

Interactive comment on “A scatterometer record of sea ice extents and backscatter: 1992–2016” by Maria Belmonte Rivas et al.

Anonymous Referee #1

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The authors construct a data record of sea ice extents and ice type coverage (multiyear, second year, and first-year ice) from satellite scatterometers (ERS, QuikSCAT, ASCAT) that show the loss of sea ice and old ice over the last 25 years. Relatively good agreements between thicknesses classes from CryoSat-2 and the ice types suggest that the ice types could be reliable proxies of sea ice thickness in the Arctic.

While the approaches to derivation of the records (ice extent and ice type) are reasonable, the analysis of data quality, and the conclusions (and therefore the abstract) are rather qualitative and require some tightening up. If these data sets were to be presented as climate quality, then I should expect a more detailed assessment of the data quality and consistency (i.e., quantify the differences between the different time series and their trends). In particular:

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1. While I understand it is difficult to address the absolute uncertainties of these retrievals, I believe that the authors should at least address the potential variability in the estimates associated with the calibration of the scatterometers, especially since fixed thresholds are used in the separation of the ice classes.

2. Could the backscatter signature of SY ice just be a mixture of MY and FY-ice at the regional transition between the regions with the two dominant ice types? This should be addressed.

3. The authors' statement that: '...we find relative good agreement between the scatterometer SY ice class and the 2.0 m isoline from the ice thickness record, suggesting the utilization of the backscatter record as a reliable proxy for the estimation of thick sea ice thickness in the Arctic...' is not really supported by the analysis provided here. To demonstrate that the backscatter record is a proxy of thickness would entail more work. For example, as an assessment, the authors could examine the mean ice thickness of the three ice types over the CryoSat-2 period and then examine the variability within the different categories. In any case, if the authors were to clarify what they meant by 'proxy' it would be more satisfactory.

I think these issues should be addressed.

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