

DYNAC: A FRAMEWORK FOR THE DYNAMIC DERIVATION OF THE USLE C-FACTOR USING HIGH TEMPORAL MULTI-SPECTRAL SATELLITE IMAGERY

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The DynaC framework aims at the up-to-date derivation of the parcel-specific cover management factor as a temporally dynamic input parameter for soil erosion modeling. Dynamic calculation means that for each acquisition date of satellite data like RapidEye, Sentinel 2 or Landsat 8 up-to-date and parcel-specific vegetation and crop residue-coverages are derived.

Parcels represent reference units for measures of soil conservation. The parcel structure varies from year to year. The parcel detection algorithm is based on multi-hierarchical objects structures which result from the segmentation of satellite imagery. The optimal segmentation level is detected by applying a geometric validation procedure.

The actual C-factor calculation also results from the analysis of multi-hierarchical object structures. In doing so, mapping results of fractional vegetation (FVC) and crop residue coverages (CRC) are related to different segmentation levels of spectral indices. The FVC and CRC validation is based on 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.

The DynaC approach will be demonstrated by the example of different RapidEye images from 2013. The study site represent a RapidEye tile which is situated in the German Federal State of Saxony-Anhalt near the city of Halle (Saale).

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