Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2022-46

Anonymous Referee #1

Referee comment on "Meteorological and hydrological data from the Alder Creek watershed, SW Ontario" by Andrew J. Wiebe and David L. Rudolph, Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2022-46-RC1, 2022

Review for ESSD-2022-46

Title: Meteorological and hydrological data from the Alder Creek watershed, SW Ontario

This study provides meteorological and hydrological datasets in the Alder Creek watershed by monitoring precipitation, air temperature, solar radiation, groundwater levels, soil texture, soil moisture, soil temperature, streamflow, and geochemistry. This comprehensive dataset can be useful for systematically studying hydrological processes in the Alder Creek watershed. However, there still exist some issues in this stage.

- My major concern for this study is how typical or special is the Alder Creek watershed, and is this region interesting enough to attract audiences of ESSD to use this dataset. What kinds of unique studies can be conducted in this small watershed rather than any other watersheds?
- This manuscript is more like a report to list all the hydrological data one by one. The measurements and characteristics of each hydrological data were described in detail, but these hydrological data were not connected together to provide any new knowledge and understanding. There are no clear result and discussion parts in this manuscript. Analysis of these data is lacked. Based on this dataset, can you provide any interesting characteristics of the hydrological processes, such as the interaction between climate and groundwater, at the site level or watershed level?

Specific issues:

Introduction

- Line 18-19: “Comprehensive meteorological and hydrological data from multiple field stations within small to mid-sized watersheds are seldom publicly available.” The USGS provides hydrological data across the country and there may exist many sites located in small to mid-sized watershed.
- Line 30. There is an extra “a”.
- Line 33. The Alder Creek watershed is important for local supply. Aside from this local importance, are there any other characteristics that make this small watershed be an interesting place to conduct hydrological studies that have broad influence in science.

Site description

- Are all the datasets first monitored and published in this study? The Water Survey of Canada is mentioned, so is the stream data collected from this source. If so, a table that lists all the data features and sources (collect, simulate, or monitor) may be helpful for audience to have an overview of these datasets.

Groundwater data

- Figure 9. The label of this figure is missing.

Vadose zone data

- Does soil texture in different sites have any impacts on soil temperature and moisture?

Soil moisture

- Why there is no figure to show the soil moisture data.

Soil temperature

- Figure 14. The simulated results seem underestimate peak values, especially in T109_2 and T109_3, what is the potential reason

Creek data

- Is discharge monitored or just estimated according to stream water level?

Geochemistry data

- Figure 18. There are few samples during May and Jun. The variations of P concentrations can be significant in a short time period according to the data around April.
- L360-365. What conclusions can be made according to the isotopes data?