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Supplement of

Global modelling of direct and indirect effects of sea spray aerosol using a source function encapsulating wave state

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Table S1. Comparison of model results from the runs *ossa-ref* and *default-salt* with measurements. NMB stands for normalized mean bias (%), O-M denotes October-March, A-S denotes April-September, and r is the correlation coefficient.

	Meas. mean	<i>ossa-ref</i>					<i>default salt</i>				
		Mean	NMB	NMB O-M	NMB A-S	r	Mean	NMB	NMB O-M	NMB A-S	r
In-situ measurements ($\mu\text{g m}^{-3}$)											
PM ₁ sea salt concentration in Mace Head	0.19	0.17	-13	-22	7	0.83	0.13	-30	-40	-8	0.86
PM ₁ organic matter concentration in Mace Head	1.00	0.18	-82	-90	-75	0.17	0.15	-85	-91	-80	0.23
PM ₁ sea salt concentration in Amsterdam Island	0.28	0.14	-52	-39	-60	0.75	0.11	-60	-44	-69	0.70
PM _{1-2.5} sea salt concentration in Amsterdam Island	0.26	1.01	283	227	351	0.34	2.46	845	791	912	0.36
PM _{2.5-10} sea salt concentration in Amsterdam Island	0.26	2.62	899	698	1172	0.30	12.06	4519	3764	5540	0.35
Total carbonaceous aerosol concentration in Amsterdam Island	0.16	0.06	-68	-77	-58	-0.45	0.04	-76	-86	-66	-0.53
PM _{2.5} sea salt concentration at Point Reyes	2.41	1.69	-29	-26	-31	0.55	3.61	50	74	35	0.55
PM _{2.5} organic matter concentration at Point Reyes	0.80	2.62	212	108	418	0.13	2.53	201	103	395	0.14
Sodium ion concentration in PM _{2.5} in EMEP data	0.36	0.22	-66	-41	-107	0.03	0.58	38	42	32	0.14
Sodium ion concentration in PM ₁₀ in EMEP data	0.40	0.58	32	46	5	0.55	2.40	84	87	78	0.60
Satellite measurements (AOD at 550 nm from PARASOL)											
AOD over all oceans	0.16	0.10	-31	-25	-32	-0.17	0.16	13	23	11	-0.21
AOD over Southern Ocean	0.11	0.07	-31	-28	-33	0.18	0.17	55	57	57	0.19
AOD around Amsterdam Island	0.10	0.09	-14	-15	-14	0.29	0.19	89	82	95	0.26
AOD west of Mace Head	0.14	0.08	-39	-36	-40	0.32	0.16	15	42	-2	0.15
AOD west of Point Reyes	0.13	0.07	-41	-33	-48	0.13	0.14	8	36	-17	0.16
Sun photometer measurements (AOD at 550 nm from AERONET)											
AOD from coastal stations	0.14	0.12	-17	-4	-26	0.77	0.15	8	28	-8	0.73
AOD from island stations	0.14	0.12	-15	-1	-24	0.65	0.16	22	48	1	0.55

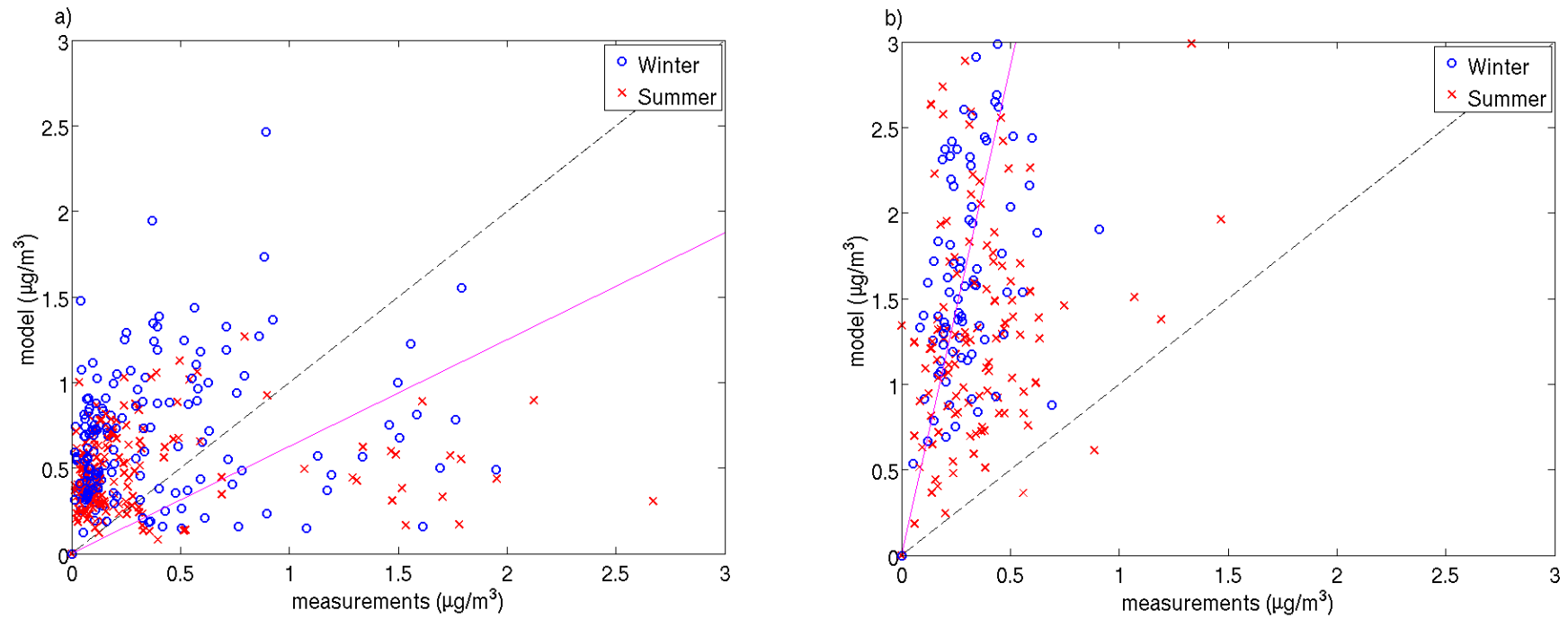


Figure S1. Comparison of measured (EMEP stations) and modelled (simulation *default-salt*) monthly mean sodium ion concentration in **(a)** PM_{2.5} and **(b)** PM₁₀ at various sites for the years 2006–2011. Blue circles indicate boreal winter months (October–March) and red crosses indicate boreal summer months (April–September).