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Interactive comment on “Size-resolved cloud condensation nuclei concentration measurements in the Arctic: two case studies from the summer of 2008” by J. Zábori et al.

Anonymous Referee #1

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Review of the manuscript "Size-resolved cloud condensation nuclei concentration measurements in the Arctic: two case studies from the summer of 2008" by Zábori et al.

The authors present both size-integrated and -resolved CCN measurements, along with simultaneous particle hygroscopicity, lidar ja particle size distribution measurements, conducted at the arctic research station Zeppelin station, Svalbard. The analysis of the results is also supported with the air mass back trajectories. The manuscript is well written and previous literature on the topic is discussed. The results of the study bring new light to the CCN activation properties of Arctic aerosols, in particular regarding size dependency. However, the data set is rather limited, consting of two periods

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that span a few days each. Also, a larger data set spanning one year of observations from the same site has been provided by Silvergren et al. (2014) although they do not cover the size dependency of the aerosol CCN activity.

In view of the criticism presented above, i.e. paucity of new data, I cannot recommend publishing the manuscript in the current form. The authors should at least revise the manuscript to clearly show what new their study brings to the table, especially that much larger data set (Silvergren et al., 2014) has already been published. This can be achieved e.g. by adding new measurements or extending their data analysis to reveal more findings from the data.

References

Silvergren S. Wideqvist U., Ström J., Sjogren S., and Svenningsson B. (2014): Hygroscopic growth and cloud forming potential of Arctic aerosol based on observed chemical and physical characteristics (a 1 year study 2007-2008), *J. Geophys. Res. Atmos.*, 119, 14,080 – 14,097, doi:10.1002/2014JD021657.

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