

Thanks very much to Hugh Pumphrey for some good suggestions, especially for improvements to the figures. We repeat below the reviewer comments in and give our responses in italics.

Page 6 Line 22: It is not clear why the authors felt it necessary to show two different versions of the ACE-FTS data and only one version of the MLS data. I have no reason to suggest that they change this, but I think they should give reasons for their choice.

We did drop the v2.2 retrievals from Figure 6 to reduce clutter, but since there are clear differences from the v3.5 retrievals, and since v2.2 retrievals have been used in previous published studies, we left them in Figures 3 and 4. We now state that the MLS v3.3 retrievals were almost imperceptibly different.

- The political point made by the authors on page 18 line 22 is very pertinent. It would be nice (but perhaps inappropriate) if they were to be more explicit about the fact that both ACE-FTS and MLS are near the end of their lives and that there are no missions any further on than a drawing board which might continue the time series.

We of course completely agree with the reviewer regarding this serious problem, but we are hesitant to mention it here. Such a comment would more appropriately be made in the SPARC WAVAS overview paper in preparation (Walker et al.).

3 Technical corrections

- All figures except figure 2: The scheme of colours and symbols set out in figure 1 has a number of unsatisfactory features. In particular, there are too many red/magenta colours which are not easy to distinguish. This makes all the figures (but especially figure 5) rather hard to interpret.

The color table in Figure 1 is being used in a number of studies, and for consistency with those studies we are very hesitant to make any changes. We very much apologize for the difficulty this causes in interpreting Figure 5.

- Figure 2: The reader has no way to tell which curve is for the sensitivity at which pressure level. The curves should really use different line-styles or colours, with a legend to show which curve is for which level.

Figure 2 now includes different colors for specific indicated levels.

- Figure 5: the many dotted horizontal lines are a distraction. The authors should consider removing all apart from -1, 0 and 1, and making the line at 0 dashed rather than dotted.

Done

- Page 15 line 18 and page 17 line 16: A1 should be *A*1, i.e. the “A” should be in italic.

Done. Sorry for being sloppy about this.