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**USING THE SNOWMELT RUNOFF MODEL TO EVALUATE CLIMATE CHANGE EFFECTS AND TO  
COMPARE BASIN RUNOFF BETWEEN NEW MEXICO AND IDAHO**

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**ABSTRACT:** The Snowmelt Runoff Model (SRM) has been developed and tested in small to large basins worldwide. SRM has been found to be very useful for understanding snowmelt processes as well as for simulating or forecasting snowmelt-derived water supplies. SRM is being used in New Mexico in a NSF-funded EPSCoR (Experimental Program to Stimulate Competitive Research) project. All important snowmelt sub basins of the Rio Grande in New Mexico and Colorado are being studied to provide required snow covered area inputs to SRM in an attempt to answer what the climate change impacts on New Mexico's mountain sources of water will be. Landsat and MODIS satellites are being employed to remotely sense snow covered area in both New Mexico and Colorado. SRM has a further advantage for evaluating climate change effects on water supply because it has an algorithm that automatically takes any future climate scenario into account. Such future climates are being derived from climate models run over the Rio Grande basin. Various snowmelt algorithms in SRM are being used independently in Idaho basins driven by other important variables at NRCS SNOTEL sites including snowmelt rate, temperature, and precipitation. It is important to compare the output of basins in the northern Rockies (Idaho) to those in the southern Rockies (New Mexico/Colorado). Typically, a La Niña year like 2011 in Idaho produces above average snow accumulation and runoff whereas in New Mexico or Colorado, La Niña produces well below average snowpacks and runoff. SRM snowmelt calculations can be made using either snow covered area or a combination of hydroclimate data available at SNOTEL sites. This presentation will show examples of each of these SRM-related products and compare hydrograph differences along the Rocky Mountain gradient.

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