Reply to the referee #1

Referee's comment is typed in blue, and authors' response is typed in black.

This paper extends previous measurements and analysis of the vertical distribution of N2O isotopocules into the tropical stratosphere. It introduces a new sampling system with a much weight-reduced cryogenic sampler. The measurements are impressively accurate and precise and show systematic differences to previously published mid latitude profiles, with implications for the balance between photolysis and photooxidation of N2O, and transport, in determining the vertical distributions. The paper is clearly written and presented. It is well suited to ACP and I recommend publication as is except for a few technical edits as listed below.

We appreciate the referee for his/her constructive comments. We have revised the manuscript according to his/her suggestions.

Technical comments:

P3 L11: …but it has not been FULLY examined because of…

Revised as suggested. (P3 L22 in the revised text)

P8 L13 and elsewhere – please replace all instances of “transportation” with “transport”.

Revised as suggested.

P8 L14 & 15: I suggest using “photochemistry” rather than “photolysis” here because the first reference on L14 is to both photolysis and phot-oxidation.

This paragraph has been deleted according to the comments by referee #2.

P8 L19: “faster” would be more unambiguous than “larger” in this context

This paragraph has been deleted according to the comments by referee #2.

Caption figure 2 – it would be helpful here to list the site names and three letter abbreviations so the reader is not obliged to go to the supplementary material to find out.

Defined once is enough to cover all later figures.

Revised as suggested.