

Interactive comment on “Hydrologic Flowpath Development Varies by Aspect during Spring Snowmelt in Complex Subalpine Terrain” by Ryan W. Webb et al.

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I would like to first thank the editors and both of the reviewers for their time in working on our manuscript. The constructive comments provided by the reviewers will certainly improve the quality of the paper.

Both reviewers commented on the lack of detailed snow pit profiles at all of our observed locations. We agree that detailed snow density and grain size profiles at all locations would be useful. However, due to constraints of an individual surveyor making observations at more than ten locations, with some depths over two meters, in a single day this was not feasible. The objective of this study was to gather more in-

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Discussion paper



formation spatially rather than at only a few points. However, we will add the depth observations to figures to help clarify that more data was collected than it seems both reviewers are aware of and we apologize for not making this more clear in the writing. Detailed profiles that were collected on the first survey of each season and will be added and discussed along with observations of ice lenses and saturated snow layers during the following surveys.

Based on further reviewer comments we will additionally make the following revisions to the manuscript in addition to other minor comments made and responded to in the discussion board:

1. Quantify the ratio of lateral flow vs. infiltration by estimating melt rates through an energy balance model and calculating the required accumulation of lateral flow along the hillslope to produce the observed increases in SWE.
2. Add snow profile data collected on the first survey of each year and observations of ice lenses and saturated layers during other surveys along with further discussion of these observations.
3. Further clarify observations of changes in snow depth and add snow depth to figures.
4. Add further citations to support points made in the discussion as Webb et al., in review is still unpublished.
5. Modify objective to clarify what was being investigated for lateral flow and add wording in the main body to more directly address this objective.
6. Discuss potential for preferential flow to occur in 2015 prior to the observation period.
7. Further clarify the physical process of water flowing downslope in the top layer of soil in addition to within the snowpack.

Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2017-12>, 2017.