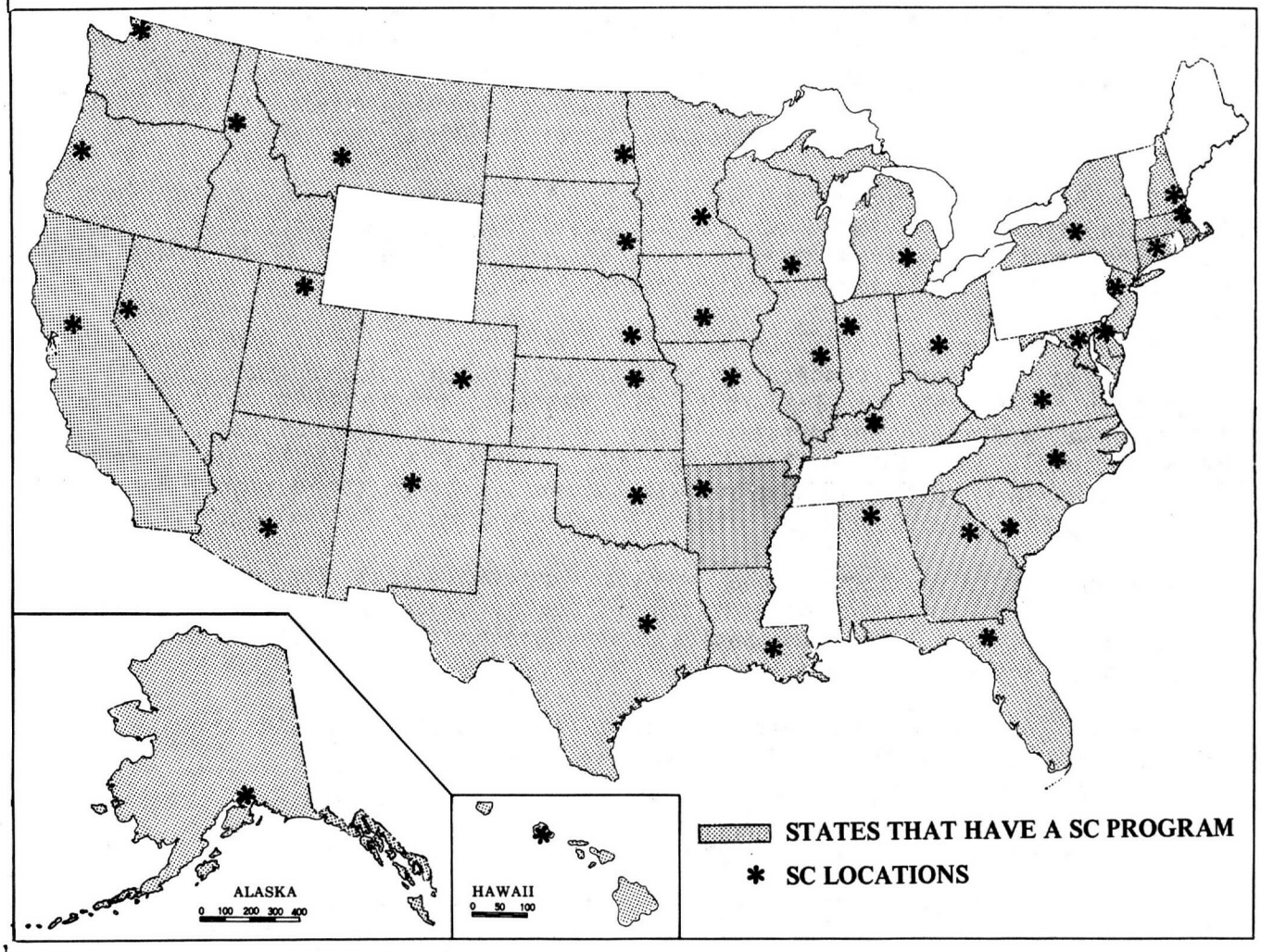
National Oceanic and Atmospheric Administration
Environmental Data and Information Service
National Climatic Center

NEWS LETTER

IN COOPERATION WITH
THE AMERICAN ASSOCIATION OF STATE CLIMATOLOGISTS



VOLUME 5 NUMBER 1 JANUARY 1981

PUBLISHED QUARTERLY AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, N.C.

GERALD LEE BARGER

It was with deep regret that the National Climatic Center learned of the death of Gerald Lee Barger who died of cancer at his home in Columbia, Missouri, on December 6, 1980. He was 64.

At the time of his death Dr. Barger was a meteorologist for Lockheed Electronic Company with an adjunct faculty appointment at the University of Missouri in Columbia, Missouri. He had earlier retired from the National Oceanic and Atmospheric Administration after thirty years of Federal service. Among other positions, he served NOAA as Director of the National Climatic Center in Asheville, North Carolina and Director of Research of the Environmental Data Service. Dr. Barger served on the staff of the World Meteorological Organization in Geneva in the mid 1960's.

Dr. Barger was graduated with a B. A. degree from Simpson College, Indianola, Iowa. He received M. S. and Ph.D. degrees from Iowa State University and a MPA from Harvard. He served in World War II as a weather officer and pilot with the U. S. Air Force.

Gerald Barger was a world authority on agricultural climatology. He authored many papers concerning the relationship of climate to food production. Through his leadership the research programs in many private laboratories and state universities were enhanced. He provided leadership to many national and international panels. While with NOAA Dr. Barger participated in cooperative programs with scientists from the National Academy of Science, the U. S. Department of Agriculture and other federal agencies.

Barger was a member of the American Meteorological Society, American Association for the Advancement of Science, International Society of Biometeorology, the American Society of Agronomy, and the Council for Agricultural Science and Technology.

He is survived by his wife, Majorie; three daughters, who live in the Washington, D.C. area, and a son of Columbia, Missouri.

NCC BRIEFS

The NCC and the AASC are pleased to welcome Dr. Jerry M. Davis as the new State Climatologist for North Carolina. Dr. Davis' address is the Department of Geosciences, North Carolina State University, Box 5068, Raleigh, NC 27650.

Dr. Davis replaces Dr. Peter J. Robinson who will retain his position as the official representative of North Carolina to the National Climate Program Office. Our sincere appreciation to Dr. Robinson for the work he has done in the State Climatologist Program.

State weather publications which NCC reviews are very much appreciated. Processing of these will be faster if mailing labels are address as follows:

Linda D. Preston, OA/D542x2
National Climatic Center - Library
Federal Building
Asheville, NC 28801

Although one-time publications should also be sent to the above address, it would be helpful if a photocopy of the title page, a flyer, or a note regarding these publications could be sent to Gus Shumbera and Bill Bartlett at this address.

Exchange of Ideas/Information - In order that we may have a more informative and interesting AASC News Letter, NCC would like to emphasize again the importance of exchanging ideas and information. The News Letter is a joint effort of Environmental Data and Information Service (EDIS), National Climatic Center (NCC), National Weather Service (NWS), and the American Association of State Climatologists (AASC), and is designed to fill a need for communication among these agencies. Inputs on new techniques to solve common problems or items of general interest to the AASC Program are solicited. If you have not already done so, please send the following information to Bill Bartlett, NCC for possible publication in the News Letter.

1. A detailed narrative describing the development of your State's climatological organization and/or function to date; what service is provided, to whom and how. What climate data are collected in your State other than National Weather Service data.

2. Describe the projects you have been working on or have completed, and a list of your climatological oriented publications. These should go back at least two years.

NARRATIVE WEATHER SUMMARY - State Climatologists are encouraged to prepare a narrative weather summary for inclusion in the monthly Climatological Data (CD) bulletin for their State. This should be done primarily on occasions of outstanding or unusual weather. The question of appropriate weather phenomena

to be included in such a narrative will be left to the judgment of the climatologist; but considerations should be given to significant monthly anomalies of temperature and/or precipitation, unusual daily temperature extremes, flooding, drought, snow (unusual for the area or season), hurricanes, severe local storms, etc.

The narrative should be submitted to NCC before the end of the following month. It should be understood that the narrative could be subject to minor editing at NCC to assure compatibility to the accompanying published data, but the SC would be consulted if any extensive revision seemed necessary.

In a few States, the NWS Forecast Office is preparing a narrative weather summary for the CE when they feel it is appropriate. In these States, a working liaison is encouraged between the SC and the Meteorologist in Charge as to who should submit the narrative, and what will be the content.

In an effort to reduce the complexity of obtaining information from the NCC digital data base (Current Status and Future Plans - AASC News Letter, Vol 4, No. 1, January 1980), the Data Base Administration staff has begun a pilot project to produce element files of daily (Summary of the Day) data. This will allow users better access to selected elements, i.e., observed parameters, of a record. Thus, when completed, one may request "max temps" and receive only ID information and maximum temperatures. Present day formats may be reproduced from the "element-file" if requested.

VACANCY ANNOUNCEMENT - We are soliciting your help in filling a scientific position in the Federal civil service. You will find below a narrative describing an employment opportunity open at the National Climatic Center, Asheville, North Carolina.

This is a permanent, full-time position established in the Federal career service. Preferably, an applicant for this position should have a U. S. Civil Service status obtained through a prior competitive appointment in the Federal service or the individual's name should be within reach for appointment on a register of eligibles established by an appropriate Office of Personnel Management Civil Service examination.

However, any United States citizen who believes he/she meets the qualification requirements specified in the narrative should forward his/her completed application papers to the Personnel Office. Upon receipt, we will submit the application(s) to the Office of Personnel Management (OPM) for rating on an appropriate examination. The candidates receiving an eligible rating on such examination who could be reached on the civil service register for appointment could then receive full consideration for filling this vacancy.

We will be pleased to consider applications for this vacancy from members of your staff and others whom you believe have the qualifications specified in this vacancy announcement. To obtain filing forms, applicants should contact any Office of Personnel Management Area Office or Federal Job Information Center. Please consult local telephone directories for numbers.

NOAA/EDIS/NATIONAL CLIMATIC CENTER - The National Climatic Center in Asheville, North Carolina, is recruiting for the position of Supervisory Meteorologist (Deputy Director), Grade GS-15. Position subject to Merit Pay. Entrance salary: 44,547. The Center archives worldwide meteorological and climatological data, performs extensive ADP and manual processing of these data, publishes numerous data bulletins, and provides data and information to a wide variety of scientific and lay users. The person selected for this position will serve as full Deputy to the Center Director. He/she will have an integral role in policy determination and implementation, management, direction, and control for all scientific and administrative aspects of Center activities. The incumbent will participate in developing long term goals for the Center and in directing program efforts to achieve those goals. Especially important will be development of innovative approaches to optimize utilization of ADP techniques to enhance efficiency and thoroughness of the Center's meteorological data bases. Maintains extensive contacts with scientists from the public and private sectors on a national and international scope, and represents the NCC and EDIS in national and international organizations. Assumes full responsibilities of the Director in the Director's absence. Qualifications: B.S. degree in meteorology or comparable education in the environmental sciences, accompanied by three years of prior experience that demonstrated successful management and/or administration of a scientific facility, academic department, or equivalent organization performing work in the environmental sciences. One year of the experience must have been at a level equivalent to the GS-14 level in the Federal service. Candidates must possess basic competence in computer science theory and techniques needed to counsel, guide, and motivate scientists implementing this function at the Center. Advanced degrees in meteorology, computer science, and/or mathematics are highly desirable. Quality Ranking Factors: Additional credit will be given to candidates with significant experience in supervising or managing professional scientific activities; with experience in climatology; and with knowledge of automated data processing hardware and software systems appropriate to scientific applications. Application Procedures: Applicants should submit Personal Qualifications Statement (SF-171) and supervisory appraisal (CD-332). Supervisors should address applicant's EEO performance. In addition, non-Federal employees should submit a complete application package for Physical Science Positions. Applications should be submitted to: Personnel Officer, National Climatic Center, Federal Building, Asheville, North Carolina 28801. Reference: Vacancy NOAA/EDIS (NCC)/ 81-9. Applications must be received by January 30, 1981. For additional information or to obtain required application forms, call (704) 258-2850, extension 267, or FTS 672-0267. Equal Opportunity Employer.

PROBLEMS IN THE CLIMATOLOGY OF THE 1980 MOUNT ST. HELENS ERUPTIONS

Howard J. Critchfield
State Climatologist
State of Washington

The potential climatic impact of the 1980 Mount St. Helens eruptions is understandably a matter of public concern as well as a focus of interest among earth scientists. Perhaps no other volcano has attracted so much attention in such a short period. The relations between climate and volcanic activity are complex, however, and in certain respects they are reciprocal. They raise a variety of questions in physical, regional, and applied climatology. The succession of eruptions at different intensities under varying atmospheric conditions affords an exceptional opportunity for testing theoretical models. Classified in terms of cause and effect the climatological problems fall into two groups: (1) effects of climate and weather on eruptive events and subsequent dispersion of ash and gases; and (2) influences of eruptions on climate and climatology. The following brief review does not attempt to assign relative importance to these categories or the individual effects.

Effects of Climate and Weather on Eruptions

One of the credible hypotheses of climatic change invokes volcanic ash as a cause. A reverse chain of processes has been discussed by Rampino, Self, and Fairbridge, who suggest that climatic fluctuations induced by solar variability or other non-volcanic factors may have resulted in redistribution of continental ice sheets and ocean water, leading to crustal stresses and volcanism (1). Thus, rather than initiating past glacial periods, volcanic explosions may have been triggered by climatic events. If the hypothesis is valid it is also general and cannot explain fully the eruption of a single volcano such as Mount St. Helens at a particular time. Atmospheric tides and circulation could augment other causes of crustal stress and trigger an eruption. The eruptions of St. Helens have begun at various phases in the diurnal cycle of atmospheric tides which has its maximum at solar noon over western Washington. Superimposition of circulation patterns on the atmospheric tides does not yield an evident correlation between barometric pressure and eruptive events, although the possible connection merits further investigation. Whereas atmospheric forces may have been negligible as causes of actual eruptions, they may be traceable to common origins in the climate system.

Whether or not atmospheric conditions were part of the cause of the eruptions it is clear that they affected associated phenomena, especially the variable paths of the aerosol. In their 1978 monograph which predicted an eruption of St. Helens, "perhaps even before the end of the century," Crandell and Mullineaux included an inverse wind rose indicating a maximum probability of wind directions toward the east or northeast at altitudes of 3,000 to 16,000 meters in the vicinity of the volcano (2). The pall of ash ejected by St. Helens on 18 May 1980 followed this path across Washington State toward northern Idaho and Montana with remarkable congruity. The pattern of ashfall also conformed closely to the modal wind direction at upper levels. The force of the explosion and strength of upper winds produced a lofting of airborne ash and maximum deposition in eastern Washington; gusty surface winds

accentuated drifting in some areas and led to exaggerated estimates of ash depth.

It is not feasible here to analyze the synoptic weather in detail for each eruptive phase, but selected cases illustrate contrasting patterns. On Sunday 25 May, one week after the initial explosion, a less violent eruption again propelled ash to high levels, but the ensuing fallout was greatest over southwestern Washington in response to easterly and southeasterly winds aloft. Centralia-Chehalis, Kelso-Longview, and Vancouver in Washington and metropolitan Portland in Oregon were major areas experiencing ashfall and reduced visibility. Light ashfall also was detected well to the north in the Puget Sound region. The general weather system over Washington on 25 May produced widespread rain, however, helping to contain surface ash from the day's eruption and ameliorating the residual ash nuisance over much of the eastern part of the state. Ash from an eruption on 7 August again traveled northeastward, reaching beyond Spokane. Winds during a more recent phase (16-18 October) carried ash first southward toward Portland then east and southeastward along the Washington-Oregon border zone toward Idaho. Throughout the series of eruptions ash that penetrated to the stratosphere has moved generally eastward across the United States. The bulk of ashfall from the troposphere has settled toward the east-northeast, but single events confirm that even a one percent chance of anomalous flow can become a reality.

Humidity, cloudiness, precipitation, and vertical stability were other possible factors in the dispersal of ash and gases. An incidental atmospheric effect was pressure-wave refraction in the wake of the 18 May explosion. Informal preliminary surveys indicate maximum surface audibility, apart from the vicinity of the mountain, was at a distance of approximately 200 kilometers. Muffled explosive sounds were heard as far north as Vancouver, British Columbia, and eastward into northern Idaho. Shock waves registered on barographs throughout the state and even as far away as Washington, D. C. (3). An examination of concurrent atmospheric density patterns could provide data for the climatology of pressure waves and acoustics.

Mesoscale Effects on Weather and Climate

Atmospheric heating was minimal during early eruptive phases (4), but it obviously was intense in the 18 May explosion. Perturbations initiated by the blast and the ensuing pressure waves probably affected cloudiness in the region and may have modified circulation slightly on a larger scale. Lightning was observed in the turbulent ash cloud above the volcano, and the Yakima National Weather Service Office (135 km to the northeast) reported frequent thunder during a more than 6-hour period as hot ash and gases drifted overhead.

Areas under the ash plume experienced a rapid diminution of solar radiation and decreasing visibility as ash sifted to the ground. Blowing ash continued to reduce visibility during later periods of drying winds. To the extent that weather accumulates to become climate, these ephemeral conditions are of climatic significance. Of greater importance are the mesoscale changes in the surface heat and water budgets owing to destruction of snowfields, fresh water systems, and vegetative cover. The resulting alterations of evapotranspiration and albedo will affect soil moisture and temperature as well as the boundary layer climate for many years. Where deep ash layers insulated the snowpack on adjacent slopes they retarded melting well beyond

the normal seasonal runoff (5). Thinner ash deposits also changed the surface albedo, but except in the immediate zone of violent destruction alpine snowfall or vegetative growth offset the effect within a few weeks. The albedo of ash re-exposed by the late summer wheat harvest in the Big Bend and Palouse farmlands was again modified by the fallout from stubble burning.

A catastrophic change that will modify local topoclimates in the revised profile of Mount St. Helens, which suddenly became a truncated cone on 18 May. A reduction in height by about 400 meters has decreased the potential alpine snow cover and the barrier effect on winds. The long-term result will be felt in the immediate lee of the mountain, unless further volcanic activity restores the cone.

Macroscale Effects

The impact of the eruptions on subsequent weather over areas remote from St. Helens is more conjectural. The principal theoretical mechanisms entail changes in the radiation balance and stimulation of cloud formation by ash particles and gases as the aerosol moved eastward in the upper troposphere and the stratosphere (6-9). It is unlikely that these or other conceivable models based on St. Helens' prior activity can explain the drought which began in early May on the Canadian Prairies and northern Great Plains, the tornadoes of the 12th and 13th in Missouri and Michigan, or the heavy rains from the 13th to the 17th along the U. S. Gulf Coast (10). It is equally doubtful that the 18 May eruption contributed to the cool, wet spring in Britain and the wine districts of western Europe, although no plausible cause and effect relation should be dismissed without careful examination.

Impacts of volcanic ash and gases on future hemispheric climate are contingent on the amount of mass transport into the stratosphere, and they are difficult to isolate from the effects of other factors. Since transient gases and particulates are known to have a longer residence time in the stratosphere than in the troposphere, we can assume that any resulting abnormalities in the radiation balance, ice nuclei efficiency, or photochemical processes (11-12) will have a protracted influence on weather and climate. If the connecting link is a gross adjustment in the general circulation, the related fluctuations of climate can be expected to appear as diverse regional trends (13). The consensus appears to be that global effects will be slight, but in any case they are complicated by other aerosols and gases, an active sun, or causes yet to be discovered in the climate system.

Climatic Records

An accompanying result of the major volcanic episodes was a disruption of normal surface weather records. Although destruction of observation sites, temporary or permanent abandonment of others, and the deposition of ash in rain gages are not directly climate-related, they are of significance to climatology. A standpipe storage gage formerly maintained by the U. S. Forest Service about 3 kilometers northeast of the crater was destroyed along with a large tract of forest on 18 May (14). Observations at other stations in the federal-state fire danger network were curtailed for various periods. The Plains of Abraham snow course, which had been the site of snow survey measurements on the north side of the mountain in the Cowlitz River drainage since 1944, was obliterated by the main blast; it has been re-established at

approximately the same location (15). The temperature record at a hydro-electric station on the Lewis River 10 km east of Cougar was interrupted by the involuntary absence of permanent personnel for the remainder of the month, although precipitation observations were maintained by daily visits (16). A substation at Kid Valley, within the "Red Zone" of prohibited entry, has been closed permanently. Rain gages throughout the ashfall zone collected various amounts of ash. The NWS gage at Yakima recorded the equivalent of 10.4 millimeters of rain over a 9-hour period.

An incidental problem arises from the lack of a synoptic code number and symbol for volcanic ash. Surface analysis charts for the period during which ash was prevalent do not distinguish ash from dust or smoke as an obstruction to visibility, nor do they distinguish ash from other causes of an obscured sky. Several standard record forms likewise permit ambiguous coding that can persist long after information in a remarks column has been digested by card punches or computers. In view of the near certainty that there will be future pyroclastic eruptions somewhere in the world it may be advisable to review the notation system for records destined to enter climatic archives.

From the climatological point of view a fortunate result of the St. Helens eruptions has been the establishment of a relatively dense event-actuated precipitation and river gage network in the vicinity of the mountain under the auspices of the National Weather Service and the U. S. Geological Survey (17). The Soil Conservation Service and cooperating agencies have increased the number of SNOWTEL installations for monitoring temperature, precipitation, and snowmelt water equivalent in the drainage basins around the mountain. In addition, the U. S. Forest Service is augmenting its fire weather and avalanche monitoring sites in the Gifford Pinchot National Forest with automatic equipment. Data from these enhanced networks will be of great value for modeling boundary layer changes and in applied studies. Although remote sensing via satellite can monitor surface conditions with increasing resolution, it might be prudent to assess the potential scientific benefits of similar networks farther north in the Cascade Range, where Mount Baker has been emitting plumes during recent years.

Applications

Environmental and economic consequences of the eruptions have generated a wide range of studies that employ climatic data and information. Examples based mainly on requests to the Office of the Washington State Climatologist since the first eruptive phase on 27 March 1980 illustrate the variety of applications.

Initial public reactions focused on earthquakes, flooding, and ashfall. Climate was not the primary concern, but the media were quick to add climatic change to the list of possible effects. The scientific community and emergency services were generally alert to the need for careful monitoring and prediction of ash and gas dispersal (18-20). Accordingly, upper-level mean wind data were much in demand for scheduling serial reconnaissance and projecting ashfall paths. The tempo accelerated after 18 May as representatives of the press, radio, and TV began requesting probability forecasts of ash paths, the effect on immediate weather, and future implications for severe winters, drought, floods, food shortages, and the next ice age. Individual perceptions of climatic processes often raced ahead of scientific knowledge.

Following the direct destruction by the explosion, mudslides, and flooding, the need for climatic data applications soon became apparent in engineering design and construction. Plans for dredging operations in the Cowlitz and Columbia Rivers had to take into account the increased potential for soil erosion and flooding in relation to probable rainfall intensity and frequency. Insurance companies required supporting evidence for claims adjustments and for review of premium rates. Planning for timber salvage, reforestation, and wildlife restoration also depended on climatic information. Studies in the agricultural sector have dealt with the effects of ash on soil climate and crop phenology, often at the microscale. Procedures instituted by manufacturers to protect equipment and personnel were based in part on climatic uncertainties.

Federal, state and local health-related services faced immediate and continuing decisions; even such an apparently trival matter as allocation of dust masks entailed climatic probabilities. Pollution monitoring took on new dimensions in the areas affected by ash. Mingling of volcanic ash with smoke from a coal-fired power plant at Centralia, Washington, presented a unique problem. Urban authorities had to choose the best leeward site for storage of ash trucked from streets or estimate the relative chance that rains would flush or clog storm sewers.

Agencies concerned with recreation and tourism sought assurance that future ashfalls would follow predictable patterns, while organizers of conventions and sporting events hastened to change venues or cancel programs. The manager of a professional football team considered the advisability of moving a summer training camp from Cheney, Washington, (near the mediam path of the 18 May ashfall) to an alternate location. It is unclear whether the potential traffic hazard, the cool, wet spring of 1980, or the price of gasoline was the leading cause of a decline in out-of-state visitors.

Conclusion

A comprehensive climatology of the St. Helens eruptions can increase our understanding of climate dynamics and their impact on environment and society, but to date it offers more problems than solutions. Consequently, refined models of the interactions between climate and volcanic activity at all scales of space and time are needed. It is essential, however, that we treat singular events, hypothetical causes, and regional effects in the perspective of the entire climate system, insofar as our inadequate knowledge permits. The question implied by the title of this article continues to merit our attention: What atmospheric effects and climatic impacts can be assigned specifically to Mount St. Helens -- 1980?

References

1. Michael R. Rampino, Stephen Self, and Rhodes W. Fairbridge, "Can Rapid Climatic Change Cause Volcanic Eruptionsπ" Science 206 (1979), pp. 826-829.

2. Dwight R. Crandell and Donal R. Mullineaux, Potential Hazards from Future Eruptions of Mount St. Helens Volcano, Washington. U. S. Geological Survey Bulletin 1383-C. Washington: Government Printing Office, 1978, p. 21.

3. Walter Hoecker, "Pressure Waves from Eruption Recorded in Washington, D. C., "Weatherwise 33, 3 (1980), p. 121.

4. William St. Lawrence, et al., "A comparison of Thermal Observations of Mount St. Helens before and during the First Week of the Initial 1980 Eruption," Science 209 (1980), pp. 1526-27.

5. Robert T. Davis, Snow Survey Supervisor, Soil Conservation Service, Spokane, WA, personal communication.

6. J. R. Bray, "Volcanic Eruptions during the Past 500 Years," in A. B. Pittock, et al., eds., Climate Change and Variability. Cambridge, U.K.: Cambridge University Press, 1978, pp. 256-262.

7. Reid A. Bryson and Brian M. Goodman, "Volcanic Activity and Climatic Changes," Science 207 (1980), pp. 1041-1044.

8. Owen B. Toon and James B. Pollack, "Atmospheric Aerosols and Climate," American Scientist 68 (1980), pp. 268-278.

9. Harry Wexler, "Volcanoes and World Climate," Scientific American 186, 4 (1952), pp. 74-80.

10. Impact Assessments of Major Climatic and Other Natural Events. Washington: Center for Environmental Assessment Services, NOAA, May 1980, p. 2.

11. Stephen H. Schneider and William W. Kellogg, "The Chemical Basis for Climate Change," in S.I. Rasool, ed., Chemistry of the Lower Atmosphere. New York: Plenum Press, 1973, pp. 203-249.

12. David A. Johnston, "Volcanic Contributions of Chlorine to the Stratosphere: More Significant to Ozone Than Previously Estimated?" Science 209 (1980) pp. 923-924.

13. Robert C. Balling, Jr., "Regional Patterns Associated with Climatic Change," National Weather Digest 5, 2 (1980), pp. 13-16.

14. The Cooperative Observer, Western Region, Summer 1980, p. 12.

15. Robert T. Davis, ibid.

16. Earl Pickering, NWS Substation Specialist, Seattle, personal communication.

17. Michael K. Holzinger, NWSFO, Seattle, personal communication.

18. Richard E. Stoiber, et al., "Mount St. Helens, Washington, 1980 Volcanic Eruption: Magmatic Gas Component During the First 16 Days," Science 208 (1980), pp. 1258-59.

19. Jonathan S. Fruchter, et al., "Mount St. Helens Ash from the 18 May 1980 Eruption: Chemical, Physical, Mineralogical, and Biological Properties," Science 209 (1980), pp. 1116-25.

20. P. R. Hopper, et al., "Composition of the Mount St. Helens Ashfall in the Moscow-Pullman Area on 18 May 1980," Science 209 (1980), pp. 1125-26.

GEM STATE WEATHER AND WATER

Myron Molnau
State Climatologist
State of Idaho

This is the first of what I hope to be a regular series of informative articles on information regarding weather and water data. Many new data are being acquired and new programs instituted to increase the dissemination and the use of data. As these data and programs become available they will be announced and explained.

Requesting Data

Idaho is fortunate in having a computerized data bank. This Hydrologic Information Storage and Retrieval System (HISARS) was installed in 1974 as a joint project of the Agricultural Experiment Station and the Idaho Water Resources Research Institute. The Experiment Station obtains all climate-related information for HISARS, while the Institute and the Experiment Station each share responsibility for acquisition of streamflow data. A users' guide to HISARS has been published. Anyone who has an account at the University of Idaho Computer Center may have access to HISARS for either data retrieval or simple analyses, with no charge except for computer time. Other persons should call or write to the State Climatologist at the following address: Myron Molnau, State Climatologist, Agricultural Engineering, University of Idaho, Moscow, Idaho 83843. We can usually service simple requests quickly at no charge.

Available Data

The data types that can be requested from HISARS are: daily streamflow, annual peak flow, daily reservoir contents or elevation, daily precipitation, hourly precipitation, daily maximum and minimum temperature, daily snowfall, and daily pan evaporation and windrun.

Stream temperatures and snow course information additions are currently in the test stages and will be added to HISARS in a new version to be released sometime in the fall.

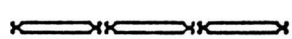
Processing Data

Listings of raw data are somewhat limited in the use that can be made of them. At the very least, means and extremes are often needed. To do this, HISARS has some built-in programs which will compute several of the more common statistics.

These include: means, standard deviation and skews, maximum and minimums for periods of a month or larger, deviation, mass curves, occurrences of various levels of snowfall, temperature and precipitation, ranking of daily streamflow, and extremes.

These computations will often be all that is required for most purposes. However, when other analyses are required, such as the maximum for a particular day, then it is best to use a standard statistical package such as SAS or SPSS. I see that many people write specialized programs to do computations which can be done much more easily with one of these standard Packages. Much time and effort can be saved by using either the SAS or the SPSS.

The present procedure is to use the COPY option and then read the copied data with the user program, written in FORTRAN, SAS or SPSS. A new version of SAS will allow users to read the HISARS files directly, resulting in more information being available, as the COPY option strips away some useful information (such as missing day values for daily precipitation). Users are reminded that the HIRARS files are standard ISAM files written by PL/1 programs. Therefore, any PL/1 program can also read the files directly.



ARTICLES AVAILABLE FROM STATE OF ILLINOIS

The following articles dealing with climatology are available upon request from:

Mr. Stanley A. Changnon
Illinois State Climatologist
Illinois State Water Survey
605 E. Springfield Avenue
P. O. Box 5050, Station A
Champaign, Illinois 61820

CHIAA Research Report No. 44 -- "Prediction of Fluctuations in Crop-Hail Loss Data" by James C. Neill, Prameela V. Reedy and Stanley A. Changnon, Jr., December 1979.

"Spatial and Temporal Correlation of Precipitation in Illinois" by Floyd A. Huff, 1979 (ISWS Circular 141).

"The Illinois Climate Center" by Stanley A. Changnon, Jr., 1979 (Reprint 452).

"Studies of Impacts of Urban-Related Weather and Climate Changes at Chicago and St. Louis," by Stanley A. Changnon, Jr., Donald F. Gatz, Jan Bertness, Steven T. Sonka, Janyce Bartlett, John J. Hassett, June 1979 (Contract Report 217).

"Studies of Urban and Lake Influences on Precipitation in the Chicago Area" by Stanley A. Changnon, Jr., Donald F. Gatz, Arthur R. Jameson, Gregory L. Dzurisin, Robert W. Scott, and Ronald C. Grosh, 1979 (Contract Report 220).

"Record Winter Storms in Illinois" by Stanley A. Changnon, Jr., and David Changnon, 1978.

"Review of Illinois Summer Precipitation Conditions" by Stanley A. Changnon, Jr., and Floyd A. Huff, 1980 (ISWS Bulletin 64).

"The Climatology of High Damaging Winds in Illinois" by Stanley A. Changnon, Jr., 1980 (Report of Investigation 94).

"Some Applications of Remote Sensing of Crop-Hall Damage in the Insurance Industry," by Neil G. Towery, 1980 (ISWS Circular 143).

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20230
OFFICE OF THE ADMINISTRATOR

UNIVERSITY AFFAIRS LETTER

Washington, D.C., December 1980

Dear Colleague,

*Following the 1980 presidential election. . .some near-term directions remain unclear. . .*nonetheless the longer term prospects for increased NOAA support of university R&D are holding strong. The emphasis will be on cooperative research, with responsibility for the course of the research shared by university and NOAA scientists. A successful mission agency should aim for ways to enhance such cooperative research -- and this is NOAA's policy.

. . .University faculty should look for opportunities to mesh their research interests with those of NOAA, and perhaps begin by becoming better acquainted with NOAA's people and programs. The U.A. Letter will be of some help.

*Climatology. . .fisheries research. . .and marine pollution. . .*are likely areas in NOAA to receive more funding during the current fiscal year, FY '81. Some of the funds will be available to support university R&D. How much increase, and where to begin looking in NOAA, will be detailed in future U.A. Letters. Approval of the FY '81 budget was delayed; so we are held up temporarily in pinpointing the funding opportunities and the NOAA contact persons.

A *five-year plan. . .for the National Climate Program. . .*has been transmitted by the President to Congress. The Plan (1) establishes goals and priorities; (2) defines the role of the Federal agencies; (3) details Federal funding required to achieve the goals; and (4) lists specific accomplishments to be achieved to ensure that the Plan's goals are realized. For a copy, write to Dr. Edward S. Epstein, Director, National Climate Program Office, NOAA, 6010 Executive Blvd., Rockville, MD 20852.

*NOAA is seeking recommendations. . .*for nominees for membership on the National Advisory Committee on Oceans and Atmosphere (NACOA). Six new members are scheduled to be appointed in July 1981. Watch for the Federal Register announcement for further details. Recommendations should be submitted to Martin H. Belsky, Assistant Administrator for Policy and Planning, NOAA, Department of Commerce, Washington, D.C. 20230, no later than December 19, 1980. Hurry! Telephone (202) 377-4634.

*The first year's activity. . .of the Office of University Affairs. . .*is outlined in the attached Fact Sheet. The record shows that the universities and NOAA have made progress in working together.

Sincerely yours,

Earl G. Droessler
Director of University Affairs

Attachment

OFFICE OF UNIVERSITY AFFAIRS

Fact Sheet

Historical Note: The Office of University Affairs was established on January 18, 1979, by memorandum from Administrator Richard A. Frank to the Major Line Components (MLC's). The memorandum followed a year-long internal study and recommendation report, accomplished under the Associate Administrator George S. Benton and involving representatives of the MLC's. The Director of University Affairs was appointed and began his duties on July 1, 1979.

Frame of Reference: Policy guidelines given in the January 18, 1979, memorandum were: (a) NOAA will increase substantially its use of academic and research institutions for performing research in support of its mandates. While the basic criteria will still have to be who can perform the research best and who can do so in the most cost-effective manner and while NOAA must still maintain a high-quality research nucleus of its own, specific goals will be set for each NOAA Component to make sure that outside research is substantially increased; (b) collaboration between NOAA and the academic community will be fostered by locating NOAA facilities near or at academic institutions. Henceforth, whenever NOAA plans to build a new research or related facility or to relocate such a facility, a presumption will exist that it will be located near or at such an institution; (c) NOAA presently has several kinds of cooperative agreements with academic institutions across the country. All major NOAA research facilities which do not have such agreements will be asked whether such arrangements would be useful. It is NOAA policy to have such arrangements when they induce or facilitate improved research programs. The cooperative arrangements may include the use of NOAA scientific facilities, such as computers and ships; (d) NOAA should use consultants from academic and research institutions whenever possible, and, in particular, when planning research programs.

Also the memorandum asked the Director of University Affairs to: (a) develop policies and programs designed to improve NOAA's relations with the academic and research communities; (b) coordinate within NOAA the implementation of the new policy guidelines; (c) review NOAA planning for grant and contract research; (d) facilitate the exchange of scientists with the academic and research communities, and assist NOAA managers in locating and attracting highly qualified academic scientists; and (e) serve as a focal point for communications and inquiries from the academic and research communities.

Office Organization: Two groups were established to assist the Office of University Affairs:

. . . The University Affairs Council was appointed by Associate Administrator Benton on August 16, 1979, "*to consider policy matters* regarding NOAA's interaction with academic and research communities, and to review the effectiveness of program implementation." The Council consists of the assistant administrators and the Director of University Affairs and is chaired by the Associate Administrator. The Council held a first series of meetings, August 30, 1979, October 18, 1979, and January 14, 1980. It's actions include approval of: the Recent Postdoctoral Research Support Program, the Program for Term and IPA Appointments of Senior Academicians, the internal distribution of the University Affairs Letter, a report from NOAA grant and contract management on long-term grants, reporting requirements and the development of a grants information system, placing the focus for NOAA's interaction with black colleges within the University Affairs Office, and a report from the NOAA Corps on a full-time university training program.

. . . The IPA/Postdoctoral Review Board was established in January 1980, by the University Affairs Council "*to provide communications within NOAA* on the objectives and benefits of the two new programs, and to work out an assessment of applications including priority ranking." Chaired by the Director of University Affairs, each MLC is represented on the Board which to date has met three times, April 8, April 29, and July 25, 1980. Actions of the Board include: reviewing and ranking the nine IPA/Term applications and the 36 recent postdoctoral research proposals, and establishing general guidelines for carrying out the second round of activities under the two programs.

Increased Budget Support: A larger expenditure of funds for extramural research was accomplished during FY '80 by the MLC's. The effort was brought into focus by a memorandum from the Administrator dated November 5, 1979, in which target figures for outside research were established:

Target Figures		Actual Expenditures	
*OAS	- $ 1.9 million	OAS	- $ 2.9 million
NESS	- 2.3 million	NESS	- 2.3 million
RD	- 11.6 million	RD	- 11.7 million
F	- 4.5 million	F	- 5.6 million
Total	- $20.3 million	Total	- $22.5 million

The comparable total for FY '79 was $10.2 million. Having exceeded the target figures, NOAA more than doubled the support of university R&D in FY '80, not taking into account the Sea Grant Program. It should be noted that NOAA's Sea Grant Program will support about $19.5 million additional R&D effort at selected universities during FY '80.

---

*/ OAS - Oceanic and Atmospheric Services, Thomas B. Owen
NESS - National Earth Satellite Service, David Johnson
RD - Research and Development, Ferris Webster
F - National Marine Fisheries Service, Terry Leitzell

Recent Postdoctoral Research Program: The purpose is "to fund a few recent postdoctorals having outstanding records and exceptional promise in academic research, and engaged in front-line scientific work on atmospheric, fisheries, oceanic sciences and related fields that undergird the mission of NOAA." The grants are made to the university of the successful applicant, a $20,000 12-month salary was stipulated as was the provision that each grantee would be in residence at a NOAA laboratory or facility for a minimum of one month each year.

Thirty-six (36) proposals were received by the deadline date June 10, 1980; were reviewed and ranked by the MLC's and the NOAA Board, and six were selected for NOAA research grants. NOAA sponsors for the six winners were readily found, and each sponsor has provided $5,000 of the award budget. In this way NOAA will keep in touch with the research work of the postdoctorals and help build another bridge of cooperation between NOAA and the universities. The next round of recent postdoctoral research grants will be announced in the Federal Register and the University Affairs Letter about February 1981.

IPA/Term Appointments of Senior Academicians: The purpose is "to invite about seven energetic and creative academic leaders, at the full professor rank, to take temporary appointments in the most attractive positions that can be arranged for them within NOAA . . . thus attracting to NOAA a variety of skills and expertise that otherwise may not be available." NOAA hopes that more faculty members will want to take a sabbatical leave with NOAA and be engaged for a time in its challenging, front-line mission activities. Each appointment would aim for one calendar year, or any period between one year and two years, which is probably the practical limit of temporary assignments. Under a written agreement (Form 69) the financial arrangements, obligations, and responsibilities of the parties are recorded. Out-of-pocket costs involved in relocation and carrying out the term assignment are included in the financial negotiations. NOAA costs would be shared 50/50 by the Office of University Affairs and the NOAA unit employing the services of the appointee.

Following the first announcement nine proposals were received, and they were reviewed and assessed by the NOAA IPA/Postdoctoral Review Board. The end result was two term appointments now being arranged; one with RD/Special Research Programs Office, and the other with RD/SESAME Program Office, ERL. A second announcement has been made, and January 1, 1981, is the deadline for applications.

Employment Procedures, Opportunities and Affirmative Action: This involved focusing on current NOAA employment procedures, the graduate scientist program, and bringing several leading black academicians into NOAA for consultation with the Associate Administrator, Policy and Planning, Office of Civil Rights, Personnel, and other NOAA staff offices. Also included were scheduled visits to historically black campuses: Prairie View A&M University; Hampton Institute; North Carolina Central University; and Atlanta University Center. Faculty and staff on each campus were much interested in learning of NOAA's outreach and discussions centered on ways to begin cooperation with NOAA. Four other highlights follow:

. . . A Workshop on NOAA Employment Opportunities and Procedures brought together a small number of university and NOAA leaders on June 5-6, 1980, to discuss personnel training, placement, career opportunities and recruiting procedures. The discussions were lively and to the point and resulted in a series of thoughtful recommendations that are now under examination by NOAA.

. . . A proposal from the National Consortium for Graduate Degrees for Minorities in Engineering, Inc., (GEM) was reviewed and awarded a first year grant. GEM encourages minority engineering students to seek advanced degrees in fields supporting NOAA's mission. NOAA can select GEM candidates for practical engineering experience through summer work at NOAA facilities.

. . . Another proposal from Hampton Institute was reviewed jointly with NSF staff, to support program planning and development of a Center for Marine and Coastal Environmental Studies, and for research and in-service science education on coastal wetlands resources. A two-year joint NOAA/NSF grant was awarded by NSF effective September 15, 1979. One site visit has been carried out. The work of the Center includes developing the Institute's own undergraduate program in marine sciences, and the recruitment of students from 12 other minority institutions with which Hampton has long-standing affiliations.

. . . A third proposal was received from Atlanta University Center/Georgia Institute of Technology and was negotiated with NSF staff. This resulted in a three-year joint NOAA/NSF grant awarded by NSF in September 1980. The higher education concentration in Atlanta is well-suited for carrying out the main purpose of the proposal, i.e., to increase the flow of minority students to the atmospheric and related terrestrial sciences. Under a related grant, junior high and high school students and their teachers from 38 minority institutions will explore the challenge of careers in science and engineering -- through a $5 million five-year NSF funded project at Atlanta University Center. AUC and Georgia Tech have enjoyed an excellent relationship for more than 10 years and are pledged to enhance their joint educational and research programs. The NOAA/NSF project will strengthen these bonds, and improve the quality of graduate training available to students.

Cooperative Institutes: They represent long-term commitments by NOAA and participating universities to cooperate in selected research activities. Some characteristics of the institutes are: (a) they are formed out of on-going R&D cooperation with a NOAA unit; (b) they promote scholarly multi-disciplinary collaboration on identified research themes; (c) NOAA scientists are assigned to each institute and participate in the research; (c) the universities and NOAA work together to provide suitable institute housing and facilities on campus; (e) each has an identified operating budget; (f) the director appointed by the university receives policy guidance from an executive board on which NOAA and the university are represented.

. . . Two new cooperative institutes were created in 1980: one at the University of Wisconsin on July 14, 1980, called the Cooperative Institute for Meteorological Satellite Studies (CIMSS); and the other at Colorado State University on September 12, 1980, called the Cooperative Institute for Research in the Atmosphere (CIRA).

. . . With the two new ones added, there now is a total of seven NOAA cooperative institutes (some are called joint institutes). The other five are: (1) Cooperative Institute for Research in Environmental Sciences (CIRES), established September 29, 1967, at the University of Colorado; (2) Cooperative Institute for Marine and Atmospheric Studies (CIMAS), established June 23, 1977, at the University of Miami; (3) Joint Institute for Study of the Atmosphere and Oceans (JISAO), established July 13, 1977, at the University of Washington; (4) Joint Institute for Marine and Atmospheric Research (JIMAR), established September 29, 1977, at the University of Hawaii; and (5) Cooperative Institute for Mesoscale Meteorological Studies (CIMMS), established July 3, 1978, at the University of Oklahoma.

The University Affairs Letter: The Letter is one of the principal ways the Office of University Affairs is serving to improve NOAA communications with the academic community. The Letter is addressed to about 400 individuals on campuses across the country, including departmental chairmen, university research administrators, research center directors, etc.; and to about 100 individuals within NOAA. The first series of monthly Letters began November 1979 and ended May 1980. The second series started with the August 1980 issue.

The University Affairs Letter highlights NOAA information of special interest to academicians, with emphasis given to cooperative R&D work with NOAA scientists. Included is information on the changing missions of NOAA, its people, policies, plans, new programs, budget, IPA appointment opportunities, etc.

EGD - October 28, 1980

USCOMM-NOAA-ASHEVILLE, N.C. 1/81/350