

Response to the reviewer 2

Thanks very much for your advice.

Technical Corrections:

#Comment 1: Please change "...are very reliable. Whereas, the experimental rate constant at about 200 K diverges..." by "...are very reliable, whereas the experimental rate constant at about 200 K diverges...".

Reply: Thanks for this suggestion. We have rephrased this sentence, as follows:

Lines 260 to 263 - 'There is reason to believe that the experimental results of 300-600K are very reliable, **whereas** the experimental rate constant at about 200 K diverges from this linear behaviour and seems to be slightly overestimated. **Therefore**, the lifetime of the P atoms in the atmosphere may be a little longer than previously thought (Carrillo-Sánchez et al., 2020).'