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Supplement of

Quantification of uncertainties in OCO-2 measurements of XCO₂: simulations and linear error analysis

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The following figures show the sensitivity of retrieved XCO₂ to interference error
5 caused by aerosol. Five composite aerosol types are shown, dust (DU), sea salt (SS),
black carbon (BC), organic carbon (OC), and sulfate (SO). Each aerosol is considered
separately in 2 layers, at $\sigma = 0.95$ and $\sigma = 0.5$. See section 3.3.1 of the paper for
details of the aerosol definitions and calculations.

10 In the figure labels, interference in the lower layer is referred to as ‘Interference_1’
while the upper layer is ‘Interference_2’. All figures show the response of XCO₂ to
an error, or variability, of AOD = 0.1 in the relevant layer and aerosol type. All
figures are plotted on the same scale and with the same color sequence, to aide
comparability.

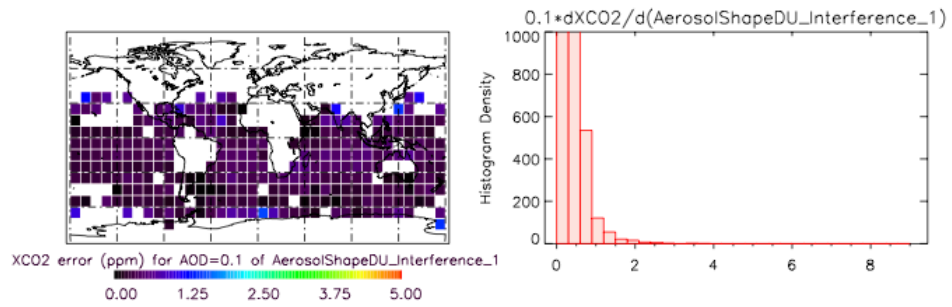
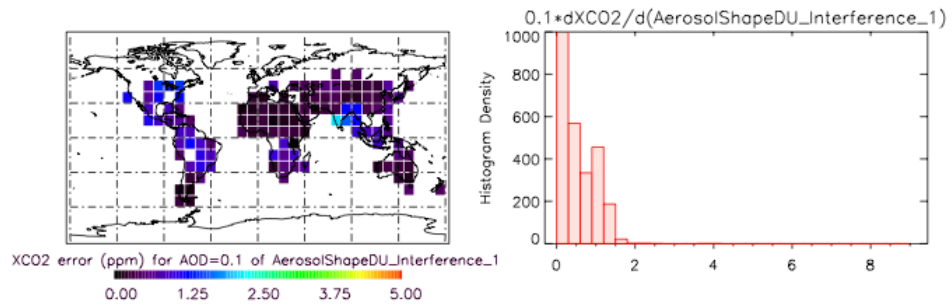
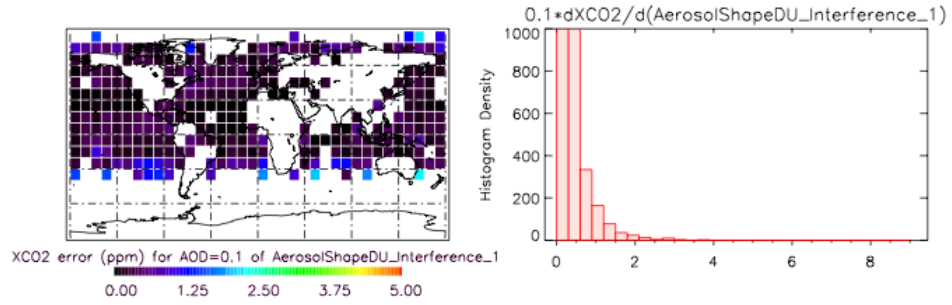
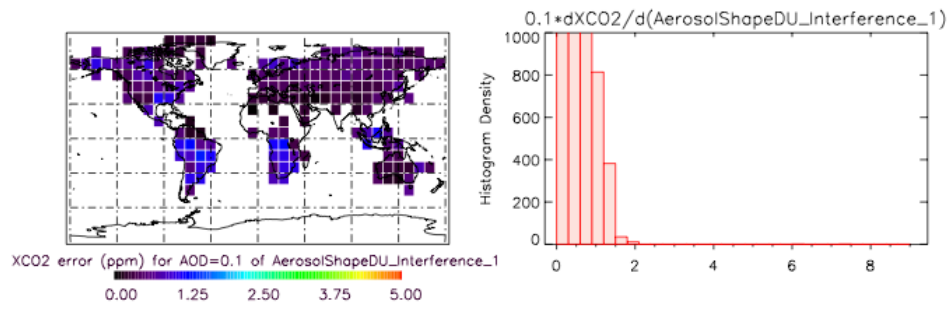
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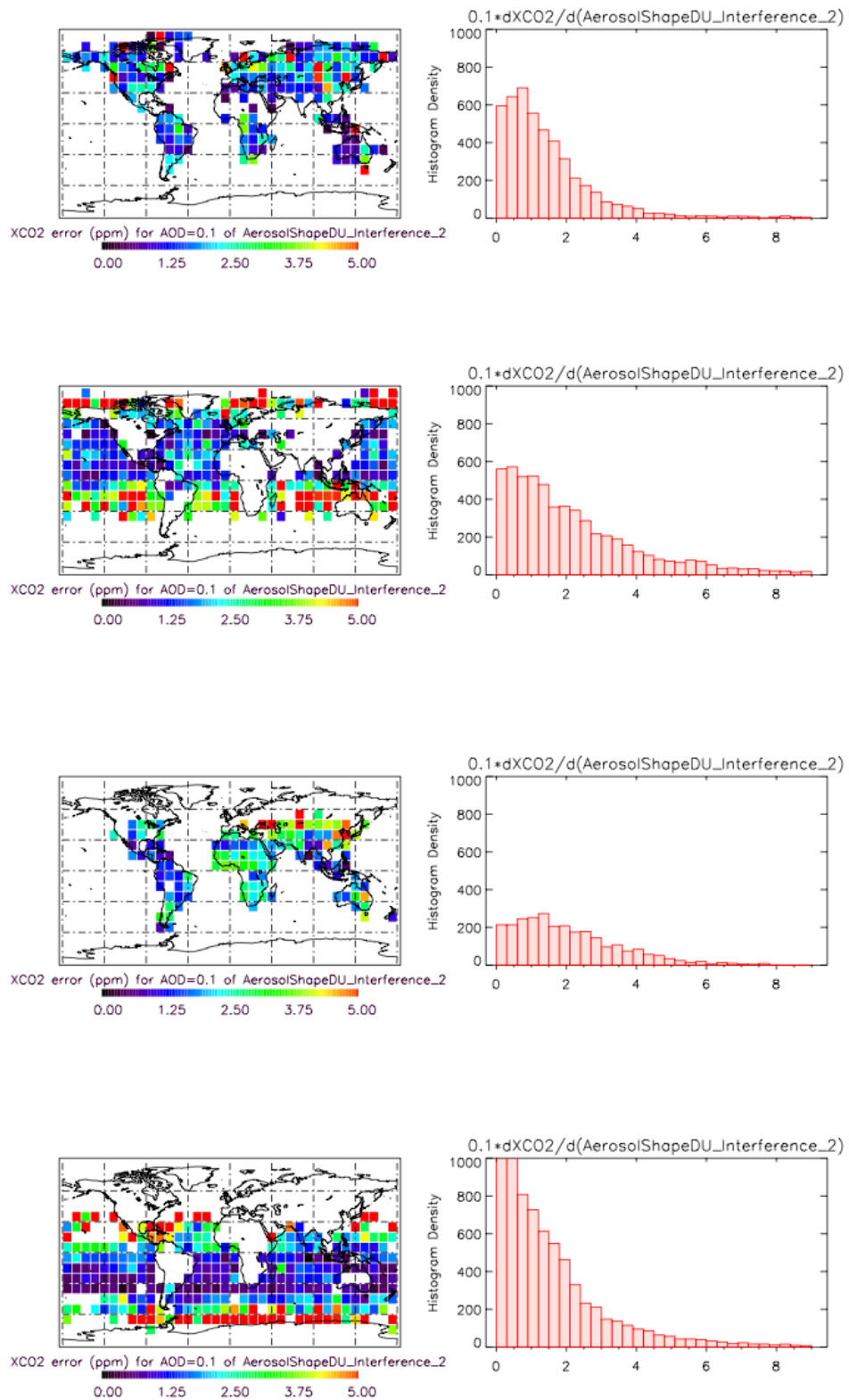
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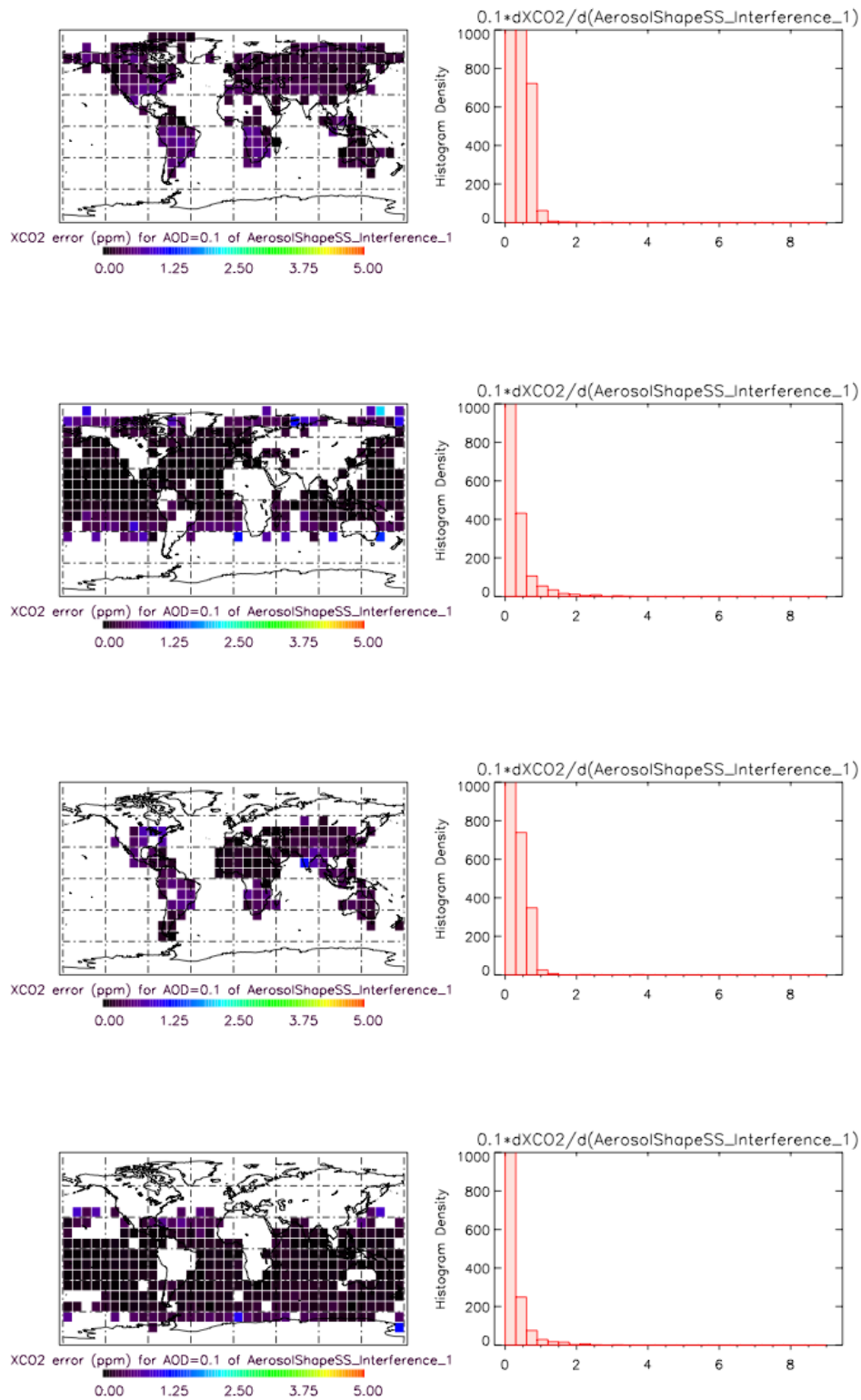
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Figure U1. Dust (DU) in the layer surface - 750 hPa



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Figure U2. Dust (DU) in the layer 750 hPa – top of atmosphere



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Figure U3. Sea salt (SS) in the layer surface - 750 hPa

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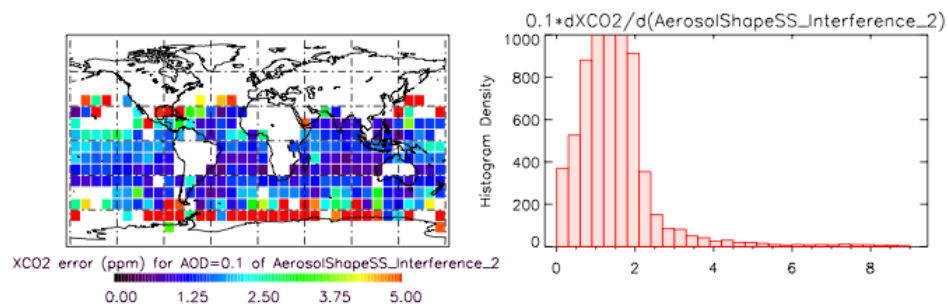
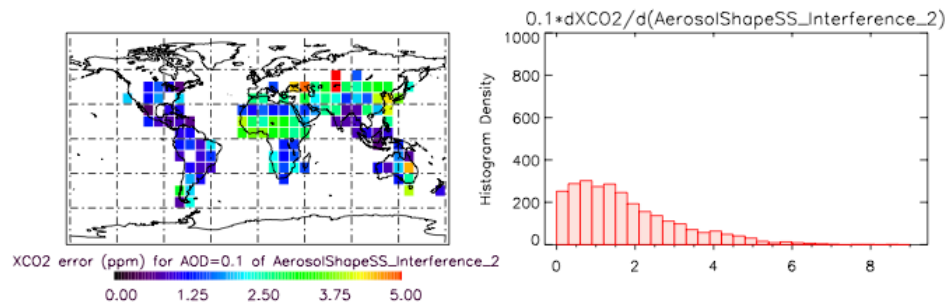
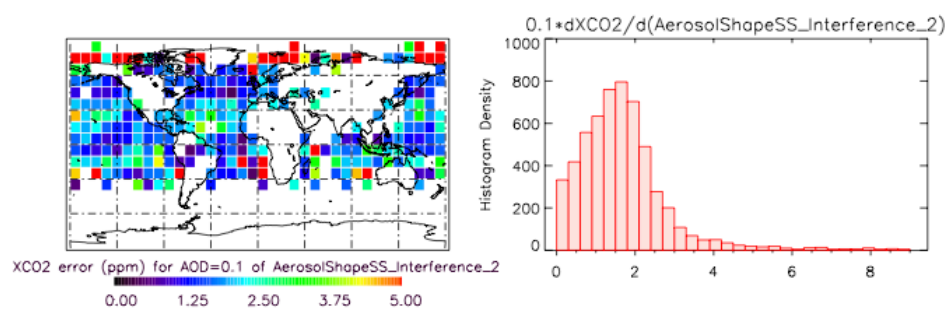
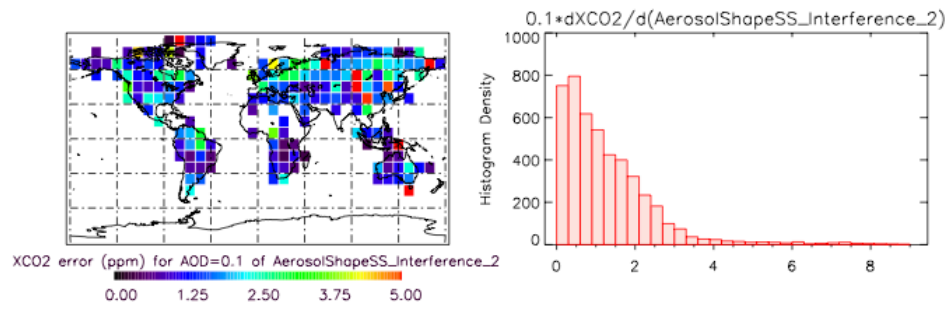
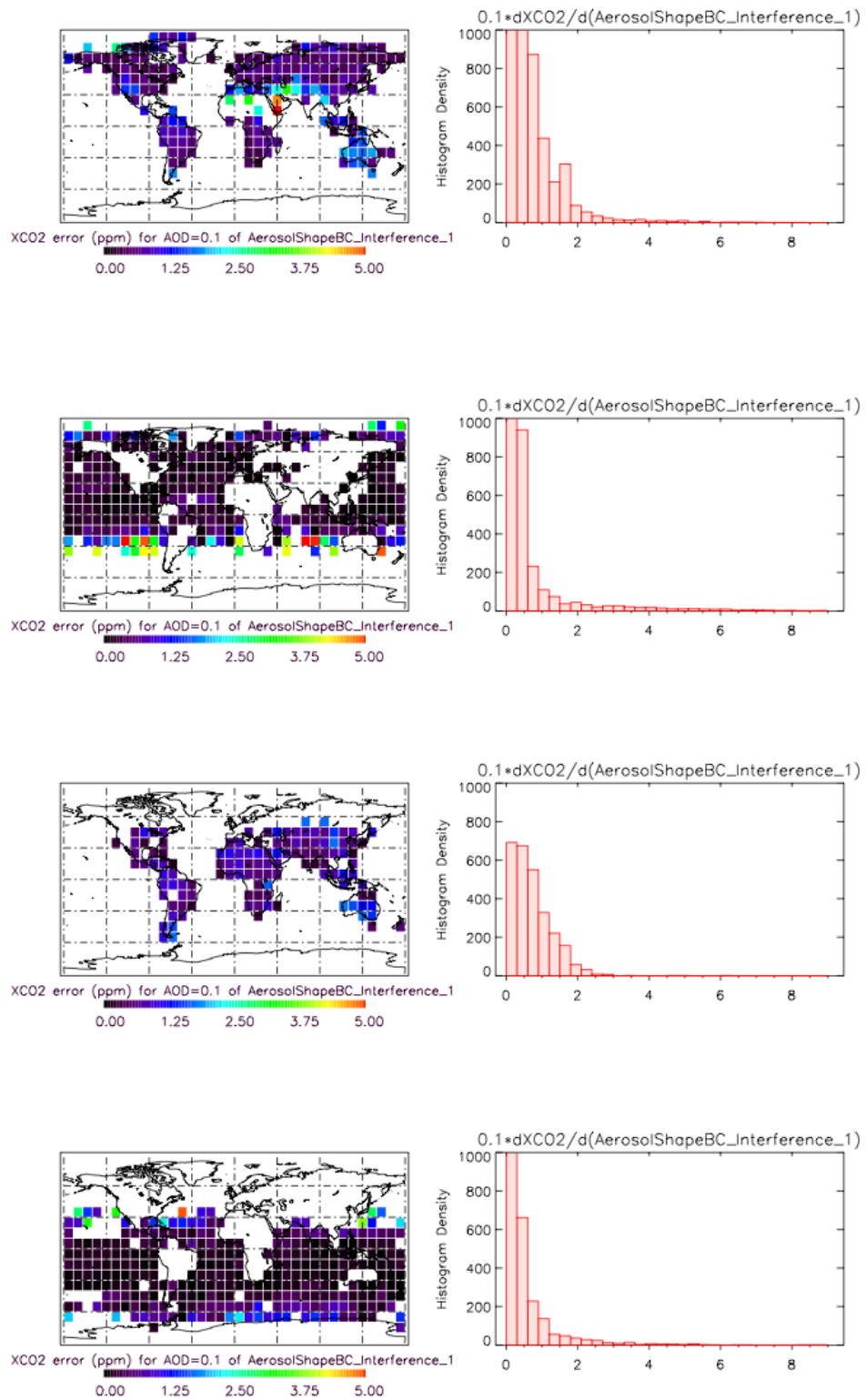
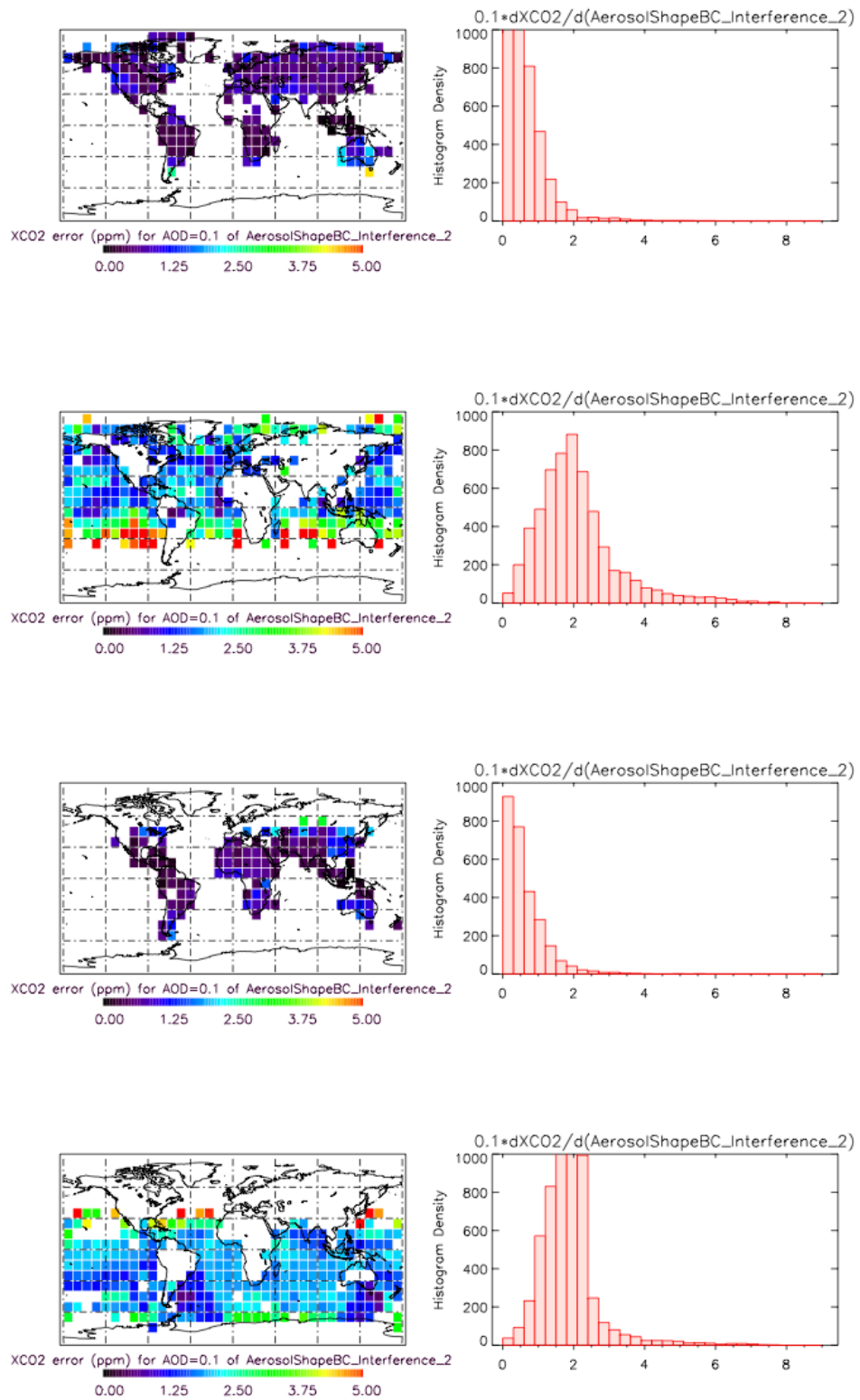


Figure 4. Sea salt (SS) in the layer 750 hPa – top of atmosphere

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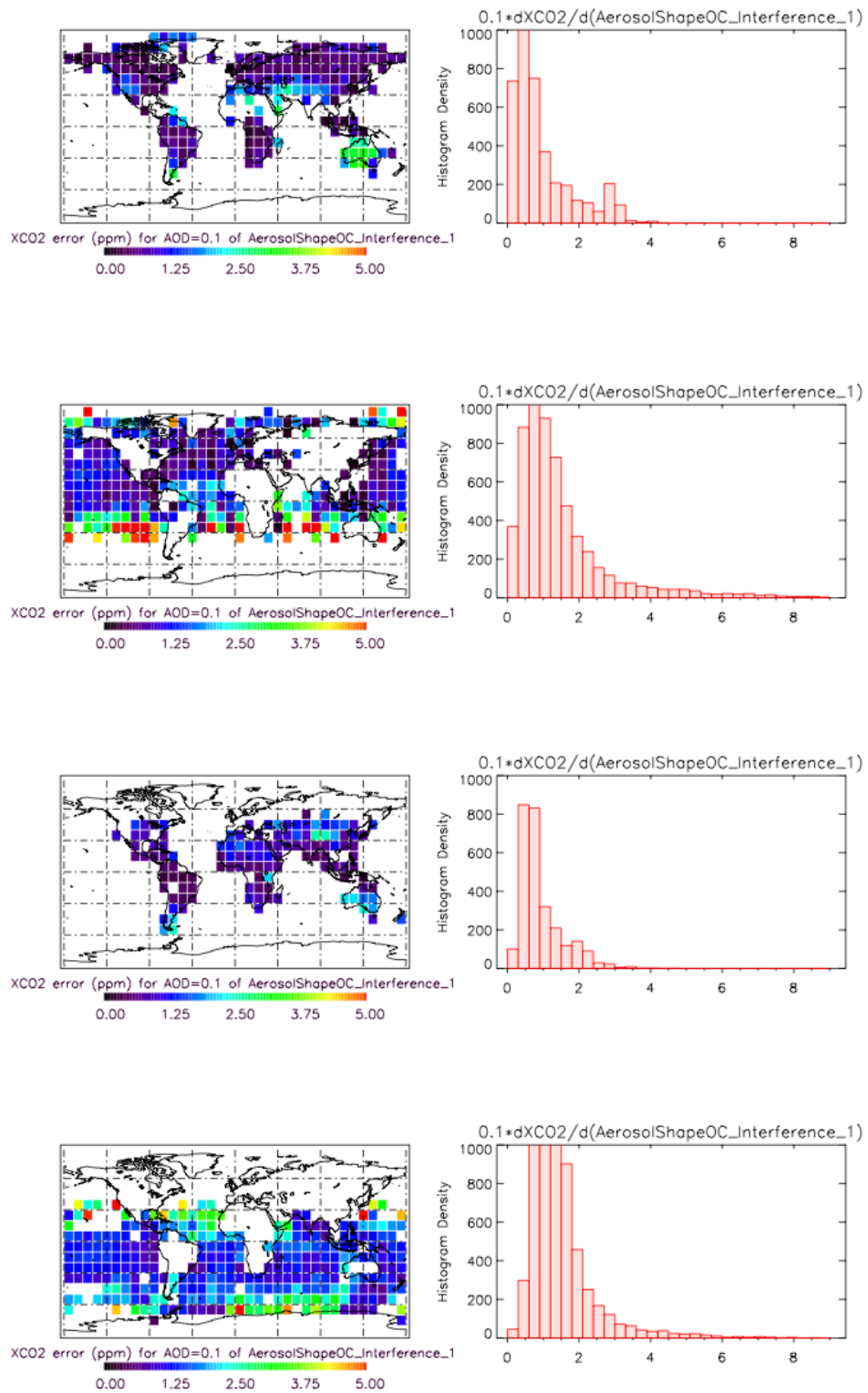


65 Figure S5. Black carbon (BC) in the layer surface - 750 hPa



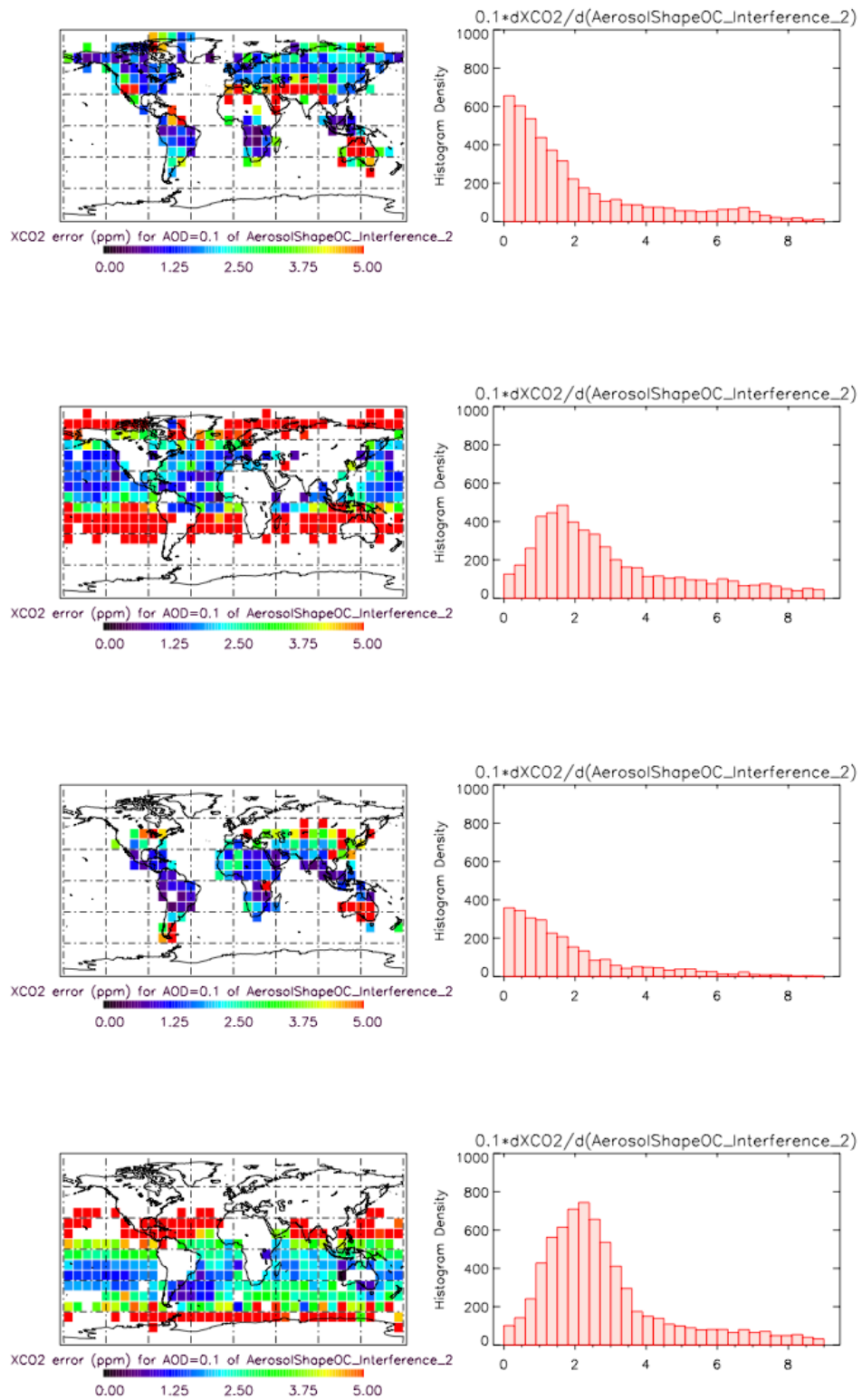
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Figure S6. Black carbon (BC) in the layer 750 hPa – top of atmosphere



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Figure S7. Organic carbon (OC) in the layer surface - 750 hPa



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Figure S8. Organic carbon (OC) in the layer 750 hPa – top of atmosphere

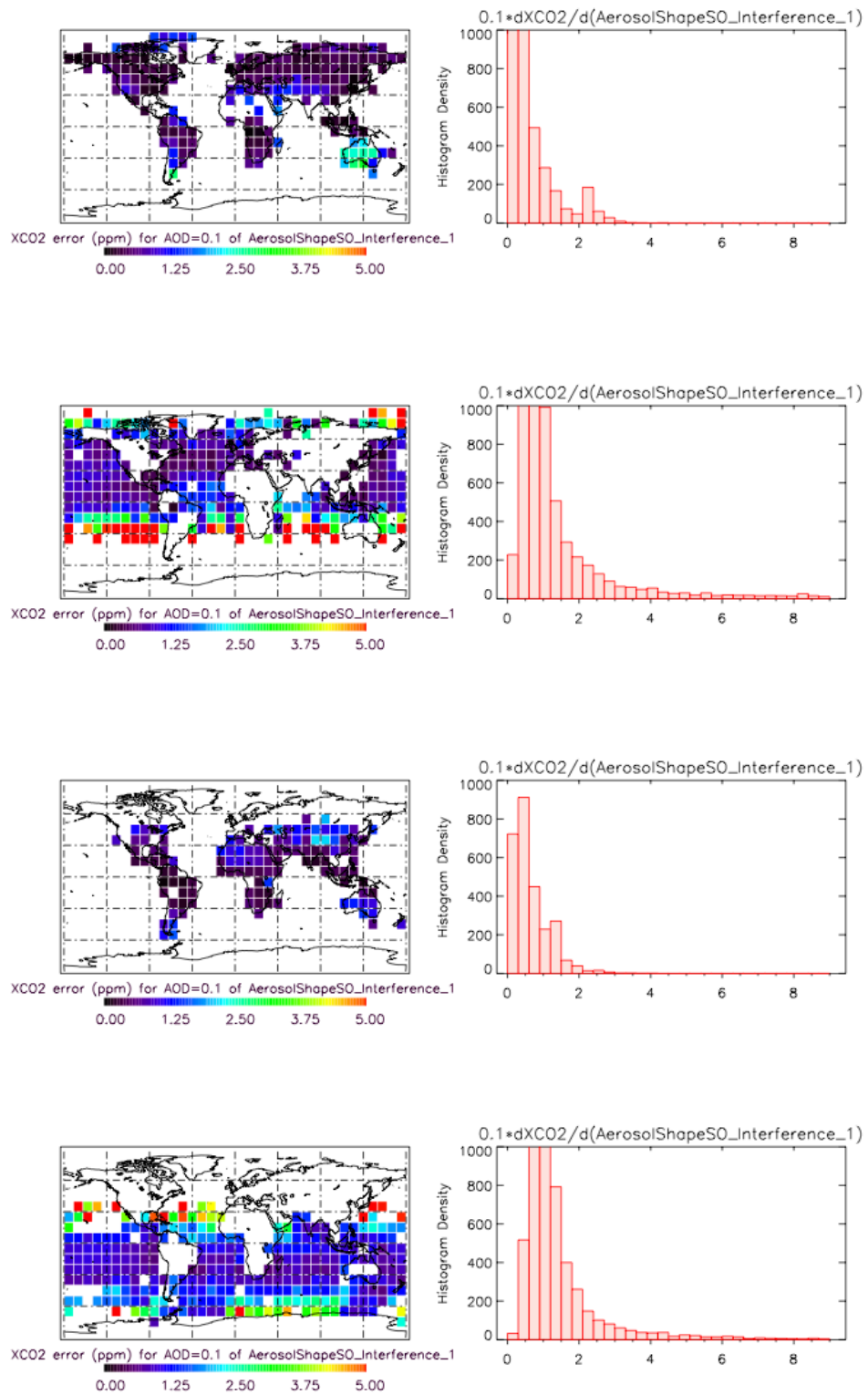
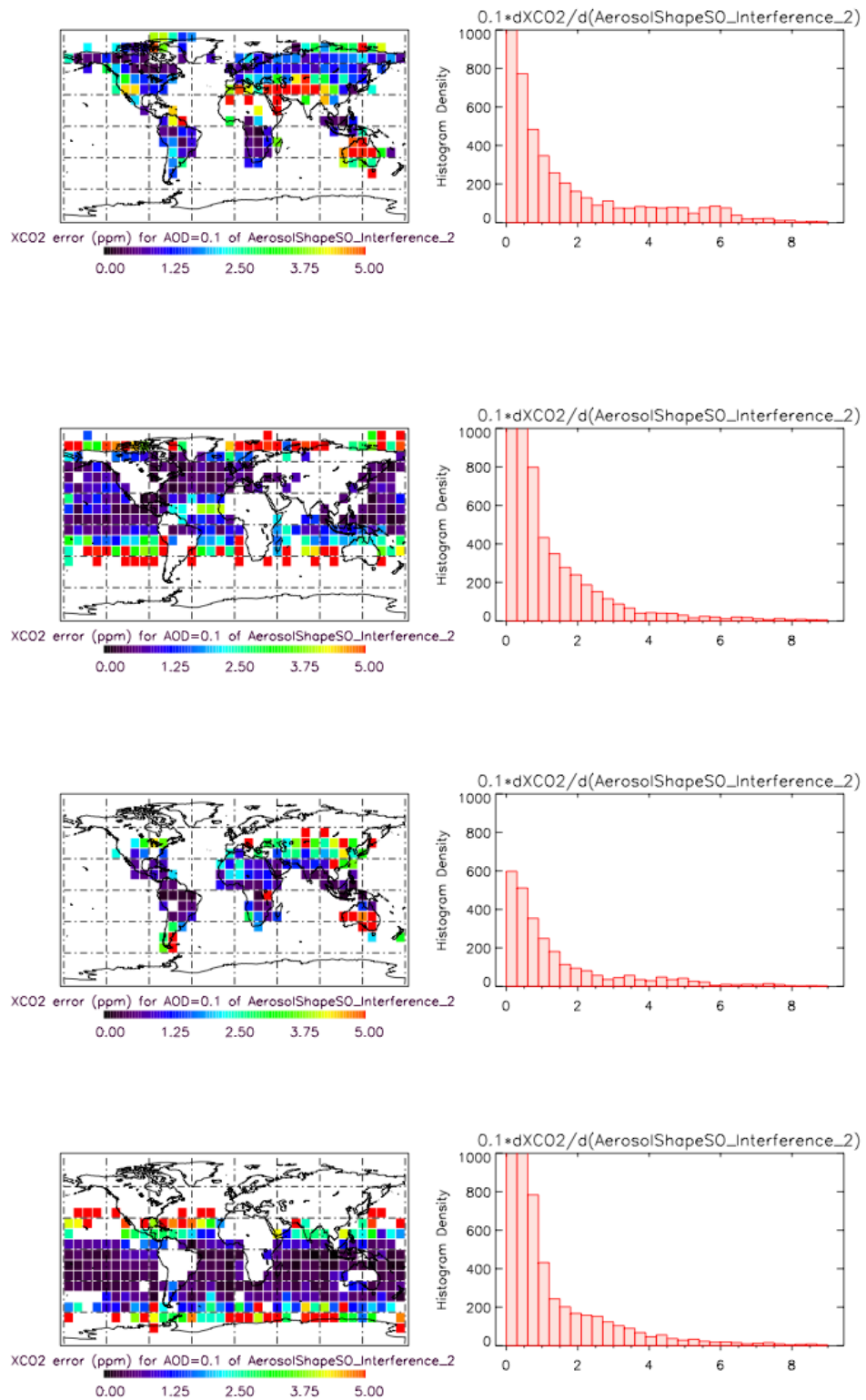


Figure S9. Sulfate (SO) in the layer surface - 750 hPa



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Figure S10. Sulfate (SO) in the layer 750 hPa – top of atmosphere