1.29 MODELING CLOUDS AND PRECIPITATION IN ADÉLIE LAND, ANTARCTICA: POLAR-WRF SIMULATIONS VERSUS IN-SITU AND RADAR OBSERVATIONS

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Despite recent satellite-based estimations, the amount of precipitation reaching the Antarctic surface and its contribution to the surface mass balance of the ice-sheet remain poorly constrained. In the austral summer 2015-2016, an intensive campaign of observation took place at Dumont d′Urville station, Adélie Land, to provide a better quantification of precipitation and insights into the microphysics of clouds and precipitating hydrometeors in this remote region. The campaign included in particular the deployment of a micro-rain radar (MRR) and an X-band polarimetric radar (MXPol).

The obtained dataset has already evidenced that riming is an active process even at those latitudes and that a significant part of the precipitation is sublimated by katabatic winds before reaching the ground surface.

In this poster, we aim to go a step further in the understanding of cloud and precipitation processes in the Antarctic periphery using numerical simulations carried out with the Polar-WRF atmospheric model. The model is first evaluated against the extensive observational dataset at Dumont d′Urville station. Sensitivity tests to microphysical parameterizations, external forcings and resolution are performed and the simulations can be directly compared with radar data by using the CR-SIM radar operator. This evaluation paves the way to a further usage of the model to figure out how the regional scale dynamics constrains and affects the microphysics and the amount of precipitation over Adélie Land.