



Using the remote sensing vegetation condition to assess the drought stress

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The occurrence of the meteorological and soil drought is one of the major hydrometeorological extremes with significant impacts on agriculture, horticulture and forestry. The drought monitor system for the Czech Republic was released in 2012. It is based on a daily step calculations of soil moisture for the whole area of the Czech Republic divided into regular grids with a spatial resolution of 500 m. The results are published on the weekly operated webpage (www.intersucho.cz). Using freely available data from the MODIS (Moderate Resolution Imaging Spectroradiometer instrument onboard Terra satellite) the vegetation state condition is taken into account as support tool for vegetation drought impact assessment. Based on the surface reflectance bands the Normalized Difference Vegetation Index (NDVI) is calculated. Consequently, weekly NDVI anomaly is expressed as Percent of Average Actual Greenness (PAAG) in relation to the average for the period of 2000-2014. The system contains filter algorithms that eliminate the noise in the satellite NDVI data mainly due to cloud effects. The following operation allows for changing crop patterns between seasons and aggregates filtered values to the 5x5 km resolution with regard to the main land use categories. The aim of this study was to compare the satellite based vegetation condition to the results of soil moisture calculation in order to detect the impacts of drought on vegetation during seasons with low and normal precipitation sums.

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