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Ozone Data Quality Assessment (O_3S-DQA): Resolving inhomogenities in long term ozone sounding records and assessing their uncertainties

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Ozone sounding records constitute the longest time series of the vertical ozone distribution between the surface and 30-35 km altitude. Up to an altitude of 20 km ozone sondes provide the single data source with long term coverage for the derivation of ozone trends with sufficient vertical resolution, particularly in the altitude region around the tropopause. JOSIE and BESOS results have clearly demonstrated that even small differences of sensing techniques, sensor types or sensing solutions can introduce significant inhomogenities in the long term sounding records between different sounding stations or within each station individually. To resolve these artifacts long term sounding records have to be homogenized either in space (between different stations) or in time (long term changes) through use of generic transfer functions which can be derived from intercomparisons (e.g. JOSIE or BESOS), dual balloon soundings and laboratory experiments.

The major goal of the Ozone Sonde Data Quality Assessment (O_3S-DQA) activity is the homogenization of a selected ozone sonde data sets. An essential aspect of this assessment is the estimation of expected uncertainties and the detailed documentation of the reprocessing of the long term ozone sonde records of the participating sounding stations. The aim is to reduce uncertainties between long term sounding records from 10-20% down to 5-10% through the use of generic transfer functions. We will present briefly the methodology followed but will focus on the results obtained before and after the homogenization process. We will discuss to what extent the use of these generic transfer functions has homogenized long term sounding records and have reduced their uncertainties.