MOTIVATION AND OBJECTIVES

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

STUDY SITE

The study is part of the project DynaC (http://paradigmaps.geo.uni-halle.de/dynac) and was supported by the German Ministry of Economics and Technology and managed by the German Aerospace Center (FKZ 50EE1230).

METHODS AND RESULTS

Segmentation and cluster analysis (blue – depression | red – slope)

Mass Balance Index

\[
MBI = \begin{cases} 
    f(C) \times (1 - f(S)) \times (f(D)) & \text{for } f(C) < 0 \\
    f(C) \times (1 + f(S)) \times (f(D)) & \text{for } f(C) > 0 
\end{cases}
\]

- \(D\) – Vertical distance to channel network
- \(S\) – Slope
- \(C\) – Curvature

Cluster analysis (k means)

- Density
- N = 56  Bandwidth = 0.2887

Sample 1

Sampling (03.05.2013)

Classification (maximum likelihood)

Sample 2

Sample 4

Sample 5

51 %

39 %

44 %

62 %