

## ***Interactive comment on “Spatially distributed water-balance and meteorological data from the rain-snow transition, southern Sierra Nevada, California” by Roger Bales et al.***

**Roger Bales et al.**

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Received and published: 4 September 2018

Specific Comments (1) I strongly suggest to have a section and discuss data QA/QC and how the data gaps were filled. This has been mentioned a little here and there, but an independent section would strengthen the case.

Response: We added a separate section re data QA/QC, which also addresses responses to suggestions from other reviewers.

(2) The value and perspectives of how the data set may be used for were not addressed sufficiently. Yes, different users may use the record differently, but something that is ob-

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vious out there should be discussed. For example, the diurnal fluctuation of streamflow is evident during the snowmelt period and ET period, which may be used to calibrate snowmelt model/module and calculate ET following Kirchner's approach.

Response: Statement added, end of introduction and 2nd sentence of abstract.

(3) It think it is arguable to claim the Providence catchments (elevation range 1500-2100 m) entirely at the rain-snow transition. The rain-snow transition is about 1500-2500 m in Sierra Nevada. The elevations of those catchments should be considered lower portion of the rain-snow transition. Authors' statement is not incorrect but just not accurate. If the Bull catchments (up to 2700 m) are included, that would cover the entire rain-snow transition.

Response: Upper Providence precipitation and snow-pillow data suggest that the top part of Providence lies near the 50% rain versus snow elevation. Text adjusted to reflect this.

Technical Corrections (P for page and L for line number)

P1/L15: Suggest to change to "Providence Creek is the long-term study site cooperated by". Response: Done

P1/L17: Round up to 5 not 4-km<sup>2</sup> (see Table 1 and also P3/L9). Response: Changed text to 4.6-km<sup>2</sup> for accuracy and consistency.

P3/L22: Add "Creek" after "Providence". Response: Done.

P5/L16: Change "later" to "longer". Response: Done.

P5/L18: Add "water" before "year". Response: Done.

P7-9: Some references are missing based on text. Check carefully. Response: Done.

Table 1: Change the catchment area from ha to km<sup>2</sup>. Metric units were used for other parameters in the tables and in the text as well. Response: Done.

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Table 3: Dink Creek (D102) was briefly mentioned in the text and the data from D102 were not actually presented. Suggest to delete it from this table. Response: Done.

P12/Table 3: Also annotate sensor types for P301 sensor network as done for other sites in the table. Response: Done. We have included a digital geographical database (ArcGIS geodatabase) for the sites, as suggested by Reviewer #3. Since this complements the listed locations, we have also added a note to the Table caption to inform the reader.

P14/Figure 1: Specify sensor types in the caption. Explain “north”, “south”, and “flat” in the caption. Change “watershed” in the legend to “catchment”. Response: Done. We also added text in the caption indicating the presence of labels in the figures for the slope aspects.

P15/Figure 2: Is this an example of sensor nodes? If so, say so in the caption and mark sensors by names on the picture (e.g., snow, soil, and air). Response: Done.

P15/Figure 3: Are those daily or hourly data? How do they differ from those on Figure 4? If it is used for displaying details, this should be mentioned and it may be shown after Figure 4 (depends what you use for). Response: Both figures display daily data; captions clarified. Positions of previous Figure 4 (long-term data means over 2006-2016) and Figure 3 (spatial variability for the period of water years 2010-2012) switched, as the latter shows a portion of the dataset.

P16/Figure 4: Missed “content” after “volumetric soil water” in the legend. Suggest to move legend of g panel toward blank area on right. Right vertical axis for a, c and e: What does “cm in top 1 m” mean? I thought you used percent for volumetric soil water content. Response: Changed legend to “Soil water storage” and axis labels to “Water storage, %, top 1 m”; legend of panel g moved. Modified caption to clarify that plots are integrated soil water storage in top 1-m depth, not volumetric water content.

P17/Figure 5: Unclear which station precipitation data are from. Response: Upper Met

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station. That detail added to the figure caption.

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Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2018-69>, 2018.

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