

Interactive comment on “Daily temperature records from a mesonet in the foothills of the Canadian Rocky Mountains, 2005–2010” by Wendy H. Wood et al.

Anonymous Referee #3

Received and published: 27 November 2017

General Comments:

This manuscript describes a dataset of near-surface air temperatures collected in, and adjacent to, the Rocky Mountains of southwestern Alberta. The network described covers a range of landscapes and elevations that are not well represented by existing meteorological networks in Alberta (or elsewhere, for that matter). As such, these data are potentially very interesting and useful to the scientific community. The reviewed manuscript fits well within the scope of Earth Systems Science Data, and the specific nature of this special issue. However, in my opinion, the manuscript needs some minor revisions prior to being accepted for publication. The main areas to revise are itemized

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here:

- Overall, the writing could be more polished, and some specific phrases should reworded to sound less informal.

- The calibration of the sensors is not well described, relative to how they were actually operated. In practice, it sounds like these sensors sample once per hour (page 3 lines 13-14), yet they were calibrated using hourly aggregates of samples taken on 1, 2, or 5 minute intervals, and compared to a reference sensor (with an unspecified sampling interval). Of course, by aggregating numerous samples the associated random error will be lowered (central limit theorem). However, this doesn't have much relevance to the way that the sensors were actually operated. The authors need to provide much more clarification in this regard.

- Figures 3 and 4 present mean absolute error as a function of space and elevation. However, these figures actually only show the estimated error introduced by the gap-filling technique (whereas there are many other sources of error present). This needs to be better discussed in the relevant section and these figures need more representative captions.

Specific Comments:

P2, line 13-14: don't use 'backcountry' (here and elsewhere in the manuscript)

P3, line 11: use 'sensors' instead of 'gauges'.

P3, line 17: is the accuracy of 0.25C referring to the sensor, the datalogger, or the combined unit?

P3, line24: replace 'fabulously'.

P3, line 33: by 'shootings' are you more generally referring to vandalism? If so, then use that word instead.

P3, footnote 1: provide the model of the Vaisala replacement.

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P4, line 32: replace 'unventilated radiation shield' with naturally ventilated.

P5, line 5-6: which 'studies' are you referring to. Provide some example references.

P5, line 24: 'but differences [are expected] to seldom exceed 1C'.

P7, line 16: move the reference up to the sentence describing the Oklahoma mesonet.

P7, lines 18-19: provide a reference for the Chinook temperature step changes.

P7, lines 26-27: explain the 'set amount' that was subtracted to account for elevation differences.

P9, lines 28-29: This sentence doesn't seem complete: 'Because of missing data, different neighbours can be used to estimate the same station data for a given month or weather type'.

P10, line 8: Explain how the seasonal cycle in weather variables was removed.

P 10, line 26: explain how the mean absolute errors were calculated. Aren't these just the estimated errors associated with gap filling?

Table 1: why is there no 'crop' land surface present, considering that this network extended into an agricultural area.

Figs 3-4: revise captions as described in general comments section.

Figure 4: y-axis label is upside down.

Figure 5: Describe what the whiskers and the individual points indicate.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2017-107>, 2017.

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