Simulating snow management in Austrian and Italian ski resorts using the AMUNDSEN model: data, setup and first results

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The production of technical snow today is a self-evident feature of modern alpine skiing resort management. Millions of Euros are invested every year for the technical infrastructure and its operation to produce a homogeneous and continuing snow cover on the skiing slopes for the winter season in almost every larger destination in the Alps. For an optimized snow management, both information about the current snow conditions on the slopes and reliable forecasts of natural snowfalls and appropriate conditions for snowmaking are crucial. To address these issues, the H2020 PROSNOW project aims to build a demonstrator of a meteorological and climate prediction and snow management system specifically tailored to the needs of the ski industry. As part of this project, the hydro-climatological model AMUNDSEN will be applied to four Austrian and Italian ski resorts: Mayrhofen, Seefeld, Colfosco and San Vigilio. AMUNDSEN includes a snow management module that takes into account the actual ski area infrastructure including individual snow guns and their specifications, water supply, and pumping capacity, and produces technical snow depending on ambient conditions and snow demand. In our contribution, we present the setup and adaptation of the model for the individual ski resorts and show first results of model runs for past conditions.