

Authors' Final Response.

We have corrected all the identified typos and searched/cleared any more of similar type.

We propose to keep all the figures (including the Pacific & Atlantic basin-mean profiles), but we have added the following paragraph to the beginning of Section 3.3 in response to RC1, explaining the logic of including these profiles. RC1 has accepted these changes and decision (see RC3).

3.3 Mean altitude profiles

Given the inherent synoptic variability plus the large seasonal shifts in chemical reactivity across the Pacific and Atlantic basins seen in the individual profiles (Figures 6-13), one might ask how useful or representative the four ATom transects are for testing model statistics. Because the 53°S-60°N Pacific and Atlantic transects contain the north-south seasonal shifts and most of the reactivity (see Southern Ocean, Arctic and Antarctic reactivities above), a mean profile should average over some of the synoptic variability and give us a seasonal variation in the basin-mean reactivity that could test chemistry-climate models. Seasonal variability in the mean reactivity profiles is clearly due to shifts in the chemical composition caused, for example, in the Atlantic by the cycle of African biomass burning and convection. A similar reasoning applies to basin-wide probability densities, see Section 3.4 below.