

Poster Presentation:

Ice Nucleation Potential and Microbiology of Natural and Artificial Snow

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Proceeding climate change effects minimized snow cover in skiing resorts globally. Artificial snow production becomes increasingly important to secure revenues and operating times of skiing resorts. The efficiency of artificial snow production depends on the ice nucleation characteristics of the input substrate.

For artificial snow production, ice has to form in a relative short amount of time and travel distance before the water droplets reach the ground. Technological efforts went into modern snow production devices with this main challenge in mind. Ice formation is determined by physical factors (temperature, humidity, droplet size), thus most technological research is focused into this direction. However, microbial and chemical substrate composition are important for artificial snow production, when physical conditions are less optimal. Atmospheric ice nucleating particles (INPs) have a considerable impact on ice cloud formation. Those can be of inorganic, carbonaceous or biological origin. There is a large scientific interest to investigate their nature, origin, and abundance to gain a better insight on atmospheric processes especially in the light of climate research. The most active INPs can be found within the group of biological particles specifically microbes.

We compared natural snow, artificial snow, piste snow and water supplies with respect of their chemical, microbiological and INP characteristics, but also consider impacts to alpine ecosystems.