

## ***Interactive comment on “Monthly-averaged maps of surface BRDF parameters in ten spectral bands for land and water masses” by Philippe Blanc et al.***

### **Anonymous Referee #2**

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This study presents a dataset of multiannual monthly average of BRDF parameters in the semi-empirical RossThick-LiSparse model adopted by the MODIS BRDF/Albedo/NBAR products. One goal is to provide spatially complete BRDF parameter maps over the globe. However, the following three critical flaws in the generation of this dataset hinder its value and appeal to the earth science community.

First, the monthly mean of BRDF parameters may smooth out the dynamics of the anisotropic characteristics over a lot of earth surface areas significantly. Particularly during some rapid changing phenomena, such as vegetation greening/browning periods, snow accumulation/melting periods, surface BRDF may change within calendar month. This monthly mean loses all the information on these surface anisotropy changes, while these changes are of critical interests and importance to many earth

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science disciplines. Although the authors argue the rationale of this monthly mean approach for gap filling in the global BRDF parameter maps by referencing Lefèvre et al. (2013), this reference is only interested in the accuracy and change of ground albedo for surface solar irradiance estimate. The ground albedo may change rapidly during the mentioned surface condition changes above. Even if the albedo of a surface may stay the same, the anisotropy may have changed indicating important surface structure changes. To publish this BRDF parameter datasets to the earth science community, the loss of anisotropy from monthly mean significantly nullifies its intention as a BRDF product.

Second, the authors chose the version 5 of MODIS BRDF datasets as their input. Looking at the LP DAAC website, the newer version, version 6 of MODIS BRDF products seem available much earlier than the submission of this manuscript. By any means, the newer version of MODIS product should be used as input for the current publication. Also an important notice to be emphasized is that MCD43 V6 products provide MCD43D, the 30 arc-second CMG products of the globe, besides the MCD43C, the 0.05 degree CMG. In the user guide of the MCD43 product, I found that it states this MCD43D is direct retrieval from sensor observations ([https://www.umb.edu/spectralmass/terra\\_aqua\\_modis/v006/mcd43d\\_cmg\\_30\\_arc\\_second\\_products](https://www.umb.edu/spectralmass/terra_aqua_modis/v006/mcd43d_cmg_30_arc_second_products)) while MCD43C is just average based on the 30 arc-second retrievals ([https://www.umb.edu/spectralmass/terra\\_aqua\\_modis/v006/mcd43c1\\_cmg\\_brdf\\_albedo\\_model\\_parameters\\_product](https://www.umb.edu/spectralmass/terra_aqua_modis/v006/mcd43c1_cmg_brdf_albedo_model_parameters_product)). This means that the MCD43C is already an average rather than retrieval of BRDF using the RossThick-LiSparse model. The quality of MCD43C is not as high as the MCD43D. To generate spatially complete product, an input of MCD43D is more appropriate.

Third, the MODIS BRDF/Albedo/NBAR product team has already provided a spatially complete CMG product at 30 arc-second gridding size over the globe ([https://www.umb.edu/spectralmass/terra\\_aqua\\_modis/v006/mcd43gf\\_cmg\\_gap\\_filled\\_snow\\_free\\_products](https://www.umb.edu/spectralmass/terra_aqua_modis/v006/mcd43gf_cmg_gap_filled_snow_free_products)), and on LP DAAC ([https://lpdaac.usgs.gov/dataset\\_discovery/modis/modis\\_products\\_table](https://lpdaac.usgs.gov/dataset_discovery/modis/modis_products_table)).

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Lastly, I couldn't find the data using the doi provided in the manuscript. And there is no web link to the data. After I searched on google, I found this page <http://www.oie.mines-paristech.fr/Valorisation/Outils/AlbedoSol/>. And downloaded the HDF5 file of BRDF parameters there. However, the single HDF5 file only provides BRDF parameters at the shortwave band. Also there is no metadata in the HDF5 file explaining the dataset at all. No quality data there either.

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