PROSNOW - Provision of a prediction system allowing for management and optimization of snow in Alpine ski resorts

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Snow on the ground is a critical resource for mountain regions to sustain river flow, to provide freshwater input to ecosystems and to support winter tourism, in particular in ski resorts. The level of activity, employment, turnover and profit of hundreds of ski resorts in the European Alps primarily depends on meteorological conditions, in particular natural snowfall but also increasingly conditions favourable for snowmaking (production of machine made snow, also referred to as technical snow). Ski resorts highly depend on appropriate conditions for snowmaking (mainly the availability of cold water, as well as sub-freezing temperature with sufficiently low humidity conditions). However, beyond the time scale of weather forecasts (a few days), managers of ski resorts have to rely on various and scattered sources of information, hampering their ability to cope with highly variable meteorological conditions. Improved anticipation capabilities at all time scales, spanning from "weather forecast" (up to 5 days typically) to "climate prediction" at the seasonal scale (up to several months) holds significant potential to increase the resilience of socio-economic stakeholders and supports their real-time adaptation potential.

To address this issue, the recently funded (2017-2020) H2020 PROSNOW project will build a demonstrator of a meteorological and climate prediction and snow management system from one week to several months ahead, specifically tailored to the needs of the ski industry. PROSNOW will apply state-of-the-art knowledge relevant to the predictability of atmospheric and snow conditions, and investigate and document the added value of such services. The project proposes an Alpine-wide system (including ski resorts located in France, Switzerland, Germany, Austria and Italy). It will join and link providers of weather forecasts and climate predictions at the seasonal scale, research institutions specializing in snowpack modelling, a relevant ensemble of at least 8 representative resorts in the Alps, technical bodies representing ski resorts managers, and private technology companies. These companies are already providing services for snow management such as snow depth monitoring, snowmaking operations monitoring and planning using latest technologies.

The added value of the demonstrator will be assessed for the ski industry, but also for additional stakeholders including local and regional tourism authorities, hydropower managers, and natural hazard forecasters and planners. This presentation will introduce the main goals and concepts of the PROSNOW project, in order to foster interactions with the specialized scientific communities relevant to this challenge.