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South African Land Degradation Monitor (SALDI) – A German – South African SPACES collaboration to advance land degradation assessments

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South Africa is greatly affected by land degradation, partly due to the high variability of its climatic conditions, the strong population growth and resulting economic demands. Thus reaching a number of SDGs, like achieving food security (#2), access to clean water (#6), and the sustainable use of terrestrial (#15) and marine (#14) resources represents a clear challenge under the present global change pressures. Land degradation has been linked in South Africa to the terms veld degradation and soil degradation and has been addressed by numerous measures. But there is still uncertainty on the extent of human induced land degradation as compared to periodic climate induced land surface property changes.

In cooperation with South African institutions and stakeholders (ARC-ISCW, SAEON, SANParks, SANSA, Stellenbosch University and University of the Free State, Equispectives Research and Consulting Services, Nuwejaars Wetlands SMA), the overarching goal of SALDi is to implement novel, adaptive, and sustainable tools for assessing land degradation in multi-use landscapes in South Africa. Building upon the state of the art in land degradation assessments, the project aims to advance current methodologies for multi-use landscapes by innovatively incorporating inter-annual and seasonal variability in a spatially explicit approach. SALDi takes advantage of the emerging availability of high spatio-temporal resolution Earth observation data (e.g. Copernicus Sentinels, DLR TanDEM-X, NASA/USGS Landsat program), growing sources of in-situ data and advancements in modelling approaches. Particularly, SALDi aims to:

- i) develop an automated system for high temporal frequency (bi-weekly) and spatial resolution (10 to 30 m) change detection monitoring of ecosystem service dynamics,
- ii) develop, adapt and apply a Regional Earth System Model (RESM) to South Africa and investigate the feedbacks between land surface properties and the regional climate,
- iii) advance current soil degradation process assessment tools for soil erosion, as this process represents an intrinsic limiting factor for biomass production and other regulating, supporting and provisioning ecosystem services, like providing clean water.

The aim of this presentation is to introduce this new cooperative research project to the EGU

Community and to seek new opportunities for collaboration.

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