Supplement of

WRF-Chem v3.9 simulations of the East Asian dust storm in May 2017: modeling sensitivities to dust emission and dry deposition schemes

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Figure S1. The meteorological conditions at 700 hPa during the dust event. The color contours show the daily mean temperature field at 700 hPa. Vectors represent the daily mean wind field at 700 hPa. Panels (a)(c)(e)(g) show the NCEP/FNL reanalysis data. Panels (b)(d)(f)(h) show the WRF-Chem simulation.
Table S1. Correlation coefficient (R) and root mean square error (RMSE) between WRF-Chem simulation and FNL reanalysis data for daily mean temperature, U component of wind, V component of wind and wind speed at 700 hPa during the dust event time period.

| Day      | R/RMSE | Temperature | U   | V  | Wind speed |
|----------|--------|-------------|-----|----|------------|
| 1 May    | R      | 1.0         | 0.89| 0.90| 0.93       |
| 1 May    | RMSE   | 0.65        | 2.36| 2.44| 1.72       |
| 2 May    | R      | 1.0         | 0.91| 0.93| 0.94       |
| 2 May    | RMSE   | 0.69        | 2.61| 2.77| 2.05       |
| 3 May    | R      | 1.0         | 0.95| 0.95| 0.95       |
| 3 May    | RMSE   | 0.65        | 2.32| 2.60| 1.86       |
| 4 May    | R      | 1.0         | 0.93| 0.93| 0.95       |
| 4 May    | RMSE   | 0.63        | 2.36| 2.50| 1.77       |
| 5 May    | R      | 1.0         | 0.96| 0.92| 0.97       |
| 5 May    | RMSE   | 0.62        | 2.27| 2.45| 1.68       |
| 6 May    | R      | 1.0         | 0.96| 0.89| 0.97       |
| 6 May    | RMSE   | 0.68        | 2.43| 3.09| 1.72       |
| 7 May    | R      | 1.0         | 0.96| 0.82| 0.97       |
| 7 May    | RMSE   | 0.77        | 2.05| 3.05| 1.53       |
| 1 May to 7 May | R   | 1.0 | 0.94 | 0.91 | 0.95 |
| 1 May to 7 May | RMSE | 0.67 | 2.34 | 2.70 | 1.76 |
Figure S2. The meteorological conditions at 06:00 UTC on 3 May for six experiments. The color contours show the temperature field at 2 meters. Vectors represent the wind field at 10 meters.
Table S2. Correlation coefficient (R) and root mean square error (RMSE) between WRF-Chem simulation and FNL reanalysis data for time-averaged temperature at 2 meters, U component of wind, V component of wind and wind speed at 10 meters from 1 May to 7 May.

| Day       | R/RMSE | Temperature | U    | V   | Wind speed |
|-----------|--------|-------------|------|-----|------------|
| GOBS95    | R      | 1.0         | 0.90 | 0.86| 0.80       |
| GOBS95    | RMSE   | 1.06        | 1.11 | 1.04| 1.18       |
| GOPE92    | R      | 1.0         | 0.90 | 0.86| 0.80       |
| GOPE92    | RMSE   | 1.06        | 1.11 | 1.04| 1.18       |
| GOZ01     | R      | 1.0         | 0.90 | 0.86| 0.82       |
| GOZ01     | RMSE   | 1.03        | 1.08 | 0.98| 1.11       |
| S11BS95   | R      | 1.0         | 0.90 | 0.86| 0.82       |
| S11BS95   | RMSE   | 1.03        | 1.08 | 0.98| 1.11       |
| S11PE92   | R      | 1.0         | 0.90 | 0.86| 0.82       |
| S11PE92   | RMSE   | 1.03        | 1.08 | 0.98| 1.11       |
| S11Z01    | R      | 1.0         | 0.90 | 0.86| 0.82       |
| S11Z01    | RMSE   | 1.03        | 1.08 | 0.98| 1.11       |
Figure S3. Simulated and observed mean AOD over the simulation period 1-6 May for six experiments. As a supplement to Fig. 9.