



Fig.S1 The nested domains (black box) and terrain height (shaded color).

Table S1 Observed mean number concentration of condensation nuclei larger than 10 nm (CN10, in # cm⁻³) at 34 surface stations around the globe.

	Location	Time	Lon	Lat	H	CN10	Ref.
1	Aspvreten, Sweden	Jan 2001–Dec 2001	17.4	58.8	20	2000	J
2	Harwell, United Kingdom	May 1998–Nov 2000	-1.3	51.5	125	3000	J
3	Hohenpeissenberg, Germany	Apr 1998–Aug 2000	11	47.8	988	2500	J
4	Melpitz, Germany	Dec 1996–Nov 1997	12.9	51.5	86	9000	J
5	Ispra, Italy	Feb 2000–Dec 2000	8.6	45.8	209	5600	J
6	Thompson Farm, New Hampshire, US	2001–2005	-71	43.1	75	7250	K
7	Lamont, Oklahoma, US	1996–2004	-97.5	36.5	318	5200	L
8	Bondville, Illinois, US	1994–2005	-88.3	40.1	230	3700	L
9	Sable Island, Nova Scotia, Canada	1992–1999	-60	43.9	5	850	L
10	Trinidad Head, California, US	2002–2005	-124.2	41.1	107	590	L
11	American Samoa	1995–2005	-170.5	14.2	42	220	L
12	South Pole	1995–2005	102	90	2810	100	L
13	Point Barrow, Alaska, US	1995–2005	-156.6	71.3	11	110	L
14	Point Barrow, AK, USA	2000–2006	-156.6	71.32	11	231	A
15	Pallas-Sammaltunturi, Finland	1997–2004	24.12	67.97	560	802	A
16	Värriö, Finland	1998–2006	29.58	67.77	400	823	B
17	Hyytiälä, Finland	1996–2006	24.28	61.85	180	2016	B
18	Uto, Baltic Sea	Mar 2003–Dec 2006	21.28	59.78	8	2921	B
19	Aspvreten, Sweden	Jun 2000–Dec 2006	17.4	58.77	25	2567	B
20	Mace Head, Ireland	1991–1994	-9.9	53.33	5	1907	A
21	Melpitz, Germany	Jan 2006–Dec 2006	12.9	51.5	86	4664	C
22	Sable Island, NS, Canada	1993–1996	-60	43.9	5	869	D
23	Thompson Farm, NH, USA	2001–2005	-70.95	43.11	75	7039	F
24	Trinidad Head, California	2003–2006	-124.2	41.05	107	918	A
25	Bondville, IL, USA	2000–2006	-88.3	40.1	230	5038	A
26	Southern Great Plains, OK, USA	2000–2006	-97.5	36.8	314	5064	A
27	American Samoa, USA	1994–1996	-170.6	-14.24	42	270	A
28	Botsalano game reserve, S. Africa	Jul 2006–Jun 2007	25.75	-25.54	1424	2340	G
29	Bago State forest, Australia	Jul 2005–Oct 2006	148.15	-35.66	1200	1800	H
30	Cape Grim, Australia	2000–2006	144.69	-40.68	94	1203	A
31	Neumayer, Antarctica	2000–2006	-8.25	-70.65	42	324	A
32	South Pole, Antarctica	1991–1998	-24.8	-89.98	2810	156	A
33	Shangdianzi, Beijing, China	2008–2009	117.12	40.65	240	12000	N
34	Waliguan, Qinghai, China	2005–2007	100.9	36.28	3816	2030	M

Source of CN10 data: A (<http://wdca.jrc.ec.europa.eu>); B (Dal Maso et al., 2008); C (<http://tarantula.nilu.no/projects/ccc/create/index.htm>); D (<http://www.cmdl.noaa.gov/aero/>); F (Ziemba et al., 2006); G (Laakso et al., 2008); H (Suni et al., 2008); I (Venzac et al., 2008); J (Van Dingenen et al., 2004); K (<http://airmap.unh.edu>); L (<http://www.cmdl.noaa.gov>); M (Kivekäs et al., 2009); N (Shen et al., 2011).