Consistency across missions of long time series of global biophysical variables: challenges and lessons learnt

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The Global component of the Copernicus Land Monitoring Service (CGLS) provides continuously a set of bio-geophysical variables describing the dynamics of vegetation, the energy budget at the continental surface, the water cycle and the cryosphere. Products are generated on a reliable and automatic basis from Earth Observation satellite data, at a frequency ranging from one hour to 10 days. They are accessible free of charge through the GCLS website (http://land.copernicus.eu/global/), associated with documentation describing the physical methodologies, the technical properties of products, and the quality of variables based on the results of validation exercises.

The portfolio of the CGLS contains some Essential Climate Variables (ECV) like the Leaf Area Index (LAI), the Fraction of PAR absorbed by the vegetation (FAPAR), the surface albedo, and additional vegetation indices. These products were derived from SPOT/VEGETATION sensor data till December 2013, are currently derived from PROBA-V sensor data, and will be derived in the future from Sentinel-3 data.

This talk will show how challenging is the transition between sensors to ensure the sustainability of the production while keeping the consistency of the time series. We will discuss the various sources of differences from input data, the impact of these differences on the biophysical variables and, in turn, on some final users' applications as such those based upon anomalies or assimilation of time series. We will present the mitigation measures taken to reduce as much as possible this impact. We will conclude with the lessons learnt and how this experience will be exploited to manage the transition towards Sentinel-3.