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Drying and moistening at the tropical tropopause

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Aircraft data of total water and water vapour from SCOUT-O3 (Australia), TROCCINOX (Brazil), AMMA (West Africa) and APE-THESEO (Indian Ocean) will be analyzed for the ice water content of cirrus and RHice at very low temperatures: Formation of ultrathin cirrus clouds and freeze-drying results in very low mixing ratios, sometimes below 2 ppmv. Deep convection leads to injection of moist air into the TTL and lower stratosphere. We will discuss the local cloud formation and dehydration processes as well as those having occurred before the observations analyzing the airmass history along backward trajectories.