

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

Anonymous Referee #2

Received and published: 15 May 2017

In the present paper, the authors study the influence of preferential flowpaths in a deep snowpack on soil moisture at the hillslope scale and investigate notably its spatial variability. They perform a qualitative analysis of the SWE and soil moisture evolution between surveys and a statistical analysis (pearson’s correlation coefficient) of near surface soil volumetric water content and topographical (aspect, slope), hydrological (peak SWE, date of peak SWE) variables. One of their main results is the increase in SWE observed at the beginning of the melt season at the toe of the north aspect hillslope. According to the authors, this increase is due to lateral flow in the snowpack. Even if this hypothesis is probable, the arguments provided in this study remains qualitative (observed ice veins at the snow-soil interface) and are not robust enough for

[Printer-friendly version](#)

[Discussion paper](#)



such a scientific publication. The introduction is well written and documented even if it is sometimes difficult to see where the authors want to go. In my opinion, some of the observations presented in the methods are the first weakness of this study: the authors present (and measured?) only the total SWE for each snow pit. A detailed profile with snow density and depth would be very useful in order to support the results (lateral flow as the main cause of SWE increase). Indeed, an in-depth comparison of snow layers could be very useful. The Results part is very difficult to read as it is essentially a description of figures: there is no underlying theme and the different paragraphs have few connections. The discussion is pretty good but does not bring any new argument. Finally, the authors are citing throughout the document their own paper currently under review (Webb et al., in review) but as a reviewer, the significance of this reference remains hard to assess.

[Interactive comment on The Cryosphere Discuss.](#), doi:10.5194/tc-2017-12, 2017.

[Printer-friendly version](#)[Discussion paper](#)