

## ***Interactive comment on “Revisiting properties and concentrations of ice nucleating particles in the sea surface microlayer and bulk seawater in the Canadian Arctic during summer” by Victoria E. Irish et al.***

**Anonymous Referee #2**

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Review of the manuscript by Irish et al.

Irish et al. investigated the ice nucleating particles (INP) in the sea surface microlayer and bulk seawater in the Canadian Arctic during summer of 2014 and 2016. This study measured INP concentrations using the droplet freezing technique. It is also investigated the effects of heat and filtration treatments on the INP concentrations. The manuscript concluded that spatial patterns of INPs are similar between the summers of these two years, but average INP concentrations are higher in 2016 and in some cases, there is INPs enhancement in the microlayer. The manuscript provides a set

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of comparison (at the “same” sampling sites) for INP measurements at important geographic location (Arctic) where data are overall limited. The topic of this manuscript is within the scope of this journal. There are some issues and comments should be addressed or considered before it is recommended for the publication.

1. For microlayer samples, the sampling devices and procedures are different when considering what is sampled (the sampling thickness of microlayer). As mentioned in P7/Line 20, how this is contributing to the difference in INP measurements in 2014 and 2016?
2. Justification of using T10 (e.g., why not using T50) for statistical analysis is needed.
3. There is a concern when the manuscript states the equation (1) accounts for the possibility of multiple INPs within a single droplet. It is better to elaborate the point that the authors try to convey.
4. It is not clear how many droplets were investigated for each sample, only 15-30 droplets as stated in P4/Line7?
5. Is there in situ Chl-a measurements which would be more accurate and can be used to correlated to T10?
6. It would be benefit to the community if the manuscript can identify some possible issues when investigating the annual or seasonal variability in INPs over the ocean. This has been done in part in the manuscript, such as the last paragraph.

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