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A 15 YEAR CLIMATOLOGY OF SPECTRAL BRDF DERIVED FROM MODIS FOR A PRIORI OPTIMAL ESTIMATION OF GLOBAL SURFACE ALBEDO WITHIN THE EU-FP7 QA4ECV PROJECT

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ABSTRACT:

In the ESA GlobAlbedo project (http://www.GlobAlbedo.org), a 10 year long record of land surface albedo was generated in 3 broadbands (0.4-0.7, 0.7-3, 0.4-3µm) from Collection 5 of the MODIS BRDF product. This was employed as an *a priori* estimate for an optimal estimation based retrieval of land surface albedo when there were insufficient samples from the European VEGETATION & MERIS sensors employed for the composite-based retrieval. It was derived at 1km from the 500m MOD43A1,2 inputs every 8 days based on the QA bits using the method described in the GlobAlbedo ATBD which is available from the website (http://www.globalbedo.org/docs/GlobAlbedo_Albedo_ATBD_V4.12.pdf).

In the successor EU-FP7-QA4ECV project, we propose the generation of a 35 year record of Earth surface albedo (i.e. including the ocean and sea-ice) using optimal estimation for the land and where available, relevant sensors for "instantaneous" retrievals over the poles. This requires the longest possible land surface spectral and broadband BRDF record that can only be supplied by a 15 year of MODIS Collection 6 BRDFs at 500m but produced on a daily basis. Due to delays in C6 processing, Collection 5 data have been re-processed over a 15 year time period from 3/2000-3/2015 using the CEMS Big Data computer at RAL to generate 7 spectral bands and 3 broadband BRDF with and without snow and snow_only. This product will be presented and the broadband new prior compared against the previous MODIS "prior" and the spectral prior against the ADAM (http://adam.noveltis.com/) 3-year climatology. The impact of the new MODIS "prior" will also be evaluated on the resulting GlobAlbedo broadband products and future prospects for the 35 year time series will be discussed.