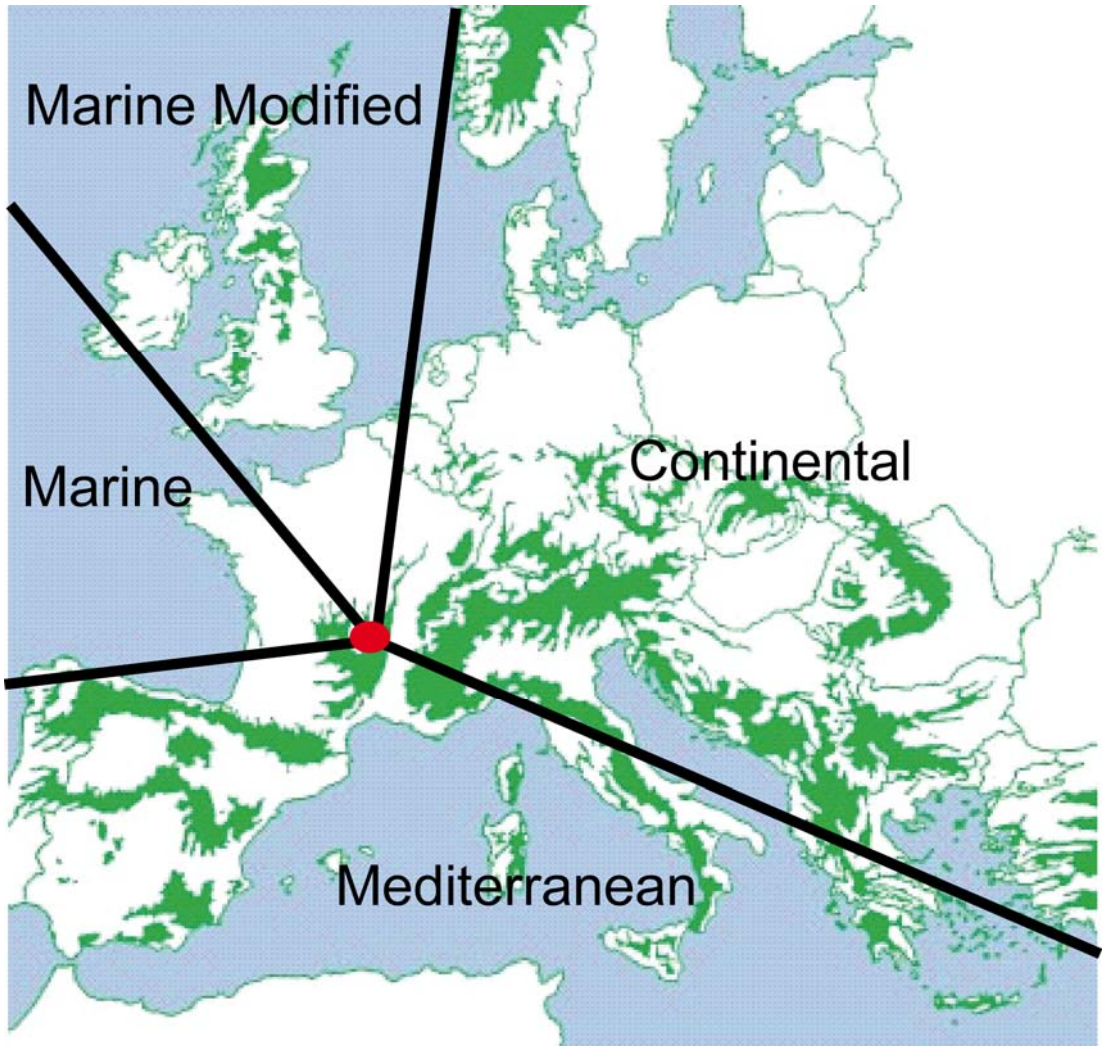


Figure S1. Sector definitions for different air masses arriving at the pdD site

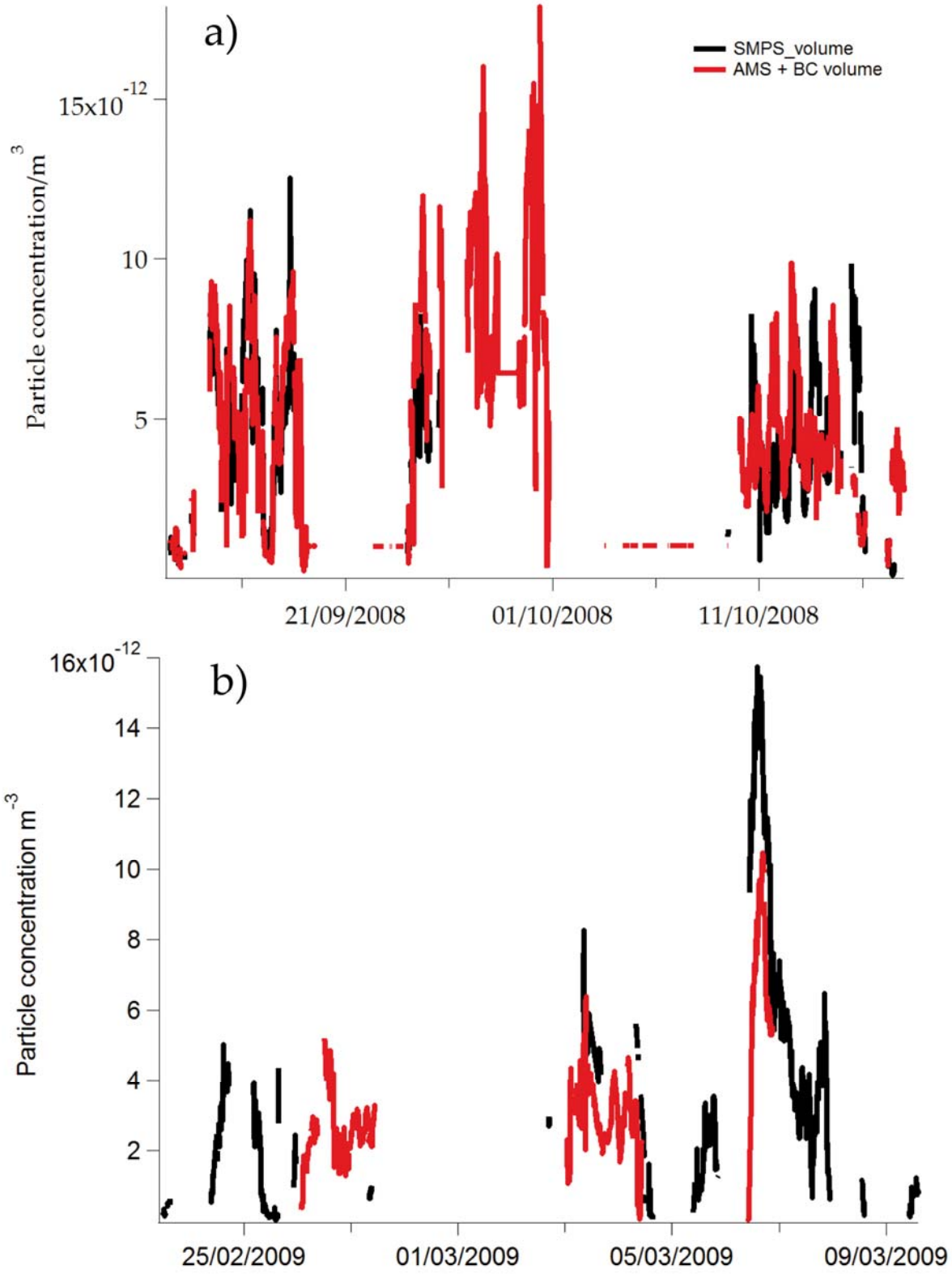
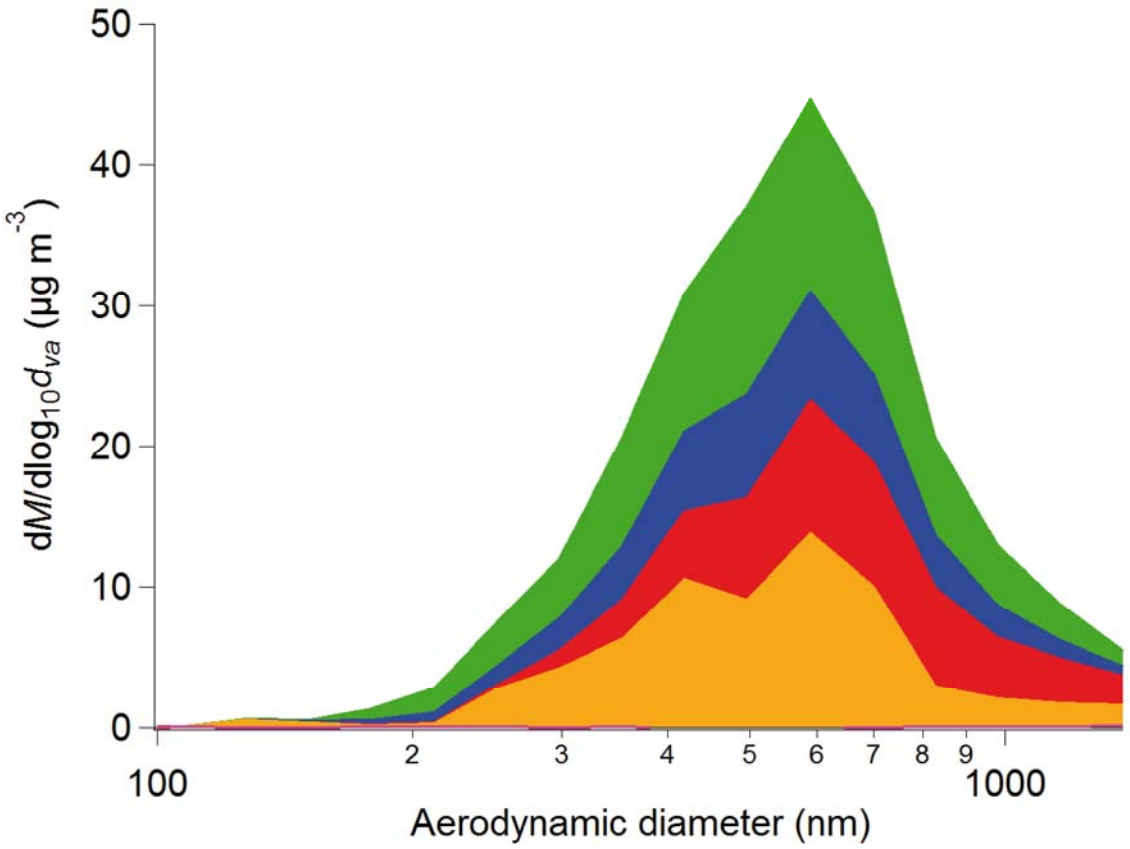


Figure S2. Comparison between the particle concentration measured by the SMPS with that measured by the AMS for the autumn (c) 2008 and (b) winter 2009



Figures S3. Typical size distribution of the aerosol particle species measured by the AMS at the pdD site.

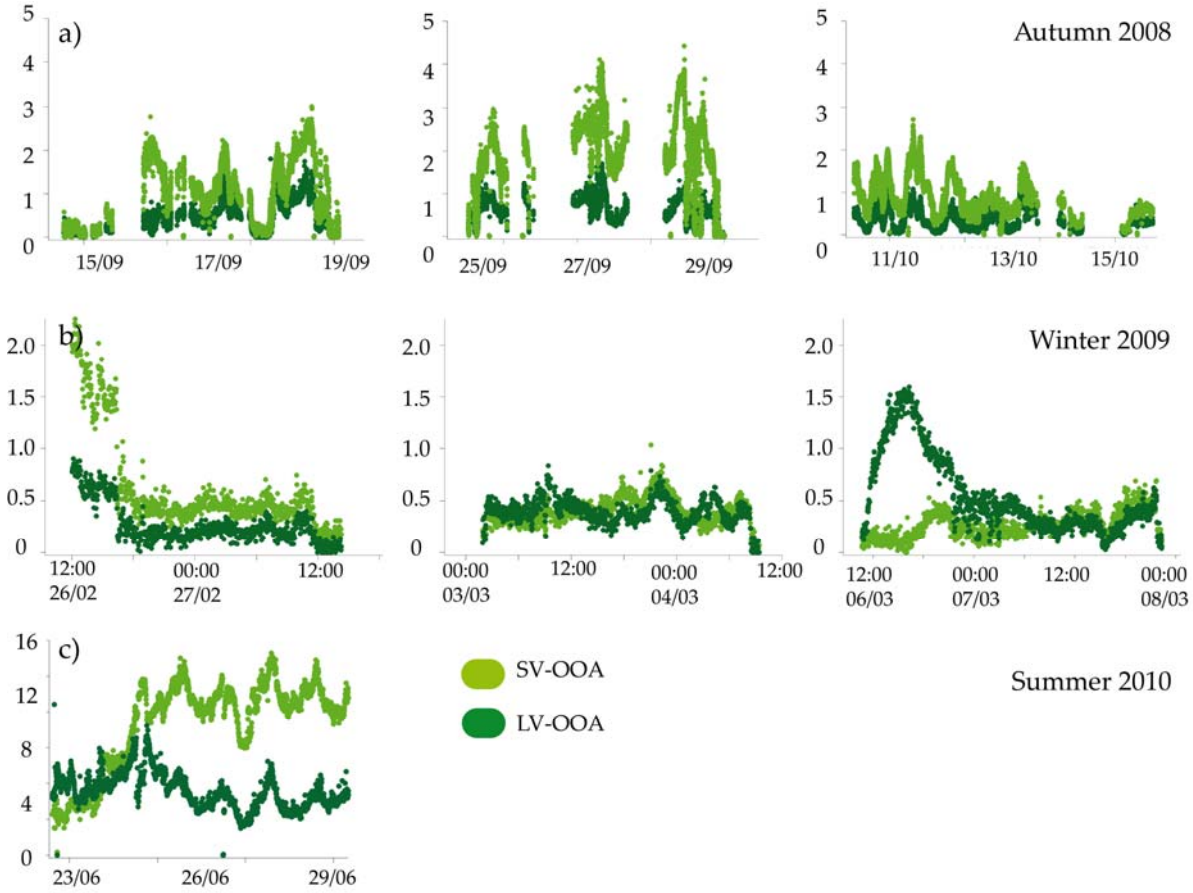


Figure S4. Time series of SV-OOA and LV-OOA sampled during the (a) autumn, (b) spring, and (c) during the summer.

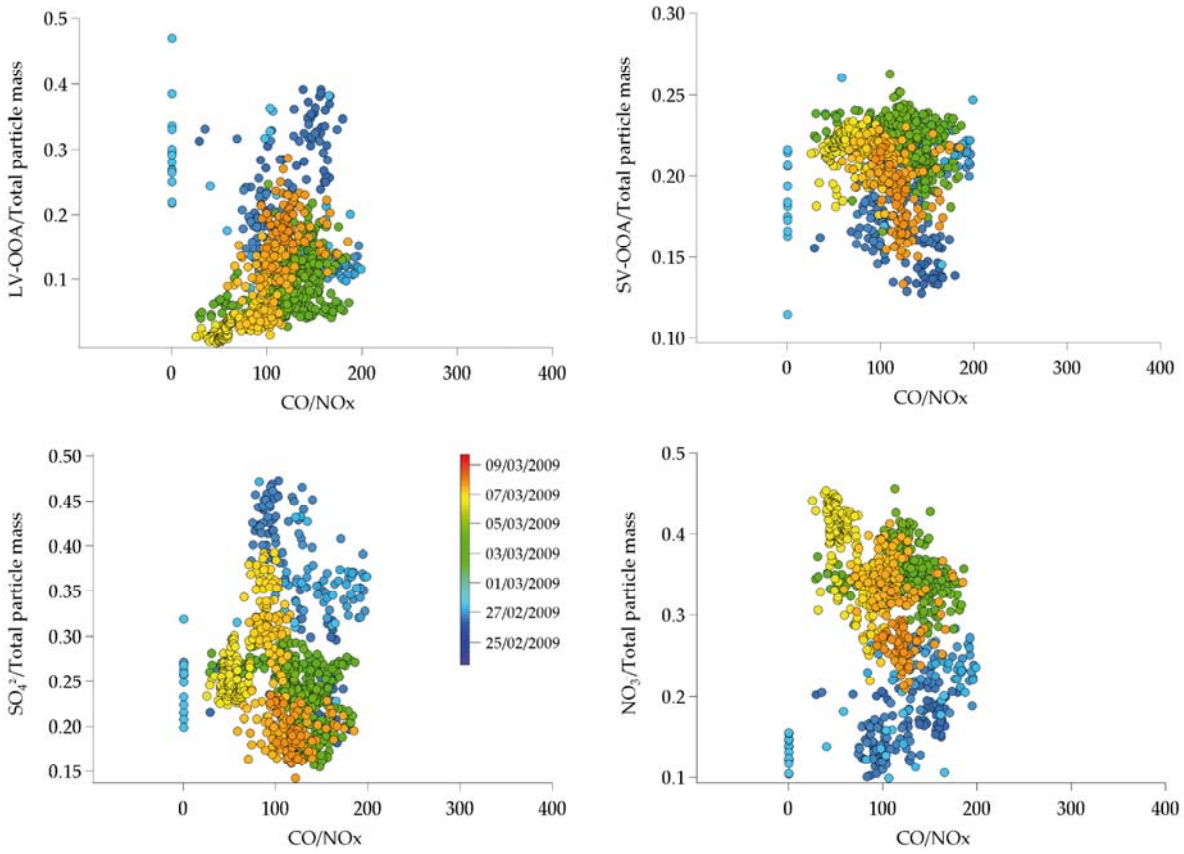


Figure S5. The fraction of (a) LV-OOA, (b) SV-OOA, (c) SO_4, and (d) NO_3 to the total aerosol mass against the measured CO/NO_x for cloud-free periods during the winter campaign coloured by date.

Table 1. Two factor solution: r^2 correlations of PMF components with reference mass spectra and with time series of gas and particle phase species.

	Autumn 2008		Winter 2009		Summer 2010	
	LV-OOA	SV-OOA	LV-OOA	SV-OOA	LV-OOA	SV-OOA
HOA	0.044	0.659	0.114	0.066	0.0425	0.253
OOA	0.918	0.301	0.828	0.918	0.912	0.969
LV-OOA	0.953	0.249	0.857	0.934	0.942	0.952
SV-OOA	0.406	0.805	0.598	0.368	0.347	0.733
BB-OA	0.288	0.787	0.538	0.251	0.222	0.616
SOA from α-pinene					0.336	0.732
Org	0.962	0.828	0.466	0.563	0.851	0.072
NO_3	0.506	0.316	0.859	0.047	0.008	0.01
SO_4	0.338	0.149	0.742	0.027	0.299	0.249
NH_4	0.669	0.364	0.867	0.039	0.319	0.135
Chl	0.039	0.024	0.779	0.050	0.133	0.0832
O_3	0.002	0.004	0.104	0.155	0.518	0.0256
SO_2	0.012	0.015	0.017	0.013	0.117	0.018
CO_2	0.027	0.029	0.272	0.090		
CO	0.49	0.507	0.121	0.001	0.326	0.073
NO_2	0.001	0.028	0.483	0.064	0.035	0.011
NO	0.137	0.335	0.134	0.0524	$<$0.01	0.02
BC	$<$0.01	0.12	0.311	0.0075	0.445	0.0676