This study presents airborne in-situ and satellite remote sensing climatologies of cirrus clouds and humidity. The climatologies serve as a guide to the properties of cirrus clouds, with the new in-situ data base providing detailed insights into boreal mid-latitudes and the tropics, while the satellite-borne data set offers a global overview.

To this end, an extensive, quality checked data archive, the Cirrus Guide II in-situ data base, is created from airborne in-situ measurements during 150 flights in 24 campaigns. The archive contains meteorological parameters, IWC, $N_{\text{ice}}$, $R_{\text{ice}}$, RH$_{\text{ice}}$, and H$_2$O ($\text{IWC}$: ice water content, $N_{\text{ice}}$: number concentration of ice crystals, $R_{\text{ice}}$: ice crystal mean mass radius, RH$_{\text{ice}}$: relative humidity with respect to ice, H$_2$O: water vapor mixing ratio) for each of the flights. Depending on the specific parameter, the data base has extended by about a factor of 5-10 compared to the previous studies of Schiller et al. (2008), JGR, and Krämer et al. (2009), ACP.

An important step in completing the Cirrus Guide II is the provision of the global cirrus $N_{\text{ice}}$ climatology, derived by means of the retrieval algorithm DARDAR-Nice from 10 years of cirrus remote sensing observations from satellite. The in-situ data base has been used to evaluate and adjust the satellite observations.

A specific highlight of the study is the in-situ observations of tropical tropopause layer (TTL) cirrus and humidity in the Asian monsoon anticyclone and the comparison to the surrounding tropics.
d'Optique Atmosphérique, F-59000 Lille, France;