Dear Editor,

Thank you for reading our manuscript. We completed the required technical corrections, all of them were crystal clear. Here the point-by-point response to your suggestions.

Paolo Colosio

P4L111: Change the current Table 2 to Table 1 and cite the new Table 1 here.

R: Done

P5L130: remove blue and red (explained in the figure caption, which is enough)

R: Done

P5L134: remove the reference to Figure 2.

R: Done

P5L150: Because of swapping the order of Table 1 and Table 2, here it should be "… in Table 2".

R: Done

P5L157: non-capitalize Soil/Ice Vegetation Atmosphere Transfer.

R: Done

P6L169: "…. Along the vertical profile of snow from the surface to 5 cm or to 1 m"

R: Corrected as "…along the first 5 cm and 1 m from the surface of the vertical profile of the snowpack"

P6L191: "LWC, snow density"

R: Corrected

P7L221: Change Table 2 to Table 1

R: Done

P11L323: "the sum of the two Commission and Omission errors"

R: Done

P11L331: "0oC"

R: Done

P13 – P14: Improve clarify. I think NSE values (L416), values of NSE (L417), Nash-Sutcliffe Efficiency coefficient (L444) refer the same value and then it is always write it down as NSE coefficient.

R: Corrected, now it is always written as "NSE coefficient"

P14L421: remove "(ME)"

R: Removed

P14L441: apostrophe after timeseries?

R: Removed

P14L444: change Nash-Sutcliffe Efficiency to NSE

R: Changed

P15L461: remove "(MOD)"

R: Removed

P15L463: Supplemental figures S2, S3, S4 and S5 are cited altogether. Please cite individual supplemental figures, with a short description what each figure presents.

R: Cited individually when the results are reported.

P16L488-489: is it in Figure 9d or Figure 11?

R: Figure 9d, corrected

P16L493: Change to "MEMLS between 1979-2017 …. And MEMLS between 1998-2012"

R: Changed

P17L526: change Figure 12 to Figure 11 (there is no Fig. 12)

R: Thanks, corrected

P17L531: Change Fig. 12 to Fig. 11

R: Corrected

P17L545 cite Fig. S5 after "in August"

R: cited

P18L547 and L549: does "autocorrelation" refer the range specifically or more generally the autocorrelation features? If the former is the case, please change it to range.

R: hank you. L547 refers generally to autocorrelation features, L549 to the range we computed. Corrected.

P18L573: change to LWC

R: Done

P18L562ff: it is confusing to see enhanced dataset, high resolution dataset etc in this section. Define the term at L532 (e.g. "3.125 km resolution 37 GHz horizontal polarization PMW Tb, called higher-resolution dataset") and use this term consistently.

R: Corrected consistently using "PMW enhanced-resolution data"

P19L581-582 and 591, 595: reverse changes to MOD, MED, MMD, MMS and MD (some readers read conclusions first and extensive use of these terms does not help such readers).

R: corrected using melt onset date, melt end date, mean melt duration, maximum melting surface and melt duration.

Table 1 and Table 2: swap the order.

R: Done

Figure 2 caption: at the very ends "mean equals …. Standard deviation equals to…."

R: Corrected

Table 3: in the top row, change "SMNR vs F08", "F11 vs. F13 (Evening)" or such like Table 4.

R: Changed

Figure 4: Add the unit of distance (m?). Also, change first, second and third rows to left, center and right.

R: Changed from first, second and third to left, central and right. The "distance" is unitles as it is the difference between the two histograms (black and purple).

Table 6 caption: change to "Nash-Sutcliffe Efficienty (NSE) coefficients" and change MOTE to Mote, 2014.

R: Corrected.

Figure S5: add "Table 7 reports range, sill, nugget and R2 values of these semi variograms."

R: Added.