

# Simulation of isotopes within the Chemical Lagrangian Model of the Stratosphere (CLaMS)

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For studying the hydrogen isotopes, the chemistry of deuterium containing compounds have been incorporated into CLaMS that cover the full  $\text{CH}_4$  oxidation chain. The CLaMS simulations are able to explain the large deuterium enrichment of  $\text{H}_2$  found in the stratosphere. However, with the initial focus on hydrogen, the isotope ratio of  $\text{H}_2\text{O}$  has not yet been incorporated.

The Lagrangian transport scheme of CLaMS is well suited for studying dynamic processes in the vicinity of transport barriers (e.g. the vortex edge, the subtropical jet or the tropopause) as no numerical diffusion smooths out the tracer gradients. The simulation of HDO would provide additional information with respect to the origin of the air masses. The possibility and difficulties of incorporating full HDO chemistry into CLaMS will be discussed. The possible improvement for understanding of transport processes in the UT/LS from analysing water vapour isotopes within CLaMS is investigated.