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Snow cover trends in Tyrol and Styria (Austria) over the last decades

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Due to their high sensitivity to environmental change, mountain ecosystems can be considered as "early warning systems" for climate change. To investigate its effect in Alpine regions, scenario simulations proved to be suitable tools in a wide field of applications, the modelling of future climate and natural snow cover being important examples. Therefore the project "Effects of Climate Change on Future Snow Conditions in Tyrol and Styria" (CC-Snow) – funded by the Austrian Climate Research Programme (ACRP) – aims at utilizing improved future climate scenario simulations to determine the effect of climate change on future natural snow conditions in the Austrian Alps. The two test sites considered for the detail studies with the high-resolution snow cover model AMUNDSEN (Alpine MUltiscale Numerical Distributed Simulation ENgine) are Kitzbühel (Tyrol) and Schladming (Styria).

One of the first achievements of CC-Snow is to analyze the available original snow cover data of the ZAMG local stations in the mentioned regions over the last decades. A modelled snow cover evolution, as an output of AMUNDSEN, is then compared to the snow measurements at these observation sites to verify the results of the modelled data. This validation process is necessary to proof that AMUNDSEN delivers satisfactory results for the upcoming future climate scenarios. In the next step a surface modelling of predefined indicators is planned to describe conditions of artificial snow production as well as future production possibilities. The aim is to achieve reliable information on future snow conditions.