

Comrex - - Southeast Regional Climate
Center

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David J. Smith
Director
Southeast Regional Climate Center

South Carolina Water Resources Commission

1201 Main Street, Suite 1100
AT&T Building
Columbia, S.C. 29201



Telephone: (803) 737-0849
FAX #: (803) 785-9080

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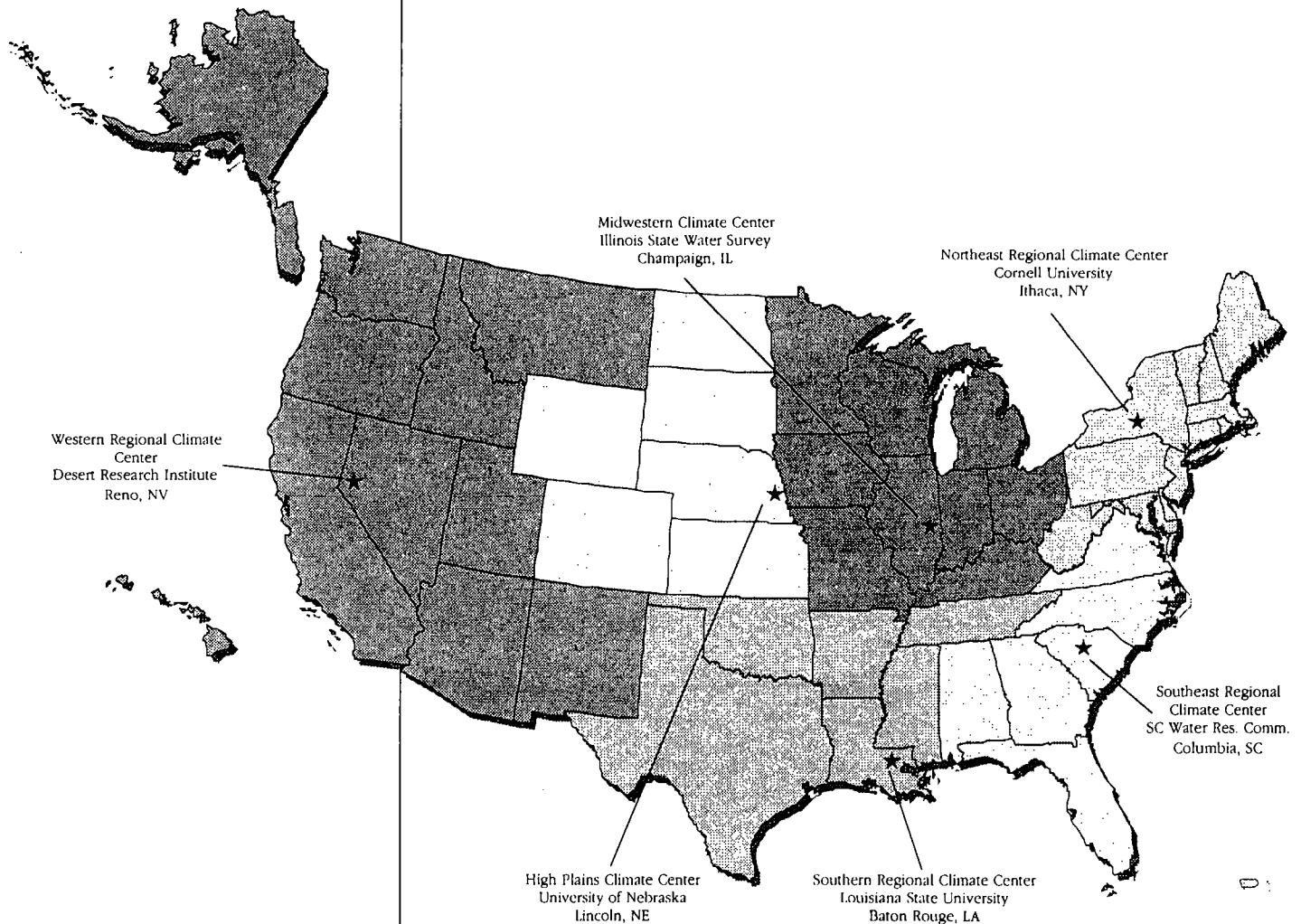
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REGIONAL CLIMATE CENTERS:

Institutions that Enhance Climate Services and Research in the United States



March 1994



RCC Resources
Conservation
Company

3006 Northrup Way
Bellevue, WA 98004-1407

Phone: 206 828-2400
Fax: 206 828-0526

A Division of Ionics, Incorporated

9 March 1994

S.C. Water Resources Commission
101 Main Street
Suite 1100, AT & T Building
Columbia, S.C. 29201

Attn.: Hope Poteat

Dear Hope,

I write this letter to express gratitude for your efforts in producing and transmitting climatological data following our telephone conversations of February 22, 1994. I must say, that it is indeed most refreshing to find someone in the Public Service Sector that shows as much ambitious and unrestrained interest in support of public inquiries.

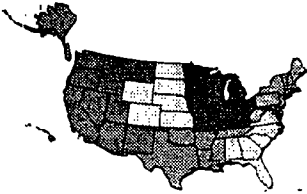
In fact, when I first called I had no clue as to the possibility of data which was available. You not only made concerted efforts to explain your data-logical capacities but took the time to listen to my problem and make suggestions regarding the data you could provide. In these times when the bureaucrats re-evaluate relative worth of our programs, I would speak highly to anyone regarding the value of your assistance to me and my firm as we continue our project here in Central Virginia.

I would indeed go further by suggesting that if other Public Commissions and Agencies replaced or energized their typical, "going through the motions" responses to public inquiries with the same such energetic spirit of assistance that you displayed, it might rejuvenate public support for these valuable tools within our Governmental Infrastructure.

In closing, let me once again express my appreciation to you for your assistance and for the thorough, timely, and professional attitude which you displayed during the course of our dealings.

Sincerely,

Mike Van Buskirk
Site Manager
Steam Host Evaporator Project
Gordonsville, Virginia



Regional Climate Center Program

Need/Request: The directors of the nation's six regional climate centers request that Congress restore at least \$3 million in funding for the Regional Climate Center (RCC) Program. This Department of Commerce–National Oceanic and Atmospheric Administration (NOAA) program has been proposed for termination, i.e., zero funding, in the President's FY-95 budget request. Congress appropriated \$3 million for the RCC program in FY-93 and FY-94. An additional \$2.4 million will be needed to adequately meet the rapidly growing volume of requests for climate information and address the complex informational needs created by severe winters, widespread flooding, and other extreme climatic conditions.

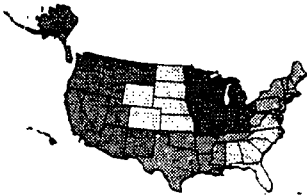
Background: This NOAA budget item supports six (6) regional climate centers across the nation including the Western Regional Climate Center at Reno, NV (Desert Research Institute), the High Plains Climate Center at Lincoln, NE (University of Nebraska), the Midwest Climate Center at Champaign, IL (Illinois State Water Survey), the Northeast Regional Climate Center at Ithaca, NY (Cornell University), the Southeast Regional Climate Center at Columbia, SC (South Carolina Department of Natural Resources), and the Southern Regional Climate Center at Baton Rouge, LA (Louisiana State University). All of the centers provide data, authoritative information, and applied research results to a host of users. The results are improved planning and management of climate-sensitive activities in the private and public sectors. Users of RCC information services include large and small businesses, public agencies and utilities, engineering and consulting firms, planning and legal offices, insurance companies, the media and private citizens.

In recent years, due to frequent severe climatic conditions across the nation, improved electronic communication, and rapidly growing numbers of referrals from National Weather Service (NWS) offices, the demand for RCC services has dramatically increased. At the Northeast Regional Climate Center for example, individual user requests for climate information has grown from an average of about 90 per month in 1991 to more than 290 per month in 1993. Use of this center's computer-based information system has increased seven-fold—from an average of about 200 log-ons per month in 1991 to more than 1400 per month in 1993. In January 1994, the number of user log-ons soared to nearly 3000. At the Western Regional Climate Center, user requests increased 440 percent between 1991 and 1993 and now average about 325 per month. Use of the Midwest Climate Center's computer-based information was up by 80 percent over the previous year with more than 35,000 products provided to users. Similar large increases were experienced at the other regional centers.

Overall, the six RCCs are responding to thousands of requests each month for accurate and reliable climate information. The information provided helps the state, region and nation safely plan and engineer capital projects and public works, resolve civil and legal disputes, settle insurance claims, plan and optimize scheduling of agricultural crop production activities, the transportation of raw and finished materials, and the marketing of seasonal products and services.

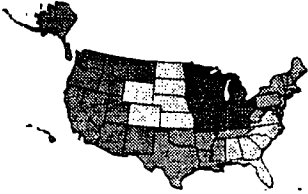
Potential Impacts: If the appropriation for this program is not restored, the nation's six RCCs will cease operations. National Weather Service offices throughout the country will be hard pressed, if not unable, to respond to the heavy and rapidly growing volume of information requests now handled by the RCCs in a timely, efficient, and useful manner. Ultimately, less accurate, reliable, or up-to-date climate information may be referenced and used in critical economic, legal, engineering and planning decisions.

For More Information: See the attached Regional Climate Centers document or contact any of the following RCC directors: Richard L. Reinhardt, WRCC (702) 677-3103; Kenneth G. Hubbard, HPCC (402) 472-6706; Kenneth E. Kunkel, MCC (217) 244-1488; Warren W. Knapp, NRCC (607) 255-5950; Robert A. Muller, SRCC (504) 388-6184; David J. Smith, SERCC (803) 737-0811.



Request for Support of the Regional Climate Centers in FY-95

- The Regional Climate Center (RCC) program developed in response to the mandate of the National Climate Program Act (PL 95-367) to improve the use and dissemination of climatic data and information for the economic benefit and well being of the United States.
- The Regional Climate Centers now provide comprehensive and vital climate services to all 50 states. In 1993, the six RCCs responded to more than 20,000 individual telephone and mail requests for information. In addition, the centers' computer-based information delivery systems are estimated to have been accessed in excess of 90,000 times during the past year. For additional details see the attached *RCC Highlights of Service Activities*.
- The RCC program was included in NOAA's budget for FY-94. The RCCs are a significant component of a long term plan within the National Weather Service (NWS) to expand climate services throughout the nation. The RCC program is a prominent element of NOAA's 1995-2005 Strategic Plan, especially in the section entitled *Implement Seasonal to Interannual Climate Forecasts*.
- The RCC program was also included in the NOAA/NWS budget for FY-95 with a substantial increase. Its exclusion from NOAA's final budget was not an agency decision but was done at the Office of Management and Budget.
- NOAA does not have a mechanism in place to satisfy the needs of the existing RCC constituents, i.e., large and small businesses, legal and insurance firms, local and state government agencies, agricultural producers, utilities, engineering, planning and consulting firms, federal resource management agencies, teachers, educators and students, and private citizens.
- Congressional support for restoration of funding is requested for FY-95 to insure the continuity of the RCC program until FY-96 when it will be included in NOAA's Climate Applications and Services program.
- Congressional support is also requested for amending the National Climate Program Act to bring it into conformance with NOAA's current programs and plans and to provide needed and warranted authorization of the RCCs.



Regional Climate Centers

Highlights of Service Activities

Southeast Regional Climate Center, S. Carolina Dept. of Natural Resources, Columbia, SC

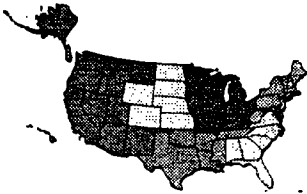
- The Center's staff utilized its data resources and expertise to compile monthly temperature averages and percent of normal precipitation for each county in the states of North Carolina, South Carolina, and Georgia at the request of the governors and USDA. The summary data was used to assess drought severity in each county and establish priorities for applications for federal disaster declaration by the Secretary of Agriculture.
- Additional examples of specialized requests handled by SERCC staff include: providing monthly climate data and statistical projections to propane gas suppliers in the region for use in scheduling deliveries and purchases, performing an analysis of data for a lawn equipment manufacturer to determine the suitability of several locations being considered for turf grass research in the region, and providing data and expert advice on climate conditions at several Georgia sites to organizers of the 1996 Summer Olympic Games.

Western Regional Climate Center, Univ. of Nevada, Desert Research Institute, Reno, NV

- The Director and staff of the Center understand the vital need in the West for a system that can monitor climate everywhere—from heavily populated urban areas to remote mountain sites. Thus, data from a wide variety of federal, state, and local networks is being integrated into a system, which will provide resource managers with improved information for mitigating the impacts of future climate events, such as drought.
- Center researchers have used their climatic data resources and expertise to demonstrate a relationship between El Nino/Southern Oscillation (both warm and cold events) and precipitation events in the Pacific Northwest and the Southwest. This relationship, which has a four month lag between an ENSO event and the following precipitation events, is being utilized by western federal agencies for stream flow predictions. It is also of potential benefit to agricultural producers, as well as to the power utility and tourism industries.

High Plains Climate Center, University of Nebraska, Lincoln, NE

- The Center offers telephone consultation, computer dial-up services and a monthly climate impacts publication. The dial-up system, known as WEATHER, delivered more than 23,000 information products to users in the seven-state, High Plains region during the past twelve months. Specialized products available on WEATHER include up-to-date soil moisture and crop water use data, the current status of crops and pests, and heat indices useful for livestock and crop production.
- The High Plains Climate Center has developed and widely distributed computer software that turns a personal computer into a powerful climate information system which provides statistical summaries and probabilities of climate conditions for any selected location in the region.



Regional Climate Centers

Highlights of Service Activities

Midwest Climate Center, Illinois State Water Survey, Champaign, IL

- The Center used its climate data bases and computerized information system to provide businesses and government agencies with a climatic perspective on the Mississippi River flooding. Special studies pointing to the likelihood of recurrence of flooding during the fall of 1993 and spring of 1994 were used as the basis for decisions related to cleanup and rebuilding involving more than \$10 million in the State of Illinois alone.
- A personal computer-based agricultural climatology atlas has been developed and distributed. It is designed to provide easy access to a range of agriculturally-important climate statistics. This software package and companion data base is a stand-alone system which can be used on an IBM-compatible personal computer.

Northeast Regional Climate Center, Cornell University, Ithaca, NY

- Published first comprehensive atlas of snowfall and snow cover for the northeastern United States. The atlas summarizes data from nearly 900 stations for the period 1955-1992. It provides architects, engineers, public works and transportation officials with vital information about the likelihood of different amounts of snowfall and snow cover during different portions of the winter season.
- The number of requests for climate data and information increased to an average of more than 290 per month, a threefold increase over the monthly average in 1991. More than half of the requests were referrals from National Weather Service offices in the region. Use of the Center's computer information system nearly tripled in 1993 compared to the previous year. In 1993, an average of over 1400 user sessions per month were logged on the system. Examples of recent requests include: a Boston engineering firm needed statistics on extreme precipitation events for several sites in New England to use in designing storm drainage systems. A railroad equipment manufacturer in Elmira, NY needed hourly temperature data for Newark, NJ in January 1994 to use in evaluating the performance of its equipment under extreme winter conditions.

Southern Regional Climate Center, Louisiana State University, Baton Rouge, LA

- User services have been greatly expanded across most of the region as a result of direct referrals from National Weather Service offices. This increasing support of NWS activities was facilitated by meetings between SRCC climatologists and National Weather Service Area Managers throughout the Southern Region.
- The Center's staff helped to dispel widespread concerns about the possibility of major flooding along the lower Mississippi River during the late summer and fall of 1993. It was commonly believed that there would inevitably be a major flood along the lower river because of the upstream flooding.

**CLIMATE APPLICATIONS
AND
SERVICES (CLAS)**

CLIMATE APPLICATIONS AND SERVICES (CLAS)

Contact: David R. Rodenhuis
Director
Climate Prediction Center
Tel: 301 763-8167
Fax: 301 763-8125
Internet: rodenhuis@climon.wwb.noaa.gov.
Omnet: D.RODENHUIS



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE

The following is a description of a new vision for a network of NOAA institutions and components to address:

Climate Applications and Services (CLAS)

CLAS is formed from existing components within the National Weather Service. It will establish a partnership with Federal agencies, state and local governments, and private industry. This new system of climate institutions will refocus NOAA's energy on the applications of climate forecasts and analyses to weather, water, and climate in order to reduce the risk to national health and welfare.



Table of Contents

1. Proposal
2. A system of Climate Applications and Services (CLAS)
3. A National Plan
4. Climate Services

1. Proposal for:

CLIMATE APPLICATIONS AND SERVICES (CLAS)

- NOW:**
- Weather and hydrology services to protect life and property on short notice;
 - Historical climate data for applications;
 - Diverse NWS climate programs: CAC and the Regional Climate Centers (RCCs), AWSCs, the Cooperative Observers Program, and the River Forecast Centers (RFCs)
- VISION:**
- New, **long-lead prediction** products
 - for the first time, a break away from initial conditions.
 - National concern for **sustainable development**
 - beyond research results (\$1.8B in FY94)
 - evaluation of cost and benefits
 - new policies of the Committee on the Environment and Natural Resources
 - new President's Council on Sustainable Development
 - International conscience for **mitigation of vulnerability** to climate fluctuations and socioeconomic hazards.
 - Inter-American Institute; International Research Institute for Climate Prediction (IRICP)
 - International Decade for Natural Disaster Reduction (IDNDR); Global Change System for Analysis, Research and Training (START)
 - International Desks (National Weather Service/NCEP)
 - Intergovernmental Panel on Climate Change, (IPCC); Global Climate Observing System (GCOS)

2. A System of

CLIMATE APPLICATIONS AND SERVICES (CLAS)

...to reduce risk to national health and wealth...

Objective: to deliver climate forecasts, products and current information on long-term changes of weather, water and climate directed towards applications for sustainable economic development, for the reduction of commercial risk, for social benefits and the security of national health and wealth.

NOAA Strategic Plan: Environmental Assessment and Prediction; response to Strat. Plan III.O, pp 1-10

Scope: weather, water and climate

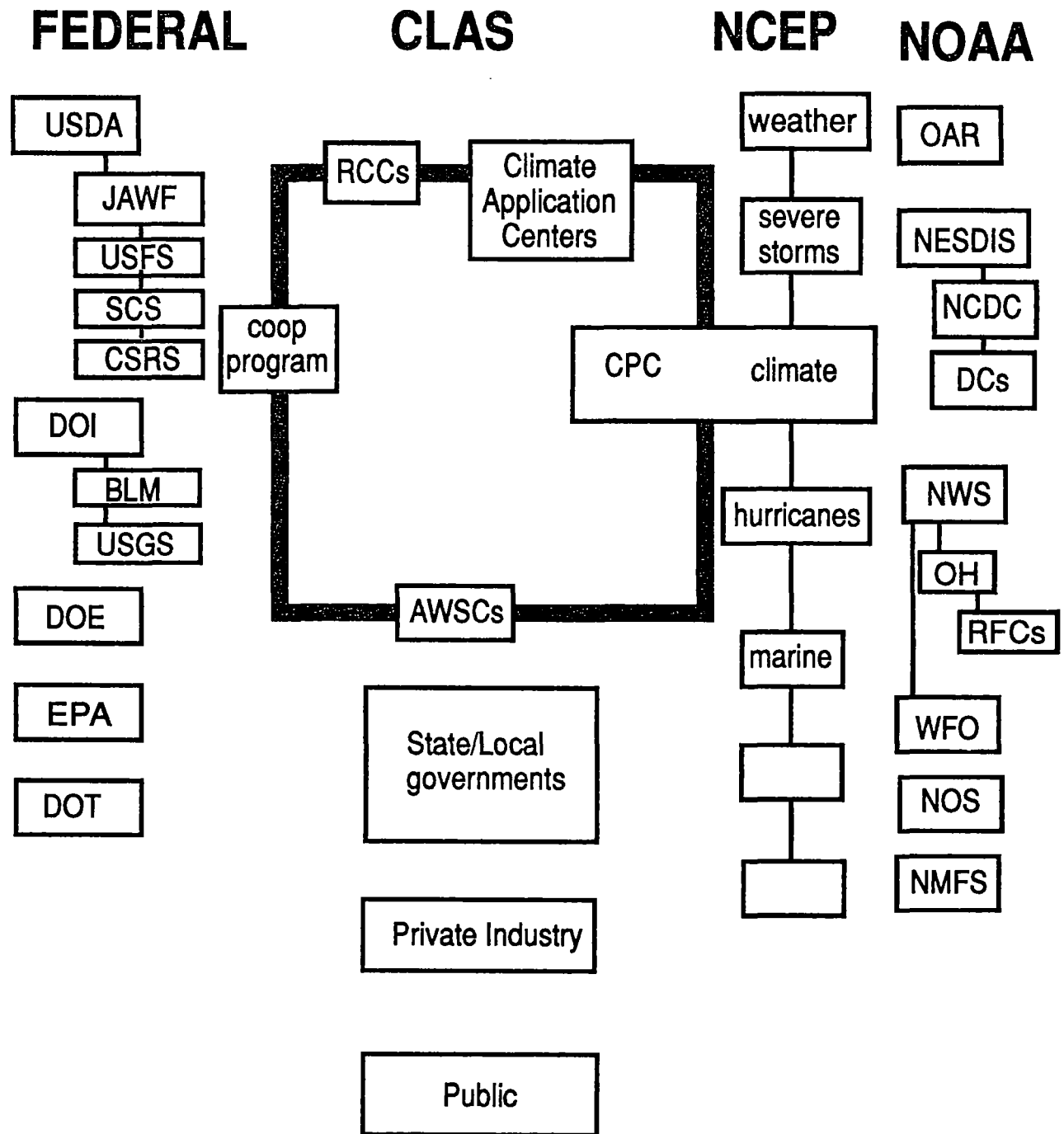
Focus: regional development; e.g., the West (California), Central (Iowa), and the Southeast (Florida)

Program strategy: demand-driven program and product development

Partnerships: NOAA, Federal agencies, state/local governments, the private sector

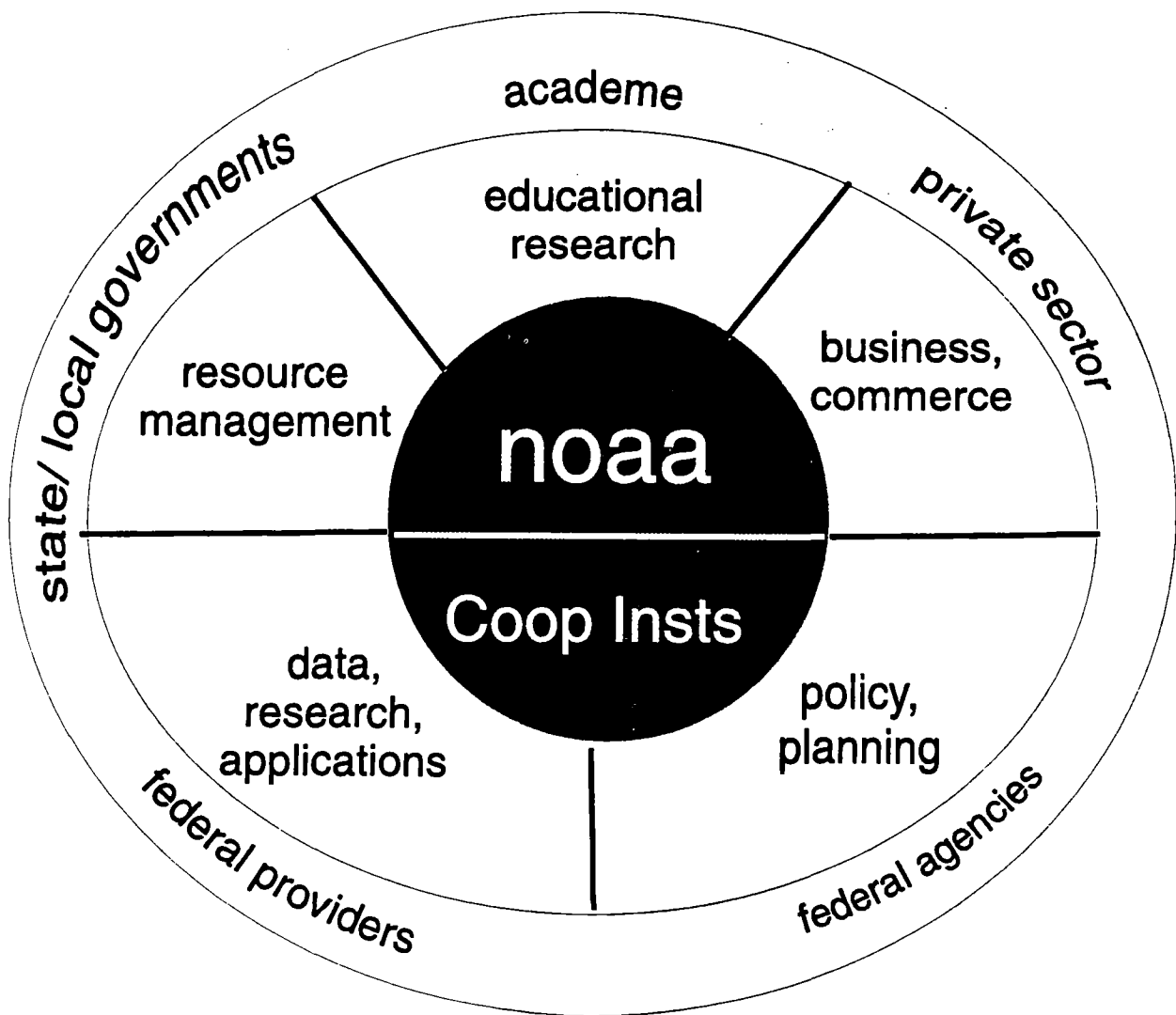
First steps:

- o target pilot projects for regional development
- o establish partnerships
 - State/local
 - Private sector business and commerce
 - Regional (RCCs)
 - Federal interagency
 - NOAA
- o build consensus
- o support continuity of the Regional Climate Centers program



Components of a National Climate Applications and Services Program

NOAA PARTNERSHIPS



3. A National Plan for Climate Applications and Services (CLAS)

...to reduce risk to national health and wealth...

EXECUTIVE SUMMARY

The public has come to expect and depend upon conventional weather services delivered daily, and around the clock, by the National Weather Service. This service, including routine observations and forecasts as well as warnings and alerts, address primarily the short-term protection of life and property. An important application sector is the aviation industry.

On the other hand, long-range issues associated with the possibility of global climate change over the next few decades are being addressed by the U.S. Global Change Research Program. In the gap between days and decades there is **short range climate variability** (over periods of weeks, months, seasons and interannually) which has a large impact on national economic security and social welfare.

The **opportunity** to improve the economic advantage of the nation's industry and commerce is based on a new capability to produce long-lead climate outlooks, and to deliver climate predictions, contemporary climate analyses and products, and applications and services to governments, academia and to the private sector. This is an opportunity to capitalize upon the investment in research results from a successful Global Change Research Program, and to build upon commercial applications that have been developed from historical climate data.

A NOAA program for climate applications and delivery of climate information and services is a direct response to the NOAA Strategic Plan in Environmental Assessment and Prediction. In particular, NOAA now has a national Climate Prediction Center from which a stream of extended range weather outlooks and short-term climate analyses, forecasts and advisories are issued. Elsewhere in the National Weather Service, the Office of Hydrology and the River Forecast Centers issue hydrologic outlooks, the Cooperative Observers Program collects climate data, the Agricultural-Weather Service Centers interpret weather forecasts, and the Regional Climate Centers (RCCs) apply this information for regional applications. These functions form the basis for a Climate Applications and Services System (CLAS).

With CLAS it will be possible to complete the investment strategy of the NOAA Strategic Plan by delivering the benefits to the private sector, to state and local governments, and to federal planning and policy agencies. This partnership with NOAA users and constituents will deliver the promises of the Strategic Plan in weather, water and climate.

The **vision** of this proposal is for a national program led by NOAA to deliver climate and hydrometeorological products and information for conservation of natural resources and agricultural applications, and for applications to other sectors: water resources, energy planning and distribution, commerce and transportation, recreation and tourism, and human health. It is a demand-driven partnership between the federal agencies, state and local governments, and business and commerce.

The **breadth** of the program is centered on the time scale of short-term climate variations, but broadly addressing topics in weather, water and climate.

The **focus** of this program is on the community of users, customers, and constituents who know how to apply this information to improve the social welfare and secure an economic advantage.

The functional description of the NWS components in a Climate Applications and Services System includes:

- o development of new applications for the use of Long-Lead Climate Outlooks produced by the NCEP/Climate Prediction Center;
- o integration of the data collected by the Cooperative Observers and auxiliary networks into the national climate record available in near-real-time;
- o improved data management and access to the ensemble climate record along with economic parameters, resource and production data in agriculture, energy usage, water resources, etc.;
- o near-real-time monitoring of the parameters of climate-economic interface;
- o applied research/development program to develop applications in each major economic sector.

The organizational elements for CLAS may be considered in the following framework:

- o **NWS participants** are the Regional Climate Centers, the Agricultural Weather Advisory Centers, the NCEP/Climate Prediction Center, and the Cooperative Observers program. Closely associated with CLAS would be the NWS/Office of Hydrology and the River Forecast Centers (RFCs), and the NWS Field Offices (WFOs).
- o **NOAA participants** are the NESDIS/NCDC and other data centers. Related offices and laboratories engaged in research are the Office of Global Programs, the Climate Diagnostics Laboratory, Boulder, and the GFDL, Princeton. The participation of NMFS and NOS is undeveloped at this time.
- o **Interagency participants** include: the offices of the USDA: i.e., the World Agricultural Outlook Board, the Forest Service, the Soil Conservation Service, the Cooperative State Research Service, and the Extension Service; the Department of Interior: ie, the Bureau of Land Management (BLM), and the Geological Survey (USGS); the Department of Energy; the Environmental Protection Agency; and other agencies as appropriate; e.g., the Public Health Service, the Department of Transportation.
- o **The private sector** is the ultimate beneficiary of the program, and a solid interaction is needed early in the design stage, and continuing to the development of applications and delivery of products. Each sector and industry will require a different suite of applications.
- o **State and local governments** are recipients of environmental information for planning, mitigation of risk, and policy guidance; they feed back regional hydrometeorological data and evaluations of climate impacts.

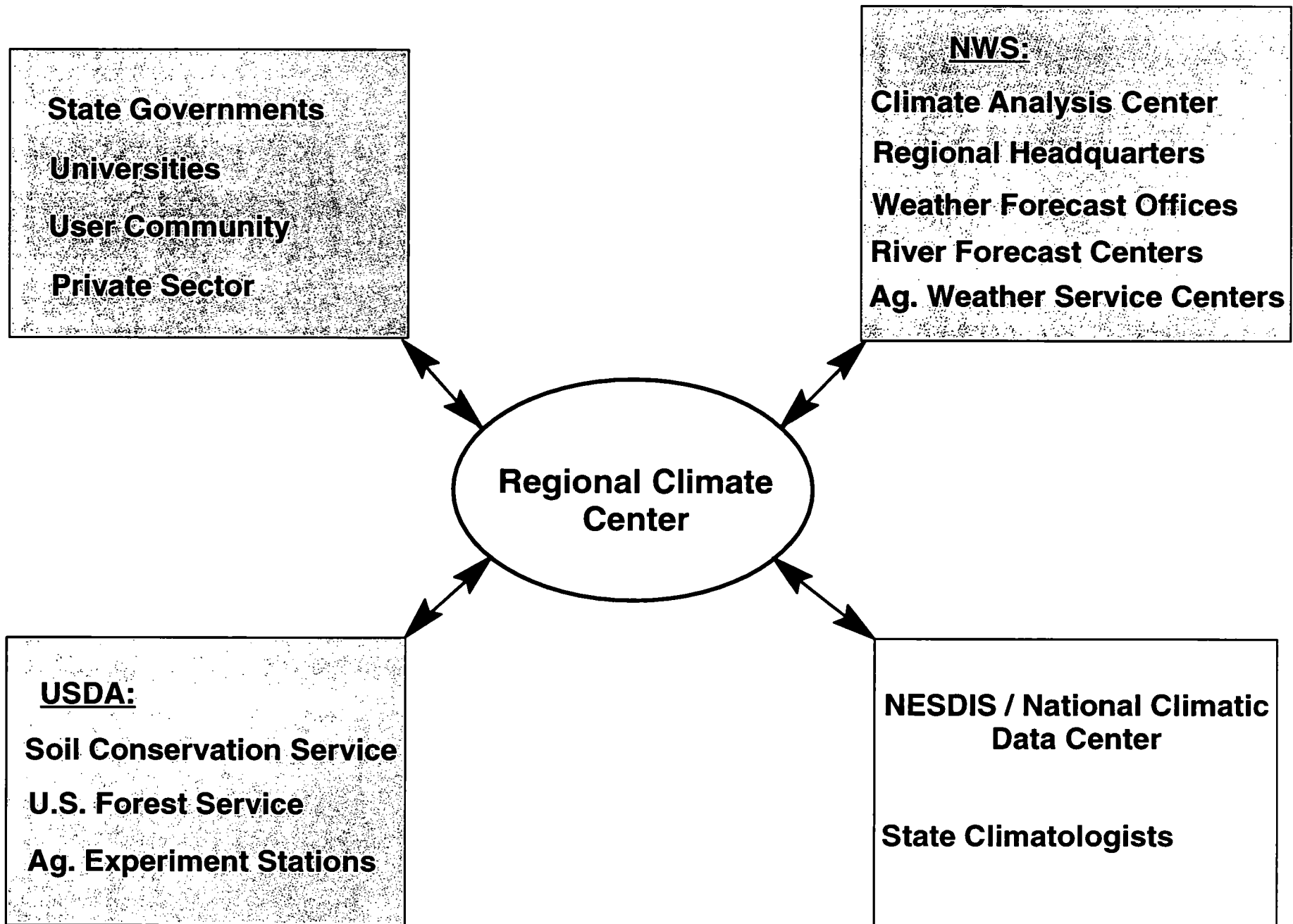
The **NWS participants** form the basis for a national network of **Climate Application Centers** (CACs) built around the present Regional Climate Centers with an expanded mission and with the collaboration of Agriculture Weather Service Centers. In addition to the delivery of climate prediction and analysis products and investigations into regional climate applications, the CACs would be responsible for the integration of regional data sets, for the marketing and delivery of applied climate products, and the development of a strong collaboration with regional business and commerce and with regional offices of

State and federal agencies. With the addition of federal personnel, and with increasing capability, the regional CACs could be designated as **NOAA Cooperative Institutes** with commensurate support and commitment for these new responsibilities. Finally, in order to meet these new responsibilities, a state program of **Cooperating Climatologist** would be established at state institutions where there is an opportunity for fruitful collaboration.

The **interagency participants** will focus their work at the regional level and on the delivery of useful climate application and services to field sites. For this purpose, the regional CACs act as "wholesalers" of national and regional climate information, some of which comes from national centers such as the NWS/Climate Prediction Center. Federal field offices act as "retailers" of these products on their way to individual users. At the national level, coordination between agencies would be organized in a **Interagency Climate Coordinating Committee** for Climate Applications and Services (ICCCAS). In order to ensure guidance of the recipients and users of climate services, a **Program Advisory Board** (Pro-Ad Board) would be established, consisting of senior business leaders from private industry, and from state and local governments.

APPLICATIONS

Agriculture	-	Resource conservation
	-	Forest management
	-	Field agriculture
	-	Row crops
	-	Truck farming
	-	Fruit industry
Water	-	Interagency management
	-	Flood control
	-	Water resources/drought
Environmental Quality	-	Pesticide control
	-	Acid rain
	-	Air/water quality
Energy	-	Utilities
	-	Fuel planning/loading
	-	Wind
Transportation	-	Aviation/pollution
	-	River transport
	-	Surface hazards
Tourism	-	Diversity
	-	Economic value
Health	-	UVB/ozone
	-	Pollution
	-	Heat/cold wave
Business	-	Retail sales
	-	Tourism



4. Definition of

CLIMATE SERVICES

.....for sustainable economic development, reduction of commercial risk, for social benefits and the security of national health and wealth.

CLIMATE SERVICES are the **monitoring** of the national climate record and the geophysical, global climate system; the **application** of basic climate research to current climate analysis and prediction; the **development** of new applications of climate information; and the timely **delivery** of climate information and products, including predictions, analyses and data for socioeconomic applications.

USERS - Climate services are delivered to Federal, State and local governments for the development of policy, for planning and conservation; to private industry in support of business and commerce; and to the academic community for research and education.

DATA - Climate Services rest on a national and global data collection system for weather and climate data, and on the construction of data sets which are quality-controlled and archived, but accessible in a form that can be readily applied to issues of commerce, natural resources, for the development of policy and planning, for socioeconomic applications, and for basic research investigations.

RESEARCH - Climate Services are the complement of basic climate research. Climate services requires supporting research; climate research results in derived services. Climate services delivers operational climate products and information on a routine basis; climate research improves understanding through process studies and model experiments. Climate services includes the monitoring, diagnoses and prediction of current climate anomalies and trends, and also includes the mission-related research and development necessary to incorporate new research results into operational practice, and to apply climate information to socioeconomic problems. Thus, it enhances and complements the objectives of basic climate research: it derives new climate products from research investigations, and supplies data and contemporary monitoring information to the research community.

APPLICATIONS - Finally, Climate Services supplies the data, products, and information for applications for sustainable economic development, reduction of commercial risk, for social benefits and the security of national health and wealth. With contemporary research results, climate information and services are used to perform regular climate assessments from which social and economic policies are developed.

(DR: 3/16/94)

