

Interactive comment on “A 16-year record (2002–2017) of permafrost, active layer, and meteorological conditions at the Samoylov Island Arctic permafrost research site, Lena River Delta, northern Siberia: an opportunity to validate remote sensing data and land surface, snow, and permafrost models” by Julia Boike et al.

N. Brown (Referee)

nick.brown@carleton.ca

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General Comments

The authors present a relevant and useful dataset. The publication of soil moisture data alongside the soil temperature fills a gap in the availability of such measurements (with

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the exception of the related Spitsbergen data). These measurements are valuable from a permafrost modelling perspective because they provide a secondary dataset against which model outputs can be validated. A few grammatical errors and unclear sections impede the clarity of the text, but these are easily fixed.

Specific Comments

(multiple locations): Dielectric number vs. dielectric constant vs. relative permittivity. I have most frequently seen the second of these used, although I understand it is falling out of fashion in favor of the third. This is the first time I have seen the term dielectric number used. I see that in appendix A you note the equivalence of these terms, but I think it would be useful to clarify this on the first mention of the term.

L233: After you checked the buckets by pouring in a known volume of water, was this spike removed from the dataset? Were there any instances where the instrument was found to be in error based on this check?

L297: The month, or time of year, would be helpful to contextualize the thaw depth measurements

L335: You mention that the errors are estimated based on the temperature values during zero-curtain periods. Can you be more specific about how exactly you derive the error estimates from these periods?

L450: You introduce level 0, 1 and 2 data but only discuss levels 1 and 2 in the text. Please consider briefly discussing level 0 data as well (PANGAEA): Data are well organized on PANGAEA, but I notice that columns in the soil level 1 dataset are inconsistent between files which will throw off attempts to combine the yearly files. Although this can be solved relatively easily, such a hurdle may make the dataset less accessible to those with little programming experience. Standardizing the columns and simply having NA values in the years where the borehole data are not present would eliminate this problem.

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Technical Corrections

L49: “The depth of zero annual amplitude . . . has warmed”. Clarify here that it is the temperature at that depth which has warmed, not the depth itself

L50: ‘niveau’ not needed here

L68: “land surface o for” typo

L103 “thawing period starts the end of may”. Should read: starts at

L104 “reaches maximum at”. Should read: reaches a maximum at

L186: “stagnant”. Doesn’t seem like the right word choice. Perhaps constant?

L192: “in parallel with”. This is more an opinion, but consider using “alongside” to eliminate any possibility that the reader interprets this as the circuitry meaning of ‘in parallel’.

L205: ‘aligned towards geographic north’. I see in the documentation for the instrument that this refers to the calibration with respect to azimuth. It is a bit confusing in the text as it suggests that the instrument is always pointing north.

L288: “For the unfrozen. . .”. The clarity of this sentence could be improved

L285,287: “signal period” vs “single period” are these meant to be different terms?

L698,700, 712: Significant figures on regression equations – is this level of precision appropriate?

L291: Consider “Instrument installation at the soil station”

L296: Should this subheading have a numerical prefix? 3.2.2?

L306: “Unfrozen topsoil layer” = thaw depth

L310: “Was probed at least once”. Would be clearer to say “contained at least one probe”

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L376: “and the signal stabilized”. Missing word: signal has stabilized (stylistic)

L388: “grounding system improved”. Missing word: system was improved (stylistic)

L446: “located on Spitzbergen permafrost” should be “located on Spitzbergen”

L449: “outliers manually” outliers have been manually (stylistic)

L449: “excluded” Doesn’t seem like the right word choice, consider ‘ruled out’

L457: “combined with data set” should be “combined with a data set”

L467: “flagged in the dataset (Table 3: Flag 7)”

L471: “differences between the locations”. Clarify to “the sensor locations”

L474: be consistent with the use of ‘record’ vs ‘data set’ (stylistic)

L487: depth of 20.8m.

L499: incomplete sentence: “this makes this an important”

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