



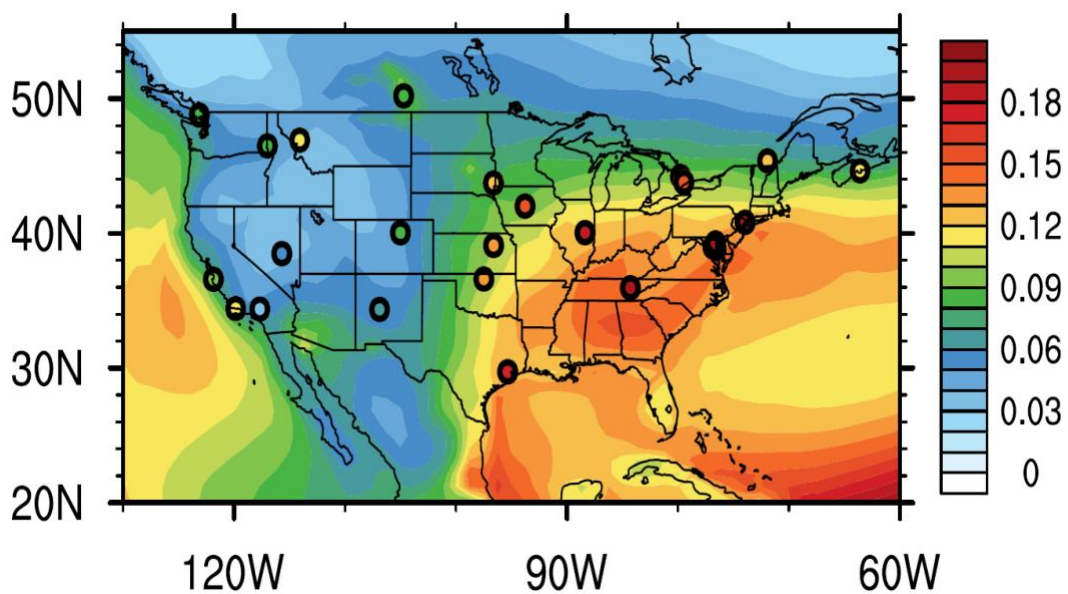
Supplement of

Projected increases in wildfires may challenge regulatory curtailment of PM_{2.5} over the eastern US by 2050

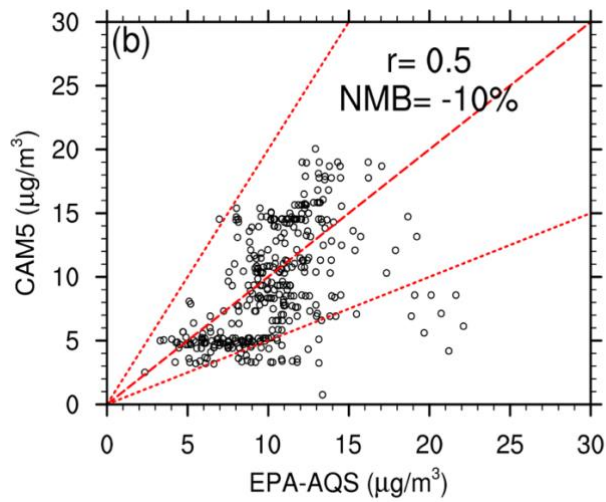
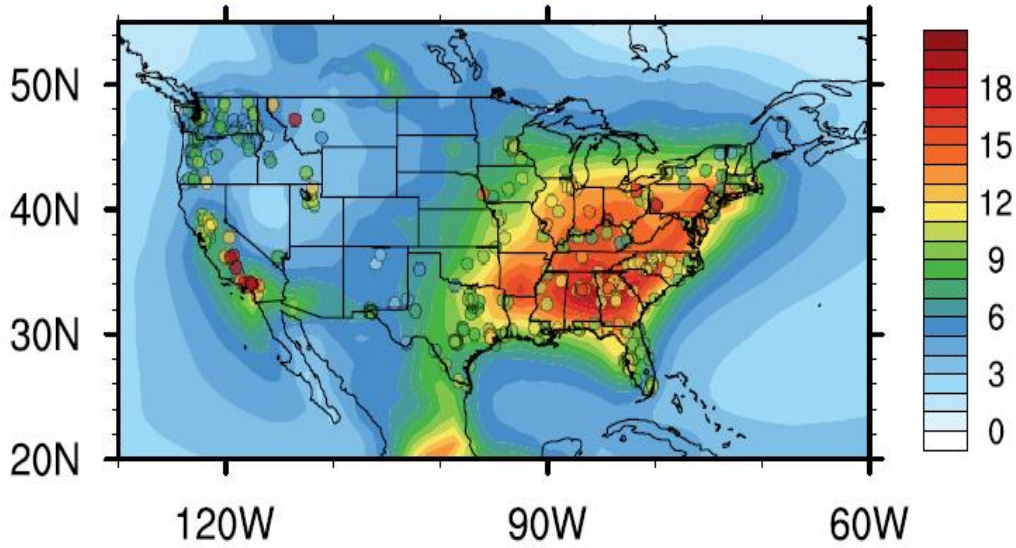
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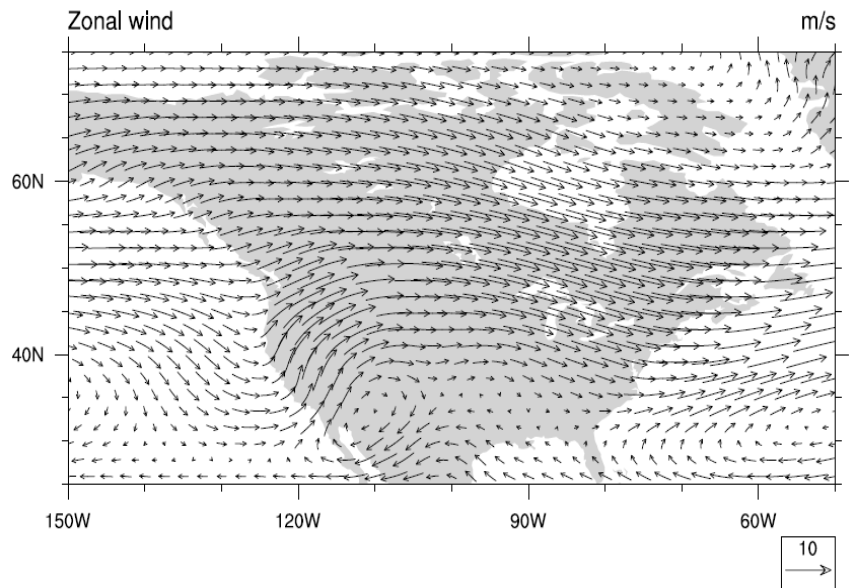
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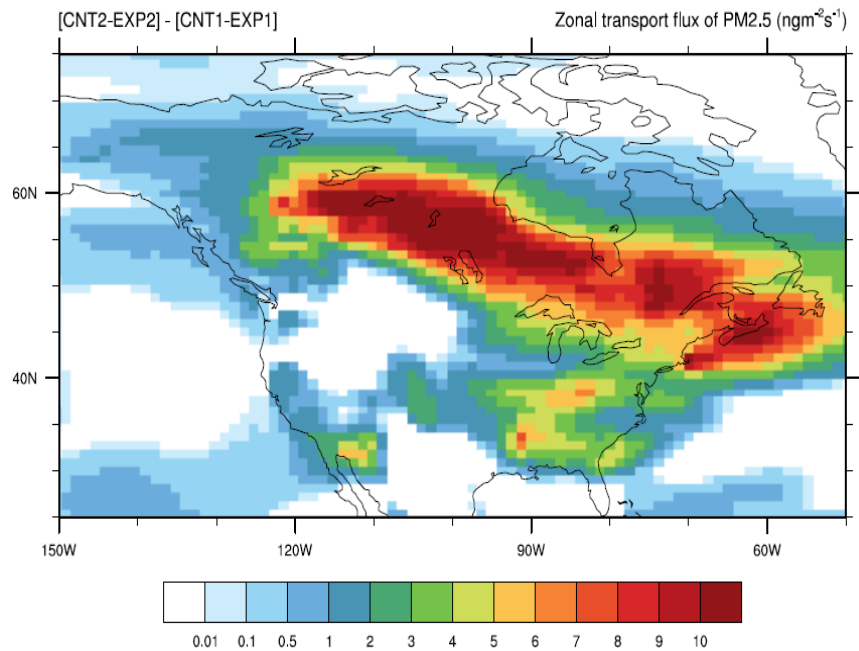
Supplementary Figure 1: Evaluation of the simulated AOD at 550 nm (unitless) against observations at the AERONET sites in North America. Comparison of decadal-averaged (2001-2010) annual mean AOD between the simulation (shading) and AERONET in-situ observations (colored circles) in the 2000s.



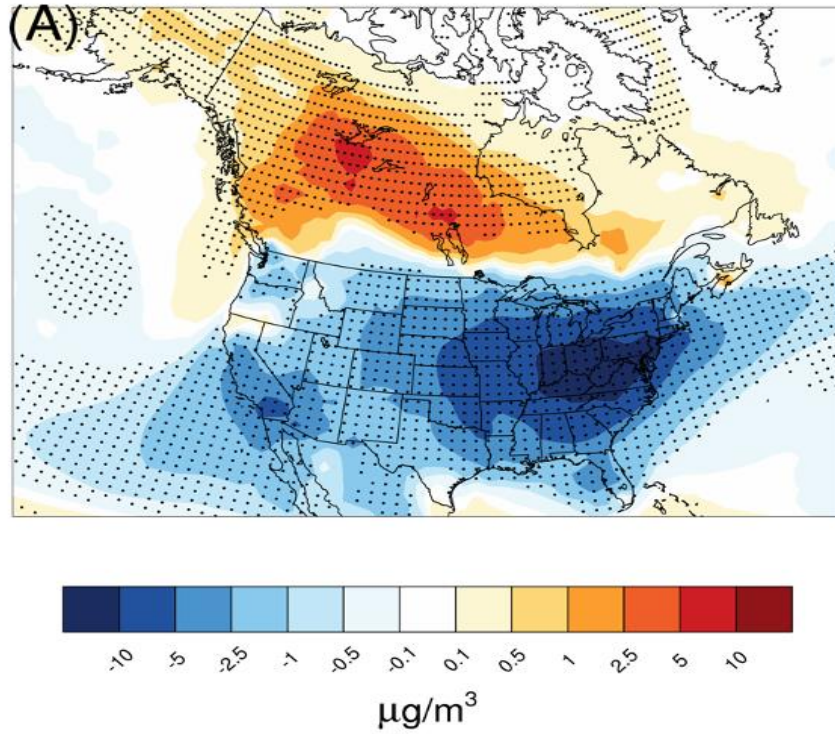
Supplementary Figure 2: Evaluation of the CAM5 simulated surface $PM_{2.5}$ ($\mu\text{g m}^{-3}$) with fire emissions from RESFire. Comparison of decadal-averaged (2001-2010) annual surface $PM_{2.5}$ between the simulation (shading) and the Interagency Monitoring of Protected Visual Environments (IMPROVE) data from US EPA Air Quality System (AQS) in situ observations (colored circles) in the 2000s; (b) Comparison of simulated and in-situ measured annual mean surface $PM_{2.5}$.



Supplementary Figure 3A: Spatial distribution of mean summertime wind vector over North America at 800 hPa from the 2000_{ALL} simulation. Differences in the mean wind vector among the 4 simulations are negligible (not shown).



Supplementary Figure 3B: Spatial distribution of the decadal mean difference in summer mean zonal flux ($U \cdot PM_{2.5}$ values) of wildfire-induced $PM_{2.5}$ between the 2000s and the 2050s ($[2050_{ALL} - 2050_{WEF}] - [2000_{ALL} - 2000_{WEF}]$) within the planetary boundary layer (from the surface to 800 hPa).



Supplementary Figure 4: Spatial distribution of surface PM_{2.5} in 10-year averaged summer mean quantities over North America from the present day to the mid-21st century (2050_{ALL}-2000_{ALL}). Areas marked with black dots indicate grids where changes are significant at the 95% confidence level.