Pacific Northwest Regional Collaboratory:

Hydro-meteorological forecasting in western basins

Investigators:
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Background

Over 80 percent of the water supply in the Western U.S. results from mountain snowmelt, where a large portion of land is owned and managed by the federal government. Many local, state, and federal agencies depend on knowledge of the runoff from mountain basins, including those interested in agriculture, power generation, tourism, contaminant transport, and fire prediction. Water resource managers require accurate and timely predictions of water supplies and demands to allocate limited resources to meet complex and often competing demands for water. Accurate estimates and forecasts of snow-cover extent, snow water equivalence, and snowmelt are important for both flood forecasts and longer-term management. There is a critical need by water resource managers for improved short-term to seasonal water supply and demand forecasts. The Natural Resources Conservation Service (NRCS) continues to be the primary end-user for this project, and has expressed a particular need for medium-range meteorological and hydrological forecasts out 10 to 15 days.

Overall Project Goals and Objectives

The overall goal of this project is to provide needed decision support to watershed managers and streamflow forecasters, such as the NRCS, so that they can better support their end-users (reservoir operators, state fish and wildlife agencies, farmers, and recreation enthusiasts) in addressing water resource issues. The overall technical objective is to provide water resource managers and other interested end-users with operational forecast *products* and *tools* for the forecasting of streamflow in snowmelt-dominated basins. Data products will include near real-time forecasts of meteorological parameters (temperature and precipitation), as well as streamflow, in various basins across the Pacific Northwest region. An expert system, package within ESRI's ArcGIS software, will allow 1) estimation of model parameters, 2) automated incorporation of images of snow cover, meteorological forecasts, and real-time streamflow values, and 3) generation of streamflow forecasts.