O-06

Session 4) Isotopologues in Atmosphere: Ozone, MIF and $\Delta^{17}O$

Mass-independent isotope effects in ozone formation: A brief retrospective and some new data

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Since the discovery of mass-independent fractionation of oxygen isotopes (O-MIF) in the ozone formation reaction four decades ago, the number and breadth of applications of ozone's O-MIF in many fields of earth and planetary sciences has grown at what must be an exponential rate. The propagation and proliferation into many fields on many different time scales – ranging from days to billions of years – is due in part to how O-MIF in atmospheric ozone is transferred to other species, including atmospheric CO_2, O_2, nitrates, and sulfates and even rocks and minerals. While many of these applications can be pursued empirically – through constraints from current atmospheric observations and laboratory experiments, for example – the origin of ozone's O-MIF in chemical physics remains unresolved. In this talk, I will give a brief overview of historical ideas about the chemical physics of ozone's O-MIF and an update to today, including insights from new laboratory data from my research group on the dependence of the O-MIF anomaly in ozone formation on pressure, temperature, and bath gas identity.