

Publication**Atmospheric ice nuclei at the high-altitude observatory Jungfraujoch, Switzerland****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 3122836**Author(s)** Conen, Franz; Rodriguez, Sergio; Hüglin, Christoph; Henne, Stephan; Herrmann, Erik; Bukowiecki, Nicolas; Alewell, Christine**Author(s) at UniBasel** [Conen, Franz](#) ; [Alewell, Christine](#) ; [Bukowiecki, Nicolas](#) ;**Year** 2015**Title** Atmospheric ice nuclei at the high-altitude observatory Jungfraujoch, Switzerland**Journal** Tellus B: Chemical and Physical Meteorology**Volume** 67**Pages / Article-Number** 25014**Keywords** ice nuclei; slight supercooling; seasonal cycle; desert dust**Mesh terms** Science & TechnologyPhysical SciencesMeteorology & Atmospheric SciencesMeteorology & Atmospheric Sciences

The state of a slightly supercooled ephemeral cloud can be changed by the presence of a few particles capable of catalysing freezing, and potentially result in precipitation. We investigated the atmospheric abundance of particles active as ice nuclei at -8 degrees C (IN-8) over the course of a year at the high-alpine station Jungfraujoch (3580 m.a.s.l., Switzerland) through the use of immersion freezing assays of particles collected on quartz micro-fibre filters. In addition, we determined IN-8 on a hill in the planetary boundary layer 95 km northwest of Jungfraujoch and in the dust laden Saharan Air Layer reaching Tenerife. Results indicate a strong seasonality of IN-8 at Jungfraujoch. Values were largest during summer (between 1 and 10 m(-3)) and about two orders of magnitude smaller during winter. Sahara dust events had a negligible influence on IN-8 at Jungfraujoch. Seasonality in the boundary layer was not observed in the upper, but in the lower bound of IN-8 values. Values <1m(-3) were only found on cold winter days, when IN-8 were more likely to have already been activated and deposited than on warmer days. A good correlation between IN-8 and maximum daily temperature at Jungfraujoch ($R^2 = 0.54$) suggests IN-8 abundance at Jungfraujoch may be limited most of the year by microphysical processing related to IN activation in approaching air masses.

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