

Interactive comment on “An 11-yr (2007–2017) soil moisture and precipitation dataset from the Kenaston Network in the Brightwater Creek basin, Saskatchewan, Canada” by Erica Tetlock et al.

Anonymous Referee #2

Received and published: 9 December 2018

An 11-yr (2007–2017) soil moisture and precipitation dataset from the Kenaston Network in the Brightwater Creek basin, Saskatchewan, Canada

General Comments The authors describe and present an alternative soil moisture, precipitation and temperature dataset based on in situ observation to calibrate and validate remote sensing measurements and hydrological model outputs. The data covers the period of 2007-2017 at two domains with different station density in a hydrometeorological network situated within the Brightwater Creek basin, east of Kenaston, Saskatchewan.

Specific Comments: This article is well written and well organized. These data are

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clearly described and well formatted (Excel). The article targets an important issue of calibration and validation of growing space-based observations and hydrological model outputs against ground-based measurements. It is crucial to evaluate the reliability of those products before routine use at a global scale. However, there are a few points in the article that can benefit from improvement:

- 75: It would be clearer if the loam calibration equation were included.
- It is not clear why the authors have chosen only 11 years and whether this dataset will be continued or the operations has stopped after 2017
- If the stations are actively reporting the measurements, will the dataset be publicly available later? In addition, how long does it take data to become publicly available after ingest?
- Since the network was designed for validation purposes, a comparison between the quality controlled data and existing datasets like SMAP and SMOS could be beneficial.
- 94: Include the equation and the reference in this section
- 99-101: Then what is the range of the uncertainty involved in these calculations?
- 102: Providing these equations in the text will make it easier for the readers to follow your method.
- 104-112: The issue is explained very well, but the authors do not clarify whether they have removed such problematic measurements from the data or if they are just recorded as they are.
- The sources of errors in the dataset are explained, but the study will benefit from a calculated estimate of such errors.

Technical Corrections:

- 1. 12: Change ESA to European Space Agency.
- 2. 14-15: According to Fig. 1's scale, the two domains are 10x10 (100km²) and 40x40 (1600 km²)
- 3. 14-15: Please clarify the wording, because it is not clear if this is describing two different domains or two different domains with different spatial resolution among the sensors. The wording is not clear but the figure clearly shows an outer domain and a higher-resolution inner domain.
- 4. 35-36: The last sentence need more explanation: "The high resolution of the network sites allows for both intergrid and intragrid validation".
- 5. 59-61: The author clearly states that AAFC stations are located within the pasture sections but it is not clear what type of landscape the ECCC and University of Guelph cover. Please clarify this in the text.
- 6. 63: Please refer to comment #2
- 7. 64: "45 x 55 km" should change to "45 x 55 km²" and also x should be replaced by



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multiplication symbol 8. 68: please refer to comment#2. Also there is a typo in km2- 9. 74: "is" should be replaced by "are" 10. 79: "regularly" should be explained in detail. How often are the sites visited? 11. 80: "more frequently". Please refer to comment# 10 12. 99: adding a comma after "manufacturer supplied" will make the sentence more clear 13. 126: "10 km2" should be replaced by "10 km" 14. 137: keep the consistency between the used words: year-round (line 40) 15. 138: "occur" should be replaced by "occurring" 16. 140: How do the thunderstorms producing solid precipitation (e.g. hailstones) in the growing season will add to the error of your measurements? 17. 47-50: what is the source of these thresholds? Please add a reference. 18. 154: What about irrigation. The abstract mentioned that the site is an agricultural site with croplands but irrigation is not mentioned anywhere in the text. 19. 182-186: The external funding sources for these operations should be mentioned in the acknowledgement. 20. 226-231: The references are in alphabetical and chronological orders. Rowlandson et al. 2013 should precede Rowlandson et al. 2015 21. 258-260: please refer to comment # 2

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2018-122>, 2018.

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