

A Systems Modeling Approach to Quantify Forest Fuel Treatment Effects on Wildfire Severity and Post-Fire Erosion

PI: Tony Cheng (*Professor of Forest and Rangeland Stewardship*)

Co-PIs: Benjamin Gannon, Kelly Jones, Stephanie Kampf, Lee MacDonald, Katherine Mattor, Peter Nelson, Yu Wei, and Brett Wolk

Abstract:

The increasing size and severity of wildfires in Colorado and the western U.S. affects water resources through adverse changes in water quality and sedimentation of municipal water collection and storage systems. Post-wildfire hydrogeomorphic processes such as increased peak flows, sedimentation, debris flow, and channel reconfiguration can also impact infrastructure, aquatic and riparian habitat, property, and human safety. There is considerable interest from municipal water providers and watershed coalitions to manage forest fuels to reduce the severity of future wildfires and therefore dampen the negative post-wildfire impacts to water resources. The objectives of this project are to expand and improve a systems model of forest fuel treatment effects on wildfire severity and post-fire erosion by adding channel transport processes, and to use the model to develop and support a spatially-explicit decision support system to help stakeholders prioritize forest fuel treatment investments.