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Ultra-violet absorption cross sections of isotopically substituted nitrous oxide species: $^{14}\text{N}^{14}\text{NO}$, $^{15}\text{N}^{14}\text{NO}$, $^{14}\text{N}^{15}\text{NO}$ and $^{15}\text{N}^{15}\text{NO}$

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Abstract. The isotopically substituted nitrous oxide species $^{14}\text{N}^{14}\text{NO}$, $^{15}\text{N}^{14}\text{NO}$, $^{14}\text{N}^{15}\text{NO}$ and $^{15}\text{N}^{15}\text{NO}$ were investigated by ultra-violet (UV) absorption spectroscopy. High precision cross sections were obtained for the wavelength range 181 to 218nm at temperatures of 233 and 283K. These data are used to calculate photolytic isotopic fractionation constants as a function of wavelength. The fractionation constants were used in a three-dimensional chemical transport model in order to simulate the actual fractionation of N_2O in the stratosphere, and the results were found to be in good agreement with field studies.

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