Earth Syst. Sci. Data Discuss., referee comment RC2
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# Comment on essd-2021-140

Anonymous Referee #2

Referee comment on "The Boreal–Arctic Wetland and Lake Dataset (BAWLD)" by David Olefeldt et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-140-RC2, 2021

In this manuscript, the authors presented a new dataset (BAWLD) of wetlands, lakes, rivers, and other land-cover types for the boreal and arctic areas. Although many land cover data have been proposed, I agree that this dataset has advantages in its comprehensiveness and expert assessment. Namely, this dataset would surely contribute to improve accuracy of methane emissions from this region, especially in terms of separation of wetland and freshwater sources. Therefore, I found enough merits to publish this manuscript.

I have two minor caveats. First, I could not understand the reason why the authors chose the spatial resolution of 0.5 degree? I know this resolution has been standard for global terrestrial models, but it may be difficult to capture spatial heterogeneity due to topography and micro hydrometeorology in this area. Indeed, several land-cover maps such as GLC2000 (used as an input data of random forest model in this study) have a spatial resolution of about 1km. One possible option may be to provide several data files with different spatial resolutions: e.g., 1km as a full resolution and 0.5 degree as an aggregated resolution. Second, I know that the Global Lake and Wetland Dataset (GLWD, Lehner and Döll 2004), which contains multiple types of wetlands and lakes, has been used in several studies. However, the authors rarely mentioned about this dataset and used it only for river detection. For example in Fig. 4 and 4S, the authors did not include the GLWD into their inter-data comparison. I recommend making a comparison or discussion with the GLWD (and other data, if necessary) to clarify the advantage of the BAWLD. For example, the explicit separation of characteristic types such as permafrost wetlands and yedoma lakes look a clear advantage for data user working in this area.

The manuscript gave full descriptions of the dataset. Although descriptions of individual wetland and lake types look lengthy, it may be useful for data users. Similarly, the authors provided a plenty of figures and descriptions as the supplementary file. The wetscape, derived from the wetland and lake data, can be excessive and unnecessary, but I agree that it is implicative. Finally, I recommend the manuscript is acceptable after minor revisions.

Technical points

Page 19 Line 13: Please note that Bohn et al. (2015) conducted a model intercomparison study on CH4 emissions in the West Siberia Lowland including the Ob River floodplains.

Page 30 Line 748: Several records in References lack the information on journal name. For example, Bastviken et al. (2004) was published from Global Biogeochemical Cycles. Please check also other records.