Interactive comment on "A BRDF-BPDF database for the analysis of Earth targets reflectances" *by* Francois-Marie Breon and Fabienne Maignan

Anonymous Referee #1

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General comments

This paper presents a new BRDF/BPDF database derived from 1 year of POLDER data, categorised according to land cover class. The database is of interest to people looking at the variability of reflectance and polarization as a function of land cover type, and over time. The paper is generally clear, well-written and presents useful data, as well as a tool to view them.

I think the data products are potentially useful and described well. I think the issue of spatial scale needs to be discussed more clearly (see page 16, 22: Yes - it may be argued!) and caveats given at the outset in terms of the limitations of the original data and the resulting database. It's not a problem per se BUT you ought to be clear that this is perhaps the single biggest limitation of the data and if someone is interested in

finer scale variability, then this database will be of little use to them. In addition, there is a lack of consideration from the figures (eg 6 and 7) of the spatial variability. Could this be shown as error bars representing the average of the underlying pixels making up each point?

page 7, line 7: where does the threshold of 75% come from, to determine the dominance of one cover type? This could potentially have some impact on the resulting database in terms of the number of polder pixels of each class that are processed. It might be useful to give an idea of this eg by giving some figures on how many pixels of each class are kept at 70, 75, 80 and 90% level. Otherwise, wouldn't this affect the score[p,m]? The same question arises over the arbitrary increase in score of 20% for observations with small phase angle. Why 20% and why 1 degree? These at least need some explanation in terms of how different choices might affect the scores and database size/quality.

Lastly, I am less convinced about the amount of time/space given over to describing the tool. Fine, it seems useful for viewing, but most people who use the database will surely want to read the data directly using their own matlab, python etc code. And so a tool developed using a proprietary language (IDL), even with the free runtime idl vm, is not really particularly open/useful, but takes up a lot of space in the manuscript. I would suggest putting all that material (description of tool and user instructions) in an appendix, or remove it entirely and just refer to a web link for download and documentation. Then the authors could just mention the figures were prepared using that tool.

Specific comments

page 1 line 12: Note that albedo is also difficult to measure at is not an intrinsic surface property; it depends on the direct/diffuse ratio of incoming radiation and hence is a function of atmospheric state. 1, 22: optical. The shadow is not an issue for spaceborne measurements! 5, 10: what do you mean by best year? Total number of

cloud-free observations? Or according to criteria in section 2.3 on page 6? p 15, 17: perhaps provide the rationale behind showing the ratio of parameters here, rather than in different places below. It;s not immediately clear why this is useful. Some explanations are given further down, but this could be summarised more clearly here i.e. k1/k0 should indicate ..... k2/k0 should indicate ..... But also won't this depend on which model is chosen, as k0, k1 and k2 can have fairly different interpretation depending on model choice? You allude to this but are not clear. For example the k2 parameter from RossThick is very specifically the volume scattering component, assuming an LAI » 2. So it's things like that which could be clearer - maybe put in a table? Figure 8: I'm not convinced by the usefulness of this. Too much information on one plot with points being much too small. Separate figures for each line with larger plots in each case might help (eg down the page, or change page orientation to landscape).

Grammatical/technical

page 5, line 15: comma after sensitivity - otherwise this sentence is very long and a bit hard to follow. 5, 16: These developments 5, 19: why capitals for Top and Reflectances? 6, 24: typo after reference 6, 25: deserts show ... wetlands sometimes .... 7, 1: why ellipsis? 8, 2: ensures 8, 21: Change title of section 3 to something like: Analysis of the database features using the visu_brdf analysis tool 12, 3: reflectances, or reflectance values (plural). And you say typical - you probably need to clarify that in terms of these characteristic properties of dense or sparse vegetation, as it can vary a lot otherwise. 13, 10: small but IS necessary 13, 18: what does "properly" mean? 15, 1: Section 3.7.1 - define NDVI and DVI properly here, to avoid any confusion. 15, 5: fit to the measurements

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