

## ***Interactive comment on “Water tracks intensify surface energy and mass exchange in the Antarctic McMurdo Dry Valleys” by Tobias Linhardt et al.***

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The authors present a succinct, clearly written analysis of energy fluxes from water tracks in the McMurdo Dry Valleys of Antarctica, in comparison to dry soils that cover most of the landscape, in an effort to foreshadow future changes that might come with increased frequency or extent of water tracks. The methodology used to measure energy balance appears justified and sound. My expertise does not lie in eddy covariance, so I will leave analysis of that aspect to other reviewers. From the perspective of an ecosystem ecologist/biogeochemist who has previously worked on these ecosystems, the manuscript currently reads as one that will be of interest to other scientists

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studying either the impacts that water tracks can have on their surrounding ecosystem, or the overall energy balance of this dry valley ecosystem. That makes the publication as-is a very useful publication to a particular audience. The authors might care to think about how they could broaden its impact by either applying their results to an improved understanding of the water track as an ecosystem, or perhaps by proposing some testable hypotheses that could follow from the differences measured in the relative importance of particular energy fluxes. For example, the ground measurements are a snapshot during a field season, so are there hypotheses that could be posed about how this would scale up to more frequent or new or larger water tracks that could then be tested? How might the energy balance difference relate to differences measured in the biologic/geochemistry of water tracks? That might extend beyond the reach of the data presented, but perhaps it could be also be posed in the form of hypotheses. Even my published work with co-author Levy is now old enough to be beyond TC's definition of conflict of interest, so it could be interesting to have continued thought put towards the connections between the physical and biological characteristics of water tracks, which tend to be studied and reported separately to different scientific audiences.

Minor comments: In the last paragraph of section 4, a 10m width for water tracks and 20 m width for streams is specified. Is there by chance published data that could be cited to bolster this? I don't really argue the size classifications, but a justification might be useful. In the last sentence of the conclusion: I assume you mean “either” not “ither”.

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Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2019-8, 2019.

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