



New drought indices from the assimilation of satellite data

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The current agricultural drought indicators produced by Meteo-France are derived from digital simulations of soil moisture produced by the SURFEX modelling platform. In the framework of the IMAGINES European project, a research was conducted in order to assess the impact on the monitoring of agricultural droughts of the integration of satellite data into SURFEX. A data assimilation system was implemented to this end. It provides simulations of the biomass and leaf area index of straw cereals and grasslands over France. It is shown that these simulations can be improved through the assimilation of satellite products distributed in near-real-time by the Copernicus Global Land service (<http://land.copernicus.eu/global/>). Reference in situ observations of the agricultural yields show that using satellite data, a significant correlation between the maximum annual above-ground biomass simulated by SURFEX and the agricultural yield at the scale of administrative units (départements) can be achieved. Without satellite data, very low correlations are observed. It is also shown that new 10-day drought indicators, complementary to soil moisture, can be derived from the leaf area index and from the above-ground biomass of vegetation. These demonstration drought monitoring products for the 2008-2013 period are freely available on the project web site (<http://fp7-imagines.eu/>) for 45 administrative units for cereals and for 48 administrative units for grasslands.