

essd-2023-77 Submitted on 03 Mar 2023

Mapping of peatlands in the forested landscape of Sweden using LiDAR-based terrain indices
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The manuscript presents the use of machine learning to model soil data against LiDAR-based terrain indices for the purpose of producing national scale peat depth maps for Sweden. The authors use data acquired from the Swedish Forest Soil Inventory and the Geological Survey of Sweden alongside LiDAR derived DEM. The combined soil data provide good coverage and data gaps are explained. Assumptions and decisions made on the data used are also well reasoned. The independent variables, referred to as features are topographic classifications derived from the DEM. A reference for each is provided so the reader could find further detail.

The work is valuable in that it presents a technique that is relatively simple to reproduce across other nations (where equivalent soil and LiDAR datasets are available). In all sections the information presented is clear and concise. The data sources are well explained and the data processing steps are outlined in an instructive and accessible way so that the reader could repeat on their own datasets.

The model performance and results are well reasoned, and the example images are nicely presented. However, I found the comments in the Discussion regarding the reliability of Gotland and Oland results a little confusing. Would it not have been better to exclude these areas?

The explanation for data download was simple and clear. Data was downloaded (from <https://bolin.su.se/data/rimondini-2023-peatlands-1>) and each of the 4 raster datasets was viewed in QGIS with ease and appeared to be complete and of high quality.

My overall recommendation would be to accept the manuscript with the following minor corrections addressed.

Abstract, Line 10	<i>degradation by land cover should read degradation by land cover change</i>
2.2.2 Features, Line 115	<i>created support delineation should read created to support delineation</i>
Table 1 caption	<i>with and asterisk should read with an asterisk</i>
2.3.2 Machine Learning workflow, Line 135	<i>Totally, 10115 data points would read better as In total, 10115 data points</i>
Line 167	<i>Final prediction mapping Unclear if this is supposed to be a sub-heading?</i>
Table 2 caption	<i>Capitalise peat40 to make consistent with other mapping layer titles.</i>
5 Discussions, Line 205	<i>in which a land should read in which case a land</i>
Line 214	<i>Superscript missing Km2</i>
Line 216	<i>land as us would read better as land as we did</i>
Lines 219, 220, 224, 225, 225	<i>Superscript for km2</i>