

Abstract

Impacts of Wildfires on Hydrological Ecosystem Services [†]

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Abstract: Forest and natural landscapes are usually considered to provide increased hydrological services over agriculture due to increased vegetation cover. Natural vegetation is expected to protect soils against erosion, regulate floods by increasing litter and soil water retention and decreased sediment yield. Afforestation is therefore used to control floods and prevent soil degradation, and water supplies are usually taken from forested watersheds. In the second half of the XXth century, agricultural abandonment in the northern rim of the Mediterranean led to extensive afforestation and renaturalization, and Mediterranean landscapes are now assumed to provide more hydrological services than before. However, Mediterranean forests are also prone to wildfires, which destroy the vegetation cover, changes soil properties with decreased soil water retention and create a highly mobile ash layer which can contaminate streams. These impacts temporarily negate the hydrological ecosystem services forests normally provided; and in regions subjected to frequent and recurring fires, it is possible that the long-term service provisioning is severely impacted. Nevertheless, forest management strategies ranging from emergency post-fire stabilization measures to structural landscape management can help mitigate these issues and prevent ecosystem service disruptions in fire-prone forests. This presentation will address this issue from a Mediterranean perspective, starting with an overview of post-fire impacts and consequences, and presenting results for a humid Mediterranean fire-prone area.

Keywords: forest hydrological ecosystem services; forest fire; burnt area hydrology



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