

Interactive comment on “Ice nucleating particle concentrations unaffected by urban air pollution in Beijing, China” by Jie Chen et al.

Anonymous Referee #2

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This paper presents measurements of ice nucleating particles in Beijing, China. The ice nucleation activity of particles sampled on filters was quantified using ice-nucleating droplet arrays, LINA and INDA. This information was supplemented by ion chromatography measurements of the filters and in-situ measurements of black carbon and particle size distributions. The authors find no correlation between filter-based INP concentrations and PM_{2.5} or black carbon measurements. As the authors correctly state, there are few measurements of ice nucleating particles in urban areas, particularly in China. This paper is therefore of interest to the community. I recommend the publication in ACP after the following concerns are addressed:

1. It would be useful to see a time series of INP concentrations alongside Figure 1.
2. On p. 10, lines 250-252, the authors mention difficulty in washing particles off

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of PTFE filters and state that this procedure cannot be recommended in general. Why was the non-recommended technique used here? Can the authors provide an estimate of the uncertainty that this contributes to LINA measurements? Further, in line 252, the authors mention that they have used a "subset" of PTFE filter LINA measurements. Which measurements were left off and why?

3. In Figure 4c, the x-axis label is "Ntotal at -16 degC". Should this be just the Ntotal average values from Figure 1? Why is the "at -16 degC" there?

4. Several (a and c, for example) of the plots in Figure 4 arguably show some weak correlations. Some statistical tests of significance would help to strengthen the authors' case.

5. Figure 4 only shows INP concentrations at -16 degC, were there any differences for other temperatures?

6. It would be useful to plot DeMott, et al. (2010 and 2015) parametrizations alongside the Fletcher (1962) parametrization in Figure 5.

7. The authors conclude that the INPs detected here are "background" INPs, likely originating from dust, based on some previous measurements in China, which show enhancements in ice nucleation during dust events. Since the calcium ion is used here as a tracer for dust, do the INP concentrations correlate with it? Do they correlate with any of the chemical constituents measured with ion chromatography?

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