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Lessons learnt for QA4ECV on validation and uncertainty traceability from the ESA GlobAlbedo project.

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A land surface broadband and spectral albedo map of the entire Earth's land surface, with or without ephemeral snow, is required for use in Global Climate Model initialisation and verification as well as in hydrological modelling employing Soil-Vegetation Transfer Schemes (SVATS). For whatever modelling objective, such datasets require both uncertainty estimates to weight their assimilation and accuracy estimation derived from comparison with independent data of higher veracity and proven quality.

The ESA GlobAlbedo project, see http://www.GlobAlbedo.org/ which was recently completed, attempted to address these issues both by estimating an uncertainty budget from level-1 reflectance through to the final DHR ("black-sky") or BHR ("blue/white-sky) albedos and by validating the final products against tower-based albedometer measurements as well as contemporaneous products. GlobAlbedo used SPOT-VEGETATION and MERIS data together with a background field for optimal estimation based on Collection 5, MODIS data. Examples of both approaches will be shown as well as an inter-comparison of uncertainty estimates with the statistics of differences. This latter comparison indicates that the uncertainty estimates do contain real information, albeit are noisier than comparable products derived from a single along-track sensor such as MISR.

Lessons learnt from these procedures will be discussed as they relate to the EU-FP7-QA4ECV project which is working on the extension of the GlobAlbedo approach to include more sensors (MODIS Collection 6, MISR, (A)ATSR(2)) and to spectral BRDF/albedos. Initial results will be shown for a test year and a description of the differences in the uncertainty approach within QA4ECV based on the experience with GlobAlbedo.

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