Sea salt emission, transportation and influence on nitrate simulation: a case study in Europe

Y. Chen et al.

Correspondence to: Y. Cheng (yafang.cheng@mpic.de) and Y. Chen (chen@tropos.de)

Table S1. Comparisons for meteorological variables between Melpitz radio-sounding measurements

 and WRF-Chem model results

	Slope	R
Potential Temperature	0.99	0.99
Wind Speed	0.90	0.96
Wind Direction	1.02	0.84
Water Vapor Mixing Ratio	0.81	0.92



Figure S1. Global NO₂ tropospheric column concentration in September 2013 of OMI satellite.

Source: http://www.temis.nl/airpollution/no2col/, last access: November 04th, 2015



Figure S2. The WRF-Chem modeled particle mass size distribution of each chemistry compounds in 8 diameter bins, averaged in the period of September 10-20, 2013, at Melpitz.



Figure S3. Three days back trajectories of Melpitz. The start time of back trajectories start from 2013-09-13 to 2013-09-19, with 6 hours interval. The back trajectories were calculated based on the GDAS (with 0.5° resolution) dataset with the Hysplit model (http://www.arl.noaa.gov/HYSPLIT_info.php).



(a)



(b)



Figure S4. Weather map of Europe at 2013-09-16, 00:00 (UTC). (a) Surface pressure (white line) and pseudopotential temperature (color); (b) 10-meter wind field (arrows) and surface pressure (blue line); (c) lifted index (numbers and white line) and mixed layer convective available potential energy 'ML CAPE' (color)

Source: http://www1.wetter3.de/ (based on the GFS dataset with 0.5° resolution, last access: November 04th, 2015)



Figure S5. Sea salt mass residential rate with relationship of transport time and lifetime, based on the concept model (Chen et al., 2016). The color indicates the percentage of sea salt mass that can be transported from the coast to Melpitz.

References:

Chen, Y., Cheng, Y. F., Nordmann, S., Birmili, W., Denier van der Gon, H. A. C., Ma, N., Wolke, R., Wehner, B., Sun, J., Spindler, G., Mu, Q., Pöschl, U., Su, H., and Wiedensohler, A.: Evaluation of the size segregation of elemental carbon (EC) emission in Europe: influence on the simulation of EC long-range transportation, Atmos. Chem. Phys., 16, 1823-1835, 10.5194/acp-16-1823-2016, 2016.