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Use of remote sensing data for monitoring and mapping phenology

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Deriving metrics that describe the phenology of vegetation growth is one of the important keys for understanding climatic changes impacts on ecosystems.

Time series of SPOT VEGETATION normalised difference vegetation indices (NDVI) from 1998 to 2005 were used. The statistic methods were applied to extract the following key phonological stages: start, duration, peak and end of the growing season. For each year the NDVI values were smoothed and the multi-year average was obtained. A trend change was detected where the NDVI values depart from the values of the average. This departure is labeled as the start of the growing season. Several other metrics lake rate of greenup, rate of senescence and total integrated NDVI were derived. The relationship between the peak and the growing season's length obtained from vegetation indexes (NDVI, EVI) and measured data was studied as well.

As result, a potential map of phenological stages that presents the dynamics of vegetation development for different places of the country is presented.