Supplement of

Fire-climate interactions through aerosol radiative effect in a global chemistry-climate-vegetation model

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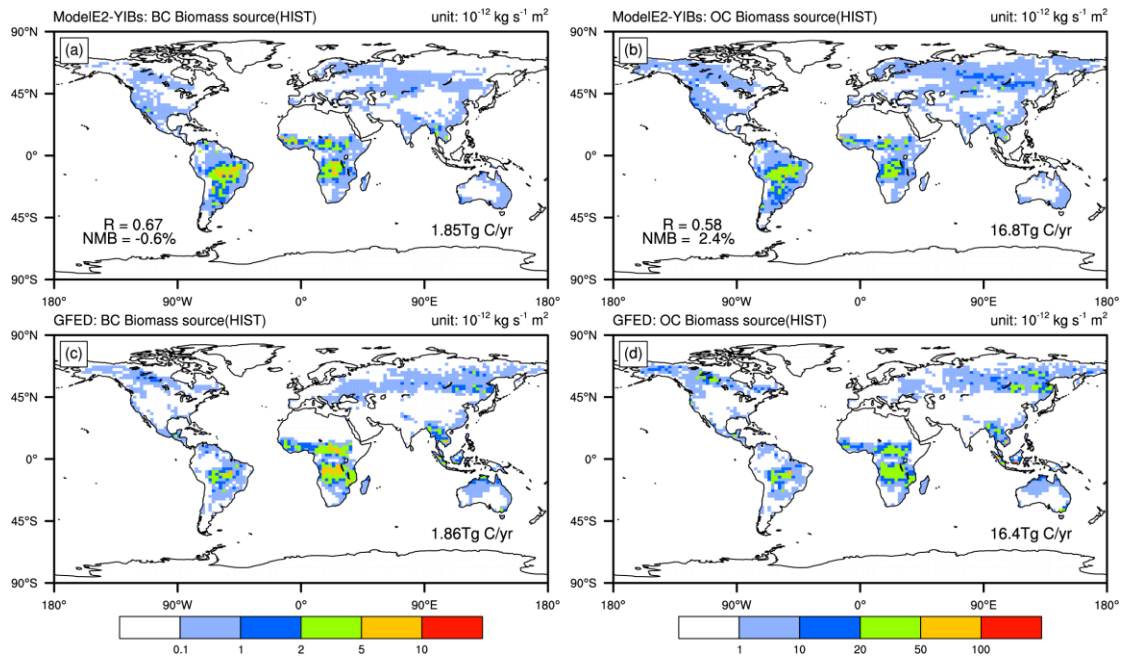
19 **Fig. S1** Annual mean fire emissions of (left) BC and (right) OC (a, b) simulated by ModelE2-YIBs

20 and (c, d) observed from GFED4.1s. Modeling results are from the simulation of YF_AD_AI_AA.

21 The total emissions are shown on the bottom right of each panel. The correlation coefficients and

22 normalized mean biases between simulations and observations are shown on the top panels.

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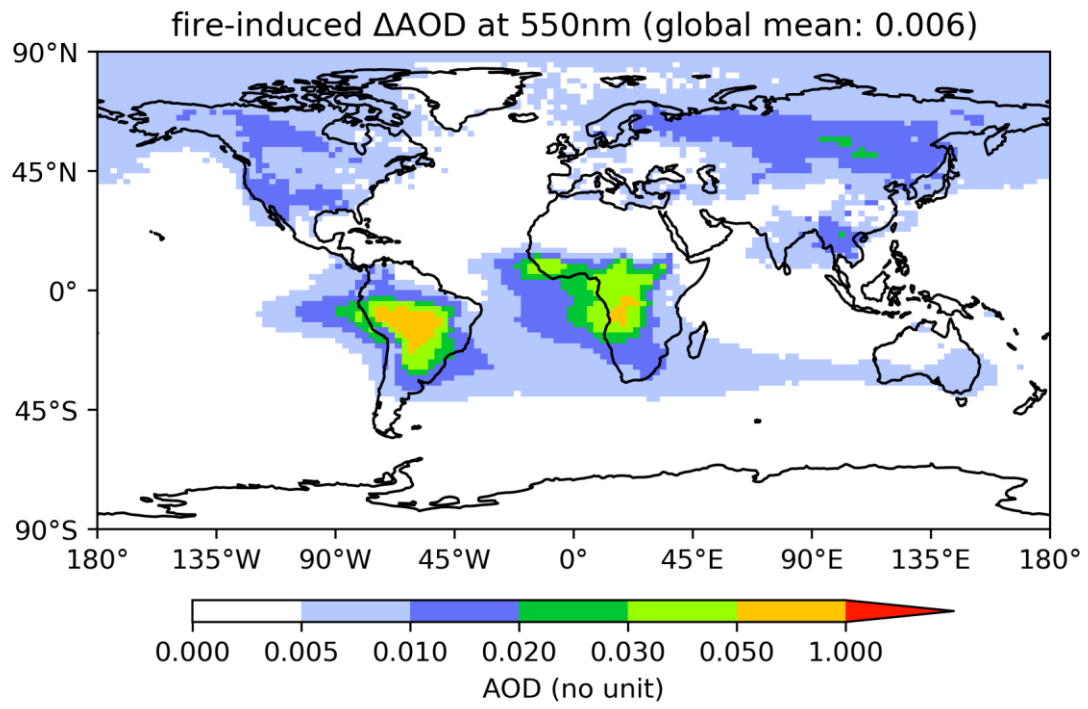
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25 **Fig. S2** Annual mean changes in AOD at 550 nm induced by fire.

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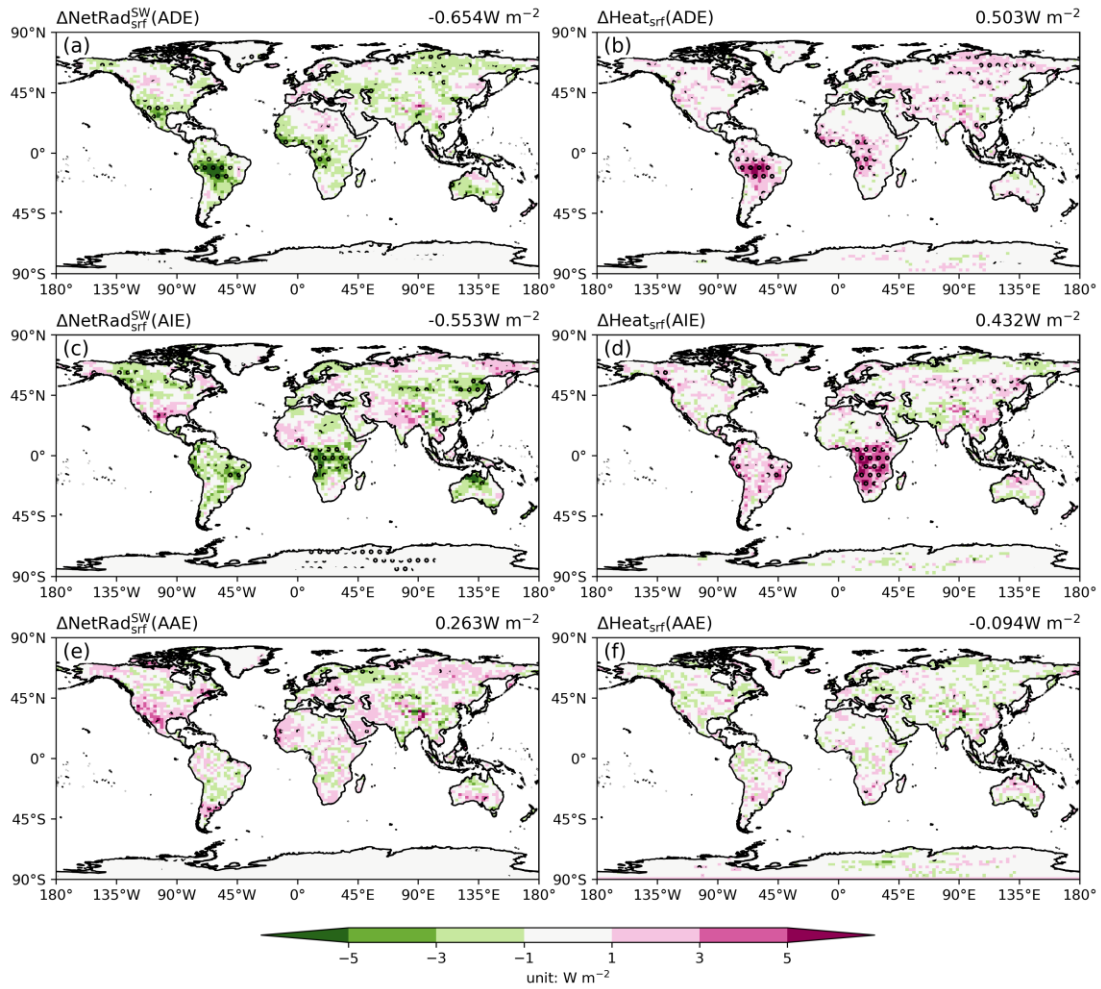
Fig. S3 Changes in surface (left) net shortwave and (right) heat fluxes (sensible + latent) due to (top)
direct effects, (middle) indirect effects, and (bottom) BC-snow feedback of fire aerosols over land
grids. Positive values represent the increase of downward radiation. Global land average is shown
at the top of each panel. Dots denote areas with significant ($p < 0.1$) changes.

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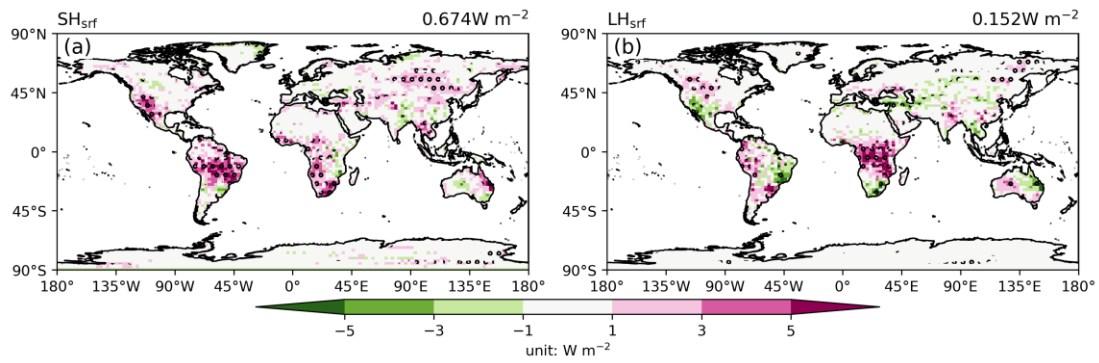
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34 **Fig. S4** Changes in surface (a) sensible and (b) latent heat fluxes caused by fire aerosols. Positive
35 values represent the increase of downward radiation. Global average value is shown at the top of
36 each panel. Dots denote areas with significant ($p < 0.1$) changes.
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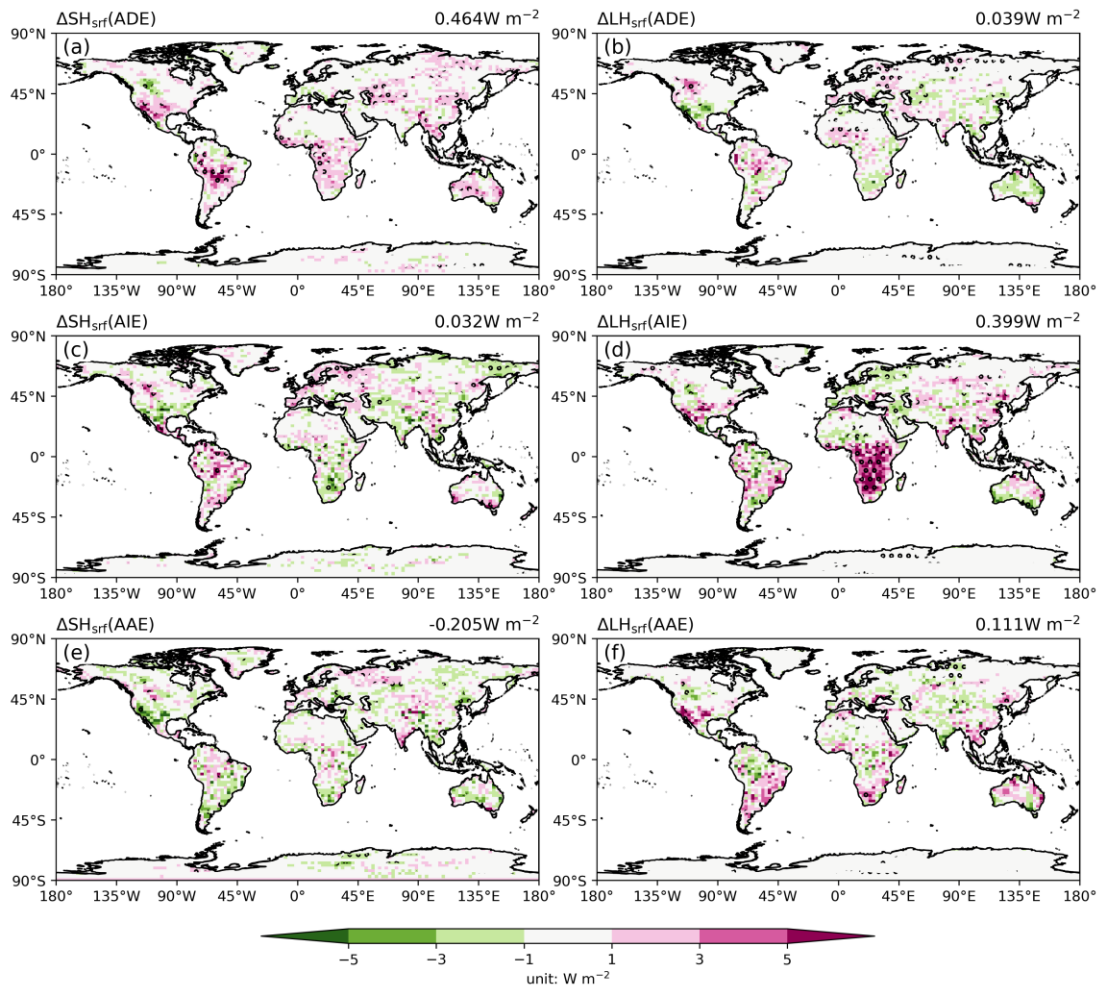
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Fig. S5 Changes in surface (left) sensible and (right) latent heat fluxes due to (top) direct effects,
(middle) indirect effects, and (bottom) BC-snow feedback of fire aerosols over land grids. Positive
values represent the increase of downward radiation. Global land average is shown at the top of
each panel. Dots denote areas with significant ($p < 0.1$) changes.

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