

Table S2. Annual Average Deposition Fluxes of Soluble ON ($\text{g N m}^{-2} \text{ year}^{-1}$) at Coastal and Marine Locations^a.

Site	LAT	LON	MOD	OBS	N	Study
Belgium	51	3	0.29	0.23	179	Bencs et al. [2009]
Tampa Bay, FL	28	277	0.16	0.12±0.07 ^b	11	Calderón et al. [2007]
Bermuda	32	295	0.04	0.10±0.06	5	Cornell et al. [1998]
Mace Head, Ireland	52	350	0.07	0.06±0.05	7	Cornell et al. [1998]
Costa Rica	10	276	0.09	0.21	107	Eklund et al. [1997]
Puerto Rico	18	294	0.03	0.12±0.04 ^b	21	Gioda et al. [2011]
Southeast Scotland	56	357	0.16	0.25	27	González Benítez et al. [2009]
Charlottesville, VA	38	281	0.21	0.06	83	Keene et al. [2002]
Newark, DE	40	284	0.20	0.07	50	Keene et al. [2002]
New Castle, NH	43	289	0.14	0.01	12	Keene et al. [2002]
Wilmington, NC	34	282	0.15	0.09±0.03	129	Kieber et al. [2005]
Long Island, NY	42	288	0.23	0.22±0.22 ^b	730	Luo et al. [2002]
Morehead City, NC	36	281	0.25	0.12±0.14	42	Peierls and Paerl [1997]
North Sea	52	3	0.29	0.07	54	Rendell et al. [1993]
Lewes, DE	39	285	0.12	0.10	60	Russell et al. [1998]
Lewes, DE	39	285	0.12	0.14	37	Scudlark et al. [1998]
New Brunswick, NJ	40	286	0.20	0.15±0.02	11	Seitzinger et al. [2003]
Mace Head, Ireland	52	350	0.07	0.28	62	Spokes et al. [2000]
Miami, FL	26	280	0.10	0.05±0.07 ^b	62	Zamora et al. [2011]
Barbados	13	301	0.02	0.02±0.03 ^b	18	Zamora et al. [2011]
Hawaii, HI	22	200	0.02	0.01	2190	Carrillo et al. [2002]
Tahiti	-18	211	0.01	0.08±0.07	8	Cornell et al. [1998]
Kilauea, HI	20	205	0.03	0.12±0.11	20	Cornell et al. [2001]
Oahu, HI	21	203	0.02	0.03±0.04	17	Cornell et al. [2001]
Singapore	1	104	0.10	0.40±0.63 ^b	12	Karthikeyan et al. [2009]
Cape Grim	-41	145	0.07	0.11±0.08 ^b	6	Mace et al. [2003b]
Erdemli, Turkey	37	34	0.08	0.23±0.48 ^b	18	Mace et al. [2003c]
Mediterranean	35	26	0.11	0.31 [*]	74	Violaki et al. [2010]
Dalian, China	39	122	0.26	1.58	330	Zhang et al. [2008]
Qingdao, China	36	120	0.28	1.27	300	Zhang et al. [2008]
Fenghua, China	37	118	0.33	3.27	300	Zhang et al. [2008]
Baltic Sea	58	18	0.13	0.31	60	Rolff et al [2008]

^aIn the model, we used a temporal resolution of 3 hours for precipitation from the assimilated meteorological fields for the year 2005 to derive the annual average deposition flux. The observed wet deposition flux was determined from the concentration in rainwater and the amount of rainfall. Zamora et al. [2011] compiled annual average rainfall data from the global precipitation climatology project (GPCP) for the calculation of the observed annual average wet deposition fluxes except the data reported by Rolff et al. [2008], who used monthly data for the period from July 2001 to June 2002.

^bDry deposition fluxes are calculated using the mean aerosol concentration and deposition velocities. LAT: latitude, LON: longitude, MOD: model results from Experiment 4, OBS: observation, N: number of data points for wet deposition data, Study: references are listed in the manuscript.