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A detailed comparison of Aura-MLS and ground-based microwave radiometry data of stratospheric ozone and water vapor

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Each day, the satellite experiment Aura-MLS performs about 10 atmospheric limb soundings in the vicinity of the microwave radiometer stations at Bern and Payerne in Switzerland (collocation criterium: horizontal distance $<$ 800 km). These two stations contribute to the "Network for the Detection of Stratospheric Change", NDSC, and provide ozone and water profiles from approx. 20 - 70km altitude. Since the launch of Aura in July 2004, a total of about 5000 limb soundings have been obtained in this area of Europe. The huge number of coincident observations allows a detailed study of the influence of the spatial coincidence criterium on the mean difference profile of the satellite and ground-based measurements. We investigate the probability distribution of the difference profiles and apply new statistical methods for a more precise estimation of the bias between the satellite and ground-based measurements. Seasonal and diurnal dependencies of the difference profiles are also analyzed.