

## **Validation of POLDER surface BRDF and albedo products based on a review of other satellites, ground and climate databases**

Olivier Hautecoeur <sup>1</sup> and Jean-Louis Roujean <sup>1</sup>

<sup>1</sup>CNRM/Météo-France, 42 avenue Garpard Coriolis, 31057 Toulouse, France

This study is devoted to a global verification of the reliability of the POLDER-derived BRDF and albedo products over land surfaces based on an exhaustive review of similar existing products. This concerns POLDER observations from ADEOS-II for year 2003 and from PARASOL for year 2005. The POLDER BRDF and albedo are collected at 443, 565, 670, 765, and 865 nm. Narrow to broadband conversion coefficients are then applied to derive spectrally-averaged products that can be judged more useful for climate applications. The present albedos comparisons are carried on with satellite-derived products (MODIS, MISR, Meteosat-7, MSG), radiative transfer outputs (ISCCP-II), and NWP (Numerical Weather Prediction) models (ECMWF, ARPEGE for Météo-France) and ground data (ARM). POLDER products are used at their nominal resolutions for MODIS and Meteosat-7 and degraded at 0.5 degree for other products. A large underestimate of the albedos from climate databases is noticed over desert and semi-desert regions. Climate models yield an update of the snow albedo, typically on a 3-hours basis. Nonetheless, large discrepancies are noticed, with an overestimate of NWP albedo by 0.4 over mountainous regions, compared to either POLDER or MODIS. Reverse trend is observed at high latitudes in the case of residual snow cover under forested areas. Clearly, upgrading snow albedo in NWP modeling should have a significant impact. As a conclusion, it comes out that the multi-angular capabilities offered by POLDER yields a unique tool to estimate surface albedo with the relative accuracy of 5% as required by the users community.

Corresponding author: Jean-Louis ROUJEAN

-----  
**Olivier Hautecoeur**

CNRM/Météo-France, 42 avenue Garpard Coriolis, 31057 Toulouse, France

**Jean-Louis Roujean**

CNRM/Météo-France, 42 avenue Garpard Coriolis, 31057 Toulouse, France

Email: roujean@meteo.fr