

CDOT Research Area of Emphasis:

Post-Wildfires Debris Flow

In recent years, Colorado has experienced an increasing occurrence of natural and man-made disasters. Drought and wildfires, in particular, result in the loss of natural obstacles to erosion such as vegetation and the depth of the water-absorbing hydrophilic layer in soil. This loss reduces the natural ability of the land surface to slow or prevent debris flow after extended rainfall and flash floods.

Debris flow can damage transportation infrastructure such as roadways, bridges, and culverts, and can be hazardous to the safety of motorists and wildlife. It has cascading effects on the natural and built environment.

Although there has been much basic and applied research to understand, predict, and prevent or mitigate post-wildfire debris flow, we still face unknowns in all these areas.

In declaring this a CDOT Research Area of Emphasis our intent is to seek creative, implementable approaches to protect transportation infrastructure and the traveling public. This is likely to involve consolidating and building on existing knowledge, and further exploring approaches that can be applied to the many varied circumstances of this problem.

We invite research Problem Statements to address this important area: Understanding and mitigating the impact of post-wildfire debris flow on transportation infrastructure.

Recent and current CDOT research projects that fall within or relate to this Area of Emphasis are:

- Post-wildfires Peak Flow Data Collection and Modeling in Burn Scars
- Precipitation and Streamgage Flood Warning System
- Enhancements to StreamStats Interface – StreamStats for Small Basins
- Enhancements to StreamStats Interface – Updates to the Regression Equations in Western Colorado
- Eastern Colorado Crest Stage Gage Network Service
- Drones for Measuring Change Detection: Slope Stability and Landscape Monitoring