

## ***Interactive comment on “Simulation of mixed-phase clouds with the ICON-LEM in the complex Arctic environment around Ny-Ålesund” by Vera Schemann and Kerstin Ebell***

**Anonymous Referee #2**

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A feasibility study is performed to see whether the ICON- large eddy model (LEM) realistically simulates a mixed phase cloud event at Ny-Alesund during June 2017. Spatial complexity provides a stiff modeling challenge. This is the first time the model has been used in the Arctic, having primarily been applied in Germany. High resolution in space and time are advocated as being needed for simulations of cloud liquid water, as demonstrated by Figure 8. By contrast, Figure 7 did not prove compelling.

Most issues are left for the future, such as the modeled low radar reflectivity being caused by shortcomings in the microphysics parameterization. Because the symbols were not identified in the right side plot, I didn't get much out of the representativity

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analysis in Figure 9.

Overall, the paper reads well and should be published after modest changes. Can the authors provide other examples of LEMs being used to simulate Arctic mixed phase clouds so the relative skill of this model can be evaluated?

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