



Supplement of

Towards parameterising atmospheric concentrations of ice-nucleating particles active at moderate supercooling

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Figure S1. Daily averaged meteorological data at Weissfluhjoch during "Role of Aerosols and Clouds Enhanced by Topography on Snow (RACLETS)" campaign, including air temperature (T, °C), relative humidity (RH, %), pressure (p, hPa), wind speed (ws, m s⁻¹), wind direction (wd, °), and precipitation rate (mm h⁻¹). Precipitation data were missing prior to 25 February, therefore those of the station in Davos (DAV) are shown as well (gray dots). Number of impinger-based aerosol samples with quantified [INP_{.15}] (n = 124) for air masses that were non-precipitating (green triangles, n = 57), precipitating (blue circles, n = 56), and carrying a substantial fraction of Saharan dust while non-precipitating (red squares, n = 11) are shown.



Figure S2. Total precipitation along the last 6 hours (mm) of the trajectory prior to sampling of air masses that were precipitating (PRECIP, blue), non-precipitating (NON-PRECIP, green), and carrying a substantial fraction of Saharan dust while non-precipitating (SD, red). Histograms of 0.5 mm binned values are plotted (dodged). The mean of each category is denoted. The precipitation values were derived along the LAGRANTO backward trajectories.



Figure S3. Measured and predicted cumulative concentrations of ice nucleating particles active at -15 °C [INP₋₁₅] (std L⁻¹) for (**a**) prediction based on a single trendline fitted through all data of aerosol particles with aerodynamic diameters > 0.5 µm [n_{0.5}], (**b**) predictions based on [n_{0.5}] and three different trendlines fitted through the data of PRECIP (blue circles), NON-PRECIP (green triangles), and SD (red squares) air masses, and (**c**) same as (**b**), but based on aerosol particles with aerodynamic diameters > 2.0 µm [n_{2.0}]. Shapes in (**a**) are consistent with those in (**b**). However, they are coloured in gray as the prediction is independent of air mass classes. A range of a factor of two (dotted lines) about the 1:1 line (solid line) as well as the percentage of values lying within that range are shown in all panels.