**The role of remote sensing in global and sub-global land degradation studies**

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Understanding the significance of land degradation and desertification is constrained by many uncertainties (MA, 2005)[[1]](#footnote-1), ranging from agreed definitions on the phenomenon to grasping causes, associated processes and their relevance for information gathering, and for developing measurable criteria to implement relevant actions and policy. While the world’s drylands continue to be the most vulnerable, land degradation is a global phenomenon which despite decades of research is yet to have agreed standards to measure its progression, that is, global mapping and monitoring systems, to reverse the uncertainty on current estimations due to lack of data.

Remote sensing-based assessments of land degradation at regional and global scales have been advocated because in combination with ground-level observations, earth observation by satellites can provide a wealth of data relating to land condition and its changes. Satellite imagery provides continuity of observations since the early 1970s (e.g. Global Inventory Modelling and Mapping Studies –GIMMS-, MODIS, Landsat-like), essential for global monitoring tasks, including determining trends in biomass and vegetation health, and baselines. The resulting environmental information offers greater detail over large areas than ground-level observation alone, and a unique opportunity to evaluate changes using consistent time-series across geographical and ecosystem-based boundaries.

This paper has three aims: (1)to recall the significance of land degradation in the context of sustainable development and emerging communities;(2) to provide a review of global and sub-global land degradation studies that have used remote sensing-based approaches in land characterisation and landscape assessment and monitoring , (3) to discuss current and future global research initiatives to mitigate desertification and remediate degraded lands, focused on actions and strategies to address land degradation, where geospatial technologies may have a vital role to play in data and information supply.

1. Millennium Ecosystem Assessment (2005) Ecosystems and human well-being: Desertification synthesis. Island Press, Washington, D.C. [↑](#footnote-ref-1)