



Federal-State Cooperative Water Program. The task force's report (1999) stated, "Current funding for the Cooperative Water Program is not adequate to satisfy all of the needs identified for additional streamflow data, regional groundwater information, updated hydrologic needs and technical publications."

Federal monitoring/prediction programs often join with universities, private institutions, and other nonfederal entities to provide information needed for effective drought preparedness and mitigation. For example, federal programs provide the basic data used by private weather services and other enterprises that play a vital role in supporting farmers and others who are vulnerable to drought. The private weather services use the federally supplied data in detailed predictions that can be tailored to individual farmers and can cover varying time periods as needed. Some private services are using remote-sensing technology that can show farmers areas of crop stress, allowing them to make more efficient decisions about applying fertilizers or irrigating. Such programs should help address the needs of farmers who told us that they rely on irrigation systems and need detailed, localized information (soil moisture, temperature, wind, humidity, evapotranspiration rates) for irrigation scheduling.

As the Western Drought Coordination Council stated in its comments to the Commission, basic weather, water, soil moisture, mountain snow amount, and climate observations are the foundation of the monitoring and assessment activity that alerts the nation to impending drought. The current federal interagency effort to indicate likely drought trends two weeks ahead of time on the drought-monitoring map is a start. But we heard that longer-term predictions would improve services, including prediction maps of drought locations in the medium range (ten days or two weeks) and one to two seasons in advance. The Climate Prediction Center of the National Oceanic and Atmospheric Administration has begun producing Seasonal Drought

Outlook maps, which schematically display likely changes in drought over the next two seasons. Proper use of this product, we were told, depends on a careful explanation of its limitations.

We also heard that the wealth of monitoring and prediction information produced by federal programs and in conjunction with nonfederal partners creates a problem for some users. We heard that drought information and data are often complex and, for the most part, are not currently presented in a standardized format. Such data can also be difficult to find and interpret. This is especially true for individuals, small businesses, and some communities and tribes that do not have ongoing relationships with drought management agencies. Many witnesses at our hearings and written comments submitted independently to the Commission indicated a need for an accessible "gateway" (point of contact) where high-quality, standardized, comprehensible current information and historical data are managed.

In relation to research, we found that this country is blessed with a tremendous storehouse of drought-related scientific and technical knowledge. Research programs of the National Oceanic and Atmospheric Administration, the Department of Agriculture, the Department of the Interior, the Environmental Protection Agency, numerous universities, and private institutions—as well as work at the National Drought Mitigation Center—form the basis of knowledge needed to monitor drought and address drought impacts. The U.S. Army Corps of Engineers is also involved in drought-related research. During the National Drought Study (1989-1993), for example, the Corps sponsored research and experiments in many aspects of drought.

However, we often heard that the results of research are not always disseminated in a timely fashion or through easily accessible modes, a criticism similar to that we received concerning monitoring and prediction data and products. Research results as well as technology transfers,