

Cold-air pool simulations with AROME

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Cold-air pools are known to be particularly challenging for numerical weather prediction models because (i) they are typically characterized by very high stability, for which traditional surface-layer parameterizations based on Monin-Obukhov similarity theory do not work well and (ii) the processes are very local and occur on small scales, which means that very high horizontal and vertical resolutions become necessary. In the framework of TEAMx, a model intercomparison study is conducted to analyze the performance of different research and operational weather forecasting models with a 1-km horizontal grid spacing for a cold-air pool event in the Inn Valley. The case study was selected from a multi-day undisturbed period during the PIANO field campaign in fall 2017.

In this project, we will join this model intercomparison study with the AROME model, a numerical weather prediction model run operationally by GeoSphere Austria. Two student assistants will be collaboratively supervised by the project partners at the Department of Atmospheric and Cryospheric Sciences at the University of Innsbruck and at GeoSphere Austria to run AROME for this test case and to perform an evaluation of the simulations against observational data collected during PIANO and against the output from the other models participating in the intercomparison study.

