

Interactive comment on “Sources and light absorption of water-soluble brown carbon aerosols in the outflow from northern China” by E. N. Kirillova et al.

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Received and published: 19 September 2013

This manuscript presents very interesting work that should be published in ACP after the following comments are taken into account:

1) Major Flaw: The radiative forcing calculation assumes a solar black body spectrum. This is wrong for the troposphere as solar radiation below ~ 300 nm is effectively absorbed by the stratospheric ozone layer. As a consequence, the solar spectrum in the troposphere doesn't contain any light below ~ 300 nm; it is dark below ~ 300 nm. Figure S6 clearly shows that for the solar black body model used here, most of the WS-

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BrC radiative forcing occurs below 300 nm. Therefore, the calculated ratios of WS-BrC and BC radiative forcing seem completely wrong. Calculations need to be redone with an appropriate solar model that takes ozone absorption into account.

2) The authors need to clarify the difference between WSOC and WS-BrC!
3) Wavelength dependent absorption spectra should be shown, ideally plotted in log-log space together with the linear (in log-log space) Angstrom coefficient fit to enable the reader to evaluate slope and curvature and SNR of these spectra.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 19625, 2013.