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Deriving the Green-Wave from Global fAPAR Time Series

C. Weiss, A. Loew, and C. Reick

Max Planck Institute for Meteorology, Hamburg, Germany (carola.weiss@zmaw.de)

Monitoring phenology is important to understand vegetation dynamics and to study terrestrial productivity. Furthermore, it plays an important role in global change research. Phenology can be measured from time series of satellite-derived vegetation indices like NDVI or fAPAR. Numerous climate research projects are based on those kind of vegetation indices.

One main problem that arises when working with vegetation indices from various sensors is the comparability of measurements from different platforms with their different sensor specifications, calibrations and preprocessing techniques.

For a relative comparison of fAPAR-time series from two different sensors AVHRR and SEAWiFS, we apply a simple but robust algorithm to each of the data sets individually to detect the green-wave per vegetation period. This algorithm is based on vector normalisation and integral calculations of the annual vegetation index curves. By this method, we derive yearly phenological patterns represented by the status of the green-wave for each data set.

In areas with a seasonal cycle, comparisons of these patterns result in maps that show the phenological variation between the different sensor measurements. Differences of the phenological patterns are displayed as time shifts in weeks and months. Results of this study on global and continental scales will be presented.