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Propagation of the seasonal CO_2 cycle in the UTLS: a 3D model evaluation with SPURT observations

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CO_2 and SF_6 have been simulated with the 3D Chemistry-Transport Model TM5 for the time period 2000 – 2003 and compared to observations performed during the SPURT (SPURenstofftransport in der Tropopauzenregion) project. SPURT delivered for the first time a detailed multi-year UTLS data record of both tracers for every season over a large range of latitudes. The seasonal cycle of CO_2 propagates through the UTLS, while SF_6 can be regarded as a reference tracer. Therefore, these SPURT observations provide a unique model evaluation tool for UTLS transport processes and the coupling between the tropics and extra-tropics. Moreover, both tracers are well suited to derive the mean age of air. We will present the results of this model evaluation and discuss the potential to perform multi-year integrations with CTMs in the UTLS region.