



Mass-dependent and non-mass-dependent isotope effects in O₃ and CO₂ photochemistry experiments: Is there really any evidence for unusual isotope effects beyond O+O₂+M?

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As an understanding of the chemical physics of the non-mass-dependent isotope effects in the 3-body formation of ozone (O+O₂+M) is rapidly progressing, it is equally important to investigate evidence for or against the existence of non-mass-dependent oxygen isotope effects in reactions other than O+O₂+M. Are there, for example, non-mass-dependent isotope effects in the UV photodissociation of ozone or in the isotope exchange reaction between CO₂ and O(¹D)? Using a combination of experimental and photochemical modeling results, I will show that, to date, no evidence exists for non-mass-dependent fractionation of oxygen isotopes in atmospheric O₃, CO₂, and N₂O beyond that traceable to the reaction O+O₂+M.