

Interactive comment on “Direct comparisons of GOMOS and SAGE III NO₃ vertical profiles” by J. Hakkarainen et al.

Anonymous Referee #1

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Review of “Direct comparisons of GOMOS and SAGE III NO₃ vertical profiles” by Hakkarainen et al.

This short paper is the first larger-scale intercomparison of two stratospheric NO₃ profile datasets made by GOMOS and SAGE III. This is a reasonable intercomparison paper that shows the two agree to within 25%. The content and the layout are adequate, but there are numerous grammatical errors and before being accepted this paper needs to be edited for grammar by a co-author or colleague.

Page 1498, line 7: “Shows agreement” – quantify this

Page 1498, line 12: “...controls the level of nitrogen oxides.” – NO₃ does not “control” the levels of NO_x; if anything it is the opposite with NO_x, O₃, and temperature

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controlling it.

Page 1499, line 1: “reverse Reaction (R3) is an additional source ...” – this is a sink of NO₃.

Page 1499, line 15: what is SAGE III? You defined it in the abstract, but you should also do so at the first occurrence in the main text; likewise with GOMOS

Page 1500, line 3: GOMOS should be defined earlier

Page 1500, line 9: define “somewhat smaller”

Page 1501, line 7: Add a reference specific to SAGE III and the lunar occultation technique

Page 1503, line 9: “star number 2” – what is this

Page 1503, line 17: “3 x 1.4826 x ...” where does this come from?

Results: Move Figure 4 to section 2.1 since this is where you discuss the spectral fit.

Results: On average are the two instruments seeing the same local time, or is one systematically earlier? (E.g., instrument A measures 1 hour earlier than instrument B). This could explain any systematic differences since NO₃ will be varying through the night.

Results: It would be useful to try and filter coincidences based on large difference in temperatures as NO₃ will be very sensitive to this.

Page 1504, line 25: can you speculate on why the agreement might be bettering the tropics?

Figure 1, caption: why use different SZA screening criteria for the two instruments (107 vs 100)?

Grammar

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Page 1499, line 10: “in practice existing only . . .”

Page 1500, line 18: “Beside” -> “Besides a”, or equivalent

Page 1500, line 24: fix “with 25-45 km altitude range” and change “with the precision” to “with a precision”

Page 1501, line 7: “The instrument” which instrument, SAGE III? Change this to “SAGE III”, likewise on line 8 change “the instrument” to “it”

Page 1501, line 17: “Data reduction” – what does this mean?

Page 1502, line 24: “share” is the wrong word, do you mean “possess”

Page 1503, line 12, line 14: Use “The” at the beginning of the sentence, “The black line indicates . . .”

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 1497, 2012.