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Interactive comment on "Diversity II water quality parameters for 300 lakes worldwide from ENVISAT (2002–2012)" *by* Daniel Odermatt et al.

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Dear referee 1,

Thank you very much for your interest in our manuscript and your valuable comments. We agree that data accuracy is of high concern, and we will revise the manuscript with a section that summarizes our validation efforts (using material that was released in Chapter 4.1.4 of Odermatt et al., 2015; http://www.diversity2.info/products/documents/DEL5/DIV2_Algorithm_Theoretical_Basis_Document_v2.4.pdf). Note however that we can only give meaningful accuracy estimates for the chlorophyll products.

Even in the case of chlorophyll, the validation is limited by: [1] The scarce availability of

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reference data, [2] the inconsistency of reference data across different lakes, in terms of estimation methods and protocols, quality control etc.; in most cases, reference data don't come with any uncertainty characterisation, which limits a quantitative validation, [3] the comparability of vertically discrete point-measurements and pixel-size, vertically integrated satellite observations, [4] the variations in pigment absorption efficiency, which introduce considerable uncertainty in the calculation from pigment absorption as estimated by the satellite to the pigment concentration measured in situ, and thus reduce absolute accuracy.

As far as the other parameters are concerned, the main limitation is that we found even less reference data than for chlorophyll. This applies to our surprise also to TSM and turbidity, for which we found some, but methodologically very diverse and not enough reference data. The availability of CDOM reference measurements was even further from being globally representative. In the case of immersed_cyanobacteria, floating_cyanobacteria, floating_vegetation and owt_cc_dominant, we provide indicators that were defined based on remote sensing reflectance, without a suitable counterpart that is available from routine monitoring measurements. And finally for LSWT we redistribute monthly products that were produced by others. Of course their accuracy estimates can be cited, as well as accuracy estimates available from independent validation studies of the optical algorithms. All other limitations discussed here will be included in the corresponding section of the revised manuscript.

We are aware that much more useful reference data exists, but often these are stored in national databases and with often complicated accessibility. Its collection is laborious to the degree that even UNEP's GEMStat database struggles to achieve global representativeness, therefore this task is beyond our possibilities.

As far as your editorial comments are concerned, please take note that 'FR' is already introduced on page 2, row 14. The order of references by the same authors is done automatically by the Zotero citation style repository for ESSD. The term 'complementing' seems correct. All other short comments are acknowledged and will be accounted

for.

Best regards, The authors

Odermatt, D., Gangkofner, U., Ratzmann, G., Ruescas, A.B., Stelzer, K., Philipson, P., and Brockmann, C. (2015). Algorithm Theoretic Baseline Document v2.4 (ESA DUE Project Diversity II).

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