

EARTH OBSERVATION SYMPOSIUM (B1)  
Earth Observation Applications and Economic Benefits (5)

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AIRBORNE HYPERSPECTRAL IMAGERY APPLICATIONS IN SOUTH AFRICA

**Abstract**

This paper will explore several local examples of where airborne hyperspectral imaging is creating real solutions locally. It will include a demonstration of how the technology is assisting Eskom, the South African utility company. Pre mature failures occurred when the u-bolts of the guy anchor foundations on the Alpha-Beta and Beta-Hydra 765kV Transmission lines started failing sporadically over the last 11 years since 1999. Studies into the causes of these failures have established that the problem areas are closely related to the accumulation of water in the upper, weathered horizons and enrichment of salts due to seasonal evapotranspiration leading to soil corrosivity. Guy anchor foundation cost of replacement, exceeds R300 000 per line kilometer and is currently being conducted systematically on all towers. However, results of an in situ spectral measurement campaign will demonstrate examples of unique spectral signatures for saline soils and halophytic plant bioindicators and how these stand to realise significant cost savings for Eskom

The paper will also demonstrate how the technology is assisting internationally with the gulf oil spill distaster and the creation of a baseline environmental audit. International and local examples of mineral exploration, mine rehabilitation and monitoring Acid Mine Drainage source detection, hydrocarbon spill assessments and alien vegetation species mapping will be included.

In conclusion, the case for a national spectral library will be presented in the context of spaceborne hyperspectral sensor development.