



Catastrophic runoff and regolith erosion following the 2003 and 2007 wildfires in the eastern uplands, Victoria, Australia.

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Studies of small montane catchments have been carried out after extensive forest fires in 2003 and 2007, in each of which > 1 million hectares was burned. Evaluation of post-fire runoff suggests that extraordinary runoff efficiencies were achieved, with small, steep catchments (basin area < 5 km²) showing specific yields of up to ~ 50 m³/s/km². Such yields are among the highest known from any part of the world. Correspondingly, remarkable stripping of soil and regolith materials followed the fires. Stripped hillslopes form one affected environment, and these exhibit a range of erosional forms from channelised to splash and sheet erosion of soil. Some channels, as well as footslopes and valley-floors form a contrasting set of depositional environments where pre-fire soils have been buried by eroded debris. Extensive cobble and boulder fans blanket some of these areas, and seem likely to resist further movement until the next extraordinary post-fire runoff event. The Victorian montane landscapes thus present a patchwork of marked erosion and deposition related to exceptional post-fire runoff and erosion. The landscape appears to have been geomorphically 'reset' by these processes, and to have experienced the redistribution of substantial volumes of soil. The sedimentary record preserves only rare (undated) records of similar events, and the stratigraphy suggests that events like those of the past 5 years have not occurred for at least several millennia.