

Earth Syst. Sci. Data Discuss., referee comment RC5  
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## Comment on **essd-2020-363**

Anonymous Referee #5

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Referee comment on "*STH-net*: a soil monitoring network for process-based hydrological modelling from the pedon to the hillslope scale" by Edoardo Martini et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-363-RC5>, 2021

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**MS:** Data are new (2019-2020), methods seem appropriate, and data will be useful. However, some text could be provided about how these data might be useful beyond immediate application to hydrological modeling, for example, to biogeochemical modeling, for oxygen, organic carbon, redox-active species, contaminants, or nutrients? There are also a few missing references I identify below. The piezometer data are missing. Reference to those data should be removed entirely if they are not provided in the dataset.

**Data quality:** I think the 10-minute and hourly averaged data should be provided, unless clearly justified why 10-minute data are not useful. I also think the code for the data processing should be provided for reproducibility. There is also no mention of data missingness, how missing data values were imputed or treated. A table showing the percentage of data coverage (completeness for each variable) might be helpful if there was significant data loss. And if data are imputed a binary flag column showing which rows were imputed could be helpful. In some cases, significant data were lost but there is no explanation. Why is there missing data from P2 for the first two months, and gaps from April to August in 2020 at P4? Finally, there is no header for the timestep variable in the Meteo text file, which creates a shift in variable names when the file is read into data analysis software.

### Line-by-line Comments

**Line 32:** I like this point about heterogeneity, but wouldn't processes be more localized if the steepest gradients were observed laterally?

**Line 60:** The citations *Brantley et al., 2017* and *White et al., 2015* (referring to CZOs) are missing from the references.

**Line 64:** Please state explicitly whether TERENO is part of the CZO network, or whether it is modeled after it?

**Figure 4:** What is going on between April and mid-August 2020 for P4 and P5 soil water content? data are missing

**Line 163:** Why are groundwater data not shown? (only available after March 2020)

**Figure 7:** Comment on similarity to other classification schemes, perhaps also include US soil order names in the text.

**Line 200:** How was signal vs. noise determined?