

Earth Syst. Sci. Data Discuss., referee comment RC1  
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## Comment on **essd-2021-257**

Anonymous Referee #1

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Referee comment on "An inventory of supraglacial lakes and channels across the West Antarctic Ice Sheet" by Diarmuid Corr et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-257-RC1>, 2021

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Corr et al. present the first inventory of supraglacial lakes and channels across the West Antarctic Ice Sheet. The data quality and data presentation are excellent in the linked Zenodo repository (Corr et al., 2021). This paper is an excellent pair with Stokes et al. (2019), and, together, the papers provide a baseline dataset of supraglacial hydrology across the Antarctic (as highlighted in the author's Conclusion). The figures are clear overall, and I just have a few suggestions on some rough locations in the manuscript.

L12: The sentence that begins with percentage is a comma splice. Suggest a re-write to not begin the sentence with a number and to split this sentence in two.

L34: Cite this inventory for the EAIS.

Figure 1: Delineate WAIS and the EAIS on Figure 1.

Introduction: This section could use proofreading to identify a few typos here and there. Several sentences could be shortened to increase writing clarity (e.g., run-on sentence from L61–65).

Section 2.1.4. Lake vs channel classification: It would be great to have an additional figure that shows how the shape index metrics are used within the K-Means clustering approach. The figure cited in this section (Figure 4) only shows supraglacial channel and lake outlines, but not how the various metrics are combined. Additional details on how the K-Means algorithm was applied communicated via a descriptive figure would help better illustrate the "20 distinct clusters" (L195) identified. What do the top 3 or 4 clusters in the dataset look like? Suggest revise Figure 4 to illustrate the K-Means clustering approach, or

add a new figure in addition to Figure 4.

L310: Move this equation up closer to where it is cited in the text.