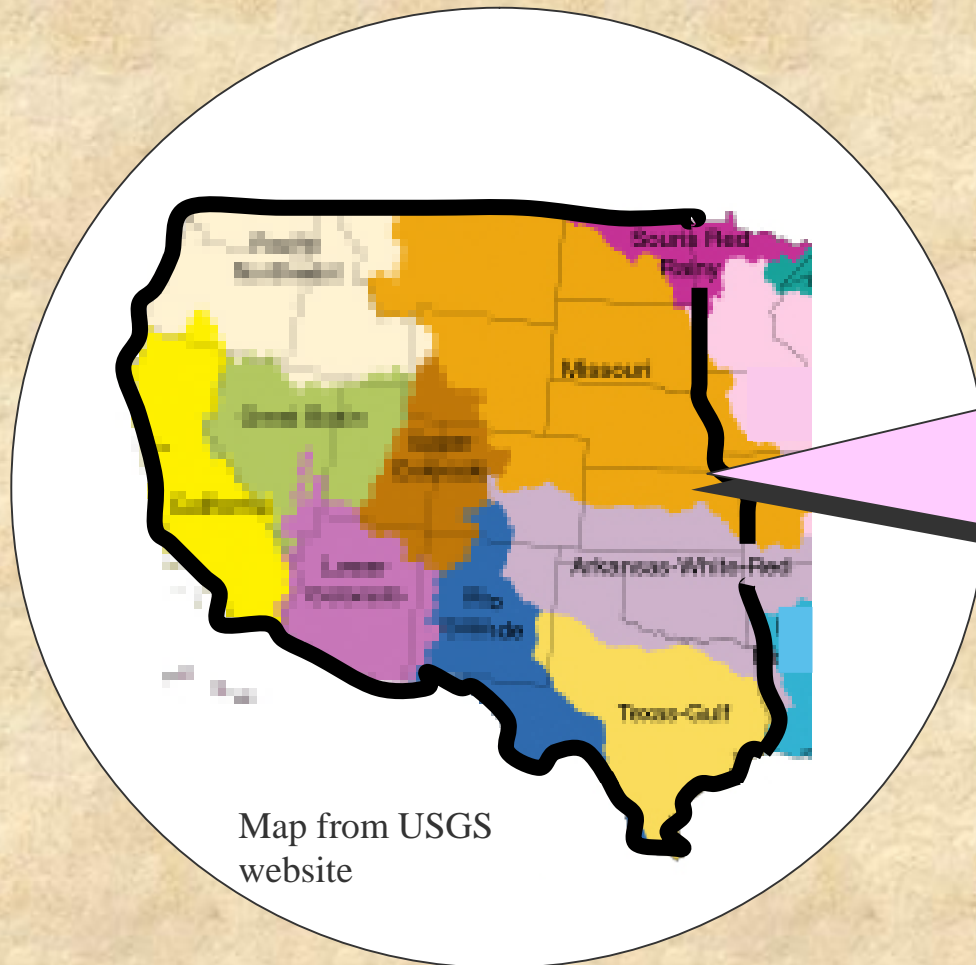

Western States Watershed Study – Future Directions Regarding Water Data Needs

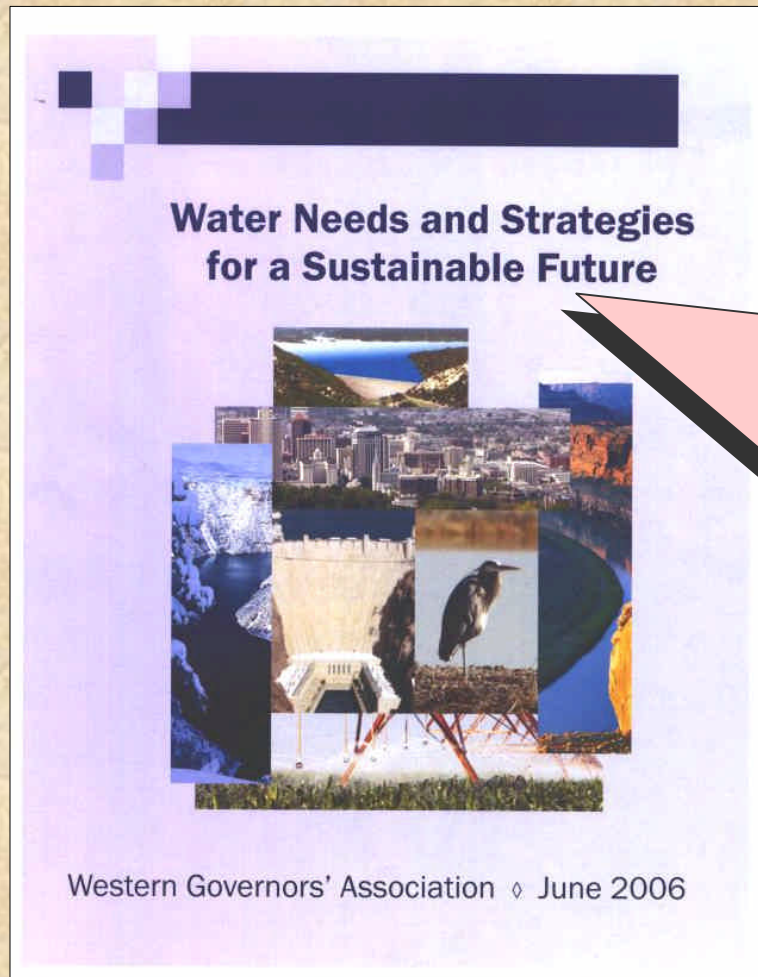
**Marcia Hackett
U.S. Army Corps of Engineers
Fort Worth District**

Western States Watershed Study



The study scope included the area consisting of the 17 Western States and addressed broad regional water resource issues in a collaborative manner

Western States Watershed Study



The Watershed Study collaboratively developed strategic plans to help implement several recommendations contained in the Western Governor's Association (WGA) / Western States Water Council (WSWC) June 2006 Report.

Water Needs and Strategies for a Sustainable Future

2.A. Federal and state agencies should increase support and funding for state and federal basic water data gathering activities that can serve as the basis for sound decision making. Gaps in data should be identified.

Remote sensing capabilities, including Landsat thermal data, **and developing technologies**, such as the use of Doppler radar to measure streamflows, are important tools that **need to be retained and fostered**.

Further, **state and federal agencies must find ways to reduce costs** related to gathering and disseminating real-time water data/information, **including the acceptance of more in-kind contributions from cooperators**. Moreover, new and stable sources of funding are needed. User-pay opportunities or voluntary non-governmental organization contributions should be explored, while recognizing the general benefits provided by basic data gathering efforts, which make it an appropriate governmental activity.

State Monitoring Survey

- **Survey of 18 Western States was conducted to gain information on their existing needs and uses of water monitoring information.**
- **13 States responded.**
- **State agencies identified many gaps that currently exist in their water data – gaps that hinder their ability to manage water resources.**

State Monitoring Survey

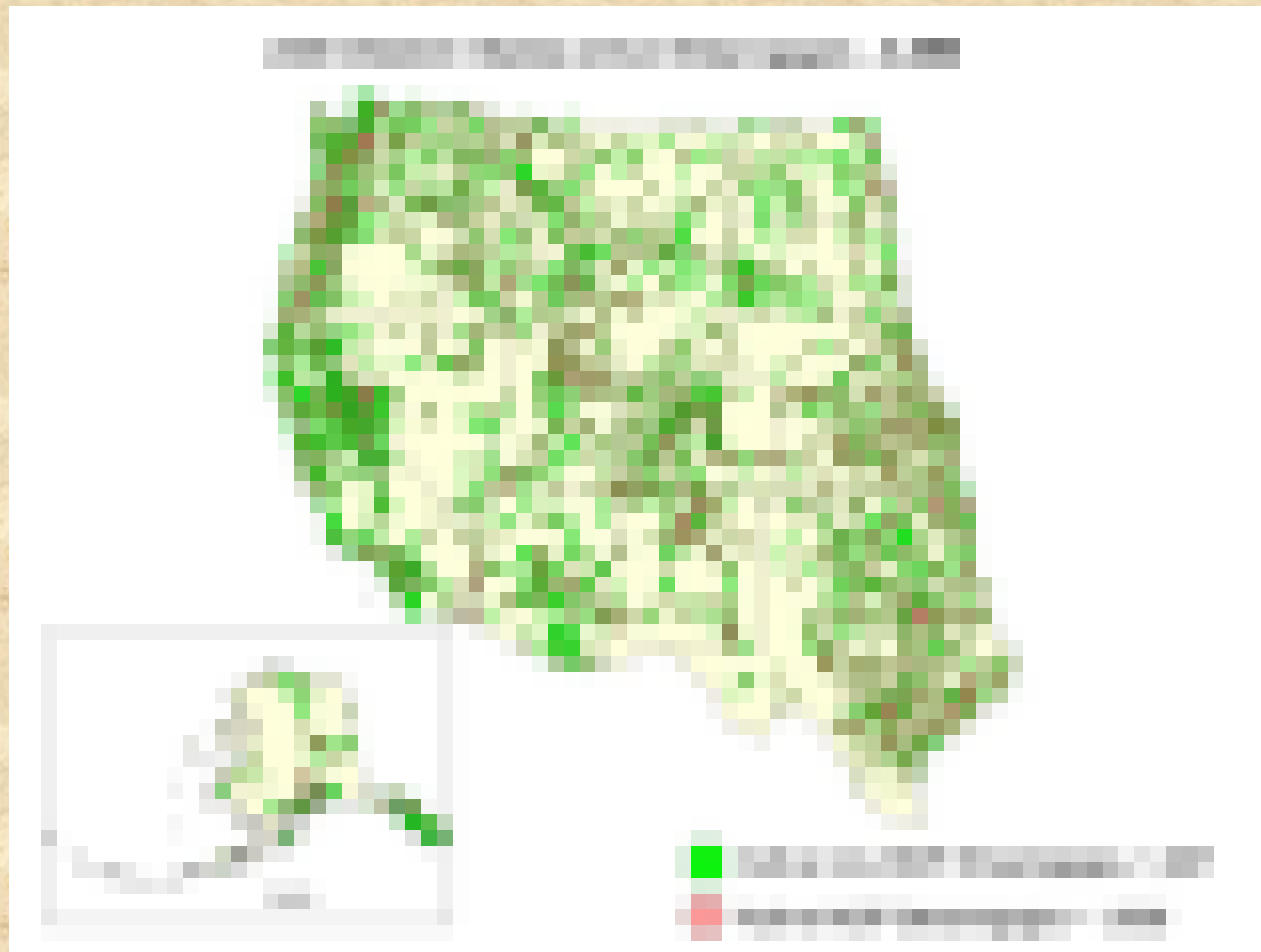
Indicate:

- **need for more quantitative ground- and surface-water monitoring.**
- **increasing need for decision-support tools upon which to base management decisions.**
- **funding is one of the main obstacles, particularly rising costs of operating streamgages and decline of matching funds available from the USGS Cooperative Water Program (CWP).**
- **some perceived data gaps may be inaccurate because information is being collected locally, but not being made publicly available.**

Caveat

- **Recommendations for improving water data have been compiled by Rolf Olsen and Marcia Hackett of the U.S. Army Corps of Engineers based on discussions with the members of the Western States Water Council and other Federal agencies.**
- **Recommendations do not represent the positions of any Federal agency.**

Streamflow



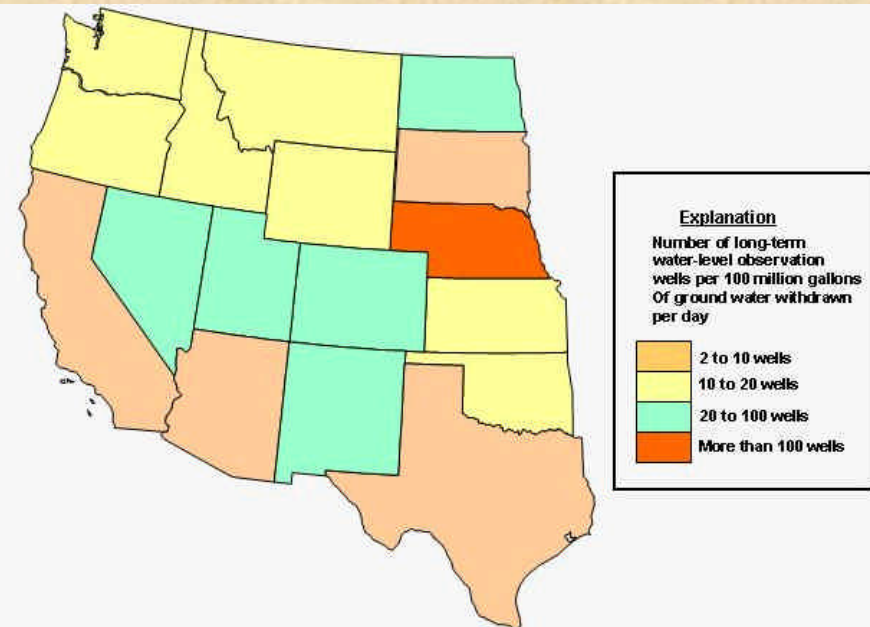
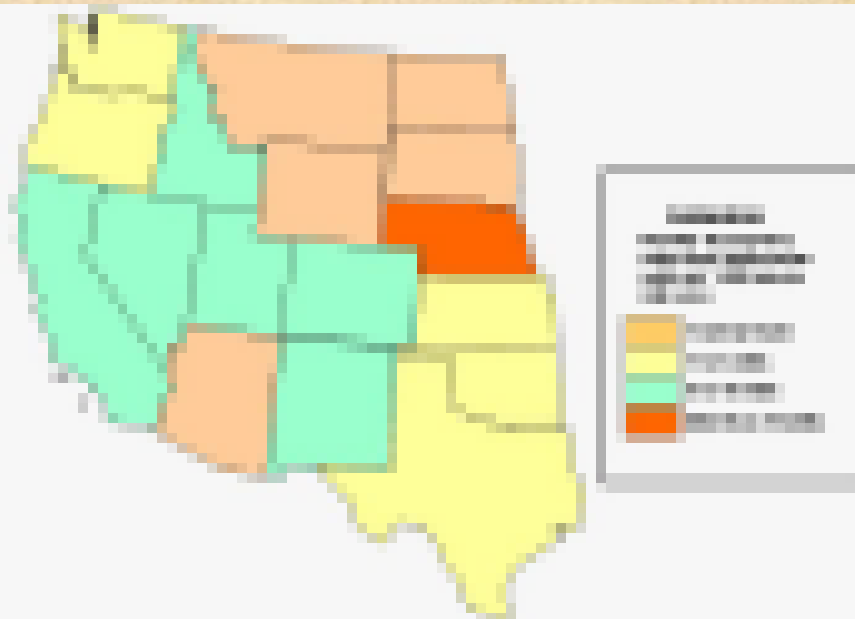
Approximately half of the 7,500 streamgages operated by USGS nationwide are located in the 18 Western States.

Recommendations: Surface Water

- **Provide full funding for the US Geological Survey's National Streamflow Information Program (NSIP).**
- **Increase funding for the USGS Cooperative Water Program (CWP) to sustain the operation of long-term streamgages.**
- **Contain cost increases through continued improvements in instrument technology, data analysis techniques, and data delivery procedures.**
- **Work to reduce salary costs by sharing manpower resources of partner agencies where logistical efficiencies can be gained.**

Groundwater

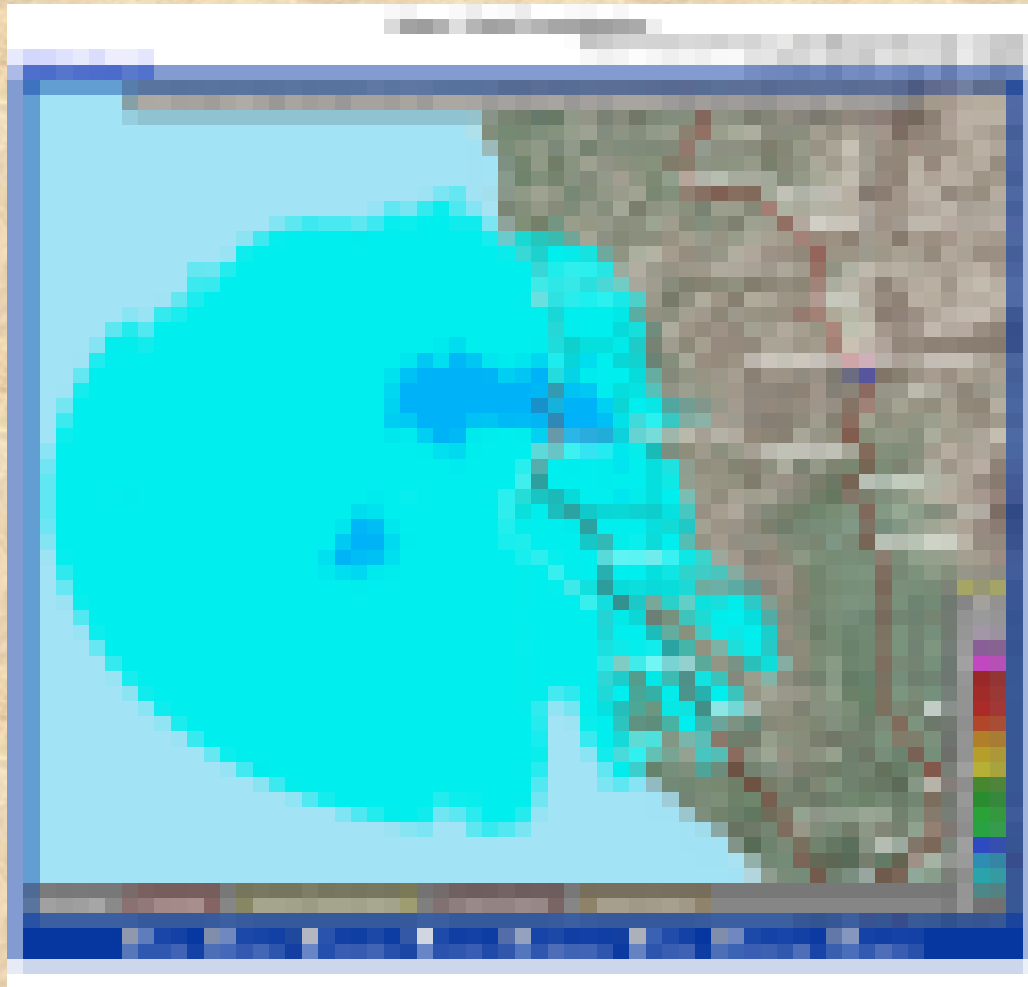
Sustainability of groundwater resources is an important component of any assessment of water supplies in the West.



Recommendations: Groundwater

- **Advisory Committee on Water Information's Subcommittee on Ground Water is currently conducting a more detailed groundwater monitoring inventory**
- **Recommend using that completed assessment as foundation to for a data gap analysis to design optimized ground-water monitoring networks.**

Precipitation

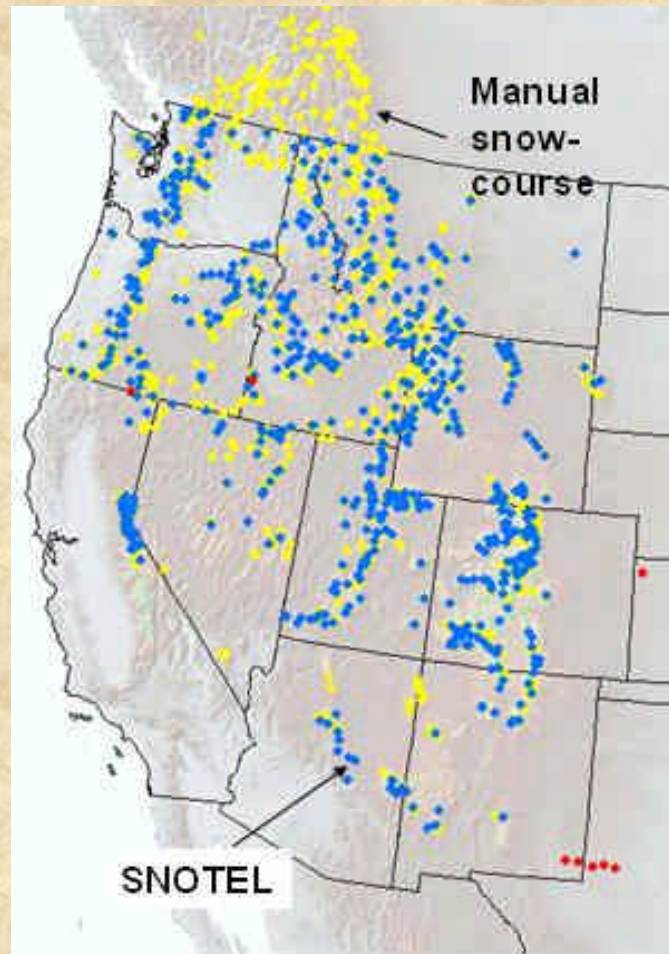


Radar estimate
of precipitation
from the Eureka
California radar.

Recommendations: Precipitation

- **In order to improve the quality of the precipitation data available in the West:**
 - **Improve NWS COOP network by supporting network modernization.**
 - **Increase number of rain gages by adding rain gages to other data collection platforms, such as USGS streamgages.**
 - **Support research aimed at improving radar precipitation estimates and multi-sensor techniques.**
 - **Install additional radars to increase coverage in the West.**
 - **Set rigorous standards and metrics for vendors to follow so that gage measuring accuracy can be more easily compared.**
- **Federal Agencies should coordinate to ensure that extreme storm data is collected, analyzed, and archived and procedures are in place to update storm data sets, methodology, and reports to develop Probable Maximum Precipitation estimates.**

Snow



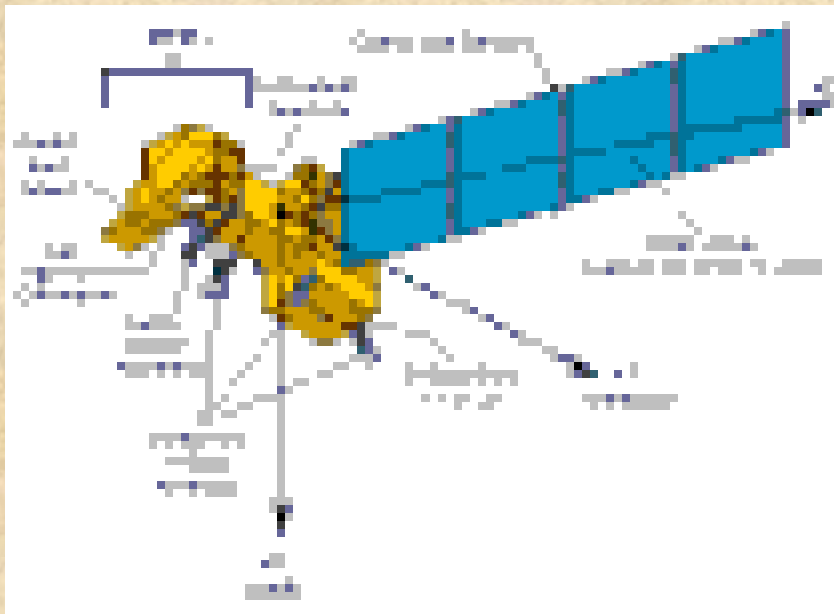
SNOTEL (747 stations)
and Snow Courses (~900
courses) networks

Better monitoring of
snow conditions is
needed in the West.

Recommendations: Snow

- **Additional instrumentation would lead to a better understanding of current snow conditions.**
- **Use of remote sensing of snow cover and snow water content should be explored.**
- **NRCS also working to expand Soil Climate Analysis Network (SCAN) to improve information about soil moisture conditions and potential droughts.**

Evapotranspiration (ET)



Landsat 7 Satellite

Current Landsat thermal band provides data to compute evapotranspiration and water use.

Recommendations: Evapotranspiration (ET)

- **Perform an analysis of existing state and regional ET weather station networks to determine best ways to provide adequate station density throughout western U.S.**
- **Establish ET weather station standards for all ET network providers to ensure accurate and consistent ET values.**
- **Support inclusion of the emissive thermal infrared band component on the Landsat Data Continuity Mission.**
- **Support research to further the understanding and development of crop coefficients.**
- **Support research to further develop and implement remote sensing ET mapping.**

Recommendations: Water Data Portal

- **Support a nationwide database or Hydrologic Information System (HIS) to provide access to the data collected by all state, local, and other Federal agencies.**