



Mean age of stratospheric air as derived from MIPAS/ENVISAT SF₆ distributions

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The mean age of stratospheric air is a fundamental parameter of stratospheric transport. It allows to diagnose the ability of the atmosphere to transport tropospheric air parcels, contaminated with pollutants or climate gases, to certain places in the stratosphere. There is indication that the strength of the Brewer-Dobson circulation is correlated to the solar cycle, leading to longer residence times of trace gases in the stratosphere during solar maximum. A suitable tracer to study the variability of stratospheric transport and the mean age of stratospheric air is SF₆. However, mid-infrared remote sensing SF₆ observations are difficult due to the weak mid-infrared spectral signature of SF₆, combined with the high accuracy needed to determine the age of the air. SF₆ is a non-operational product from MIPAS/ENVISAT generated, among other places, at IMK. The retrieval approach is discussed in detail, including systematic error sources. Mean age distributions of stratospheric air are presented and compared to expected values, and transport processes are discussed.