Project: 1086
Project title: High-resolution modelling around supersites for cloud and precipitation observations
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Cloud and precipitation formation at specific locations

During the last year, we focused our simulations of the local setup around Ny-Ålesund on sensitivity studies with respect to CCN and IN availability. In Ny-Ålesund the availability of CCN and IN is in general rather low but can also be highly variable due to long-distance transport of aerosols and air in general. We performed several sensitivity studies with different background assumptions to test the sensitivity on CCN and IN in our simulations and compare them with remote sensing observations for rather clean and rather polluted cases. This study is still work in progress and we will continue with further simulations to also reach some statistics.

Based on some new measurement tools, we are also excited to run some more cases for urban heat island effects, but this will get interesting with warmer temperatures and during the upcoming summer months.

Air mass transformation in the arctic region and the influence on cloud processes

A recent development of enabling the use of instrument simulators during an ICON simulation offered completely new opportunities for our comparisons of ICON simulations with airborne measurements from past campaigns. We re-simulated some case studies to test this new capability with our instrument simulator PAMTRA and included the outcomes already in a publication (about to be submitted). By applying the instrument simulator during the model simulation it allows to process the atmospheric state at every timestep and save continues crosssections. So far the crosssections have been calculated on 3D output with a rather coarse time resolution and by this inconsistencies / artefacts have been introduced (see Fig. 1). This new in-situ coupling and the processing at every timestep creates smooth crosssections and a more consistent comparison to the observations. We are excited about the upcoming opportunities to perform and re-perform more simulations with this new tool.



Figure 1: Two crosssections of simulated radar reflectivity showing the same case study: (top) the traditional way of using coarse temporal output and (bottom) the new in-situ possibilities