Surface Water and Snowpack Modeling With Emphasis on Post-Wildfire Hydrologic Impacts in the Santa Fe Watershed, NM

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The Santa Fe Municipal Watershed is an important source of drinking water and water storage for the City of Santa Fe and these water resources are believed to be at considerable risk from high severity wildfires. This hydrologic modeling project intends to develop a coupled snowpack-surface water model for the Santa Fe Municipal Watershed that will be useful for predicting wildfire risk scenarios. Preliminary work has so far included watershed characterization, instrumentation planning, and model selection. Project plans are that surface water modeling will begin in HEC-HMS, while the SnowModel model package will be used to track seasonal snowpack evolution and provide meltwater inputs to HEC-HMS. It is believed that the coupling of these models will provide more reliable runoff and water yield estimates than with less complex snow modeling modules. Models will then be parameterized with different wildfire and forest management scenarios to provide insight into hydrologic vulnerability and resilience in the Santa Fe Municipal Watershed. Field data will be collected to parameterize and validate the model – sap flow measurements for determining transpiration rates in dominant tree species, and soil moisture content measurements. Other data will come from weather stations (SNOTEL, RAWS) and USGS streamgages.


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