

We received two reviews of our paper and have submitted our replies recently. As you can read in our reply, we feel that the value of our paper was misjudged.

Reviewer 1 appreciates the paper, but simply thinks the added value is limited, a viewpoint we do not share. It is the first scientific publication in which a complete and consistent sets of isotope fractionations in sulfur compounds has been implemented, and the novelty of the paper is that we combine the different S compounds and their isotopic signals using isotope effects in all relevant reactions, from the troposphere to the stratosphere. More details are mentioned in the reply to reviewer 1.

Reviewer 2 mentions that the photolysis calculation ignores the Rayleigh scattering which has a large impact on altitude and wavelength dependent photon fluxes. However, when we check the scattering cross-sections and compare the diffuse versus direct radiation at altitudes where COS photolysis is important, we see that Rayleigh scattering is of minor importance. Including Rayleigh scattering will thus not change our results.

We are very willing to add material to address the minor suggestions, like better highlighting the new findings, and a validation in the stratosphere with satellite data. We also aim to clarify details like the solar radiation description (why Rayleigh scattering is not included), and highlight the isotopic results better.

We think the paper constitutes a consistent piece of work that connects the S-isotope composition in the troposphere to SSA in the stratosphere, something that has not been presented before, and is therefore worth publication.

We therefore hope that the paper will be accepted, and we are happy to provide the additional modifications that we propose in our rebuttal,