Western Coordinating Committee Renewal Petition

NUMBER: WCC-102

TITLE: Climatic Data and Analyses for Applications in Agriculture and Natural Resources

DURATION: October 1, 2001 – September 30, 2006

STATEMENT OF ISSUES AND JUSTIFICATION:

Climate information, including historical, real-time and prognostic, is vital for the optimal management of agriculture and natural resources. The use of climate information supports policies, programs technologies, and practices that protect, sustain, and enhance water, soil, and air resources. Currently climatic data bases collected by Federal, state and local governments as well as private organizations are primarily stored by the organizations administering each climate data collection program. Communication among different government and private organizations is necessary to avoid duplicating climate data collection efforts and disseminate the data to all interested parties. Coordination between all entities collecting climate data could be accomplished at the national level. The State Climatologist is the coordinator of this activity at the state level, the regional climate centers accomplish the task at the regional level and NCDC stores the climate data at the national level. Internet tools need to be written by supportive organizations to fully use the climate data available on the internet. In the western United States, climate information comes from a variety of sources. Individuals as well as Federal, state and local government entities all share in the flow of information, including data collection and research into the relationships among weather, climate, agriculture and natural resources. Development of analytical tools and preparation and dissemination of analyses and forecasts are also shared. The resulting data, information, and products are used by researchers, policymakers, public land managers, extension personnel, professional consultants, growers and ranchers, to support development of new applications, transfer the technologies and practices used in the new applications, and adoption of those applications for better decision making by end users.

In particular because of the unique character of the Western U.S., with its complex climate zones, highly diverse agriculture, forest and rangeland structure, widely varying topography, and large percentage of publically owned lands, coordination among these groups is critical to ensure consistency of information, efficiency of resources, and prioritization of research and its applications.

To these ends, the Western Coordinating Committee has served, and continues to serve, a critical function in ensuring collaboration among the many and varied groups who have responsibility for climate and climate-related information in the West. In times of increasingly tight budgets, accompanied by significant economic impacts from adverse weather and variabilities in climate, it is prudent that the committee continue to serve as a focal point ensuring collaboration in weather and climate research and applications in the West.

OBJECTIVES:

1. Coordinate collection and dissemination of weather and climate data and information in the western U.S. and serve as a forum for discussion of related issues.

- 2. Identify weather and climate issues and support research related to agriculture and natural resources in the West.
- 3. Map climatic elements in the West over a range of scales.
- 4. Promote application of weather- and climate-based products in agricultural and natural resource management.

5. Promote access to real time climate elements and products in order to improve monitoring of natural resources issues (i.e. drought, agriculture, fire).

EXPECTED OUTCOMES AND IMPACTS:

From Objective 1:

- 1. Identification and sharing of relevant weather and climate data and information resources.
- 2. Maintenance and enhancement of the Western Regional Climate Center's integrated data base of the major climatic databases in the West.
- 3. Development of a set of distributed databases that will be compatible with the goals and objectives of the Unified Climate Access Network (UCAN).
- 4. Coordination of issues surrounding data collection and quality control/assurance, and resulting recommendations to appropriate organizations as needed to promote and ensure useful, high-quality data sets to support agriculture and natural resource research and applications.

From Objective 2:

- 1. Improved algorithms for turf water management.
- 2. Support for monitoring and assessment of drought.
- 3. Development and enhancement of stochastic climate models ("weather generators"), and their application in agriculture and natural resources management.
- 4. Development of models, calculators, and other tools that quantify or describe relationships between weather and climate and crops, forests, rangelands, pests, and diseases, including algorithms for estimating or predicting crop water use, and crop and pest phenologies for better timing of management interventions.
- 5. Improved understanding of climate variability and its effects on and agricultural and natural resources management.
- 6. Improved precipitation depth-duration-frequency relationships.

From Objective 3:

- 1. Share methodologies for manipulating and presenting digital climate information spatially. Maps of climate elements (including temperature, frost dates and growing season, wind, snow water equivalent, etc.), using distribution and modeling techniques such as PRISM (Parameter-elevation Regressions on Independent Slopes Model) and other physical or statistical methods.
- 2. Availability of revised precipitation depth-duration-frequency maps and information for the Western states, coordinated across state boundaries and produced using uniform methods.
- 3. Gridded data sets, or methods to interactively develop gridded data sets, of commonly measured climatic elements, e.g., temperature, precipitation, evapotranspiration, as well as stochastic climate simulation model parameters.
- 4. Coordinate wind climatologies relevant to agricultural air quality issues.

From Objective 4:

- 1. Improved, more effective presentation and dissemination methods for climate information using electronic media.
- 2. Improved dissemination of information critical to integrated crop and water management, e.g., irrigation scheduling models, and plant and pest phenology models including quality-controlled data suitable for use in models, as well as model outputs ready for application by agriculture and natural resource managers.
- 3. Drought advisories that may be applicable to policymakers, water managers, and end users.
- 4. Data critical for the national Weekly Weather and Crop Bulletin.
- 5. Development, organization and participation in formal training workshops, classes, and programs such as the Weather and Climate Applications for Resource Management (WACARM) course targeted at managers and end users.
- 6. Assurance that products and services provided are meeting users needs, including utilization of advisory structures and other feedback mechanisms.

From Objective 5:

- 1. Identify a common format for real-time data to be exchanged (such as UCAN and SHEF).
- 2. Develop a list of sources of real-time weather and climate data.

- 3. Develop tools needed to be able to use climate data available on the internet from any climate network. The tools could include a drought return period calculator, irrigation scheduling programs, rainfall return period calculator, etc.
- 4. Provide information on the WCC-102 web site.

INTERNAL AND EXTERNAL LINKAGES:

The participants of the WCC-102, shown below, represent a wide variety of backgrounds and responsibilities. Included in this group are six state climatologists, one regional climatologist, several climatologists at national centers, and leaders at state experiment stations. The committee is split between CSREES employees and those working for other federal and state agencies.

EDUCATIONAL PLAN:

Agricultural meteorology and climatology are integral sciences in virtually all research sectors of the AES. Participants are called upon to provide consultation to other researchers, extension personnel, and end users such as growers and consultants. A major focus of the WCC-102 is the development and dissemination of weather and climate information related to agricultural and natural resources management. Another purpose of the WCC-102 is the on-going education of its participants regarding activities of the complex web of agencies involved in weather and climate monitoring and application in the West. Specifically, the WCC-102 will:

1. Conduct detailed educational sessions at each annual meeting about current priority issues. For example, we will conduct one workshop on methods of effective presentation and dissemination of products, and a second workshop on evaluation of product and outreach effectiveness;

2. Coordinate and publicize the availability of sources of weather and climate information; and

3. Provide information and documentation about the various weather and climate-related products generated and disseminated under the Objectives.

4. Provide a web page and ability to post committee progress and interaction.

GOVERNANCE:

Governance will be standard. Two officers are elected each year: A chairman, who develops the agenda and leads the annual meeting; and a recording secretary who prepares the minutes and the annual report. Traditionally, the secretary becomes the chair the following year.

BUDGET:

Budget and related funding issues will be addressed as needed by individual committee members and their institutions.

AUTHORIZATION:

Administrative Advisor

1. LONA

Date

Executive Director/Western Director's Association

July 18, 2001 Date

PARTICIPANTS:

			Appointment		
		Expertise Area	%Res.	<u>%Ext.</u>	%Teach.
Lee Sommers (Admin. Ad	lvisor)				
	U. Arizona	Water demand and management			
Scott Archer	BLM, Denver	Fire weather forecasting	NA		
Paul Brown	U. Arizona	Ag. weather; crop-water use	95	05	
Nolan Doesken	Colorado State U.Regiona	l climate			
Jim Draper	No. Co. Water Cons Dist	Instrumentation	NA		
Francis Fujioka	USFS, Riverside	Fire weather	NA		
Clayton Hanson	USDA-ARS, Boise	Measurements; Weather Generators	NA		
Alan Hinckley	Campbell Scientific	On-site meteorology; marketing	NA		
John Hughes	NCDC, Asheville	Climatology	NA		
Donald T. Jensen	Utah State U.	Climatology/Hydrology	28	00	10
Greg Johnson	USDA-NRCS, Portland	Weather Generators; Ag. Meteorology	NA		
Hal Klieforth	U. Nevada	Climate data and analysis	NA		
Joe McFarland	Texas A&M U.	Ag. Weather	NA		
Peter Palmer	Bur. Reclamation, Boise	Ag. weather; Hydrology	NA		
Russell Qualls	U. Idaho, Moscow	Hydrology; Climatology	50	20	30
Kelly Redmond	WRCC, Reno	Climatology; Quality Assurance	NA		
Ted Sammis	New Mexico St. U.	Irrigation Mgmt.; Ag. weather	75	25	
Joyce Strand	UC-Davis	Integrated Pest Management	100		
George Taylor	Oregon St. U.	Climatology; Climate mapping	100		