

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 #3

Received and published: 18 December 2018

This paper presents a soil moisture and precipitation dataset from a hydro-meteorological network located in the Canadian Prairies (Saskatchewan). The paper is well written and the data are available on a Canadian platform designed to host research data. Therefore, I recommend the publication of this paper in ESSD subject to minor revisions outlined below.

- Specific comments

Introduction: the introduction is rather short and some elements could be added to better insist on the need of detailed hydrometeorological dataset in this region of Canada. For example, at P2 L 28-30, it would be interesting to add a few sentences and refer-

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ences on the remote sensing of soil moisture and the associated challenges, including the need for calibration at reference sites. The second paragraph could be also more accurate:

- What is the “unique combination of landscape and climatic conditions” mentioned at P 2 L 33-34?

- What are the other few existing monitoring networks available in the Canadian Prairies? Over the last few years, these networks have been used to evaluate land surface models applied for hydrological and weather forecasting in Canada (Garnaud et al., 2016,2017).

Garnaud, C., S. Bélair, A. Berg, and T. Rowlandson, 2016: Hyperresolution Land Surface Modeling in the Context of SMAP Cal-Val. *J. Hydrometeor.*, 17, 345–352, <https://doi.org/10.1175/JHM-D-15-0070.1>

Garnaud, C., S. Bélair, M.L. Carrera, H. McNairn, and A. Pacheco, 2017: Field-Scale Spatial Variability of Soil Moisture and L-Band Brightness Temperature from Land Surface Modeling. *J. Hydrometeor.*, 18, 573–589, <https://doi.org/10.1175/JHM-D-16-0131.1>

P 2 L 40-41: the authors mention the presence of an eddy-covariance tower (also mentioned in the abstract). No additional information are available in the rest of the text. Are the data of this tower available from one of the institutional partner involved in this community site? If not, can the author add this dataset to their paper and make this dataset available on the FRDR website? It would be extremely valuable for the evaluation of land surface and hydrological models.

P 3 L 56: how does the University of Saskatchewan contribute to the community site?

P 3 L 57-58: the AAFC stations are of potential interest for any studies in this area. I recommend the author to mention in the text the number of AAFC stations located in the area and to show their location on Figure 1.

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P 3 L 63: the spatial scales are not accurate when compared to Fig. 1. Are the authors mentioning an area of 10*10 km² instead of 10 km²? And 40*40 km² instead of 40 km²? The abstract should be modified accordingly.

P 3 L 63-65: it would be interesting for the readers to know the number of stations in the network and to refer to Table 1 to mention that the exact position of each stations is given in Table 1.

P 3 L 75-78: which institutional partner has collected the additional data? Can these data be obtained on request?

P 3 L 79-81: what is the typical frequency of the visits at the sites in summer time?

P 4 L 100: the loam calibration equation should be given in the paper since it is a paper focusing on the data.

P 4 L 101-102: what is the impact of using in-situ calibration equations on the accuracy of the computation of soil moisture? How large is the decrease in accuracy when using the loam calibration equation? Even if the in-situ calibration equations are not available for each probe, this comparison would be very useful for the reader to better understand the accuracy of the dataset presented in this paper.

P 4 L 103-109: which treatment is applied to the soil moisture data when measurements issues occur with the Hydra Probe? Based on Table 3, it seems that these issues are identified during the automatic QC but Section 4.2 does not detail the final treatment applied to the soil moisture data.

P 5 L 125-126: what is the impact of the replacement of the rain gauges at the ECCC sites on the quality and the consistency of the times series of precipitation?

P 6 L 149-150: it is not clear in Section 4.2 how the flags described in Table 3 are used during the manual review process. I recommend the authors to describe the specific treatment applied on the dataset for each flag.

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P 7 L 172: mention the format of the data on the FRDR website,

P 7 L 179-180: is the data acquisition still continuing at the ECCC stations and at the University of Guelph stations? If it is the case, will the data be made available in a near future? At which frequency and on which platform? The fact that the data acquisition is still continuing is really important and should be clearly mentioned in the conclusion and also in the introduction.

P 13: do the stations equipped with 4 probes share the same configuration? In particular, are the probes at 20 cm and 50 cm always located in the ground below the agricultural field as shown on Fig. 3?

P 14: Table 1: it would be interesting to know in the table which stations belong to ECCC and which stations belong to the University of Guelph.

- Technical Comments

Abstract L 9: mention that Saskatchewan is located in Canada.

P 4 L 84: the references are not correct.

- Comments on the dataset

Metadata: the metadata on the FRDR website does not contain the location of each stations. These information are only given in Table 1. of the submitted paper. I recommend the authors to add an ascii file containing the locations of each station. This file could have the same content as Table 1 and could be used with Python or R by a person interested in this dataset.

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

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