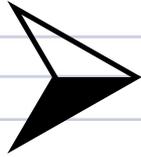
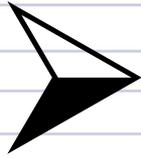
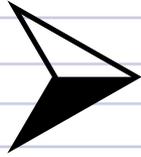


Snow SURVEYS

(White Paper)



Overview





To script an authoritative peer-reviewed document to present to lawmakers and other persons of influence that clearly demonstrates the value of the CCSS data collection network and its critical role in forecast reliability and accuracy and emergency preparedness among many other benefits.



- *White Paper draft outline created*
- *Analysis and evaluation of existing water supply forecasting sensor network is underway*
- *Held several meetings focused on refining the scope/outline and identifying pertinent issues to address*
- *Identifying contributors and staff to complete the effort*

timeline

- *Sensor network analysis to be completed by end of 2016*
- *Draft White Paper targeted for end of January, 2017*
- *Goal to present the white paper concept at the Western Snow Conference in Boise, April 2017*



ISSUES

Goals

- *DWR's Mission Statement: "To manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments."*
- *CCSS established following California Water Code, Section 228: "The department shall gather and correlate information and data pertinent to an annual forecast of seasonal water crop, including the making of snow surveys, either independently or in cooperation with any person or any county, State, Federal, or other agency."*



ISSUES

Value

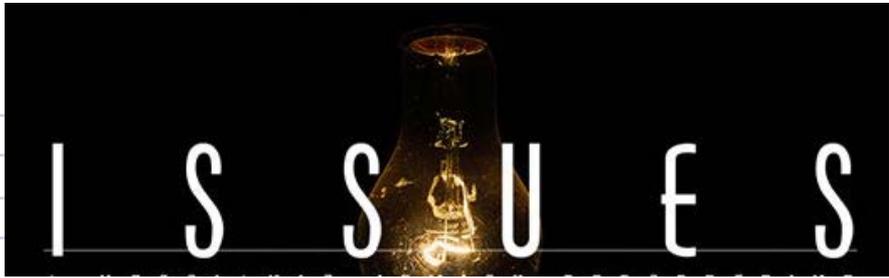
- *Present the distribution and density of the sensor network*
- *Describe the uses for the sensor data*
- *Demonstrate the value of the long-term continuous sensor data records*
- *Analysis showing existing network is still vital for water resources management*



ISSUES

Challenges

- *Protecting employee safety and continuing to meet worker safety requirements*
- *Modernizing and integrating agency systems to support data exchange and analysis*
- *Expanding data collection to include more types of hydrologic parameters - i.e. soil moisture, albedo, solar radiation, ET, etc.*
- *Improving snowmelt and water supply modeling and forecasts to utilize more types of hydrologic data and physical attributes of the watershed (GIS info) in order to adequately model a changing environment and climate.*



ISSUES

Challenges, cont'd

- *Evaluating climate variability and providing scientific information*
- *Continue to provide valuable guidance for State water emergencies in the face of greater climate variability*
- *Preserving or gaining access to remote wilderness areas to install or maintain observation systems and collect data*



ISSUES

Wilderness

- *Discuss the issues with the scale of the network - number of stations overall and within Wilderness areas - we have difficulty maintaining them all reliably*
- *NIMBY (Not In My Back Yard) syndrome*
- *Individual entities (Park, Forest, etc.) don't realize the magnitude of the value and that it benefits MANY - present the issue of "silos"*
- *Facing further wilderness designation*



ISSUES

Future

- *Waiting until stations break or fail does not ensure a reliable network*
- *Prospects for modernizing sensor network and using other emerging technology*
- *Eliminating antifreeze, increasing reliability, shrinking footprint, and minimizing visibility of stations.*



ISSUES

Engaging with Partners

- *Conduct periodic meeting with interested cooperators*
- *Circulate drafts to colleagues in the Western States to get feedback & review*
- *Engage with Executive/Management*
- *Leverage legal and lobbying folks in our agencies and network*
- *Continue Collecting studies from partner agencies showing value of network*

National Park Service
U.S. Department of the Interior



Natural Resource Program Center

Weather Data Inventory, Devils Postpile National Monument

Natural Resource Data Series NPS/SIEN/NRDS—2010/213

Climate Change

Resource Brief

National Park Service
U.S. Department of the Interior



Natural Resource Stewardship & Science

Recent Climate Change Exposure of Devils Postpile National Monument

Climate change is occurring at especially rapid rates in some areas of the U.S. In national parks, climate change challenges the ability of park managers to preserve natural and cultural resources. To understand the “climate change exposure” of national parks—that is, the magnitude and direction of ongoing changes in climate—we investigated how recent climates compare to historical conditions. This recently published research ([Monahan & Fisichelli 2014](#)) updates the basic climate inventories for 289 national park units. Here we summarize results for Devils Postpile National

repeated this approach for the 20 and 30-year “windows.” This type of analysis helps to smooth year-to-year fluctuations in order to identify longer-term trends that characterize the park’s historical range of variability (HRV). The three windows encompass both near- and long-term management and planning horizons, as well as important climatic periods and cycles.

- We compared the average temperature and precipitation values

“DEPO is fortunate to have an engaged, collaborative community of weather/climate and hydrology scientists working for its benefit. DEPO is a small NPS unit, and depends upon outside collaboration to achieve its management goals. The monument will benefit from maintaining these relationships as long as they directly support park management priorities. Active participation in these relationships involves facilitating frequent communication among the parties, prompt maintenance of instruments and related equipment, regular Scripps data transfer to the WRCC, and periodic analysis and reporting. The creation of a specific plan for data analysis as a complement to or component of the Sierra Nevada Inventory & Modeling Network (SIEN – Devil’s Postpile, SEKI, Yosemite) weather and climate monitoring protocol would help define the direct application of weather data to resource issues, identify knowledge gaps, and steer research toward the most useful avenues. As the GMP process progresses, the network of scientific partners already in place will enhance DEPO’s ability to clearly define its resource concerns, effectively map a route to sustainable management, and grapple with the challenges of climate change.”

Questions?

