



Validation of GEOLAND-2 global Albedo products based on SPOT/VEGETATION observations

F. Camacho (1), J. Sanchez (1), R. Lacaze (2), C.B. Schaaf (3), and A. Cescatti (4)

(1) EOLAB, Parc Científic Universitat de València, Paterna, Spain (fernando.camacho@eolab.es), (2) HYGEOS, Cesbio, Toulouse Cedex 9, France (rl@hygeos.com), (3) Department of Geography and Center for Remote Sensing, Boston University, Boston, USA (schaaf@bu.edu), (4) EC-DG Joint Research Centre, Ispra, Italy (alessandro.cescatti@jrc.ec.europa.eu)

This study evaluates the scientific merit of the global surface albedo products developed in the framework of the Geoland-2 project based on SPOT/VEGETATION observations. The methodology follows the CEOS/WGCV Land Product Validation guidelines. The spatial and temporal consistency of SPOT/VGT albedo products was assessed by intercomparison with reference global products (MODIS/Terra+Aqua and POLDER-3/PARASOL) for the period 2006-2007. A bulk statistical analysis over a global network of 420 homogeneous sites (BELMANIP-2) was performed and analyzed per biome types. The accuracy and realism of temporal variations were evaluated using a number of ground measurements from FLUXNET sites suitable for use in direct comparison to the co-located satellite data.

Our results show that SPOT/VGT albedo products present reliable spatial and temporal distribution of retrievals. The SPOT/VGT albedo performs admirably with MODIS, with a mean bias and RMSE for the shortwave black-sky albedo over BELMANIP-2 sites lower than 0.006 and 0.03 (13% in relative terms) respectively, and even better for snow free pixels. Similar results were found for the white-sky albedo quantities. Discrepancies are larger when comparing with POLDER-3 products: for the shortwave black-sky albedo a mean bias of -0.014 and RMSE of 0.04 (20%) were found. This overall performance figures are however land-cover dependent and larger uncertainties were found over some biomes (or regions) or specific periods (e.g. winter in the north hemisphere). The comparison of SPOT/VGT blue-sky albedo estimates with ground measurements (mainly over Needle-leaf forest sites) show a RMSE of 0.04 and a bias of 0.003 when only snow-free pixels are considered.