Innsbruck Network for Weather and Climate Research (IWCR)

Funding proposal for a Student Assistant

Low stratus simulations with AROME in the Inn valley

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Low stratus is a common weather phenomenon in the autumn and winter months. In the Alps it is usually restricted to the plain areas north/south the of Alps (Swiss Plateau, Bavaria, Danube valley, Po valley, etc.) and to some specific valleys and bassins (e.g. Rhine valley, Klagenfurter bassin, Salzkammergut, etc.). However, there are some situations when also inner Alpine valleys such as the Inn valley are affected by low stratus. The correct simulation of fog and low stratus is a difficult task for numerical weather prediction (NWP) models. Despite many advancements in recent years, the skill of NWP models to correctly predict low stratus events is still very low. The models suffer from several deficiencies in the microphysics parametrization, the turbulence parametrization but also from a poor vertical and horizontal resolution.

In this project we would like to run simulations and perform evaluations with the convection permitting AROME model – the operational NWP system of GeoSphere Austria for some low stratus events. The target area is the Inn valley around Innsbruck where ACINN and GeoSphere Austria are operating a dense observation network (stations, LIDAR, flux towers, etc.). The presented work should be done by Benedikt Wibmer a master student at ACINN who is currently writing his MSc thesis on thermally driven wind simulations with AROME in a collaboration between ACINN and GeoSphere Austria.

Low stratus in the Inn valley.