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Do common fire-severity estimation parameters really tell us much about landscape susceptibility to enhanced hydrogeomorphological response?

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Fire severity is a widely used concept, which inevitably differs between regions, user requirements and ecosystem types. The most commonly used approach centres on the loss of, or damage to, vegetation and is often based on coarse-scale remotely sensed data supported by ground truthing. This information can be acquired relatively easily and is very useful in determining fire perimeter, above-ground biomass loss and aspects of fire behaviour.
It is also often used as a guide in predicting likely hydrogeomorphological responses of burned hillslopes such as enhanced soil erosion by wind and water, flooding and debris flows. A more specific assessment focused on these responses and on soil degradation is the North American burn severity classification and similar counterparts used elsewhere. This involves detailed measurement of terrain and soil characteristics in the field.

Most studies focusing on hydrogeomorphological responses involve at least some of the parameters used in these different approaches to classify burn severity. They may include, for example, coarse-scale remote sensing data, twig diameter of remaining vegetation, ash colour, and the degree and depth of any water repellency in the soil. Using examples from the USA, Europe and Australia, this presentation attempts to evaluate the degree to which different fire severity indicators are closely linked and reliable in predicting soil degradation and landscape susceptibility to enhanced hydrogeomorphological response.