



The influence of fire history, plant species and post-fire management on soil water repellency in a Mediterranean catchment: the Mount Carmel range, Israel

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Fire is a key factor impacting soil hydrology in many Mediterranean catchments. Soil water repellency (SWR) can stimulate land degradation processes by reducing the affinity of soil and water thereby triggering a reduction in soil fertility and increasing soil and water losses. The effects of two consequent fires (1989 and 2005) on SWR were assessed in the Carmel Mountains, Israel. Fire history, plant recovery and post-fire management were investigated as determining factors in a time dependent system. SWR was highest in the >50 years unburnt plots, where soil under *Pinus halepensis* is most hydrophobic. In the most disturbed soils (twice burnt), many sites have a low to absent SWR even if the soil is very dry. The dynamics and fluctuations in SWR differ in magnitude under different plant species. The areas treated with CC (chipping of charred trees) showed a much higher SWR than areas left untreated. From these insights, a conceptual model of the reaction of SWR on multiple fires was developed.

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