

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Inventory and Analysis of Sierra Nevada Network Regional Stream Flow and Snow Water Equivalent Data

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: University of Colorado, Boulder
Effective Dates: 9/28/2009 - 8/31/2010
Funding Amount: \$59,999

Investigators and Agency Representative:

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Project Abstract: The Sierra Nevada Network (SIEN) has selected streams and rivers as a high priority for long-term monitoring. Critical measures will likely include flow magnitude, timing, duration, and frequencies, all metrics derived from continuous monitoring of flow at fixed station locations. In order to develop a monitoring protocol, it is first necessary to inventory existing regional stream flow data and monitoring locations. Because stream flow in the Sierra Nevada is dominated by snowmelt, an inventory and analysis of snow course data will complement the stream flow analysis.

The purpose of this project is to inventory and analyze existing stream flow and snow course data for the region encompassing Yosemite (YOSE) and Sequoia and Kings National Parks (SEKI), and Devils Postpile National Monument (DEPO) in order to assist the SIEN in developing a protocol for monitoring streams and rivers. Existing data takes the form of snow survey and snow pillow records, and stream gages where there has been at least 10 years of continuous data collection. At a minimum, all stations within a 10 km buffer around park boundaries will be considered in this analysis.

Project objectives are as follows:

1. Review and summarize existing literature related to Sierra Nevada water and snow dynamics, with particular attention to interpretation of changes in the hydrologic system in response to potential climate change scenarios.
2. Assemble, document, and analyze existing stream flow and snow course data in and near SIEN parks to inform the selection of sites and metrics for long-term monitoring.
3. Improve understanding of the annual and long-term dynamics of SIEN hydrologic systems through a literature review and analyses or compiled data in a final report.
4. Improve accessibility to hydrologic and snow course data by compiling, documenting, and providing relevant existing data.

Outcomes with Completion Dates: Due Date for Final Report and/or Other Products: April 30, 2010

List of Products:

1. Final report assessing streamflow and snow data for Sierra Nevada Network parks - formatted for publication in the NPS Technical Report series
2. Digital data and data documentation for all streamflow and snow course data assembled and analyzed for this project

Keywords: Rocky Mountain National Park, University of Colorado at Boulder, Sierra Nevada Network, stream flow, snow data, protocol