**NASA DEVELOP National Program**

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**Short Title: Sierra Nevada Water Resources**

**Updated Abstract**

Snowpack in the Sierra Nevada is a crucial component of the California water supply. Climate change effects on forest ecosystems in this region have reduced snowpack resulting in earlier snowmelt. Wildfire frequency and severity in the Sierra Nevada have also increased, due to climate change-induced warmer temperatures, drought, and a legacy of fire suppression policies leading to increased fuel loads beyond their range of historic variability. These combined factors have the potential to severely impact California’s water supply. However, the effects of wildfire severity on snowpack have not been geospatially quantified. This study used NASA’s Earth Observing System, modeled climate data, and automated classification of Landsat imagery, to quantify the effect of low, moderate, and high severity wildfire on snowpack and snow water equivalent (SWE) in the Sierra Nevada. Results indicated a moderate to strong correlation of rapid deceases in snowpack and SWE in areas of moderate to high severity burns. This information will assist in decision and policy making related to management of forest ecosystems and water resources within the Sierra Nevada.