

Dear Reviewer 2,

We appreciate your enthusiasm for our work, and your suggestions, which we believe have strengthened our work as well as the fit for the journal. You'll find our responses (in blue text) to each of your comments (in black text), below. It was the general consensus across the reviewers to trim down the description of the baseline classifier, including your suggestion of moving the details of the classifier into the appendix, which we have done. We have also cut the comparative benchmark against Dunmire et al. 2025, as we agree with your comment that it is best to keep "only what demonstrates that the dataset is usable and correctly structured". We believe this restructuring better highlights the dataset and its utility as a scientific asset that may be readily ingested by a deep learning model.

Sincerely,
Joshua Rines, on behalf of all coauthors

Retitle Sect. 6 to something like "Technical Validation," which is ESSD's preferred structure.

Done. Thank you.

Trim the comparative benchmarking against Dunmire et al. to a short paragraph, and move the detailed F1/confusion-matrix analysis (Figs. 8–10, B1, B2) to an appendix or supplementary material, keeping only what demonstrates that the dataset is usable and correctly structured.

We have cut the comparative benchmark, as we take your suggestion to keep only what demonstrates that the dataset is properly structured and can be directly ingested and used in a deep learning model. We have pared down the detail on the results of the baseline model and moved these details to a brief description in the "Technical validation" section and more detailed description in Appendix B.

Explicitly distinguish between the human-expert labels (the core contribution of this work) and the lake boundaries inherited from the existing Dunmire et al. (2021) inventory, for readers' clarity.

Thank you for your comment. We believe that the distinction between the human-expert labels and the lake boundaries from Dunmire's work are clearly distinguished. However, we have added a sentence directly stating so (L182).

Trim the Introduction. The dataset contribution is not introduced until line 89, after roughly 75 lines of physical background on hydrofracture, moulins, and lateral/crevasse drainage (lines 15 to 81), much of which is restated later in the Sect. 2.4.1 taxonomy. Suggest condensing this background into a single paragraph and moving mechanistic detail to Sect. 2.4.1, so the dataset contribution and literature gap arrive earlier, as readers expect in an ESSD data descriptor paper.

Thank you for the suggestion. We have trimmed down the introduction for a more streamlined background on lake types and the importance of distinguishing between them. We have also restructured the introduction section such that the dataset contribution and literature gap arrive much earlier in the introduction, as you suggested, now around L42.