



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 vegetation/land component of GMES is called “Land Monitoring Core service” (LMCS). The geoland2 European project (FP7, 2008-2012) is a demonstrator of the evolution of the LMCS, including the consolidation of prototype services and the test of their operational capacity. In particular, the perimeter of the LMCS is extended, with a global component (biogeophysical parameters), and thematic core information services.

The main mission of the land carbon core information service (LC-CIS) of geoland2 is to assess the impact of weather and climate variability on terrestrial biospheric carbon fluxes, in the context of international conventions. The LC-CIS aims at monitoring the global terrestrial carbon fluxes (e.g. to support reporting obligations in the course of the Kyoto Protocol) and setting-up pre-operational infrastructures for providing global products, both in near real time and off-line mode. A multi-model carbon accounting system is developed, coupled with EO data assimilation schemes. Emphasis is put on validation (in-situ data), with downscaling on reference European countries (F, NL, HU). The C-TESSSEL and SURFEX modelling platforms (of ECMWF and Météo-France, respectively) are used for production. The ORCHIDEE modelling platform (LSCE) is used for benchmarking and validation purposes.

The ECWFM reanalysis (ERA-Interim) will be used to build a global 20-y climatology of carbon and water fluxes, LAI and vegetation biomass, in order to rank the near-real time simulations. Gradually, EO data will be integrated in the modelling platforms, in order to improve the atmospheric constraint on the model (e.g. downwelling solar radiation from the EUMETSAT’s Land-SAF), analyse soil moisture and vegetation biomass (e.g. assimilate the EUMETSAT’s ASCAT soil moisture product and MODIS and/or SPOT/VGT LAI estimates). Finally, EO data will be used for model verification (e.g. land surface temperature).