

Interactive comment on “Hydrometeorological observations from the rain-to-snow transition zone: a dataset from the Johnston Draw catchment, Reynolds Creek Experimental Watershed, Idaho, USA” by Clarissa L. Enslin et al.

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General comments:

This paper presents a unique and comprehensive hydrometeorological dataset for a small semi-arid mountainous catchment in the northwestern USA. The catchment is very small (~ 2 km²), thus limiting the spatial extent of the data, but it spans an important elevation range in this region, bracketing the typical rain-snow transition zone. Data analyses and modelling based on these data could address such topics as understanding mass and energy dynamics during rain-on-snow events and looking into

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possible snowpack scenarios in a warmer climate. There are enough stations to allow for an accurate calculation of distributed or mean areal catchment forcings, thus minimizing error due to misspecification of these forcings (as is often problematic in many catchments with a sparse data network).

The paper explains the data well and is well-written. The datasets are available in a number of comma-delimited files via an internet link. The accompanying “readme” file gives full information on what each data file contains.

I have a few comments and suggestions about the data files, which I give below in the “specific comments” section. I give some typographical and editorial suggestions in the “technical corrections” section.

Specific comments:

Below is a list of items regarding the data files that the authors should address:

1) It is not explained whether the time associated with precipitation values represents the beginning or end of the hourly time interval. For example, if a precipitation value is given for a time of 14:00, is it the total precipitation between 13:00-14:00 or 14:00-15:00? Please clarify.

2) Similarly, are the other parameters hourly averages or instantaneous values taken at the indicated time? Please clarify which ones are which. If averages, clarify the time frame as in item 1 above.

3) The dates in the first column are given in the format commonly used in the US, i.e., mm/dd/yy. This is US-centric and is not appropriate for international publications. The dates ought to be in a format commonly used in the international and scientific communities, either dd-mm-yyyy or yyyy-mm-dd. (The latter would conform to the order in which the date elements are given in subsequent columns, i.e., year then month then day.) I also suggest using a 4-digit rather than 2-digit year in the first column date. I would admonish the authors: Pay attention to US non-conformity to

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international practices, and be aware of and adhere to them. Failure to do so, although subtle and small, does send a message.

4) Why are some data files .csv and some .txt? All are comma-delimited with a similar format. Shouldn't they all be .csv?

5) Suggestions for the "readme" document:

a) Move the table of parameter abbreviations and definitions (p. 5) to the beginning. The explanations of the various data files use these abbreviations, so it would be preferable to have these up front. Ensure that the text uses these exact abbreviations – e.g., note that there are many places that use subscripts whereas this definitions table does not. Be consistent.

b) Move the header information at the bottom of p. 4 – just preceding the parameter definitions – to the beginning as well. Also, change the date format here, as mentioned in item 3 above. One additional change for a US-centric thing: The times are not "military time" as mentioned here but simply a 24-hour clock. In the US, this is often associated with the military, but this is a cultural quirk. Besides, even in the US, the 24-hour clock is used in other places too (e.g., hospitals), and it is commonly and routinely used in many countries. Calling it "military time" is an oddity that is not correct and certainly not appropriate for an international venue. (Authors, again be aware of your – subtle and perhaps unconscious – US-centrism!)

c) Change the font on the last citation to be the same as the others.

d) The data files are grouped into categories and labelled with "Directory" or "Sub-directory". However, the internet site from which the data files are accessed and downloaded are not organized into directories but rather are all presented individually. Categories of files are only recognizable by their file names. I suggest removing references to directories in the readme document and just focus on the data types.

Technical corrections:

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Below is a list of items regarding editorial suggestions for the paper:

1) Page 2, line 7. Add "USA" after "Idaho".

2) Page 2, line 21. Remove "and provide guidance to improve water resource management as the climate warms." The connection of this dataset with water management is much too vague. Perhaps modify the previous phrase, as in "understanding of these complex regions, especially as the climate warms."

3) Page 2, line 22. Add a paragraph break here ("The rain-to-snow transition zone ...").

4) Page 3, line 15. Correct the location of closing parenthesis – move to end of sentence.

5) Page 3, line 20. Define a water year in this first mention of the term (1 October - 30 September, and use international date format).

6) Page 3, line 31. Spell out USDA and give acronym in parentheses (as with ARS and NWRC).

7) Page 4, lines 2-4. Give common names of these plants in addition to their scientific names.

8) Page 4, line 16. Define ws and wd.

9) Page 4, line 32. Replace "start times" with "start dates".

10) Page 5, line 6. Define Ta and RH, as done for most variables in the text – that is, "Air temperature (Ta) and relative humidity (RH) were measured ...".

11) Page 5, line 26. Clarify "longwave radiation can limit model performance". For example, do you mean misspecified longwave radiation or a lack of data for longwave radiation?

12) Page 7, line 2. Snow depths were collected on an hourly basis – clarify if these data are instantaneous readings or hourly averages.

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- 13) Page 7, line 3. Clarify how you defined the “snow-covered period”. How did you select the date of beginning of the snow cover and the date of melt-out? There are days in the fall when snow falls then quickly melts; similarly in the spring, the snow can melt out and then there can be a subsequent snowfall. How were the dates selected to account for these ephemeral snowpack occurrences?
- 14) Page 7, line 20. Write out the parameter names before the abbreviation (“soil temperature (Ts) and soil moisture (θ)”).
- 15) Page 7, line 30. Where do the soil depths 100 cm for north facing slopes and 50 cm for south facing slopes come from? Explain.
- 16) Page 8, lines 6-9. Where do the +/- confidence intervals come from? The explanation that they were “based on error propagation for sums and differences” is not clear nor adequate.
- 17) Page 8, line 17. Spell out DEM.
- 18) Page 8, line 31. First word should be “these” not “this” (referring to data).
- 19) Page 9, line 14. Spell out ISU.
- 20) Page 9, line 17. Insert “National” as in “National Water and Climate Center”.
- 21) Pages 10-12 (References). Use indentation on second and subsequent lines of each citation for readability.
- 22) Figure 1. Is the color scheme the same for both maps (Reynolds Creek and the blow-up of Johnston Draw)? It looks like they are different. Ensure that they are the same, and make sure the elevation range depicted covers the elevation range of Reynolds Creek as a whole. Otherwise the colors on Reynolds Creek are not correctly depicted.
- 23) Figure 2. Explain the box and whisker symbols in the figure caption.

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- 24) Figure 4. Data “were” not “was” in 4th line of the caption. Are the values plotted averages over all of the water years? Clarify.
- 25) Table 1. Switch the first two columns – station should be first, then elevation. Add vertical lines separating the hydrometeorological parameters to make it easier visually to group the three sub-columns (WY, S, NS). The third and fourth lines of the caption do not make sense – clarify.

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