Title	Role of clouds and water vapor in the Arctic radiative energy budget

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The increase in the near-surface air temperature in the Arctic is strongly pronounced compared to the global mean. This so-called Arctic Amplification is related to complex feedback mechanisms whose relative importance is still unclear. This is partly associated to the fact that many processes are not well understood yet. In particular water vapor, i.e. the most important greenhouse gas, and clouds play a crucial role in the Arctic climate system. For example, they have a direct impact on the radiative energy budget by modifying shortwave (SW) and longwave (LW) fluxes in the atmosphere. In particular in the Arctic, the interaction of clouds and radiation can be quite complex due to the prevailing boundary and atmospheric characteristics. In order to better understand cloud-radiation and water vapor-radiation interactions in the Arctic, cloud, thermodynamic and boundary conditions thus need to be well known. Such detailed information can be provided by ground-based remote sensing observations. In this contribution, we present results based on measurements from Ny-Ålesund where a comprehensive suite of remote sensing instruments is operated at AWIPEV research base. In particular, we want to answer following questions: 1) What is the impact of clouds on the atmospheric radiative fluxes and heating rates? 2) How does water vapor influence the LW downward radiation? For the second question, we also make use of the ERA5 reanalysis which allows to extend the view from the local (Ny-Ålesund) to the pan-Arctic scale.