DETERMINING USE INTENSITIES OF SEMI-NATURAL GRASSLAND FROM HIGH-RESOLUTION INTRA-ANNUAL SATELLITE TIME SERIES

C. Jopke [a],*, G. Tintrup gen. Suntrup[b], B. Kleinschmit[a], M. Förster[a],

[a] Geoinformation in Environmental Planning Lab, Technical University of Berlin, 10623 Berlin, Germany
birgit.kleinschmit@tu-berlin.de, michael.foerster@tu-berlin.de, c.jopke@mailbox.tu-berlin.de
[b] Dept. Environmental Systems, RLP AgroScience - Institute for Agroecology, Breitenweg 71 67435 Neustadt, Germany
gregor.tintrup@agroscience.rlp.de

THEME: Agriculture and Food Security.

KEY WORDS: RapidEye, Rhineland-Palatinate, MASD, swath, mowing regimes

ABSTRACT:

Grasslands are one of the dominant terrestrial ecosystems in central Europe. Intensity of cutting and grazing regimes highly influences species composition and therefore biodiversity of grasslands. Since management regimes are dynamic processes that cover the entire vegetation period time-series are needed to provide feasible information on use intensities.
In this study we analyse an intra-annual multispectral high resolution RapidEye time series with six acquisition dates from February to October (22/2, 26/5, 25/7, 10/8, 16/9, 20/10) from an agricultural dominated area in south-western Rhineland-Palatinate in 2012. All scenes have been geometrically and atmospherically corrected. In a second step, we differentiated grassland and cropland based on a support vector machine classification. We used reviewed data from the German Official Cadastral Map ALKIS for training and validation. Furthermore, the Mean Absolute Spectral Dynamics (MASD) has been computed from spectral band and vegetation indexes (NDVI and RE-NDVI) as input for the classification of grassland use intensities. We detected classes with one to three swath events, per season. Additionally, one class was found for grazing. Classification results have been validated with swath event data derived from local agricultural domains. The results of this study show that the number of cutting events as well as grazing on grassland areas can be derived from intra-annual satellite imagery.

---

* Corresponding author. This is useful to know for communication with the appropriate person in cases with more than one author.