

# Droughts Impact Water Balance Recovery from Fires in the Western U.S.

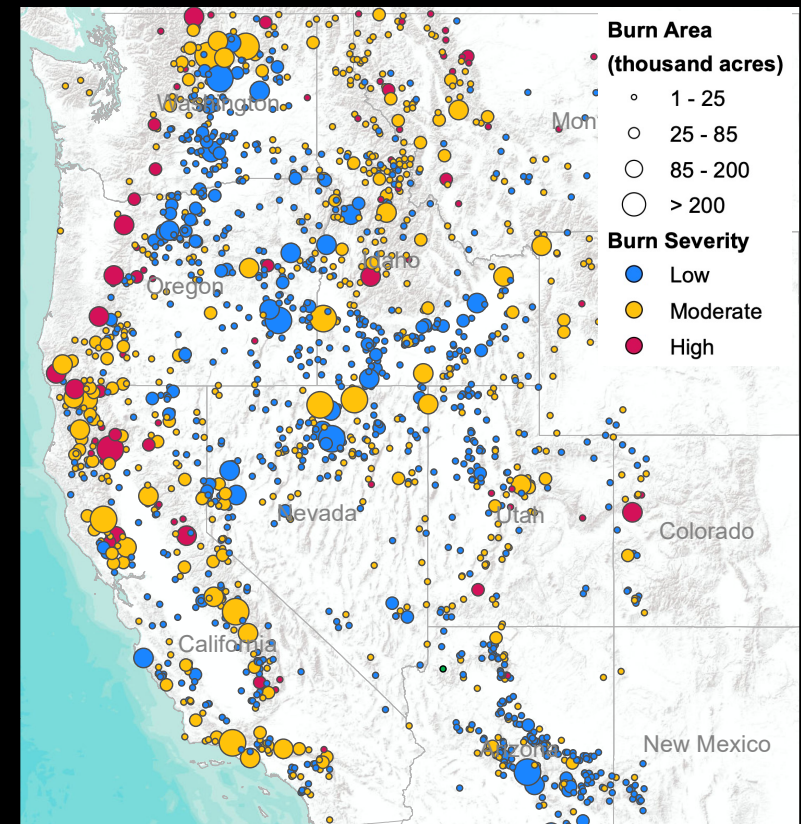


Catastrophic fires are increasing at an unprecedented rate in the western United States. As part of the Earth Information System (EIS) project, Goddard scientists led a study to examine the compounding effects of those fires with intensifying droughts, and how that combination significantly impacts post-fire water balance in various ecosystems. Droughts exacerbate disturbances to the water and carbon cycles by impairing canopy photosynthesis and increasing vegetation mortality.

Their study suggests that non-forested vegetation types are more susceptible to prevailing drought stresses in pre- and post-fire years than forests, causing large fluctuations to water balance. In contrast, severely burned forests respond with slow or incomplete recovery, but with a lower sensitivity to dry extremes. They conclude that the dynamics of water balance recovery in post-fire years are dominated by moisture-limited conditions. The results highlight the dominance of drought on altering the resilience of vegetation to fires.

The authors argue that it is imperative for the hydrologic modeling community as well as hazard management practices to consider the diverse responses of ecoregions to fire-drought disturbances.

Paper: [Droughts impede water balance recovery from fires in the Western United States | Nature Ecology & Evolution](#)



Fire events from 2014 to 2020 colored by burn severity and sized by burn area.

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