**MOTIVATION AND OBJECTIVES**

The DynaC framework aims at the up-to-date derivation of the parcel-specific cover-management- or C-factor as a temporally dynamic input parameters for soil erosion modeling. Parcel boundaries and parcels’ fractional vegetation coverages (FVC) result from the analysis of multi-spectral and multi-temporal satellite imagery. The FVC modeling results are validated by digital pictures taken from representative samples on selected parcels. The samples’ locations are chosen within classified topographic positions for which a relation to FVC degrees is assumed.

**STUDY SITE**

The project DynaC is funded by the German Ministry of Economic Affairs and Energy. It is managed by the German Aerospace Center (FKZ 50EE1230 | http://paradigmaps.geo.uni-halle.de/dynac).

**WORKFLOW**

- **Parcel detection**
  - RapidEye May 3, 2013
  - Multi-hierarchical segmentation
    \[ H = L(\omega_{BP} + \omega_{VAR}) \] with \( \omega_{BP} + \omega_{VAR} = 1 \)
  - Rates of changes in hierarchical standard deviations
    \[ NDVI = \frac{RE5 - RE3}{RE5 - RE3} \quad \sigma_L = \frac{1}{N} \sum_{i=1}^{N} \sigma_{L,NDVI}^2 \]
  - C-factor
    \[ C = \bar{\sigma}_L - \bar{\sigma}_{L-1} \]

- **Sampling design**
  - DEM
  - Segmentation and cluster analysis
    (blue – depression | red – slope)
  - Picture sampling and classification
    Sample 1 May 3, 2013 Maximum likelihood 51%

- **FVC modeling**
  - Parcel-specific Fractional Vegetation Coverage
    \[ FVC = \frac{NDVI_{Object} - NDVI_{Soil}}{NDVI_{Vegetation} - NDVI_{Soil}} \]
  - Reference units for NDVI:
    - RapidEye: Tile
    - Field Block
    - Field Block, 4x4 search radius

**METHODS AND RESULTS**

- **Parcel detection**
  - RapidEye May 3, 2013
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Phenological structuring of multi-temporal satellite-based imagery for the modeling of fractional vegetation coverage

DynaC – Dynamic modeling of the USLE C-factor using high-temporal multi-spectral satellite imagery

Parcel detection

RapidEye 5-3-2

FVC modeling

DynaC is funded by the German Ministry of Economic Affairs and Energy. It is managed by the German Aerospace Center (FKZ 50EE1230). (http://paradigmaps.geo.uni-halle.de/dynac)