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## Predicting Source Water Quality Following Wildfires Using Hydrologic Modeling

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Forested watersheds are critical sources of the majority of the world's drinking water. Almost one-third of the world's largest cities and two-thirds of cities in the United States (US) rely on forested watersheds for their water supply. These forested regions are vulnerable to the increasing incidence of large and severe wildfires due to increases in regional temperatures and greater accumulation of fuels. When wildfires occur, increases in suspended sediment and organic carbon can negatively affect aquatic ecosystem health and create many costly challenges to the drinking water treatment process. These effects are often largest in the first year following a wildfire. While past research has shown the likelihood of source water impacts from wildfire, the magnitude of effects remains uncertain in most regions. In our study, we will quantify the projected short-term effects of three large (>70,000 ha) wildfires on key water quality parameters (sediment and organic carbon) in two important forested source watersheds in the Cascade Range of Oregon, US. We calibrated and validated a modified Soil and Water Assessment Tool (SWAT) to simulate streamflow, sediment loads and transport, as well as in-stream organic carbon processes for a historical period prior to wildfire. The calibrated model parameters were then modified based on literature values and burn severity maps to represent post-fire conditions of the three large wildfires. The parameter adjustments for simulating wildfire will be validated with post-fire water quality field samples from the wildfires. We will present estimations of future water quality impacts in the burned watersheds under different precipitation conditions at a daily scale for the first year following the wildfires, which will provide testable hypotheses. Additionally, we will determine catchment characteristics most critical in determining the post-fire water quality response. This work will help predict the magnitude of effects from these historic wildfires, which can inform forest and drinking water management decision making.