Dear Reviewer,

Thank you very much for your positive comments on our paper "On sampling uncertainty of satellite ozone profile measurements". Below we present the replies to your comments.

Reviewer #1.
Specific comments

p.2386, Section 2.2: What is the temporal resolution of the FinROSE model? Please add a short comment on the model resolution in comparison to the resolution of the satellite data. Is the model resolution well suited (i.e. fine enough) for this study?

Authors:
The temporal resolution of FinROSE is variable. For our analysis, we ran FinROSE with 30 min time step. This temporal resolution is sufficient to capture majority of ozone variability, and therefore well suited for this study. We added this information and the note in the revised version.

Reviewer #1:
p.2389, lines 8–10: The difference between collocated GOMOS and MIPAS ozone data is ~4% (shown in the bottom panel of Fig.2, green and magenta lines). Why are the differences for strict and more relaxed collocation criteria similar? I would expect to see smaller differences in case of the tight collocation criteria. Do you have an explanation?

Authors:
Biases between collocated datasets (which are shown in Fig.2) are mainly due to instrument-specific features. They should weakly depend on collocation criteria, if no systematic difference due to large spatio-temporal mismatch is introduced. With relaxing the collocation criteria, usually the spread about the mean value (bias) increases, but not the mean value itself.

Reviewer #1:
p.2390, last paragraph: I would suggest to reformulate the sentence "... indeed, the same periods are observed in the inhomogeneity values" and to explain Fig. 1d in more detail. Please give a short explanation of H_{lat} and H_{time} here.

Authors:
In the revised version, we provide more details, as suggested.

Reviewer #1:
p.2393, line 10: The LLM climatology is based on satellite data (and balloon sondes). Is the climatology affected by sampling uncertainty? Is the climatology publicly accessible?

Authors:
The LLM climatology is affected by sampling uncertainty, especially at lower altitudes, where it relies on local ozonesonde measurements. The LLM climatology can be accessed via anonymous ftp from toms.gsfc.nasa.gov; the data are in the directory pub/LLM_climatology. The detailed information is provided in the dedicated paper (McPeters et al., 2007).

Reviewer #1:
Technical corrections
p.2383, line 18: Define "SPARC".
p.2384, line 9: Remove "(http://www.esa-ozone-cci.org/?q=node/166)" (see p.2393,line 24)
p.2390, line 9: change "anisotropy" to "asymmetry"
p.2391, line 1: change "(1)" to "Eq. (1)"
p.2402, Fig.4, caption: I would suggest to mention in the caption, that the estimated sampling error is based on model data only (sub-sampled to the satellite locations).

Authors: Corrected.