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Sources and mixing state of summertime background aerosol in the north-western Mediterranean basin

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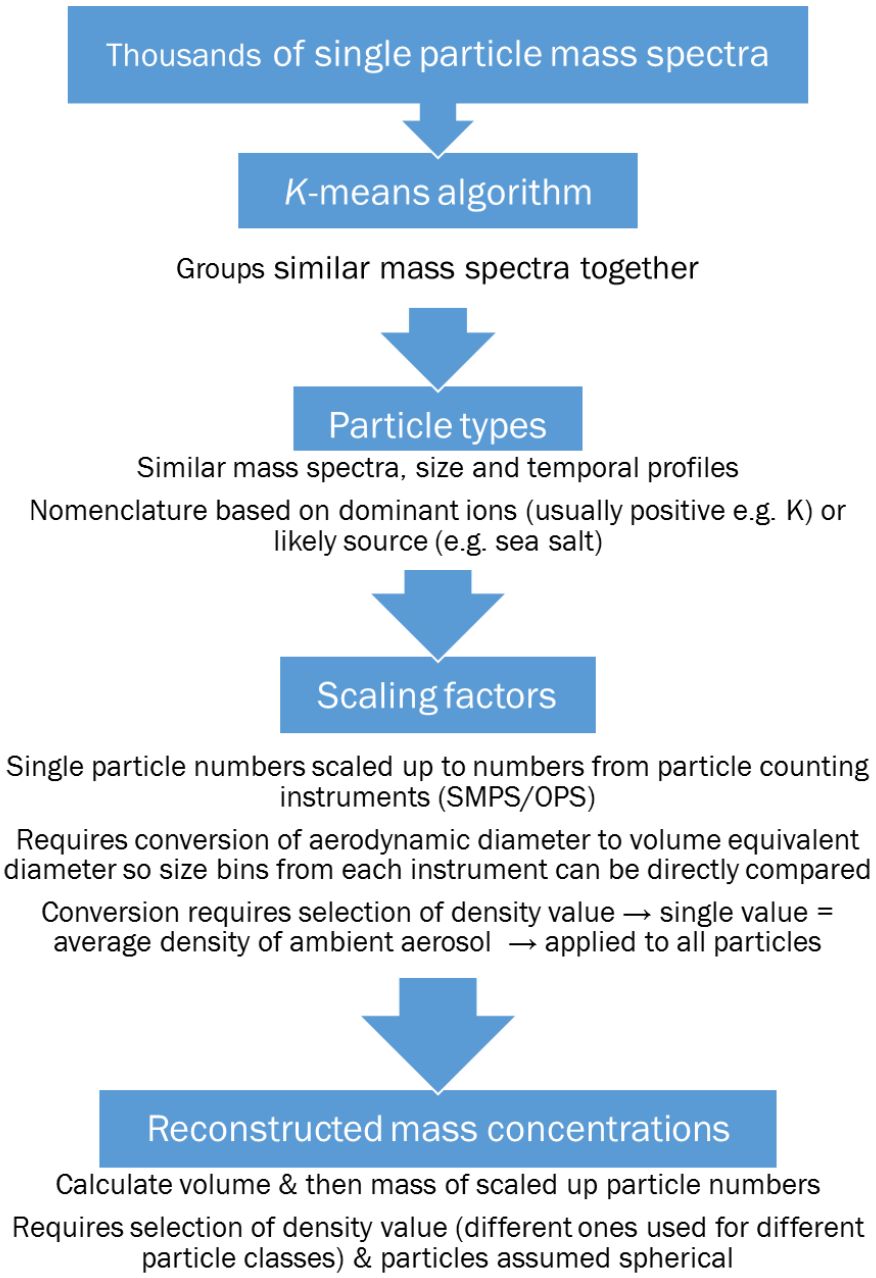


Figure 1. Schematic overview of ATOFMS data analysis.

Table 1. Pearson's correlation coefficient (R^2) between mass concentrations from ATOFMS ($PM_{2.5}$), TEOM (PM_{10} & PM_1), ACSM (PM_1), PILS (PM_{10}) and MAAP ($PM_{2.5}$) measurements and OPS number concentrations (#/cm^3) for the full sampling period, and during specific periods.

R^2	ATOFMS total	ATOFMS EC-rich	ATOFMS K-rich	PM_{10}	PM_1	BC	ACSM total	ACSM SO_4^{2-}	ACSM NH_4^+	ACSM SV-OOA	ACSM LV-OOA	PILS-IC SO_4^{2-}	PILS-IC NH_4^+	OPS 0.3-0.579 µm particles	*PILS Oxalate	*WSOC	**ATOFMS fresh sea salt	** PILS SSA	**OPS 0.579-2.156 µm particles	*** PILS MSA	*** ACSM NO_3^-	*** PILS NO_3^-
ATOFMS total	1																					
ATOFMS EC-rich	0.73	1																				
ATOFMS K-rich	0.48	0.28	1																			
PM_{10}	0.21	0.20	0.09	1																		
PM_1	0.44	0.46	0.30	0.17	1																	
BC	0.55	0.50	0.37	0.19	0.40	1																
ACSM total	0.72	0.66	0.46	0.17	0.54	0.70	1															
ACSM SO_4^{2-}	0.66	0.61	0.38	0.14	0.46	0.48	0.81	1														
ACSM NH_4^+	0.65	0.62	0.37	0.12	0.44	0.47	0.81	0.93	1													
ACSM SV-OOA	0.46	0.43	0.35	0.11	0.38	0.57	0.69	0.33	0.32	1												
ACSM LV-OOA	0.59	0.59	0.46	0.17	0.50	0.67	0.88	0.61	0.61	0.63	1											
PILS-IC SO_4^{2-}	0.58	0.52	0.25	0.12	0.41	0.41	0.61	0.81	0.75	0.21	0.42	1										
PILS-IC NH_4^+	0.44	0.43	0.23	0.08	0.30	0.30	0.46	0.53	0.53	0.18	0.33	0.68	1									
OPS 0.3-0.579 µm particles	0.73	0.69	0.49	0.24	0.54	0.57	0.82	0.71	0.70	0.54	0.75	0.60	0.46	1								
*PILS Oxalate	0.35	0.41	0.25	0.14	0.36	0.37	0.50	0.28	0.29	0.41	0.54	0.27	0.23	0.42	1							
*WSOC	0.44	0.37	0.29	0.24	0.42	0.46	0.50	0.19	0.18	0.60	0.58	0.19	0.09	0.44	0.55	1						
**ATOFMS fresh sea salt	0.04	0.07	0.05	0.04	0.02	0.04	0.12	0.07	0.05	0.15	0.16	0.06	0.18	0.02	0.01	N/A	1					
**PILS SSA	0.11	0.01	0.02	0.35	0.00	0.00	0.09	0.05	0.06	0.13	0.17	0.02	0.25	0.01	0.04	N/A	0.81	1				
**OPS 0.579-2.156 µm particles	0.42	0.03	0.02	0.24	0.03	0.01	0.01	0.00	0.00	0.03	0.07	0.01	0.08	0.03	0.00	N/A	0.81	0.88	1			
***PILS MSA	0.18	0.19	0.06	0.05	0.16	0.06	0.21	0.35	0.37	0.001	0.17	0.48	0.54	0.20	0.08	0.03	0.06	0.00	0.02	1		
***ACSM NO_3^-	0.58	0.53	0.34	0.25	0.54	0.41	0.75	0.71	0.75	0.35	0.66	0.75	0.55	0.65	0.35	0.28	0.05	0.02	0.04	0.46	1	
***PILS NO_3^-	0.07	0.06	0.02	0.10	0.04	0.00	0.04	0.13	0.14	0.02	0.03	0.34	0.33	0.13	0.15	0.00	0.01	0.24	0.36	0.53	0.20	1

*Correlations calculated from 21st June-4th August.

**Correlations calculated from 20-27th June.

***Correlations calculated from 23rd July-5th August

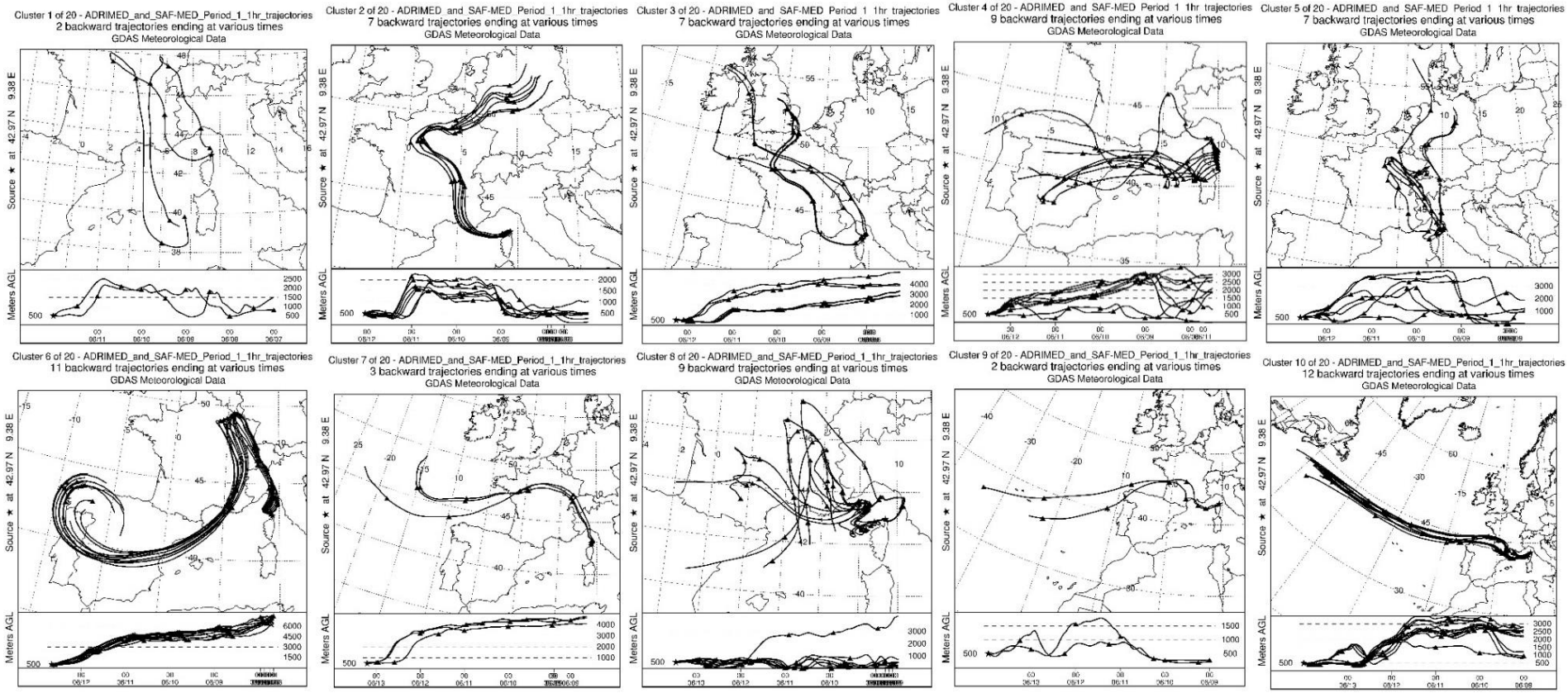


Figure 2. Individual HYSPLIT 120-hour back trajectories for each cluster for Period 1 during ADRIMED and SAF-MED.

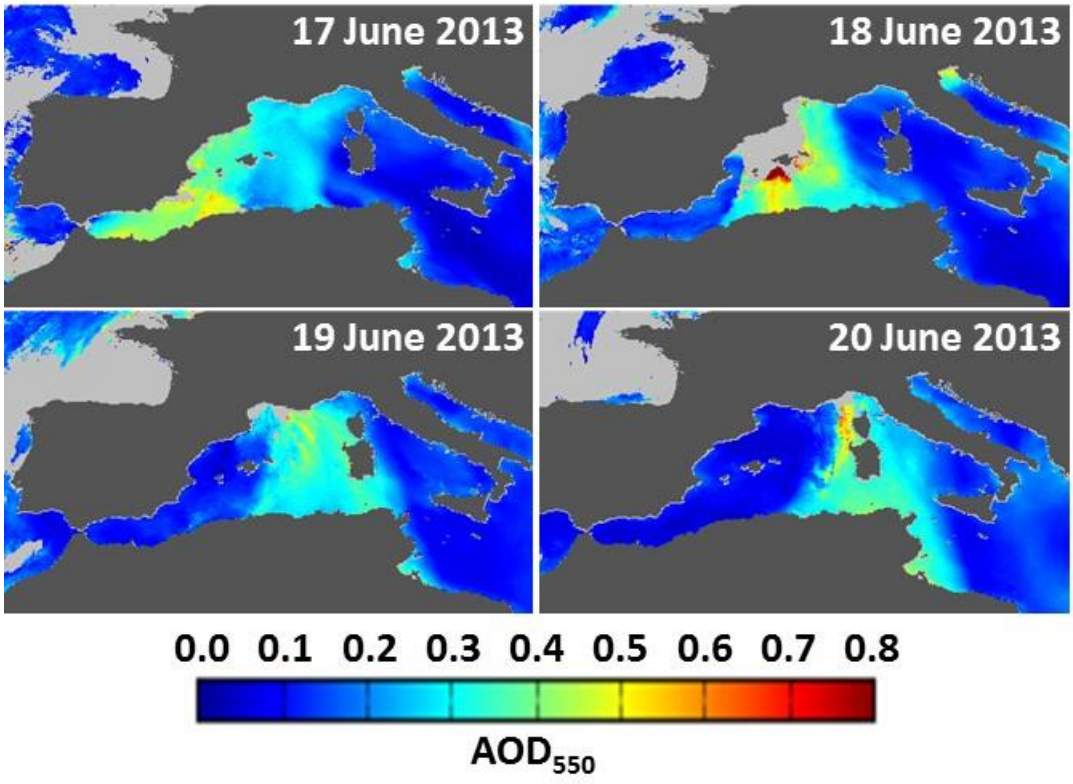


Figure 3. Daytime average aerosol optical depth at 550 nm (AOD_{550}) derived from MSG/SEVIRI (Thieuleux et al., 2005) from 17th to 20th June 2013 showing a dust plume transport over the western Mediterranean basin (produced by http://www.icare.univ-lille1.fr). Land and cloudy pixels in dark and light grey, respectively.