

## ***Interactive comment on “Cleaning up our water: reducing interferences from non-homogeneous freezing of “pure” water in droplet freezing assays of ice nucleating particles” by Michael Polen et al.***

### **Anonymous Referee #1**

Received and published: 9 May 2018

Review of “cleaning up our water: reducing interferences...” by Polen et al.

In this manuscript the authors test different substrates, water sources, droplet matrixes, and droplet sizes with the goal of improving the droplet freezing technique. Since the droplet freezing technique is being used by several groups to quantify and understand ice nucleating particles in the atmosphere, this manuscript is useful and appropriate for AMT. This manuscript will be especially useful for new researchers to the field of atmospheric ice nucleating particles. I suggest publication in AMT after the authors have had a chance to address the following comments.

1. Title. I would delete “cleaning up our water” from the title, since the manuscript

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includes more than just experiments to remove impurities in water.

2. Page 9, Lines 275 – 285. Can mineral oil have different freezing temperatures depending on the average molecular weight? Maybe the WISDOM technique used a different type of mineral oil? I suggest the authors add additional information on the conditions used in WISDOM and the conditions used in the current experiments.

3. Page 9, Line 299. This sentence suggests that the water was filtered for many weeks. I assume that this is not correct.

4. Page 10, Lines 317-319 and Page 19, Lines 581-582. The issues with the MilliQ-produced water were blamed on the particle membrane filter. How do the authors know that the particle membrane filter was the source of the problem? I would have guessed any issue associated with the particle membrane filter would be rectified with the 0.02 micrometer post-filter.

5. On Page 14, it was not clear how the Vaseline surfaces were made. Line 431 suggests Vaseline was spread on the sample dish. What was the sample dish made of? On page 19, Line 563, it sounds like the Vaseline was spread on the hydrophobic glass slides? Please clarify.

6. The format of the references needs to be improved in several cases.

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-134, 2018.

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