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Discussions

Interactive comment on "An Arctic watershed observatory at Lake Peters, Alaska: weather-glacier-river-lake system data for 2015–2018" *by* Ellie Broadman et al.

Anonymous Referee #2

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The data manuscript titled "An Arctic Watershed observatory at Lake Peters, AK: weather-glacier-river-lake system data for 2015-2018" provides an interesting dataset for the four year monitoring period. Three meteorological stations provide information at three different elevations, temperature sensors observe lake temperature profiles, lake water level and sediment inputs were also documented. Additionally, stage data were collected for the two main creeks.

The manuscript is well-written and easy to follow. It was mostly clear to me what was done for sensor installation and how the data were processed, with some minor gaps further detailed below. My primary concern with the data is the hydrological data. It is

my understanding that the location that stage data were collected changed from year to year and all data were attempted to be corrected to an initial rating curve developed in 2015. This can not be done. The authors state the assumption of a consistent stage-discharge relation, but this assumption can only be made if stage is taken at the exact same location AND the cross section of the channel does not change at that location from year to year (as well as immediately up and down stream). Based on the data presented, these assumptions can not be made and thus the only discharge data available and reliable are for 2015. When downloading these hydrological data I was also surprised to only find the discharge data, it would be helpful for data users to have access to stage data and specific location information. It is my recommendation that only stage data are made available for all years other than 2015, and for 2015 both stage and discharge data with an explicit statement in the metadata about the moving of pressure transducer and differing cross sections.

Additionally, the application of the dataset is certainly interesting. However, I would like to see a bit more details and analysis of all these data. Perhaps an example of a simple model, as mentioned, and comparison to the flood event. Or perhaps a detailed analysis and inventory of the dataset.

I am recommending major changes based on my concerns with the hydrological data and desire to see more analysis. Minor comments are listed below and referred to by approximate line number.

33: I suggest removing webpage link and citation from the abstract.

55: What implications do the "non-permanent" installations have on the dataset

Fig. 4: The gray dots and text is quite difficult to see and read, I suggest a different color.

186: How often were these measurements taken? How many points in total did you use for the rating curve?

202: This assumption is really based on stage being measured at the same location and channel X-section not changing which doesn't appear to be true here.

Fig. 7: the panel identifiers a-j are difficult to see, maybe make them bigger and in a top corner?

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