

Changes in vegetation spring dates in the second half of the twentieth century

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This study aims at estimating trends in spring phenology from vegetation index and air temperature at 2m height. To this end, we have developed a methodology to infer spring phenological dates from Global Inventory Modeling and Mapping Studies (GIMMS) Normalized Difference Vegetation Index (NDVI) time-series, which are then extrapolated to the period 1948-2006 with the help of Reanalysis data, using its 2m height air temperature parameter. First, yearly NDVI is fitted to a double-logistic function for the whole extent of the GIMMS database (1981-2003). This fitting procedure allows us to describe, on a yearly basis, the NDVI evolution for each pixel through the estimation of six parameters which include the spring date. Retrieved spring date time-series are then upscaled to Reanalysis database resolution and compared to degree-day amounts. Those degree-day amounts are estimated for various thresholds in order to determine the best thresholds for their calculations on a pixel-by-pixel b