**Short Title:**

Sierra Nevada Water Resources

**Long Title:**

A Quantitative Assessment of Wildfire Severity and its Effects on Snow Water Equivalent Throughout the Sierra Nevada, USA

**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. The effects of wildfire severity on snowpack have not been quantified. Therefore, this study used NASA Earth Observing Systems, and automated classification of Landsat data, to quantify the effect of low, moderate, and high severity wildfire on snowpack and snow water equivalent in the Sierra Nevada. Results indicate a moderate to significant correlation between the snow melt timing and post burn areas. This information will improve management of forest ecosystems and water resources within the Sierra Nevada.

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