

The figures shown below present the same analysis as in Fig. S6, except that the Collections 5.1 and 6 Level 3 AOD data were used instead of the AOD dataset based on the Collection 5.1 Level 2 data. Specifically, the figures show the relationships between BB fractions of CO columns (Δv) and AOD ($\Delta\tau$) in (a) the "source" region on 21 July and (b) in the "receptor" region on 22 July 2012 according to the satellite (MODIS and IASI) measurements (see green and blue lines) and the simulations for the STN scenario (see orange dashed lines). The source and receptor regions are shown in Fig. S1. We consider an increase of the difference between the regression coefficients for the observed and simulated data in the receptor region with respect to the source region as evidence for the enhancement of AOD due to BB aerosol aging processes. It can be seen that this increase is slightly larger (0.45 vs. 0.42) in the case with the Collection 6 data than in the case with the Collection 5.1 data. Accordingly, this analysis indicates that the AOD dynamics discussed in our manuscript is not an artifact of the known minor issues in the Collection 5.1 data.

