

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Remote Sensing Methods for Mapping and Attributing Climate Induced Tree Mortality in Northern New Mexico and Beyond

**Discipline:** Natural  
**Type of Project:** Research  
**Funding Agency:** USGS  
**Other Partners/Cooperators:** University of Idaho  
**Effective Dates:** 9/15/2014 - 9/14/2015  
**Funding Amount:** \$70,000

**Investigators and Agency Representative:**

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**Project Abstract:** The goal of this project is include: 1) develop methods for mapping tree mortality and identifying the responsible disturbance agent at the global scale using Landsat resolution satellite imagery. 2) increase understanding of the extent, causes, and impacts of tree mortality in northern New Mexico. 3) develop methods for identifying causes of tree mortality and building predictive models using empirical (statistical) analysis. 4) convey findings to various other groups working at continental to global scales on forest dynamics to build networks to build network/linkages.

The specific objectives of this project include:

Objective 1. Evaluate and compare several methodologies with a goal of minimizing operator input for use in global mapping and for capturing tree mortality across a range of forest types.

Objective 2. Apply methods to map the following disturbances using time series of Landsat imagery from northern New Mexico: fire, drought/bark beetles, defoliators.

Objective 3. Quantify spatial and temporal patterns of tree mortality in northern New Mexico, and relate to possible influencing factors in simple ways.

Objective 4. Develop global disturbance attribution algorithms and test in New Mexico.

Objective 5. Develop an advanced statistical model of tree mortality in New Mexico that considers climate, topography, and forest structure as possible explanatory variables.

**Outcomes with completions dates:** September 14, 2015

**Keywords:** remote sensing, mapping, climate change, tree mortality, New Mexico, USGS, University of Idaho