

Equation 2: The second term should be positive (e.g. see equation 2 of Price et al. 2019 <http://www.the-cryosphere.net/13/1409/2019/>). Please confirm whether this is a typo or if this form of the equation was used in the analysis.

I would like to thank the editor very much for catching this typo! I can confirm this minus sign is not used in the analysis.

Line 260 - I could not find this parameterisation for the speed of light correction in the reference given. However, Ulaby usually refers to snow in units of g / cm³. Please could you check this equation, add the equation number to the reference and if necessary correct the equation for the units used in your paper.

Yes, the editor is right. The equation I included in the paper is in snow units of g/cm³, I've changed this to kg/m³, as was also used in the analysis. I made a mistake in entering the reference. The equation is not found in Ulaby Microwave Remote Sensing volume II (1982) but in volume II (1986). I have changed this in the paper. The equation number is E.80: $\epsilon'_{ds} = (1 + 0.51\rho_s)^3$. This gives the real part of the dielectric constant of snow. As the speed of light through a medium is $v = \frac{c}{\sqrt{\epsilon_r}}$, this leads to the equation in the paper. The equation number has been added to the reference list. As this equation is often used in radar altimetry studies of sea ice (Mallett et al., 2020; Landy et al., 2017; Kwok & Markus, 2018; Kwok, 2014; Kacimi & Kwok, 2020), we believe we do not need to go into depth in the manuscript itself on how this equation is derived.

Line 296 - 'very little' -> few

We have made this change.

Line 449-451, particularly 'the assumed snow layer would weight down and suppress the ice underwater more than the actual layer does' argument is a little hard for me to follow: no more mass is added and in fact less of the column is assumed to be ice. Perhaps it would be better to refer to equation 2 - with greater assumed snow depth (h_s) the first term would increase due to the snow propagation correction (equation 3) and the second term (with correct sign) would also increase due to the adjustment of hydrostatic balance (compared with equation 1: increase in snow depth decreases h_i).

I have extended this explanation and also included a mathematical explanation referring to the equations like the editor suggested. I personally like to understand things physically, so I've kept the explanations in physical terms as well.

Supplement page 3 and 5: switch east-west to west-east for consistency

We have made this change.

Otherwise I think the inclusion of the ULS data is very interesting. Please spell out the acronym and perhaps briefly explain the difference between sea ice thickness and draft.

We have included this.