Supporting Information

Simulating the Oxygen Content of Ambient Organic Aerosol with the 2-D Volatility Basis Set

B. N. Murphy[1], N. M. Donahue[1], C. Fountoukis[2] and S. N. Pandis[1,3 *]

[1]Department of Chemical Engineering, Carnegie Mellon University
5000 Forbes Ave, Pittsburgh, Pennsylvania 15213
[2]Institute of Chemical Engineering and High Temperature Chemical Processes (ICE-HT), Foundation of Research and Technology (FORTH), Patra, Greece
[3]Department of Chemical Engineering, University of Patras, Patra, Greece
[*]Phone: 412-268-3531; fax: 412-268-7139; email: spyros@andrew.cmu.edu

3 Pages

O:C Ratio													
	1.2	6.9	6.5	6.1	5.7	5.3	4.9	4.5	4.1	3.7	3.3	3.0	2.6
	1.1	7.4	7.0	6.5	6.1	5.7	5.3	4.9	4.4	4.0	3.6	3.2	2.7
	1.0	8.0	7.5	7.0	6.6	6.1	5.7	5.2	4.8	4.3	3.9	3.4	3.0
	0.9	8.6	8.1	7.6	7.1	6.7	6.2	5.7	5.2	4.7	4.2	3.7	3.2
	0.8	9.4	8.9	8.3	7.8	7.3	6.7	6.2	5.6	5.1	4.6	4.0	3.5
	0.7	10.4	9.8	9.2	8.6	8.0	7.4	6.8	6.2	5.6	5.0	4.4	3.8
	0.6	11.5	10.9	10.2	9.5	8.9	8.2	7.6	6.9	6.3	5.6	5.0	4.4
	0.5	13.0	12.2	11.5	10.7	10.0	9.3	8.5	7.8	7.0	6.3	5.6	4.9
	0.4	14.8	14.0	13.1	12.3	11.4	10.6	9.7	8.9	8.1	7.2	6.3	5.6
	0.3	17.3	16.3	15.3	14.4	13.4	12.4	11.4	10.4	9.4	8.4	7.4	6.4
	0.2	20.8	19.6	18.5	17.3	16.1	14.9	13.7	12.5	11.3	10.1	8.9	7.7
	0.1	30.5	28.8	27.1	25.3	23.6	21.9	20.1	18.3	16.6	14.9	13.1	11.4
		10^{-5}	10^{-4}	10^{-3}	10^{-2}	10^{-1}	10^{0}	10^{1}	10^{2}	10^{3}	10^{4}	10^{5}	10^{6}
		Effective Saturation Concentration [µg m^{-3}]											

Figure S1. Organic species carbon number as a function of effective saturation concentration and O:C ratio in the 2D-VBS. Estimates are calculated from structure activity relationships and are documented in Donahue et al. (2010).

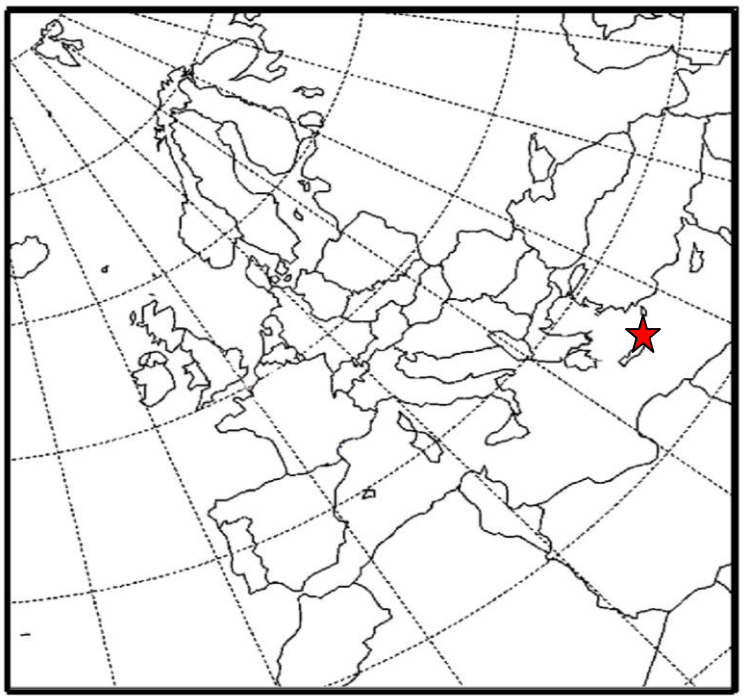

Figure S2. European domain used for gridded input files. Meteorological inputs from WRF and emissions inputs from EMEP were obtained on this domain with 36 km resolution. The red star indicates the location of the Finokalia site where the FAME-08 observations were taken.

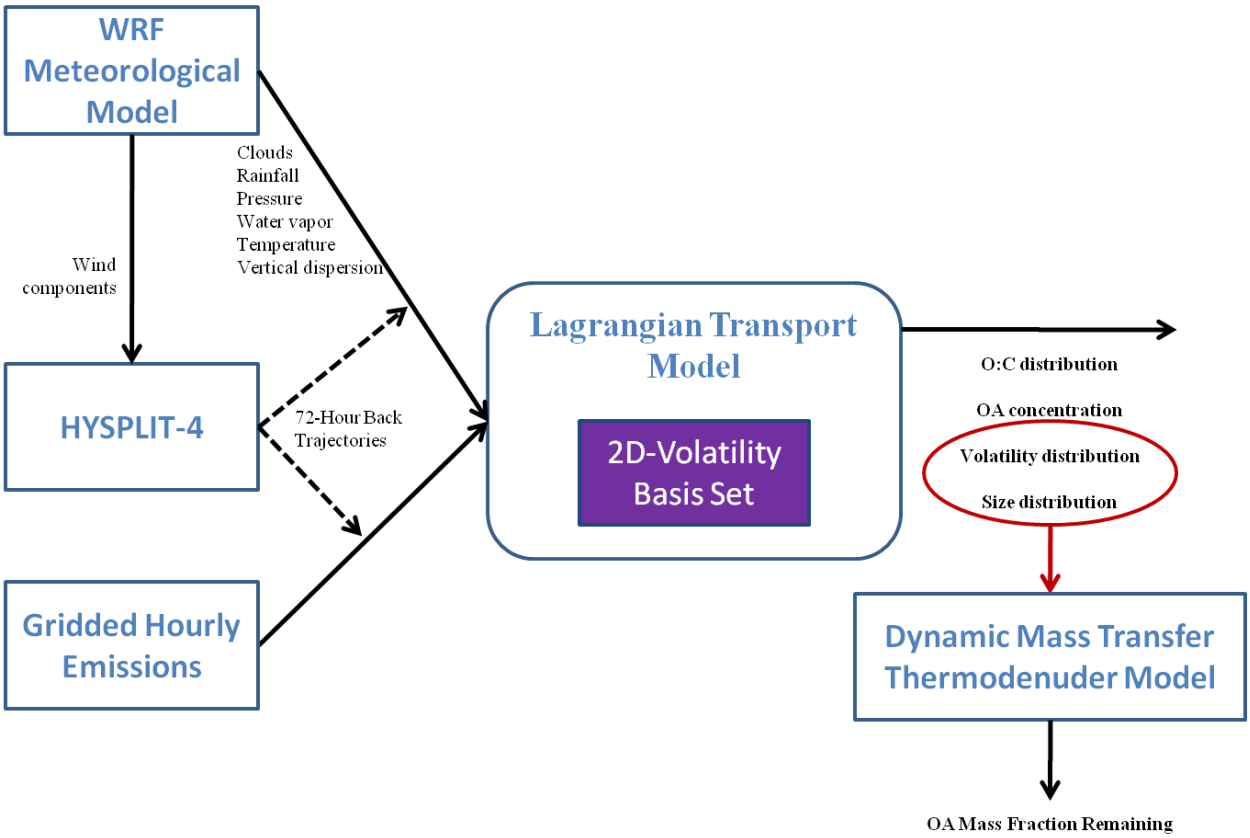

Figure S3. Schematic of current modeling study including the sources of inputs to the Lagrangian transport model with 2D-VBS module and the dynamic mass transfer thermodenuder model used.

References

Donahue, N. M., Epstein, S. A., Pandis, S. N., and Robinson, A. L.: A two-dimensional volatility basis set: 1. Organic-aerosol mixing thermodynamics, Atmos Chem Phys Discuss, 10, 24091-24133, 10.5194/acpd-10-24091-2010, 2010.