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Dynamics of pre- and post-fire pollutant loads in an urban fringe watershed

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ABSTRACT

This study investigates the impacts of wildfire on storm runoff chemistry in an urban fringe watershed that is highly impacted by regional atmospheric pollutants. Pre- and post-fire storm runoff was collected and analyzed for basic cations and anions, trace metals, and total suspended solids. The loss of vegetation and changes in soil properties due to fire reduced lag time and greatly increased the magnitude of storm runoff, resulting in sediment laden floods carrying high concentrations of particulate-bound constituents. Post-fire concentrations and loads were up to three orders of magnitude greater than pre-fire values for many trace metals, including lead and cadmium. A shift was also observed in the timing of chemical delivery, where maximum sediment, trace metal, and cation concentrations coincided with peak discharge in the post-fire runoff. Our results highlight the need for treatment of sediment-bound chemicals, in order to mitigate potentially detrimental impacts on downstream water quality.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2011AnnualReport/ar11_061_070.pdf