Raster modelling of land and soil capability in NSW. Steps towards sustainable soil management?

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Land and Soil Capability (LSC) is a rules based class assessment of the relative degree of eight land degradation hazards. LSC has been used to assess place-based sustainability of land management actions by comparing against hazard intensity limits of land management actions.
LSC has been previously mapped for New South Wales by allocating land degradation hazard intensities using simple rules applied to nodal soil parameters of soil map units as well as various landscape and climate parameters.

This paper outlines methods used to digitally map LSC for the land degradation hazards. LSC has been modelled, classified and remapped using digitally modelled soil data and available digital climate, time series land cover and terrain surfaces. We used the revised universal soil loss equation; USDA wind erosion hazard classification; pH buffering capacity; and refitted soil structure, mass movement and salinity hazards. Most of the maps were quickly produced using the multi criteria analysis spatialtool.
Resulting maps have greater spatial resolution and are broadly consistent with original LSC layers.
As improved models, or data layers, such as those from the Australian Soil and Landscape Grid or Global Soil Map, become available, it is expected that LSC can be rapidly updated and perhaps even applied globally.
Examples are shown how Land and Soil Capability mapping, in concert with land management practice hazard intensity limits and land management data, identifies which, how much, and where the practice of a particular land management action contributes to land degradation. Land management action survey data, such as from national agricultural surveys, can be analysed against LSC to help justify and prioritise regional and sub-regional natural resource management strategies.