

Raphael et al, 2025: A low-cost, autonomous system for distributed snow depth measurements on sea ice

Second reviewer

I am very pleased with the improvements of the manuscript. Nearly all of my comments were taken into account. The only remaining substantial comment is connected to the comparison of the spatial variability in snow depth to previous studies. This could be done for the initial snow depth conditions and for the development during the accumulation phase. This can be very brief (like it was done for the melt period). Otherwise, I only suggest some minor or technical improvements of text and figures.

(the line numbers refer to the tracked-changes document)

Title: consider including the name of the system into the title. This will be helpful, once your paper is published and it will appear in the reference lists of other publications.

Abstract

lines 20-24: I recommend to write first about the winter and then about the melt period. Potentially, a separate sentence could be added about the accumulation period (if more analysis can be done first). Also, I recommend an explicit clarification about the snow depth variability for data. For example:

‘While initial snow depth varied by up to 42% within each network, a comparison of mean initial snow depth between networks showed a maximum difference of only 26%. Similarly, whereas surface melt varied within each network by up to 38%, mean surface melt between networks varied by only up to 9%. This indicates that floe-scale measurements made using SnoTATOS provide a *valuable snow depth variability information and are therefore* more representative data for regional intercomparisons than existing single station systems.

Line 33: conflicts – plural as there is more than one.

Line 45: provide some references for temperature profiles in style ‘e.g.’. Consider using references that you already use elsewhere in this manuscript

Line 54: ‘similar’ or rather ‘opposite’

Lines 67-70: maybe begin with the Russian datasets first, so that the data is listed in chronological order

Line 100: is or will be?

Line 170: ‘depth stop’ is not mentioned elsewhere. I see it was now added to Figure 3. You write somewhere how the change of elevation of the sensor is important and how it may change over the season... Consider writing bit more how this depth stop is useful or not. This is optional.

Line 370 and Figure 6: Please list all network names when you mention them first. Then it will be easier to follow which ones have failed etc. Also, the names in the text and names on Figure 6 are not identical. Please, change the legend on the Figure.

Line 388 (and similarly 402-405, 408, 424-425,...): here you call ‘2024P’, just ‘P’. Please be consistent with naming.

Figure 7: Please reduce the time axis on the plot so that times with no data are not shown (29 April-5 January?). Then the plots containing data will be bigger. Also move the ‘result description’ text from the caption into the main text.

Table 3: ‘which snow has filled’ to ‘snow-filled’ for brevity?

Line 465 (and text before): you now added the information about the melt variability comparison to SHEBA and MOSAiC. Please do the same for the snow depth variability during the accumulation period.

Line 490: four nodes were still reporting in January 2025, when you first submitted this manuscript. Would it be worthwhile to update the plots with the complete information now? Surely there is no more data coming in now.