

Aspects of Vegetation Monitoring in active hard coal mining areas using Imaging Spectroscopy

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POSTER ABSTRACT

Underground mining activities lead to subsidence and ground movements at the topographic surface. These influences lead not only to impairments of the technical infrastructure furthermore they may lead to long lasting changes of hydrological and ecological parameters. Current research activities focus on methodical and practical developments to establish hyperspectral data sets as an important constituent for a long-term monitoring of those influenced areas. In this context it is necessary to develop procedures for vegetation mapping and vegetation monitoring.

An area under investigation has been recorded with the HyMap™ sensor in 2000 and in 2003. The ground instantaneous field of view (GIFOV) was 5m in both times. The flight campaign in 2000 was organized as a part of the EU-funded project MINEO. The second flight was within the framework of the HyEurope 2003 campaign. Atmospheric corrections and geocoding were done using the software packages ATCOR-4 and PARGE.

During both flight campaigns extensive and detailed field campaigns and reference measurements have been done. Both times an ASD Field Spec FR was used. The data were used for atmospheric corrections of the hyperspectral imagery in 2000 and were used for image analyses in 2000 and 2003 respectively. To classify vegetation types and to describe those in terms of vitality the reflectance curves were parameterized. The derived parameters describe the signatures at specific wavelengths and within different intervals. In addition higher derivatives of different intervals were calculated. These parameters were analysed in particular to detect anomalies within the reflectance signatures. In a second step the parameters serve as the basis for change detection analyses.

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