

We thank Dr. F. Conen for his positive comments and for his suggestions for extending the work to include potential number concentrations of agricultural soil dust IN active at warmer temperatures. As you point out, because of very small IN number concentrations, it is difficult for the CFDC to obtain the number fraction of agricultural soil dust particles capable of nucleating ice at temperatures warmer than about -18°C . To investigate the ice nucleation properties of the soil dusts at warmer temperatures, your suggestion to collect particles into water followed by analyses using immersion freezing is a good one, and we have indeed tested this approach. This is still an ongoing study, although some preliminary results have been reported in the 19th International Conference on Nucleation and Atmospheric Aerosols (Hill et al., 2013). We will report the comprehensive results at warmer temperatures in a forthcoming paper (Hill et al., in preparation). In the revised manuscript, we have added the following description:

Page 9713, Line 17: “Given the results of immersion freezing experiments showing that soils having higher contents of organic matter can serve as efficient IN even at temperatures warmer than about -15°C (Schnell and Vali, 1972; Conen et al., 2011; Hill et al., 2013; O’Sullivan et al., 2014), the contribution of agricultural soil dusts to the IN population at these temperatures may exceed that of natural soil dusts (not shown here).”

References

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