

Interactive comment on “Djankuat Glacier Station in the North Caucasus, Russia: A Database of complex glaciological, hydrological, meteorological observations and stable isotopes sampling results during 2007-2017” by Ekaterina P. Rets et al.

Anonymous Referee #2

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General comment:

This manuscript presents a valuable hydrometeorological dataset with hourly and sub-daily time steps for a glacier basin in the Caucasus. Despite high merits of the data collected from high mountains in Caucasus reported in this paper, the presentation of the data needs more organization. In its current version, the paper is too long with so many details on previous studies that are not directly relevant to the dataset. It has 17

C1

figures, most of them can to be merged or removed. Authors need to pay attention that this is a dataset paper and not a review paper. Below are some concerns that need to be resolved before considering for publication:

1. English is very poor and there are so many cases with typos, errors, and unclear sentences (e.g., sentences in page 2 line18-19). The entire paper needs to be proof-read for grammar. In abstract the authors mentioned 30% of the basin is covered with glaciers, in page 2 line18-19 this number is 27%, and the range of elevation is also not consistent with that in the abstract. Provide accurate numbers for glacier area and elevation range. Again in page 4, the authors report a different number for drainage area. I recommend explaining these numbers only once and avoid inconsistency.
2. Study area in section 2 should be very brief and focus on the data and basin characteristics. There are redundant information about the previous works in the region, which are not relevant to the focus of a data paper. For instance, last two paragraphs in this section (2. Study area) can easily be removed.
3. For better presentation of the data, I recommend authors to provide a summary of the data and sampling time steps and record period in a table. Tables 2 and 3 and Tables 6 and 7 can be merged and modified to summarize variables name, unit, time step, record period, long term annual means, sensors (or estimation methods) used for measuring. In its current version, these information are repeated in both text and separate tables, which makes it difficult to follow. This needs more organizations. For instance, a summary table with all the information would be enough and there is no need to discuss in each subsections about the sampling intervals and instruments, and period pg 8 line 2, 11, 27, 29 or pg 10 line 6 or pg 11 line 2.
4. Section 3.3 Meteorological measurements needs to be more concise avoiding instrument names. Instruments names can be provided in a table and not repeated multiple times in the text.
5. There are so many redundant figures. Figures 1, 2, and 6 can be merged. Figures

C2

4 and 5 do not belong to the dataset provided in this paper. I suggest removing them. What is "SMOW" on Figure 12? Figure 14, annual trends are not significant, remove the trend lines and equations. What is "w.e." in y-axis. Delete Figure 16, 17. Figure 11 can also be removed and instead be illustrated in a sentence in the text.

6. How was snow differentiated from glacier in mass balance estimations? Explain.

7. Correct the full website address for the dataset access.

Editorial comments:

* When citing multiple references, cite in a chronological order: first, the most old reference and last, the most recent one. Also when there are only two authors use "and" between the authors and not ",",

* Pg 1, Line 20; replace "situated on elevations between 2500 – 4000 m, by 30% covered with glaciers." with "30% of the drainage area is covered by glaciers. Elevation of the basin ranges between 2500 m and 4000 m."

* Pg 1, Line 25: Replace "sum" with "total", "one-hour" with "hourly", and ""several-hours" with "subdaily". Change these throughout the paper. (e.g., pg. 6 line 19 & 20)

* pg 1, line 27, replace "sum" with "total".

* pg 1, line 6: replace "mountains" with "mountainous". Same in line 9.

* pg 2, line 1: remove "to study mountain territories".

* pg 2, line 3: replace "this dangerous hydrological phenomena" with "lake ice-breakup".

* Cite "Global change. . . , 2001" properly in in page 2, line 9 and remove ",," after "Bales et al., 2006". Same goes for "Bobrovitskaya, Kokorev, 2014," in line 11 and line 17.

* pg 2, line 15: remove ", that used to have a developed observational network during

C3

the Soviet Union period, recently joined the mentioned above poorly studied territories in terms of level of information availability on meteorological and glacio-hydrological topics" and add " is also a poorly instrumented terrain lacking high quality glacier and hydrometeorological data (references)."

* What is "International Hydrological Decade", this is not defined in the manuscript. I suggest you introduce it and use acronym for it as it has been repeated in the manuscript.

* pg 2, line 22: replace "Hydrological and meteorological complex" with "Detailed hydrological and meteorological". Same as in the following line 24, replace "The complex hydrometeorological observation" with "the detailed hydrometeorological observations".

* pg 2 line 29: rewrite the sentence. Check the grammar. pg 3, line 3: check the grammar in "A ... stations".

* pg 3, line 10 and page 9-10 and all over the manuscript: add " δ " before "18O" or "2H" or "D" isotopes to be consistent. Use " $\delta^{18}\text{O}$ " and not alternatives of 18O nor " $\delta^{18}\text{O}$ ".

* pg 3, line 11: replace "Since 2014 up" with "From 2014".

* pg 2 lines 13-15: Rewrite the sentence. Check the grammar in line17.

* pg 3, line 22: remove "which height is approximately 2000 m , the highest point of the Greater Caucasus is Elbrus mountain (5642 m)" and add ", approximately 2000 m above sea level. The Elbrus Mountain has the peak elevation in the Greater Caucasus reaching 5642 m."

* pg 3, line 23: remove "here".

* pg 3, line 30" replace "Great spatial variety is characteristic of river runoff in the North Caucasus." with "Streamflows show large variations across the North Caucasus".

* pg 4, line 1: replace "s*sq.km" with "km².s". Use the same unit format in line 22 and 25 and all over the manuscript.

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- * pg 4, line 2: check the grammar and rewrite the sentence
- * pg 4, line 5: add "a" before "stable"
- * For consistency, use "River" after river names and not "river" or mix of these two.
- * pg 4, line 31: remove "by" and change "sums" into "totals".
- * pg 4, line 34: remove "is" before "950 mm".
- * pg 5, line 9 & 11 and later in the manuscript: I would rather use "per decade" instead of "/10 years".
- * pg 5 line 13: what does "he" mean here? Replace it with "the".
- * Use Mountain and not "Mt." and not both alternatively; e.g., pg 6 line 1.
- * pg 6 line 7: check the typo, "in" is repeated twice.
- * What is "a staff gauge" in pg 6 line 23? Do you mean "an on-site personnel"
- * It is not clear what do you mean by saying "the inter-annual fluctuations of the Djankuat River runoff can be quite sufficient" in pg.7 line 6?
- * pg. 7 line 24 check the grammar.

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