

Poster Presentation:

High Diversity and Ice Nucleation Activity in Iceland Air and Snow

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Snow and ice surfaces host viable and diverse bacterial and fungal communities. These originate from wet and dry aerial deposition, and may be driven by the potential of some microbes to nucleate ice in clouds to trigger precipitation. However, the impact of short or long distance air transport, precipitation and selective deposition remain unclear in their role with air and snow microbial diversity. Rapidly changing climate patterns in polar regions evoke a pressing need to investigate such air-snow community dynamics.

18 air samples, comprising 56m³ of air, were taken at 15 sites along three transects in northern Iceland, covering distances of 120km with MD8 Air Port (Sartorius) and Coriolis μ (Bertin) air samplers, together with 11 fresh snow samples. Airborne and snow-associated bacterial and fungal diversity, abundance and ice nucleation potential was investigated. Bacteria and fungi feature some ubiquitous core phyla, but show significant differences between air and snow on taxa level. Ice nucleation activity was high in some samples of fresh fallen snow and air before snow fall. *Pseudomonas* genera were present in many of the active samples hinting towards active bioprecipitation of these highly INA active species. Results hint towards a high contribution to snow microbial diversity from other than single cell deposition, suggesting snow inoculators originate from wet deposition, particle-associated microbe input or airborne, rare but highly successful colonizers.