

The answers are in red.

The authors present here a new setup to investigate ambient deposition ice nuclei properties. The study, conducted in the city of Cordoba (Argentina), reports deposition ice nuclei number concentrations in a temperature range between -15 and -30 C at different supersaturations with respect to ice ranging from 2% to 20%. Due to the scarcity of ambient IN measurements in the literature, these results are valuable. However I feel like some points of the paper could be improved:

We appreciate the interest in our work.

Introduction: Some studies on deposition nucleation are missing and should be included in the introduction, e.g. Welti et al., 2008, Archuleta et al., 2005 among others. As the authors are reporting ambient IN measurements, a description in the introduction of all the potential natural and anthropogenic IN studied in laboratories should be given.

We agree that studies on the IN sources are quite relevant. Particularly, one of the long-term objectives of our research group is to determine the main IN sources of the region. However, this was not a goal of the current work; here we measure the concentration of the deposition IN in air as a function of temperature and supersaturation, regardless the IN origin. For this reason, we consider that including a description of the potential natural and anthropogenic IN could unnecessarily extend the length of the introduction section. There are two recent Review's papers, both cited in the present paper (De Mott et al. 2011 and Hoose and Mohler 2012), where the readers can find the detailed description required by C.Chou.

Experimental setup: Is there a possibility to calibrate the RH sensor by investigating the deliquescence point of size selected ammonium sulphate at sub-zero temperatures and compare it directly to some results reported in the literature (e.g. Braban et al., 2001)?

This is an interesting calibration method. However, it is not necessary to do this calibration at the moment because the instrument is brand new. Furthermore, the comparison of the RH values reported by two different hygrometers are in good agreement as explained in the manuscript.

What aerosol concentrations were encountered during the measurements?

We do not report this information because this concentration was not measured in the period of the experiments.

I am wondering if the water vapour provided to the chamber is high enough to avoid water vapour competition in case of high aerosol concentration cases and therefore reduce the size of the ice crystals of certain IN that may not sediment.

The amount of water vapor available in the chamber is given by the supersaturation of the system. It can be assumed that ice crystals grow until vapor density reaches the saturation over ice. Assuming that all the ice crystals are nucleated simultaneously then they should achieve similar sizes (> 50 microns diameter for IN concentrations ~ 100 per liter, temperature -20°C and 20 % supersaturation).

Results and discussion: The authors claimed that they have measured from April to July 2012. However they do not provide much information about the measuring time and how they have derived the different data points present in Figure 5. Do these data points represent a 1 week measurements? It would also be helpful to use a different shape or color for data points of different season as the measurements were carried out during autumn and winter.

The measurements were performed along the period April – July 2012. Similar conditions of temperature and supersaturation were settled in different days and months within this period. We did not observe any systematic difference in the results for experiments performed in different months. However, it is important to remark that the number of measurements available is not enough to perform a reliable statistical analysis of the seasonal variability of the IN concentration in the region, we expect to continue with the measurements in order to be able to do this study.

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