Nonlinear Analysis of hyperspectral remote sensing data to quantify climate driven erosion processes

Objective:

- the aim is the quantification of erosion processes with hyperspectral remote sensing data

Duration / Budget:

- 01.11.2010 – 31.10.2013

Products / Parameters:

- provenance-parameter
- alteration grade of bedrocks
- quantity and origin of eroded material

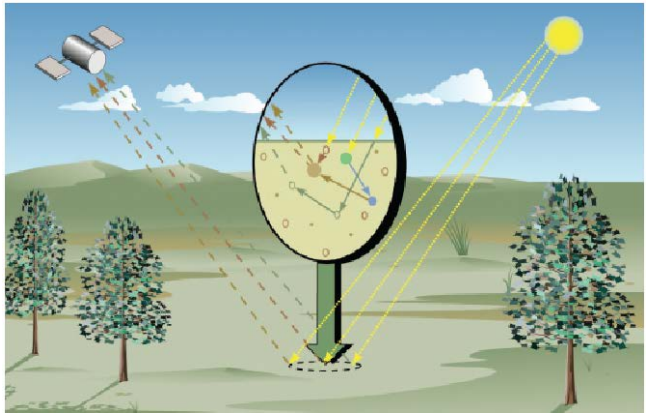

Figure 1: This scenario shows a nonlinear mixture due to multiple scattering. (Keshava et al., 2002)

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Added Value (quantitative /qualitative):

- improve spectral unmixing process to determine the concentrations of different materials more precisely within one pixel by means of nonlinear methods
- a more accurate quantification of eroded material

Additional:

- Project Area: Kiesgrube Hohensaaten-Lunow (Germany), Suguta Valley (Kenya), Mt. Kenya
- data source: AISA, Hyperion, EnMAP (synthetic)
- Validation: spectral field- and laboratory data

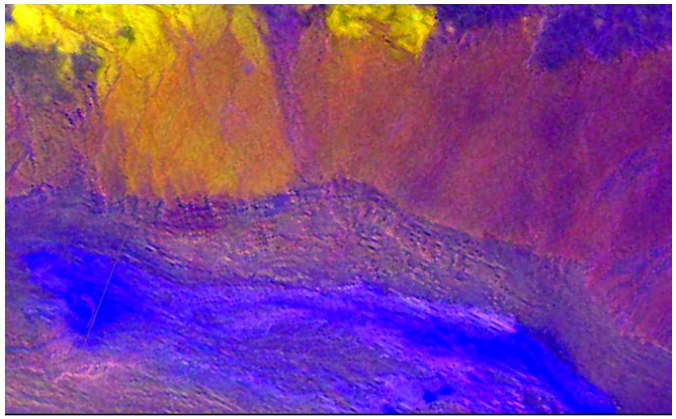

Figure 2: alluvial fan with different provenance in Suguta Valley, Kenya. Mixture of SiO_2-rich rocks (rhyolitic, trachytic) in yellow and SiO_2-poor rocks in purple (basalt).

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