

Interactive comment on “Lateral meltwater transfer across an Antarctic ice shelf” by Rebecca Dell et al.

Anonymous Referee #1

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This manuscript presents a quantitative analysis of meltwater distribution, storage and transfer on the Nivlisen Ice Shelf, Dronning Maud Land in East Antarctica during one melt season (2016–2017). The authors use a modified version of a previously published algorithm to classify meltwater into four different categories from Landsat-8 and Sentinel-2 imagery and track meltwater area and volume through the melt season.

Meltwater has been linked to the instability and collapse of Antarctic ice shelves, but detailed observations of the seasonal evolution of meltwater on ice shelves in Antarctica are lacking. Therefore, it is my view that the findings from this manuscript are of broad interest to the cryosphere community.

In general, the manuscript is well-written and clearly structured and the rationale for the study is well justified. The quantification of meltwater area and volume stored and

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transferred on the ice shelf during one melt season builds upon previous work that has identified surface meltwater systems present on numerous Antarctic outlet glaciers and ice shelves (Langley et al., 2016; Kingslake et al., 2017; Stokes et al., 2019).

Please see attachment for further specific comments.

Please also note the supplement to this comment:

<https://www.the-cryosphere-discuss.net/tc-2019-316/tc-2019-316-RC1-supplement.pdf>

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2019-316>, 2020.