IGRASS Abstract – Invited Session I.8: ALOS and other ESA Third Party Missions

Title: Integration and application of remote sensing data towards the South African National Biodiversity Assessment (NSBA)

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Introduction:

Currently, the National Spatial Biodiversity Assessment (NSBA) for South Africa realised by the South African National Biodiversity Institute (SANBI) is one of the few frameworks worldwide providing a continuous and consistent national status assessment of biodiversity. The NSBA identifies national biodiversity priorities and is part of the National Biodiversity Strategy and Action Plan (NBSAP), which aims at the conservation, and sustainable use of South Africa's biodiversity (Driver et al. 2005). It has four components, dealing with the terrestrial, freshwater, estuarine, and coastal marine environments. Repeated every five years, it assesses for each of its environments the current status and protection level of ecosystems and identifies priorities for conservation actions and improved management of land and natural resources. Thus, the NSBA repeatedly assesses ecosystem status across biomes and integrates biodiversity priorities into policies, plans and actions of public and private stakeholders (DEAT 1997). However, this continuous assessment will require robust methods and area-wide tools derived from remote sensing products and applications to evolve (Reyers et al. 2007).

Methodoloy:

In the context of the NSBA 2010 remotely sensed land cover / land use products are needed in addition to indicators describing different facets of the status and the dynamics of ecosystems in a objective and continuous manner (Chilar 2000 and Friedl et al. 2002). Through the introduction of multi-scale remote sensing data, spatially explicit information on the coverage and status of ecosystems is currently derived. To get spatial and temporal information on national and regional scales, lower resolution time-series satellite data, supplemented by high-resolution satellite data are introduced to the assessment framework. The objective is to produce sound land cover products and indicators on the status of biodiversity, ecosystems, and coastal and marine resources. Development of quantitative and qualitative spatial indicators sensitive to changes of

ecosystem status of the terrestrial environment will include vegetation cover fraction, habitat fragmentation, fire impact (Liang, S. 2004). Development of spatial indicators sensitive to changes of ecosystem status adapted for the freshwater, estuarine, and coastal marine environment will include, wetland status assessment, coastal accessibility, water quality, sediment loads (Geider et al 2001). Global coverage of remote sensing data allows for transfer of products and methods while implementation strategies based on the experience of the NSBA will be shared with other countries in the SADC region.

Conclusion:

Being a work in progress we present the development and implementation of remote sensing products and application to support the technical evolution of the NSBA framework towards an integrative broad scale, repeatable, assessment biodiversity status, transferable to other regions. For South Africa, the most important gap is not information about where different habitats and species are located, but rather reliable, area-wide and up-to-date information about where ecosystems and their services have been lost or degraded, especially for terrestrial, river, and marine environments.

References:

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