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Suspended sediment yield following wildfires in a mixed species eucalypt forest, southeastern Australia

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Abstract In June 2001, flow and suspended sediment monitoring equipment was installed at the outlets of four study sub-catchments in Kangaroo River State Forest, southeastern Australia. A moderate severity wildfire in October 2001 burnt 94% of a 443-ha sub-catchment and the same wildfire, combined with an earlier fire in August 2001, burnt through 61% of the adjacent 367-ha sub-catchment. Neither of the remaining sub-catchments experienced these wildfires. The 2001 wildfires occurred during a drought year which was followed by an extended period of low rainfall. Substantial flows did not occur in either of the burnt sub-catchments until February 2003. As a consequence, suspended sediment yields in the immediate post-fire period were minimal and not significantly different in the burnt and unburnt sub-catchments. A substantial sediment pulse was generated during the summer rains of February (223.7 mm) and March (200.5 mm) 2003 in all sub-catchments, with sediment responses being similar in the burnt and unburnt areas. This case study illustrates the importance of the timing and magnitude of post-fire rainfall events in determining the likelihood of significant sediment transport following wildfires.

Key words wildfire; drought; catchment response; Kangaroo River; southeastern Australia