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Discussions

Interactive comment on "Optimised degradation correction for SCIAMACHY satellite solar measurements from 330 to 1600 nm by using its internal white light source" *by* Tina Hilbig et al.

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In general, this is a good paper and I recommend only a few minor corrections.

Section 3.4 is about the aging correction for the WLS. As I understand your text, the WLS is only used to make a flat-field correction to the detector array. Corrections to the long-term trends in the SSI time series come from the other sources. Is this correct?

In the new degradation model, the WLS is an "independent" light source. The corrections shown in Figure 5 and described in Equation 1 seem to assume that all of the observed changes in the lamp are due to degradation of the lamp and none of the loss

of signal is due to the rest of the system. Fitting a curve to remove the variation in the WLS seems to make an assumption about the magnitude of changes in the detector (for example). If I have interpreted the text correctly, can you add some discussion on how this changes the trends in the SSI time series? If I have not interpreted the text correctly, then could you add another paragraph explaining how the WLS correction does not impact the final degradation correction?

In Figure 9, the 430 nm time series shows out of phase trends. Is this a statistically significant result about the Sun, or does this fall within the uncertainty of your SSI time series? In Figure 10, the 425-435 band also shows this behavior. In the text, you do mention the out of phase behavior in the SCIAMACHY data, but you don't make a clear statement on whether or not this is a new finding of SCIAMACHY. I would like to see a clarification on this point.

P16 L12: you refer to Woods' MuSIL and Mauceri's SIMc as if they were observational datasets. Both are essentially corrections based on proxies (or TSI) rather than instrument data. So comparisons to those time series should fall in the same category as comparisons to SATIRE-S or NRLSSI2.

Figure 11 uses different colors for the different missions than Figure 9. I would recommend that each instrument in the two figures have a consistent color assigned. It will make it easier for the reader to compare the time series.