

Interactive comment on “Spatially distributed water-balance and meteorological data from the Wolverton catchment, Sequoia National Park, California” by Roger C. Bales et al.

E.H. Bair (Referee)

nbair@eri.ucsb.edu

Received and published: 22 September 2018

General comments:

This is a nice contribution of ten years of hourly model-ready measurements from several high-altitude sites in Sequoia National Park. I appreciate the inclusion of daily and hourly continuous measurements. It's helpful that the authors have provided the Level 0 through Level 2 data to clarify where the data were cleaned and gap filled. I only have a few minor points to suggest, and recommend publication after they are addressed. If the authors have any questions, I encourage them to contact me at nbair@eri.ucsb.edu.

Lidar data are mentioned throughout the text and shown in Figs. 1 & 2, but not provided. I see that the lidar data are provided in Harpold et al. (2014) so I understand that they are accessible via FTP, but the lidar data are not part of this dataset. Fig. 2 is ok because it provides an overview of the site, but I suggest removing Fig. 1.

Other than a few sentences on gap filling, the manuscript does not address many of the potential biases in the measurements. Here are some questions on measurement bias:

1) How was precipitation undercatch from wind accounted for? What type of wind shield was used on the precipitation gauge?

2) According to Campbell Scientific's website, the TE525MM operating range is 0 to 50 deg C, not ideal for measuring snowfall. Thus, I assume a heater was used on this tipping bucket? Heaters cause sublimation when set too high. Likewise, clogging occurs during snowfall when heaters are set too low. Since there were no other tipping buckets in the area, regression cannot be used to fill gaps. Please comment on these potential sources of bias.

3) What are the problems with the net radiation measurements? For example, it's difficult to imagine that the snow surface was perfectly level. A properly leveled radiometer will then be sensing the sun at a different angle than that of the snow surface, leading to erroneous net radiation measurements.

Specifics:

There is a "Net_radiation_ws_correction(W/m²)" column which is not explained anywhere.

The authors should check their headers for misspellings, for example, "Air_temperature..." in "daily_wy2007_2016_wolverton.csv."

The datasets at DASH (DOI: 10.6071/M3S94T) and at the website (<https://eng.ucmerced.edu/snsjho/files/MHWG/Field/SEKI/Wolverton>) are differ-

Printer-friendly version

Discussion paper



ent. For example, the website contains flow data while DASH does not. Programs for the dataloggers are also available on the website, but not at DASH. It seems that the website is more comprehensive. Thus, is it possible to just point the DOI to the website, or mirror the contents of the website at DASH?

L 1, p 5, what are “level-logger issues?” L 2 p 5, “snowpack” and “snow pack” are used. I suggest “snowpack” here and elsewhere.

Table 1 - I suggest adding “m” to the installation height column headers and removing the inconsistently used “m” from each row. “W m⁻²” is also truncated under units.

Figure 2 – If the Worldview data were acquired using a NextView license (i.e. free use for federally funded research), then DigitalGlobe has very specific instructions for captions, e.g. “[®] 2018 DigitalGlobe NextView License.”

References:

Harpold, A. A., Guo, Q., Molotch, N., Brooks, P. D., Bales, R., Fernandez-Diaz, J. C., Musselman, K. N., Swetnam, T. L., Kirchner, P., Meadows, M., Flanagan, J., and Lucas, R.: LiDAR-derived snowpack data sets from mixed conifer forests across the Western United States, *Water Resour. Res.*, 50(3), 2749-2755, doi:10.1002/2013WR013935, 2014.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2018-70>, 2018.

Printer-friendly version

Discussion paper

