OZONE PHOTOLYSIS: STRONG ISOTOPOLOGUE/ISOTOPOMER SELECTIVITY IN THE STRATOSPHERE

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Using the visible-UV absorption cross section (Abs. XS) of five ozone isotopologues and an averaged actinic flux, we have calculated the contribution of the atmospheric ozone photolysis to the oxygen isotope and ozone isotopologue/isotopomer enrichment. Five ozone isotopologues/isotopomers are considered among which three are symmetric, $O^{16}3$ (noted 666), $O^{16}O^{17}O^{16}$ (676) and $O^{16}O^{18}O^{16}$ (686), and two are asymmetric, $O^{17}O_2^{16}$ (667) and $O^{18}O_2^{16}$ (668). The photolysis rates of the five ozone isotopologues have been calculated as a function of altitude. The Multi Configuration Time Dependent Hartree (MCTDH) method and the potential energy surfaces calculates by R. Schinke and *coworkers* have been used. We have used experimental actinic fluxes, averaged for latitude and season, for altitudes varying by step of 4km up to 80km. Below 35km, the contribution of the Hartley band to the photolysis rates is restricted to its low energy range, named the Huggins band, which has strong isotopologue/isotopomer selectivity and then induces strong enrichment. Consequently, the isotopologue enrichment's due to ozone photolysis are strongly dependent of the altitude, with pronounced enrichment peaks around 35 km, the altitude corresponding to the maximum relative contribution of the Huggins band.

We will also present some new simulations for the simulation of laser-induced quantum dynamics of the electronic and nuclear motion in the ozone molecule on the attosecond time scale.