knights of Columbus Building 56 - 3rd Street, S. E. P. O. Box 1357 Huron, South Dakota

Joseph R. Sasser 561 U. S. Court House Nashville, 3 Tennessee

Longfellow L. Lough Lazzelle Building 178 Forest Avenue Morgantown, West Virginia

Marvin F. Schweers 3010 E. Washington Avenue Madison 4, Wisconsin

Bernard H. Hopkins Tip Top Building 345 E. 2nd Street F. O. Box 699 Casper, Wyoming

OUTSIDE THE CONTINENTAL UNITED STATES

Charles W. Wilson Territorial Conservationist P. O. Box F Palmer, Alaska

John H. Christ Territorial Conservationist 202 Federal Building Merchant & Nililand Streets Honolulu, Hawaii, T. H.

Richard L. Von Treba Director, Caribbean Area Segarra Bldg. 1409 Ponce de Leon Ave. P. O. Box 4671 San Juan 23, Puerto Rico

STATE SOIL SCIENTISTS

Miles E. Stephens Soil Conservation Service P. O. Box 311 Auburn, Alabama

Soil Conservation Service Room 101A, Agriculture Bldg. Univ. of Arizona Tucson, Arizona

Hartsell C. Dean Soil Conservation Service New U. S. Post Office and Federal Court House Bldg. Little Rock, Arkansas

Leonard R. Wohletz Soil Conservation Service 2nd Floor, Tioga Bldg. 2020 Milvia Street Berkeley, California

E. Milton Payne Soil Conservation Service 202 Agronomy Bldg. A & M College Ft. Collins, Colorado Arthur E. Shearin Soil Conservation Service P. O. Box 348 Windsor, Connecticut

Merl F. Hershberger Soil Conservation Service Agricultural Bldg. University of Maryland College Park, Maryland (also for Delaware)

Olin C. Lewis Soil Conservation Service P. O. Box 162 Gainesville, Florida

Frank T. Ritchie, Jr. Soil Conservation Service P. O. Box 832 Athens, Georgia

Charles F. Parrott Soil Conservation Service Hoppie Bldg. 1524 Vista Avenue Boise, Idaho Lindo J. Bartelli Soil Conservation Service Nagle Bldg. 605 S. Neil Street Champaign, Illinois

Turner C. Bass Soil Conservation Service Agronomy Department Purdue University Lafayette, Indiana

W. J. B. Boatman Soil Conservation Service Iowa Bldg. - 4th Floor 505 - 6th Avenue Des Moines, Iowa

Arthur P. Nelson Soil Conservation Service Public Utility Bldg. 116-1/2 W. Iron Street Salina, Kansas

Willard W. Carpenter Soil Conservation Service Production & Marketing Bldg. 231 W. Maxwell Street Lexington, Kentucky

Demetrius L. Fontenot Soil Conservation Service Svebeck Bldg. P. O. Box 1630 Alexandria, Louisiana

J. Stewart Hardesty Soil Conservation Service Maples Hall University of Maine Orono, Maine

William H. Coates Soil Conservation Service South College Bldg. Massachusetts State College Amherst, Massachusetts

Clarence A. Engberg Soil Conservation Service Unit E, Wells Hall Michigan State College East Lansing, Michigan Alex S. Robertson Soil Conservation Service 517 Federal Courts Bldg. St. Paul, Minnesota

Richard R. Covell Soil Conservation Service Masonic Temple Bldg. 1130 W. Capitol Street Jackson, Mississippi

Harold E. Grogger Soil Conservation Service Post Office Bldg. 6th and Cherry Streets Columbia, Missouri

Dave R. Cawlfield Soil Conservation Service Gallatin Block Bldg. Bozeman, Montana

Lloyd E. Mitchell Soil Conservation Service 201 Nebraska Hall University of Nebraska Lincoln, Nebraska

Edmund A. Naphan Soil Conservation Service Room 19, 1479 Wells Avenue Reno, Nevada

Lloyd Garland Soil Conservation Service 29 Main Street Durham, New Hampshire

Granville A. Quakenbush Soil Conservation Service Post Office Bldg., Post Office Box 670 New Brunswick, New Jersey

Harrison J. Maker Soil Conservation Service P. O. Box 1348 Albuquerque, New Mexico

David R. Gardner (Asst.) Soil Conservation Service Room 438, Warren Hall Cornell University Ithaca, New York Forrest Steele Soil Conservation Service State Office Bldg. N. C. State College Raleigh, N. C.

Lloyd E. Shoesmith Soil Conservation Service P. O. Box 270 Bismarck, North Dakota

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William W. Hill Soil Conservation Service 515 W. 10th Avenue Eastern Bldg. Portland, Oregon

Frank G. Loughry Soil Conservation Service Dauphin Bldg. 203 Market Street Harrisburg, Pennsylvania

Paul H. Montgomery Soil Conservation Service P. O. Box 417 Columbia, South Carolina

Glenn A. Avery Soil Conservation Service P. O. Box 1357 Huron, South Dakota

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Richard M. Marshall Soil Conservation Service 114-118 South 3rd Street Temple, Texas John W. Metcalf Soil Conservation Service Utah State Agricultural College P. O. Box 151 Logan, Utah

Montague Howard, Jr. Soil Conservation Service Extension Bldg. 481 Main Street Burlington, Vermont

Robert E. Devereaux Soil Conservation Service P. O. Box 497 Blacksburg, Virginia

Ray W. Chapin Soil Conservation Service Spokane, Washington

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William deYoung Soil Conservation Service 2702 Monroe Street Madison 5, Wisconsin

Harold Bindschadler Soil Conservation Service P. C. Box 966 Laramie, Wyoming

Territorial Soil Scientists

G. A. Woodruff Soil Conservation Service Neal-Wright Bldg. Colony Street Palmer, Alaska

Joe W. Kingsbury Soil Conservation Service Federal Bldg. Merchant & Mililand Streets Honolulu, Hawaii

C. J. Koch Soil Conservation Service Segarra Bldg. 1409 Ponce de Leon Avenue P. O. Box 4671 San Juan 23, Puerto Rico

3. C. D. WEATHER STORIES: The Office of Climatology is reviewing critically the Weather Summaries as printed in State Climatological Data. The January issues disclosed a large number of contradicting statements and many examples of poor sentence structure and vague meteorological terminology. A common fault is the overuse of words such as generally, mostly, some, about, etc.

Suggestions and comments would be welcome in answer to the following questions about these summaries:

1. Who reads the summaries and what do they expect to find in them?

2. What is the best way to get across the expected information?

3. Is a set text-form preferable to a free-wheeling discussion?

The wide range of weather events and resultant effects on agriculture, transportation, industry and other activities may preclude a strait jacket formula (see 3. above). Further, the content necessarily varies widely by season and location. However, we have selected a January summary from a large number of good ones as representative of a weather summary that apparently meets requirements. Your comments are invited. The selection follows:

ILLINOIS - JANUARY 1956

WEATHER SUMMARY

January temperatures were higher than their long-term averages at most northern stations and below average at most southern stations. Precipitation over the State was very light. The soil was dry but the winter grains and legumes continued in fair to good condition.

Temperatures were several degrees above the long-term averages during the first two weeks of the month. The 5th was unusually warm and almost all stations registered their highest maximums on that date. Maximums on the 5th ranged from the low 40's over the extreme north to the low 60's from East St. Louis to Mt. Vernon and southward. The highest temperature for the State, 65°, occurred at Anna 1 NW, Carbondale, and Harrisburg on the 5th. Warm weather continued over the northeast to the 19th but a cold front moved into the State from the west on the 15th and temperatures over the south dropped sharply. Chicago registered a maximum of 39° on the 16th while Springfield's maximum on that date was only 18°. Springfield's minimum for the 16th was only 8° in contrast to Chicago's minimum of 28°. Arctic air began pouring

into the State late on the 20th and continued for several days. The 21st to 23d was especially cold over the northern half of the State and most stations in the north registered their lowest temperatures for the month during that period. Monthly minimums at southern stations came on other dates. Minimums ranged from -13° at Stockton to 17° at Cairo. Below-zero temperatures were registered as far south as Vandalia. Temperatures did not drop to zero, however, at several stations in the Chicago area, and at many other stations in the northern half of the State. Minimums were -5° or colder over several northwestern counties. Chicagoans enjoyed another mild spell from the 24th to 29th. Southern Illinois warmed more slowly and their only mild days during the last decade were the 27th and 28th. The cold front which crossed the State on the afternoon and evening of the 28th sent the temperatures tumbling and the last two days were cold over the entire State. Monthly mean temperatures ranged from 21.7° at Stockton to 34.4° at Cairo. Monthly mean temperatures were above their usual January averages from Havana eastward and northward and at Effingham and Newton. Elsewhere, below-average monthly mean temperatures were the rule. Temperature departures ranged from -4.7° at Mt. Carmel to 5.4° at Rockford Airport.

Light snow fell over the northern part of the State on the 15th and 16th. Several inches fell over the south on the 18th and 19th. Moderate snowfall also fell over the southeast and south on the 29th. Light rain or snow occurred locally on a few other dates. Snowfall totals ranged from a trace at Dixon and Sycamore to 15.5 inches at Greenup. In general, most southern stations received 6.0 inches or more and most northern stations received less then 6.0 inches. Although most stations received more snow in January 1956 then in any January since 1945, the total precipitation, which includes snowfall, was less at most stations than for any January since 1944. This may possibly sound paradoxical but is true because so much of the January 1956 precipitation fell as snow and very little as rain. Precipitation totals (which include melted snow samples) ranged from 0.11 inch at Antioch and Princeville 2 NW to 3.43 inches at Brookport. In general, stations south and east of a line from Park Forest to White Hall, a few stations in the extreme northwestern part of Illinois, and a few scattered elsewhere received more than 0.50 inch precipitation during January. Most stations north and west of the line from Park Forest to White Hall received considerably less than 0.50 inch. Most stations south and east of a line from Greenup to Chester received more than 1.00 inch of precipitation during January. Several stations in the extreme south received more than 2.00 inches. Only a few stations received more than half as much as their longtime average January amount. Most of these stations were in the extreme southern part of the State. Several counties in the extreme northeast and most counties south and east of a line from Park Forest to White Hall received between 25% and 50% of their long-time average rainfall. North and West of this line and excluding a few counties in the extreme northwestern part of the State, the January 1956 precipitation was less than 25% of the average for all Januarys. A few stations received less than 10% of the average.

It might well be recalled that, in general, December 1955 was the driest December of record for the State of Illinois. The dought intensified during January 1956 which was among the driest Januarys of record. A few shallow wells failed. Soil moisture was deficient in all areas of the State. Although the weather was favorable for outdoor work and some plowing was accomplished, the top soil was too dry for field work. However, the winter grains and legumes made fair progress. Several inches of snow over the south on the 18th and 19th and the moderate amounts over the south and southeast on the 29th improved the soil moisture; it continued very dry over the central and northwest. The weather was mostly favorable for livestock grazing and the animals continued in excellent condition.

Lucius W. Dye

4. DISTRIBUTION OF STATE (OR SECTION) MAPS: You were requested, in CSM #51(Item 6) to notify the NWRC as to your regular requirements for both the large (17 x 22) and small (8-1/2 x 11) state maps. The NWRC has informed us that only 24 replies were received, most of which did not indicate continuing need each time these maps are revised. Without this information the NWRC cannot intelligently plan their printing requirements for the maps. We request again that all recipients of this memorandum having a need for these maps inform the NWRC as soon as possible. The name (or names) of the state maps required each time they are revised, and the number of copies of each of the small and the large maps, should be indicated.

5. USE OF WORD "EARLIER" INSTEAD OF "LATER" IN REFERENCE NOTE IN C.D. STATING "+AND ALSO ON LATER DATE OR DATES": A question has arisen as to why we use the reference note "+And also on later date or dates" in the Climatological Data while in some other publications we use "earlier" instead of "later".

Our reasoning on this is as follows: The word "earlier" should be used in published tables containing data for a number of years' records, while "later" should be used in published tables containing only current data (1 year or 1 month). For most purposes it is more important to publish an extreme temperature for 1955 than for 1895. On the other hand, in current publications the argument for "earlier" or "later" is the same on both sides. For instance, in the spring a low temperature is usually more important on April 20th than on April 1st; but in the autumn a low temperature is usually more important on November 1st than on November 20th. It would not be practicable, of course, to change these reference notes with the seasons.

6. <u>MACHINE LISTINGS FOR LOCAL CLIMATOLOGICAL DATA-SUPPLEMENT</u>: Local Climatological Data Supplements are now published for all Weather Bureau stations for which WBAN #1 cards are available. Therefore, the National Weather Records Center no longer has a requirement for the machine listings and they may be destroyed at the WRPC's.

7. SOIL TEMPERATURE DATA: The response to CSM No. 49, Item 3, has been very gratifying in indicating that numerous soil temperature data are being taken currently in the United States. Several of the replies have included inquiries about possible future soil temperature installations. This office and the Instrumental Engineering and O&SF Divisions are now investigating instruments that could be used by the Weather Bureau for such observations. All field offices will be advised when a decision is reached. Meantime, some World Meteorological Organization recommendations about soil temperature observations are reproduced below for your guidance should you receive requests for advice about soil temperature installations:

"The levels at which soil temperatures are observed SHOULD include the following depths: 10, 20, 50 and 100 cm (approx. 4, 8, 20 and 40 inches). At the deeper levels, where temperature changes slowly, daily readings will suffice. At shallower depths, the observations may consist, in order of preference, of either continuous recordings, observations of daily maximum and minimum temperatures or readings at fixed hours, the observations being made preferably at intervals of not more than 6 hours."

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Because of the recent interest in soil temperature data we believe it worthwhile for State Climatologists to investigate the possibility of obtaining current data for publication in Monthly Climatological Data. All State Climatologists who determine that soil temperature data can be obtained for prompt publication should advise this office so that necessary action can be taken to arrange for publication.

8. FORM 1066 FOR STATE CLIMATOLOGISTS: (Reference Item 7, CSM 46) The referenced item invited State Climatologists to obtain for selected stations an extra copy of Form 1066 from WRPC for distribution to local newspapers and/or substation observers. We are curious to learn, from all State Climatologists who received extra copies, their appraisal of any advantage accruing from the distribution of these Forms. We are considering dropping this service if no real need is met by it.

9. WHEAT-CLIMATE RELATIONSHIPS: A copy of Wheat-Climate Relationships and the Use of Phenology in Ascertaining the Thermal and Photo-thermal Requirements of Wheat prepared by Mr. M. Y. Nuttonson of the American Institute of Crop Ecology has been sent to each State Climatologist. This will be of particular interest for those located in the wheat growing areas. We believe it will also be valuable as a model for other State Climatologists who might be interested in the preparation of similar studies relative to other crops.

10. INDEX FOR CSM's: An Index for CSM's No. 43 through No. 52 has been distributed to all recipients of CSM's.

11. BOOKS: (Reference CSM 48, Item 4) It would help us in the selection and distribution of climatological books if we had an up-to-date list of such books now on hand in Sate and Area Climatologists' Offices. As time is available those offices are asked to furnish us such a list. Only books pertaining to climatology should be reported. 12. ACTIVITIES OF STATE CLIMATOLOGISTS: Mr. Nelson Kauffman, Pennsylvania State Climatologist, has worked out arrangements with the Agricultural Marketing Service State Statistician's Office whereby that office will, in the future, prepare copy and reproduce the Weekly Weather and Crop Bulletin. The State Climatologist's Office will contribute the weather portion of the bulletin.

Mr. Charles B. Carney, North Carolina State Climatologist, cooperated in the preparation of an excellent publication, "North Carolina Hurricane Project Report". Copies have been sent to all Gulf and East Coast State Climatologists.

Mr. L. A. Joos, Illinois State Climatologist, has prepared an excellent and timely climatological release on tornadoes for distribution in connection with the occurrences of tornadoes. A copy will be sent to each State Climatologist's Office.

Mr. Eichmeier, State Climatologist for Michigan, in cooperation with Michigan State College, has prepared a "Summary of Weather Conditions at Chatham", similar to the East Lansing Summary issued in 1951. Copies may be obtained from Mr. Eichmeier if desired.

13. TO ALL STATE CLIMATOLOGISTS: Please furnish the Office of Climatology your business telephone number.

FOR WRPC's

14. MEMOS OF TRANSMITTAL: It will no longer be necessary to send the Central Office a carbon copy of memos of transmittal of recurring shipments of punch cards and forms.

15. AMENDMENTS TO PROCEDURES:

Par. 1009.6131 - Delete all references to Table 1 and W.B. Forms 5101, 5101a, 5101b and 5101c.

Par. 1009.6134 - Delete reference to Table I

Par. 1009.6137 - Delete reference to Table I

Par. 1009.6151 - Delete reference to Table I

Par. 1009.631 - Delete entire paragraph

Par. 1009.632 - Change the second sentence to read: "Division averages should be carried." Also, change the sentence in this paragraph beginning with "Only 5 items" to "Only 3 items for division should be carried, namely the average temperature, the average precipitation and the average snowfall."

Par. 1009.6322 - Change first sentence to read: "Since networks are non-uniform in most sections it will be necessary to employ weighted division averages if any divisions are combined into larger areas."

Par. 1009.6421 - Add the following designator numbers for Pacific Ocean areas:

91 Hawaiian Islands (selected stations)

92 Phoenix and Line Islands and American Samoa

93 Western Pacific Islands North of 12° N.

94 Caroline and Marshall Islands

Par. 1009.6422 - In first sentence delete Canton and Wake Islands.

Par. 1009.652 - Cancel the reference note that reads: "Sleet and hail were included in snowfall averages in Table I, beginning with July 1948."

Par. 1009.821 - Change the heading to Average Temperatures and Departure from Long-Term Mean.

Par. 1009.822 - Delete the last three sentences in this paragraph. "The last line in this table should be for the section average." "Monthly and annual averages and departures" and so on to end of paragraph.

Par. 1009.823 - Change the heading to "Total Precipitation and Departures from Long-Term Mean." Also, delete the last two sentences in the paragraph.

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H. E. Landsberg Director, Office of Climatology

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