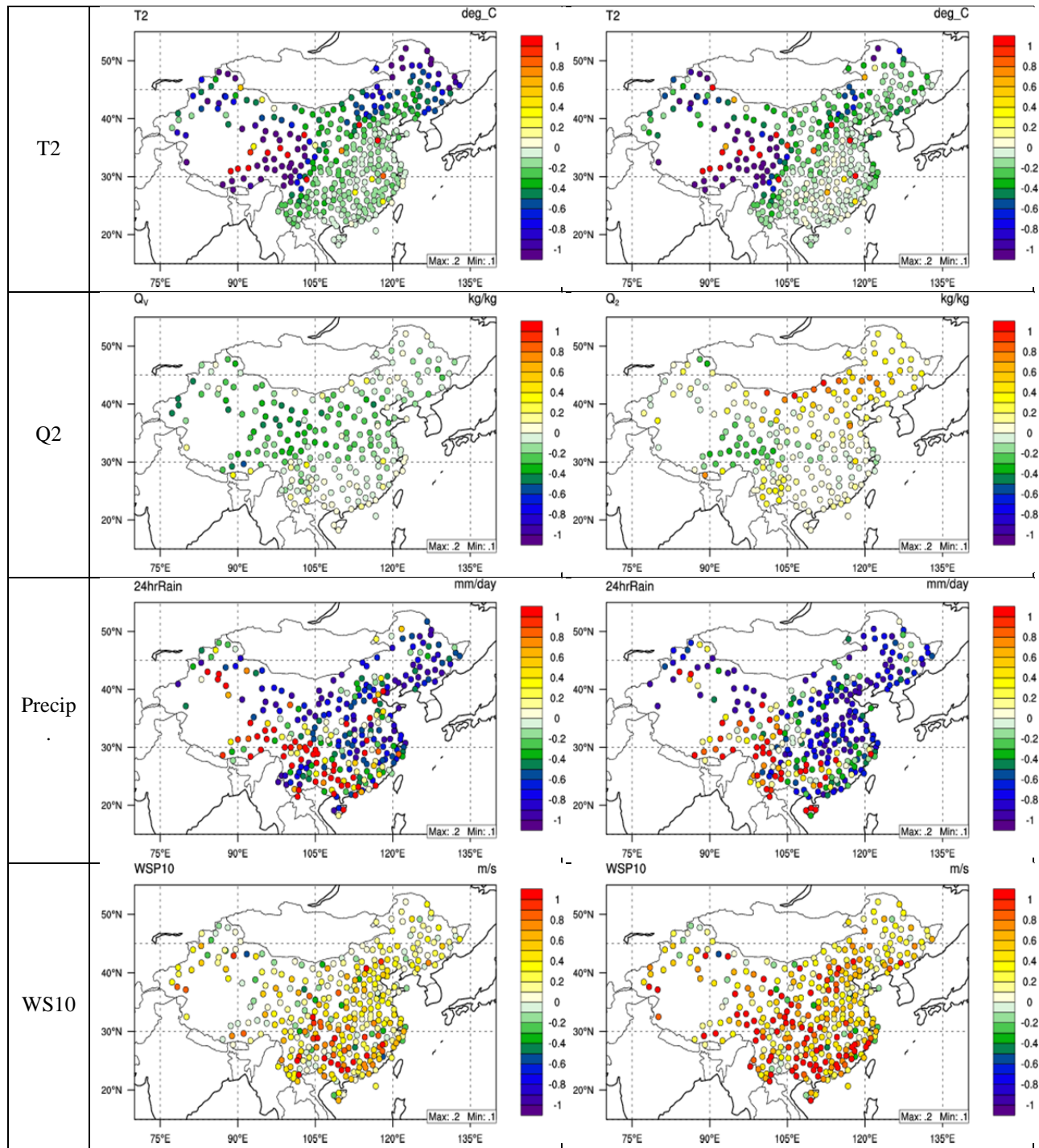
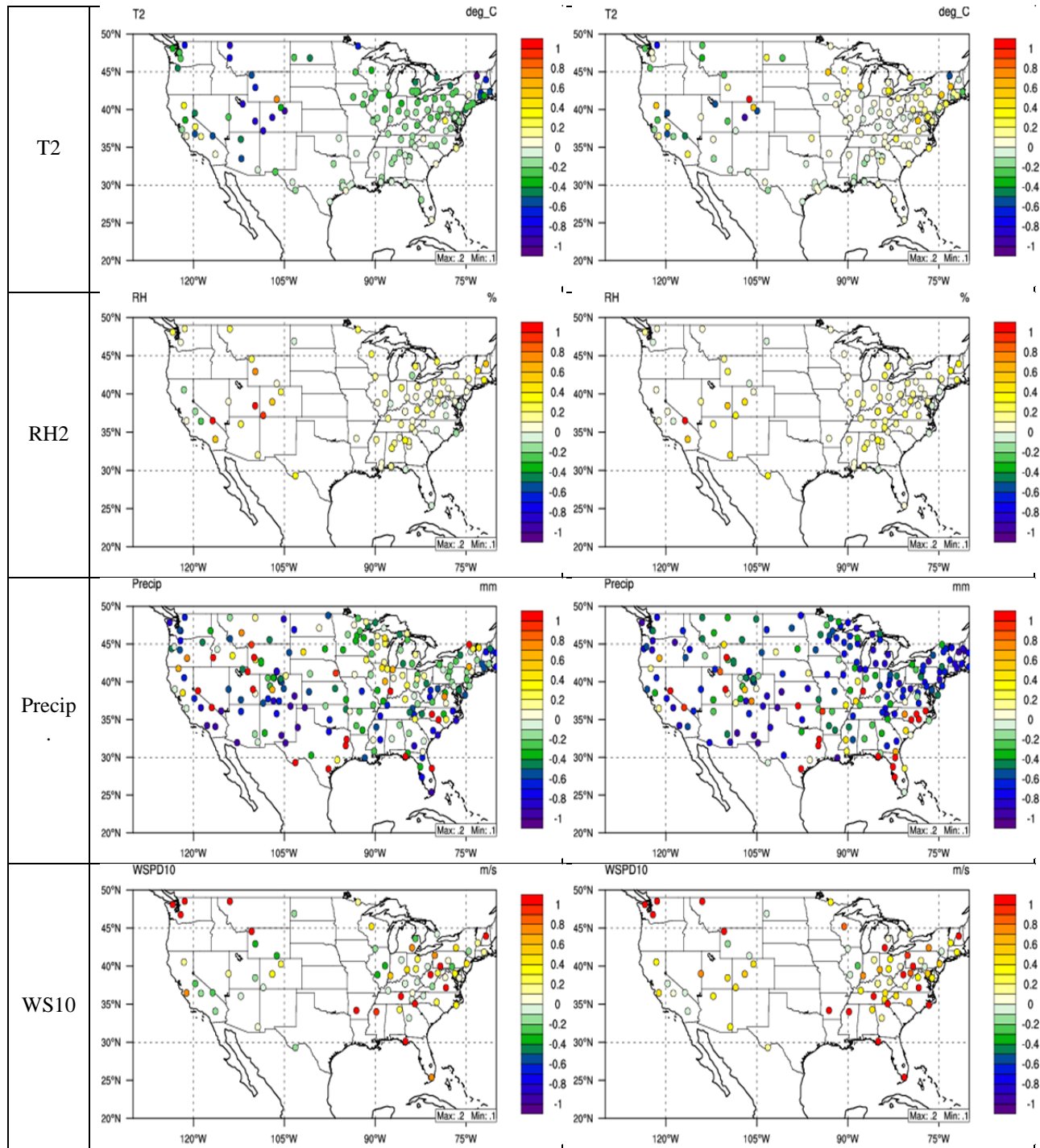


- 1 **Supplementary material to be published together with the article**
- 2 **“Implementation of dust emission and chemistry into the Community**
- 3 **Multiscale Air Quality modeling system and initial application to an Asian**
- 4 **dust storm episode” by K. Wang, Y. Zhang, A. Nenes, and C. Fountoukis**

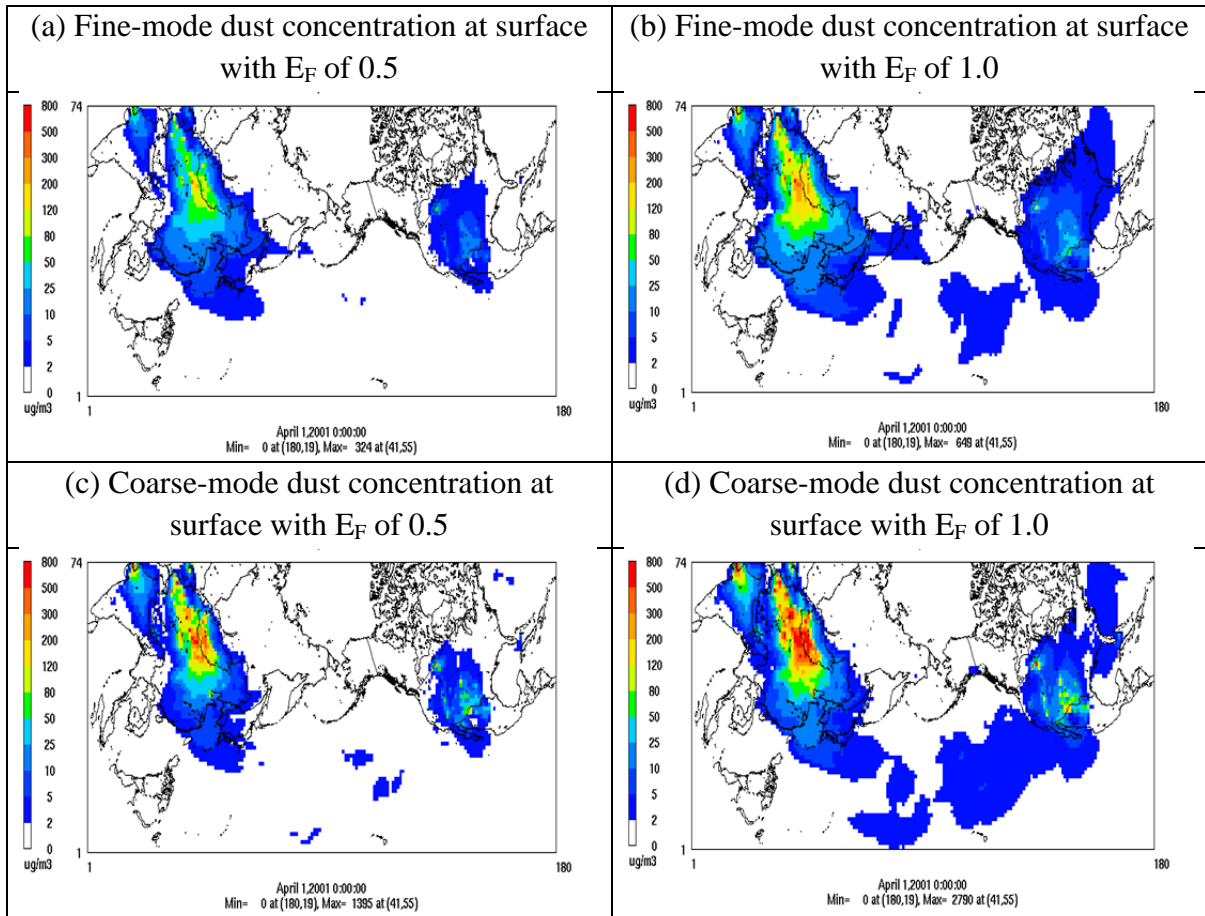
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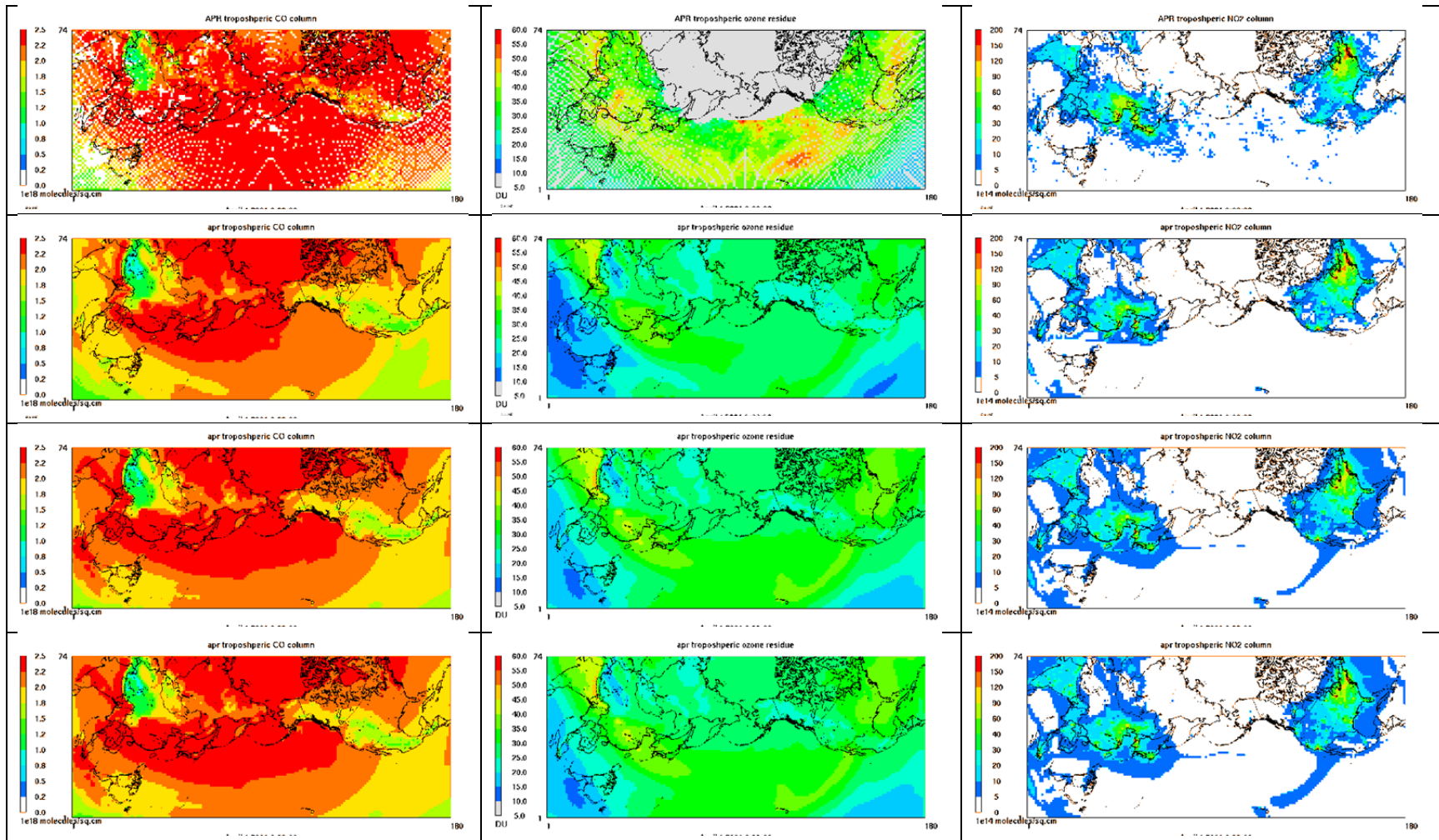
2 Figure S-1. Spatial distribution of NMBs between observations and MM5 simulation (left
3 panel) and WRF simulation (right panel) for temperature at 2 m (T2), water vapor mixing
4 ratio at 2 m (Q2), 24 h total precipitation (Precip.), and wind speed at 10 m (WS10) over
5 China for April 2001.



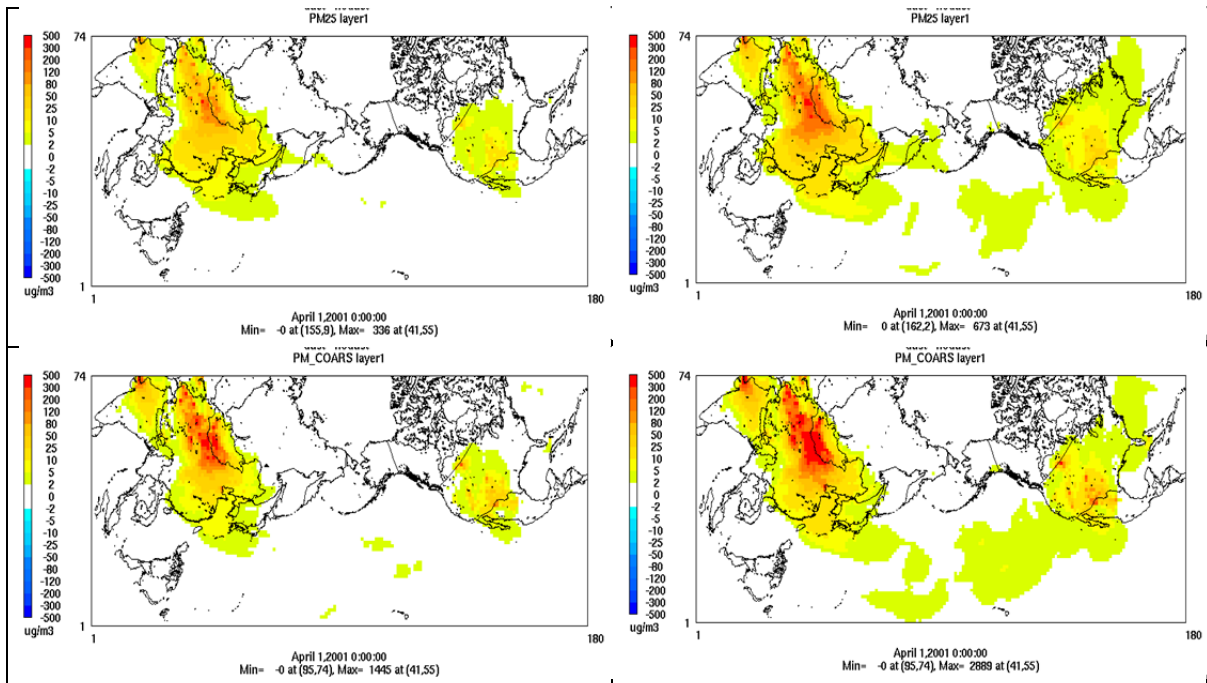
1 Figure S-2. Spatial distribution of NMBs between observations and MM5 simulation (left
 2 panel) and WRF simulation (right panel) for temperature at 2 m (T2), relative humidity at 2
 3 m (RH2), weekly total precipitation (Precip.), and wind speed at 10 m (WS10) over the U.S.
 4 for April 2001.



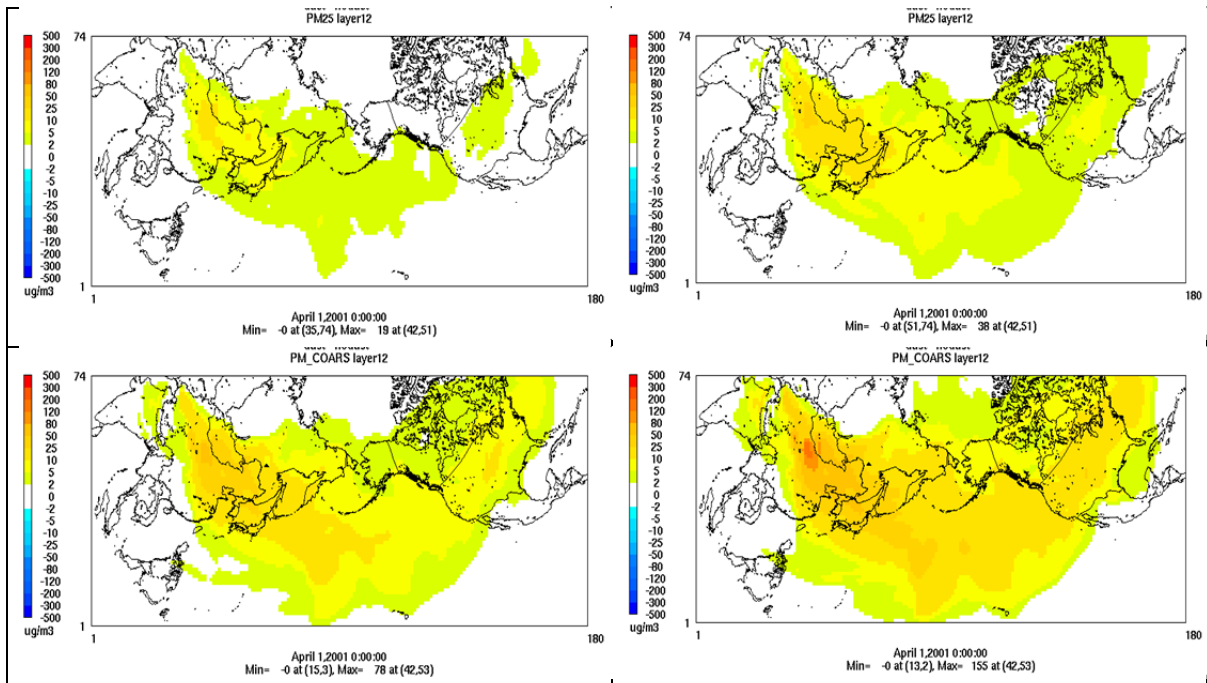
1 Figure S-3. The predicted monthly-mean (a)-(b) fine-mode dust and (c)-(d) coarse-mode dust
 2 concentrations with E_F of 0.5 (left panel) and 1.0 (right panel) at surface from the Zender
 3 scheme in CMAQ-Dust.



1 Figure S-4. Spatial distribution of column variables (from left to right: CO, TOR, NO₂) from satellite observations (1st row), CMAQ
 2 v4.4 (2nd row), DEFAULT CMAQ v4.7 simulation (3rd row) and DUST simulation (4th row) in April 2001.



- 1 Figure S-5. Spatial distribution of differences between simulations DUST and
- 2 BASELINE_NO_DUST (left panel) and between simulations DUST_HIGH_EF and
- 3 BASELINE_NO_DUST (right panel) at surface layer for PM_{2.5} and PM_{coarse} in April 2001.



1 Figure S-6. Spatial distribution of differences between simulations DUST and
 2 BASELINE_NO_DUST (left panel) and between simulations DUST_HIGH_EF and
 3 BASELINE_NO_DUST (right panel) at an altitude of ~5-km for PM_{2.5} and PM_{coarse} in April
 4 2001.