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Soil mapping in Africa using satellite remote sensing at regional and continental scales

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The protection and the sustainable management of soil resources in Africa are of paramount importance, particularly in the context of the uncertain impact of climate change and the increasing pressures of human activities. From the perspective of a policy maker interested in topics such as food security and land degradation in Africa, up-to-date and relevant soil information at regional and continental scales are required. To provide timely and reliable information on soils at synoptic scales, moderate and coarse spatial resolution satellite data offer many possibilities. Here we review how a range of multispectral, thermal infrared, passive microwave and active microwave spaceborne sensors can be used in the delineation of soil units, as well as in the assessment of some of the key soil properties and threats to soil functions (water and wind erosion, landslides and salinisation). We show that remotely sensed data can be used for mapping soils in Africa but often they need to be combined with ancillary data and field observations in order to be effective. Remote sensing is shown to be a key component of the emerging discipline of digital soil mapping.