

Interactive comment on “Water-balance and hydrology research in a mountainous permafrost watershed in upland streams of the Kolyma River, Russia: a database from the Kolyma Water-Balance Station, 1948–1997” by Olga Makarieva et al.

Anonymous Referee #1

Received and published: 5 December 2017

This manuscript by Makarieva and co-authors presents an extraordinary hydrological dataset (including its history) from a permafrost region in the North-East of Russia. It includes meteorological variables, as well as records of runoff, snow and soil frost from different locations within watersheds of 0.27 to 21 km² area collected between 1947 and 1997. The objective of this manuscript is to make the research community aware of this valuable data treasure and to give access to the data. I agree with the authors that the presented data set, representing a part of the world with very limited hydro-

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logical longterm information, is unique and therefore of great importance in the context of climate change. Therefore, I highly appreciate this publication and hope to see it published in Earth Syst. Sci. Data, which seems to be an appropriate journal for such a data-announcement paper. The provided information is clear and well-structured for most of the part. However I have one major and a few minor questions and suggestions that may help improving the manuscript.

PS: I've made random checks of the dataset. It was easily accessible and well-structured and documented. The quality of the data seemed to be good.

Major comment:

The discussed data set is called “Kolyma water-balance station” implying that the water balance has been calculated here. However, only the different components of the water balance are presented in this manuscript, but not the balance. I know, it is very difficult to do that for such a location where winter conditions are extremely harsh. Nevertheless, I wonder whether or not the annual water balance has been calculated and suggest to include such results if available. Else you may explain why the term “water balance” is so prominent in the name of the station.

Minor comments:

- In the abstract you state that “the data are representative for the vast territory of the North-East of Russia”. What is this claim based on?
- You mention different types of evaporimeters (Rykachev, Gorshenin, GGI-500), some of them used also for snow evaporation measurements. Could you briefly explain how these evaporimeters differ from each other. Also, when you measure snow evaporation, is this representative for snow on the ground? I assume (and know from our own longterm observations) that snow evaporation from trees (interception) is more relevant than from the ground. Can you comment on that?
- I guess that most readers of this journal don't know what a Danilin cryopedometer is.

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I understand that it measures the thaw depth of the active layer, but how exactly?

- Some of the figures are just too small. For example, the map of Fig.2 should be enlarged to become readable. Also the very nice photos in Fig. 6 showing the hard work of measuring snow would deserve a larger format.

- Different types of rain gauges and shields are mentioned in section 3.2 (Nipher, Tretyakov, Kosarev and pit rain gauge), and a reference is made to Fig. 5. But which one of these types are actually shown in Fig. 5? Please clarify in the figure caption. And, if possible, could you shortly explain how these specific types differ from each other.

- line 260: “correspond to” instead of “account for”

- line 275: “amount to” instead of “account for”

- line 309: add “the” after “published in”

- line 415: remove “could”

- Table 2: you may include the lower caption into the table

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2017-125>, 2017.

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