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Monitoring soil and vegetation fluxes of carbon and water at the global scale: the land carbon core information service of GEOLAND2

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The global component of the Global Monitoring for Environment and Security (GMES) Land Monitoring Core service (LMCS) is being developed in the framework of the GEOLAND2 European project (FP7, 2008-2012). Land Data Assimilation Systems (LDAS) for the carbon and water cycles have been proposed as a core activity of the LMCS Global component and are developed by the Land Carbon Core Information Service (LC-CIS) of GEOLAND2. Both water and carbon terrestrial cycles require a similar data assimilation approach in which a model is constrained by as many relevant data as possible. Indeed, water and carbon cycles are closely linked and it is possible to build an integrated LDAS which includes all the processes. The advantage is that consistency can be achieved across a range of products based on satellite data. The LC-CIS performs modeling and data assimilation tasks, associated to a verification component based on in situ observations. The LC-CIS links the LMCS to the atmosphere component of GMES using the existing infrastructure/tools developed by meteorological services (ECMWF and national meteorological services). Leaf area index and surface soil moisture products derived from SPOT/VGT and from ASCAT are used to analyze the vegetation biomass and the root-zone soil moisture. The first 16km x 16km resolution products of the global LDAS operated by ECMWF are presented, together with 8km x 8km resolution products over France and Hungary of regional LDAS operated by Meteo-France and OMSZ, respectively.