

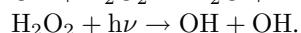
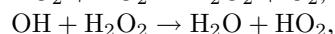
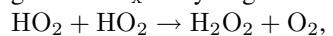


## Comparison of H<sub>2</sub>O<sub>2</sub> model results with different reaction rates to MIPAS observations

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H, OH and HO<sub>2</sub> (collectively called HO<sub>x</sub>) are fast-reacting radicals in the middle atmosphere. These radicals are efficient catalysts for destroying ozone and play an important role in atmospheric chemistry. An important reservoir gas for HO<sub>x</sub> is Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>). The main reactions for H<sub>2</sub>O<sub>2</sub> are:



Many of the corresponding reaction rates have high uncertainties. We performed model simulations with our CTM KASIMA with different sets of reaction rates for the main reactions. Mixing ratios from these simulations are compared to H<sub>2</sub>O<sub>2</sub> observations of the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) for standard conditions and during the Solar Proton Event in Oct./Nov. 2003. The KASIMA model overestimates H<sub>2</sub>O<sub>2</sub> concentration using the standard set of reaction rates, but can qualitatively reproduce H<sub>2</sub>O<sub>2</sub> enhancements as observed after the SPE event. We further take a look at the differences in H<sub>2</sub>O<sub>2</sub> mixing ratios in this time period using the different reaction rates.