Dear Dr. Weber,

Thank you for the opportunity to submit a revised manuscript. We believe that we have addressed all the referees' comments as detailed below.

Sincerely,

Adam Bourassa and co-authors

In Response to Referee #1

We have added the following paragraph in the Summary and Discussion section comparing to the trends reported for SCIAMACHY and MIPAS, and included the corresponding references:

"Other recent studies of long term satellite measurements have reported stratospheric ozone trends by similar analyses, though not by merging with the SAGE II measurements. Gebhardt et al., 2014, derived trends using SCIAMACHY measurements alone from 2002 to 2012. The broad pattern of recovery in the upper stratosphere is consistent with our results, including the hemispheric asymmetry that shows stronger recovery in the southern hemisphere. However, the SCIAMACHY results show strong, significant, negative trends of up to -20% per decade in the tropics between 30-35 km, and up to -10% per decade in the northern hemisphere middle latitudes between 25-35 km that are not in agreement with our results. Additionally, the SCIAMACHY analysis does not show the decreasing trend in the lower stratosphere. Eckert et al., 2014, also performed similar analyses using the MIPAS measurements alone from 2002 to 2012. These results show recovery in the mid-latitude upper stratosphere and a small region of significant negative trend in the tropical stratosphere near 30 km, though with smaller magnitude than that found with SCIAMACHY, and no significant trend below 20 km."

We have also implemented all of the minor suggested changes.

In Response to Referee #2

Regarding the minor comments:

1. We are not aware of any technical or structural cause for the increased bias at latitudes south of 50 S. It does not seem to be related to sampling or any retrieval deficiency. However, the bias removal that we perform in the merging seem to handle this and there is no indication that there is a significant effect on the resulting trends. The correlation to tropopause pressure in this region is somewhat interesting, but we have no further insight into the cause.
2. The observed ozone enhancements during warm ENSO events at northern mid-latitudes is indeed in agreement with previous work, and we have added the following statement and reference at the end of this discussion in the revised manuscript. "The ENSO projection also shows out-of-phase patterns in the NH midlatitude lower stratosphere, corresponding to ozone enhancements during ENSO warm events (consistent with observations of column ozone over midlatitudes, e.g. Bronnimann et al, 2004)."

3. As noted in the response to the other referee, we have added a paragraph discussing the comparison of the results with those from SCIAMACHY and MIPAS.

Figures:

Fig. 2 caption has been revised to include explanation of “a” and “b” regions.
We are unsure of the requested change to be made to the Fig. 6 caption.