Heavy Metal Deposition Mapping: Concentrations and Deposition of Heavy Metals in Rural Areas of the UK:

Annex to SID4 Interim Report Covering the Period January 2010 – July 2011

Interim Report to the Department of Environment, Food and Rural Affairs by the Centre for Ecology and Hydrology

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Executive Summary

CEH has been monitoring the concentrations of a range of heavy metals in rural locations across the UK since 2004. The data are compiled to provide information of the background concentrations of these pollutants, and are used to demonstrate compliance with relevant air quality legislation. The measured concentrations are also used to calculate annual deposition of heavy metals and to produce UK maps of concentration and deposition. This report provides the concentration and deposition data for samples collected during 2010 and up to 30th June 2011 .

The heavy metals (and metalloids) which are monitored are aluminium (Al), arsenic (As), antimony (Sb), barium (Ba), beryllium (Be), cadmium (Cd), caesium (Cs); chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), lithium (Li), manganese (Mn), mercury (Hg), molybdenum (Mo), nickel (Ni), rubidium (Rb), scandium (Sc), selenium (Se), strontium (Sr), tin (Sn), titanium (Ti), tungsten (W), uranium (U), vanadium (V) and zinc (Zn).

The background concentrations of metals in air and rainwater can show significant inter-year variations and since the scheme has only been operating since 2004, there are insufficient data to report on definitive trends. However, the 2010/11 concentrations are similar to those reported in previous years, and in general, concentrations at most sites have reduced over the period of the monitoring.

The concentration data are integrated with rainfall and other meteorological data to determine the annual UK wet and dry deposition budget for each metal. The 2010 deposition values included in this report are based upon the ratified rainfall data for 2010 as supplied by The Met Office, and can be considered as final values.

In addition to the normal annual reporting schedule of concentrations and depositions of heavy metals in the UK, the 2011 includes quarterly updated running annual means based upon the previous 12 months of sample collection. This gives 4 quarterly reported annual means covering the periods:

- Quarter 1 – samples collected between April 2010 and March 2011
- Quarter 2 - samples collected between July 2010 and June 2011
- Quarter 3 - samples collected between October 2010 and September 2011
- Quarter 4 – samples collected between January 2011 and December 2011

Note that quarter 4 will correspond to the traditional annual reporting cycle, and will be the data used to calculate annual deposition. Total deposition will not be calculated for quarters 1-3, as the required rainfall data is based upon a calendar year.

This is an interim report with the aim of providing the data required by Defra. Full interpretation of the data will be included in a forthcoming project report which will include a more in depth analysis of the spatial and temporal trends in the concentrations and depositions of heavy metals in rural areas of the UK.

Introduction

CEH has been monitoring the concentrations of a range of heavy metals in rural locations across the UK since 2004. The monitoring network was established to measure the background concentration of a range of heavy metals in samples of airborne particulate matter (the PM_{10} fraction), rainwater and cloudwater which have been collected at rural locations which are not unduly influenced by local sources of emissions. The data are compiled to provide information of the background concentrations of these pollutants, and are used to demonstrate compliance with relevant air quality legislation. The measured concentrations are also used to calculate annual deposition of heavy metals and to produce UK maps of concentration and deposition. This report provides the concentration and deposition data for samples collected during 2010 and the first two quarters of 2011 (up to 30th June 2011).

The heavy metals (and metalloids) which are monitored are aluminium (Al), arsenic (As), antimony (Sb), barium (Ba), beryllium (Be), cadmium (Cd), caesium (Cs); chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), lithium (Li), manganese (Mn), mercury (Hg), molybdenum (Mo), nickel (Ni), rubidium (Rb), scandium (Sc), selenium (Se), strontium (Sr), tin (Sn), titanium (Ti), tungsten (W), uranium (U), vanadium (V) and zinc (Zn).

Network Operation 2010-2011

During 2010 and 2011 the network comprised a total of 14 monitoring sites across the UK (Figure 1). Samples of particulate matter (PM_{10}), and rain water are currently collected at the 11 sites indicated by red dots. These samples are analysed for a total of 26 heavy metals. At the other sites, only samples of rainwater (yellow dots) were collected. At the 11 red dot sites, there is an additional analysis of mercury vapour and mercury in rainfall. The site at Holme Moss (blue dot) was decommissioned in 2010.

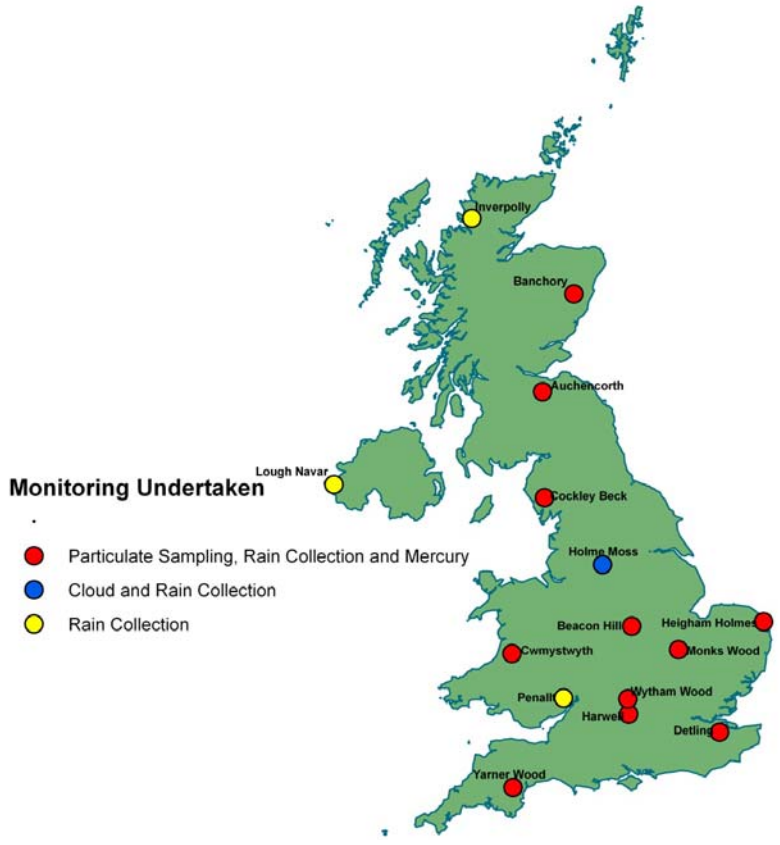


Figure 1 Location of Network Monitoring Sites

With the exception of Harwell, all of the sites included in Figure 1 were established in 2003. The site at Harwell was established in 2008 to complement the EMEP supersite activities which are currently undertaken there.

2010/2011 Concentration Data

The annual mean concentrations of heavy metal in samples of PM_{10}, and rain / cloud water collected during 2010/11 are listed below. To comply with European reporting requirements, the annual means are updated quarterly based upon a rolling mean of the previous twelve months. This report contains 3 versions of the annual means, along with summary data regarding the number of samples included within the rolling annual average period. Note that as the mercury monitoring scheme requires separate sample collection methods to the other heavy metals, there is separate summary information for these samples. As in previous years, concentrations which are greater than two standard deviations above the mean are excluded from the calculation of the annual means. When calculating the annual mean, concentrations below the limit of detection were expressed as 0.5 times the analytical limit of detection.

This report contains 3 updates of the annual means as follows:

- 2010 – covering the sample collection period January to December 2010
- 2011Q1- covering the sample collection period April 2010 to March 2011
- 2011Q2 – covering the sample collection period July 2010 to June 2011.

2010 Data – Auchencorth

Auchencorth		2010 Q4 Jan-Dec 2010			PM10 data
Data	97	% metals	Filters	54	metals
Capture	107	% Hg	Analysed:	25	Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.043	0.026	0.038	2	8
Be	0.010	0.002	0.009	2	53
Al	24.360	19.677	21.063	3	3
Sc	0.159	0.033	0.150	2	53
Ti	1.488	1.419	1.367	1	8
V	0.705	1.141	0.527	1	0
Cr	0.485	0.722	0.355	3	40
Mn	1.181	0.975	1.004	2	0
Fe	46.799	37.922	39.374	3	2
Co	0.032	0.025	0.029	2	37
Ni	0.541	0.664	0.406	2	0
Cu	1.969	4.920	1.610	1	2
Zn	4.828	3.225	4.116	3	41
As	0.296	0.185	0.265	3	0
Se	0.370	0.230	0.341	2	8
Rb	0.084	0.049	0.070	4	0
Sr	0.716	0.287	0.680	1	1
Mo	0.134	0.107	0.123	1	42
Cd	0.047	0.035	0.041	3	6
Sn	0.844	2.098	0.399	2	3
Sb	0.461	0.366	0.408	2	0
Cs	0.013	0.016	0.010	2	37
Ba	1.133	1.101	0.949	2	12
W	0.037	0.038	0.031	1	52
Pb	2.581	1.837	2.272	3	0
U	0.006	0.001	0.006	2	53
Hg	0.630	0.280	0.592	1	0

Auchencorth		2010 Q4 Jan 2010 - Dec 2010		Rain data
Rainfall	801	mm metals	Samples	42	metals
Collected	663	mm Hg	Analysed	22	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.025	0.034	0.024	4	0	0.193
Be	0.025	0.001	0.002	0	36	0.012
Al	0.002	17.290	5.780	5	0	46.309
Sc	6.881	0.018	0.025	0	41	0.200
Ti	0.026	0.533	0.166	3	6	1.330
V	0.175	0.146	0.130	2	0	1.045
Cr	0.155	0.063	0.040	0	17	0.324
Mn	0.047	2.474	0.723	3	0	5.795
Fe	0.847	26.661	7.799	4	0	62.493
Co	0.229	0.023	0.009	0	13	0.072
Ni	0.010	0.320	0.187	5	0	1.499
Cu	0.231	0.429	0.333	5	0	2.672
Zn	0.353	9.060	2.558	1	5	20.497
As	3.132	0.055	0.072	0	0	0.578
Se	0.079	0.076	0.084	4	3	0.677
Rb	0.093	0.074	0.042	1	0	0.339
Sr	0.043	1.114	0.920	9	0	7.369
Mo	0.960	0.238	0.057	1	21	0.457
Cd	0.105	0.014	0.008	0	4	0.061
Sn	0.009	0.039	0.027	6	7	0.216
Sb	0.031	0.068	0.075	6	1	0.601
Cs	0.083	0.003	0.002	0	23	0.015
Ba	0.002	0.810	0.370	5	0	2.965
W	0.431	0.015	0.007	0	31	0.060
Pb	0.009	0.377	0.285	9	4	2.282
U	0.327	0.001	0.001	0	33	0.009
Hg (ng/l)	2.803	01.618	2.713	1	0	0.018

2010 Data – Banchory

Banchory		2010 Q4 Jan-Dec 2010			PM10 data
Data	101	% metals	Filters	54	metals
Capture	84	% Hg	Analysed:	18	Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.041	0.049	0.030	4	19
Be	0.009	0.002	0.009	3	52
Al	25.238	34.312	20.010	4	12
Sc	0.153	0.024	0.150	2	53
Ti	2.546	4.305	1.684	3	12
V	0.748	1.136	0.554	2	8
Cr	0.436	0.733	0.321	3	38
Mn	1.281	1.497	1.029	3	0
Fe	86.388	302.438	45.154	1	8
Co	0.045	0.088	0.033	1	36
Ni	0.486	0.591	0.371	3	6
Cu	1.279	1.249	1.123	3	7
Zn	4.230	3.046	3.438	4	44
As	0.307	0.185	0.283	3	0
Se	0.336	0.482	0.274	1	16
Rb	0.119	0.072	0.106	4	0
Sr	0.623	0.449	0.575	2	2
Mo	0.113	0.063	0.100	4	46
Cd	0.057	0.057	0.044	4	7
Sn	0.486	1.174	0.328	1	11
Sb	0.409	0.494	0.354	1	1
Cs	0.015	0.023	0.011	2	38
Ba	0.981	1.162	0.776	3	16
W	0.034	0.013	0.031	3	50
Pb	2.779	3.493	2.380	1	2
U	0.006	0.002	0.006	2	52
Hg	2.688	7.596	1.118	1	0

Banchory		2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall	824	mm metals	Samples	38	metals
Collected	601	mm Hg	Analysed	18	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.041	0.046	0.035	1	0	0.290
Be	0.001	0.001	0.002	1	37	0.012
Al	5.475	16.606	4.610	3	0	37.977
Sc	0.023	0.000	0.025	38	38	0.206
Ti	0.223	0.676	0.175	2	7	1.444
V	0.175	0.135	0.177	1	0	1.461
Cr	0.033	0.070	0.035	3	21	0.287
Mn	3.116	4.867	2.469	2	0	20.338
Fe	6.713	16.353	5.855	2	1	48.227
Co	0.009	0.011	0.009	3	9	0.070
Ni	0.219	0.286	0.198	3	0	1.632
Cu	0.286	0.608	0.281	1	0	2.312
Zn	2.242	1.654	2.114	2	5	17.413
As	0.108	0.100	0.117	1	0	0.960
Se	0.115	0.093	0.108	2	5	0.891
Rb	0.235	0.235	0.250	2	0	2.062
Sr	1.665	1.845	1.417	1	0	11.675
Mo	0.055	0.084	0.051	1	23	0.420
Cd	0.013	0.014	0.012	3	3	0.101
Sn	0.837	5.383	0.017	1	12	0.138
Sb	0.046	0.118	0.046	1	2	0.380
Cs	0.005	0.010	0.003	2	16	0.027
Ba	0.534	0.628	0.469	2	1	3.866
W	0.008	0.007	0.006	2	32	0.051
Pb	0.398	0.570	0.360	2	3	2.968
U	0.001	0.001	0.001	2	35	0.009
Hg (ng/l)	4.080	2.712	3.457	1	0	0.021

2010 Data – Beacon Hill

Beacon Hill			2010 Q4 Jan-Dec 2010			PM10 data
Data Capture	76 90	% metals % Hg	Filters Analysed:	59 22	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.101	0.083	0.072	2	3	
Be	0.013	0.007	0.010	2	55	
Al	69.818	83.231	47.558	2	1	
Sc	0.222	0.118	0.166	2	55	
Ti	5.882	13.450	3.584	1	3	
V	1.419	1.342	0.837	5	1	
Cr	1.544	1.911	0.990	5	18	
Mn	3.988	3.772	2.624	3	1	
Fe	143.320	146.135	99.350	2	1	
Co	0.074	0.058	0.053	2	16	
Ni	1.010	0.703	0.698	4	1	
Cu	6.164	7.078	3.508	2	1	
Zn	14.983	11.044	9.524	4	14	
As	0.868	0.605	0.603	2	1	
Se	0.748	0.394	0.544	1	4	
Rb	0.221	0.177	0.155	3	1	
Sr	1.429	1.191	0.921	2	1	
Mo	0.338	0.200	0.236	1	21	
Cd	0.152	0.129	0.096	4	5	
Sn	1.382	0.901	0.932	3	1	
Sb	1.512	1.019	1.059	1	1	
Cs	0.040	0.077	0.019	1	21	
Ba	3.433	2.886	2.207	2	3	
W	0.190	0.733	0.034	2	53	
Pb	8.579	6.859	5.464	3	1	
U	0.009	0.006	0.007	3	54	
Hg	1.089	0.698	0.991	1	0	

Beacon Hill			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	563 484	mm metals mm Hg	Samples Analysed	13 22	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition (g ha^{-1} y^{-1})**
Li	0.042	0.031	0.036	1	0	0.202
Be	0.003	0.003	0.002	1	8	0.013
Al	19.534	23.791	13.276	1	0	74.777
Sc	0.027	0.000	-	0	13	-
Ti	0.507	0.544	0.408	1	0	2.300
V	0.332	0.187	0.306	0	0	1.721
Cr	0.081	0.076	0.063	1	4	0.356
Mn	4.984	5.583	3.608	1	0	20.321
Fe	26.731	33.308	18.334	1	0	103.263
Co	0.031	0.028	0.026	2	0	0.148
Ni	0.216	0.192	0.171	1	0	0.966
Cu	1.308	0.618	1.203	0	0	6.773
Zn	6.279	3.091	5.771	0	0	32.506
As	0.229	0.113	0.211	0	0	1.188
Se	0.131	0.088	0.121	0	2	0.680
Rb	0.207	0.223	0.145	1	0	0.815
Sr	1.127	0.926	0.953	1	0	5.366
Mo	0.078	0.048	0.061	1	2	0.345
Cd	0.026	0.015	0.024	0	0	0.133
Sn	0.025	0.020	0.019	1	3	0.107
Sb	0.149	0.060	0.136	0	0	0.769
Cs	0.006	0.006	0.005	1	2	0.030
Ba	2.044	1.653	1.608	1	0	9.055
W	0.011	0.013	0.008	1	9	0.044
Pb	1.561	0.860	1.435	0	0	8.081
U	0.002	0.003	0.001	1	9	0.007
Hg (ng/l)	5.821	3.369	5.291	1	0	0.026

2010 Data – Cockley Beck

Cockley Beck			2010 Q4 Jan-Dec 2010			PM10 data
Data Capture	87 87	% metals % Hg	Filters Analysed:	50 19	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.054	0.422	0.050	1	10	
Be	0.010	0.063	0.009	1	49	
Al	37.276	397.861	34.544	1	2	
Sc	0.164	1.049	0.154	1	49	
Ti	3.500	52.365	3.200	1	9	
V	0.640	2.762	0.604	1	2	
Cr	0.764	12.757	0.695	1	25	
Mn	1.990	16.939	1.857	1	0	
Fe	79.130	895.654	73.188	1	5	
Co	0.039	0.381	0.036	1	32	
Ni	0.444	3.383	0.416	1	9	
Cu	1.482	10.805	1.389	1	10	
Zn	5.688	61.300	5.269	1	34	
As	0.319	0.923	0.303	1	0	
Se	0.427	1.968	0.403	1	6	
Rb	0.114	0.672	0.108	1	0	
Sr	0.890	4.942	0.838	1	0	
Mo	0.139	0.631	0.131	1	39	
Cd	0.052	0.138	0.050	1	8	
Sn	0.443	2.541	0.417	1	1	
Sb	0.500	1.660	0.474	1	4	
Cs	0.017	0.045	0.016	2	32	
Ba	2.599	11.583	1.594	2	15	
W	0.037	0.210	0.035	1	47	
Pb	2.950	9.744	2.798	1	3	
U	0.007	0.042	0.007	1	47	
Hg	1.051	0.470	1.051	0	0	

Cockley Beck			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	2018 1842	mm metals mm Hg	Samples Analysed	41 24	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.024	0.024	0.023	2	0	0.471
Be	0.002	0.002	0.002	2	35	0.033
Al	4.061	18.911	3.595	3	0	72.577
Sc	0.026	0.000	0.025	0	41	0.505
Ti	0.070	0.441	0.060	3	14	1.220
V	0.195	0.153	0.189	2	0	3.822
Cr	0.030	0.056	0.028	4	30	0.571
Mn	0.591	2.258	0.554	3	0	11.175
Fe	4.252	21.018	3.952	3	6	79.781
Co	0.007	0.019	0.007	2	14	0.132
Ni	0.147	0.266	0.122	3	0	2.464
Cu	0.295	0.271	0.287	3	0	5.786
Zn	1.700	2.253	1.638	4	10	33.068
As	0.082	0.060	0.079	2	0	1.601
Se	0.122	0.097	0.119	3	1	2.392
Rb	0.041	0.069	0.039	4	0	0.785
Sr	0.965	0.813	0.937	2	0	18.915
Mo	0.037	0.062	0.028	3	26	0.568
Cd	0.011	0.022	0.010	1	2	0.211
Sn	0.026	0.024	0.022	1	8	0.442
Sb	0.073	0.056	0.045	4	1	0.901
Cs	0.002	0.003	0.002	4	20	0.039
Ba	0.292	0.580	0.279	3	0	5.638
W	0.009	0.013	0.005	3	33	0.109
Pb	0.573	0.488	0.376	2	1	7.584
U	0.001	0.001	0.001	2	37	0.021
Hg (ng/l)	3.242	2.058	3.063	1	0	0.056

2010 Data - Cwymstwyth

Cwymstwyth		2010 Q4 Jan-Dec 2010		PM10 data
Data	75	% metals	Filters	44	metals
Capture	86	% Hg	Analysed:	19	Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.046	4.131	0.044	1	6
Be	0.010	0.451	0.010	1	40
Al	29.034	1412.724	28.323	1	5
Sc	0.167	7.509	0.163	1	40
Ti	2.027	146.591	1.953	1	7
V	0.860	68.606	0.825	1	1
Cr	0.212	6.001	0.209	1	34
Mn	1.436	88.570	1.391	1	0
Fe	46.343	3151.281	44.759	1	5
Co	0.033	1.987	0.032	1	29
Ni	0.491	36.580	0.473	1	4
Cu	2.045	48.094	2.021	1	3
Zn	5.132	344.468	4.959	1	36
As	0.324	22.894	0.313	1	0
Se	0.448	41.776	0.427	1	1
Rb	0.104	7.996	0.100	1	0
Sr	0.825	119.868	0.765	1	0
Mo	0.125	4.508	0.123	1	37
Cd	0.052	3.399	0.051	1	3
Sn	0.452	19.299	0.442	1	0
Sb	0.451	21.515	0.440	1	0
Cs	0.021	0.672	0.021	1	24
Ba	0.874	37.724	0.855	1	11
W	0.041	1.507	0.041	1	39
Pb	2.985	119.118	2.925	1	1
U	0.007	0.300	0.007	1	40
Hg	1.903	1.650	1.655	1	0

Cwymstwyth		2010 Q4 Jan 2010 - Dec 2010		Rain data
Rainfall	1438	mm	Samples	13	metals
Collected	909	mm Hg	Analysed	21	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.026	0.014	0.026	1	0	0.379
Be	0.002	0.000	0.002	1	12	0.022
Al	3.847	8.064	2.517	2	0	36.191
Sc	0.025	0.000	0.025	0	13	0.360
Ti	0.068	0.188	0.048	1	7	0.688
V	0.137	0.054	0.132	1	0	1.902
Cr	0.034	0.042	0.030	1	7	0.434
Mn	0.825	1.576	0.690	2	0	9.926
Fe	4.597	12.134	2.585	2	4	37.179
Co	0.011	0.047	0.006	1	7	0.088
Ni	0.236	0.355	0.139	1	0	1.996
Cu	0.205	0.313	0.175	1	0	2.512
Zn	1.233	4.963	0.711	1	8	10.223
As	0.111	0.048	0.110	0	0	1.584
Se	0.085	0.085	0.077	1	2	1.114
Rb	0.040	0.087	0.031	1	0	0.441
Sr	1.045	0.535	1.039	0	0	14.940
Mo	0.018	0.009	0.015	1	10	0.216
Cd	0.014	0.099	0.004	1	1	0.055
Sn	0.016	0.020	0.013	1	6	0.191
Sb	0.026	0.021	0.024	1	0	0.346
Cs	0.001	0.001	0.001	1	9	0.017
Ba	0.174	0.310	0.137	1	0	1.968
W	0.057	0.064	0.018	1	9	0.260
Pb	0.239	0.475	0.193	1	0	2.772
U	0.001	0.002	0.001	1	12	0.014
Hg (ng/l)	4.108	2.496	3.740	1	0	0.034

2010 Data – Detling

Detling			2010 Q4 Jan-Dec 2010			PM10 data
Data Capture	98 75	% metals % Hg	Filters Analysed:	55 18	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.065	0.101	0.052	1	8	
Be	0.011	0.011	0.010	1	52	
Al	42.382	55.773	36.301	1	0	
Sc	0.185	0.189	0.162	1	52	
Ti	2.589	3.338	2.092	2	2	
V	1.589	1.759	1.389	2	0	
Cr	0.964	1.335	0.875	2	22	
Mn	3.264	6.960	2.339	1	0	
Fe	120.010	231.923	89.797	1	0	
Co	0.070	0.122	0.055	1	17	
Ni	1.172	1.421	0.998	2	0	
Cu	4.621	8.397	3.208	2	1	
Zn	13.256	23.749	10.227	1	18	
As	0.839	1.803	0.598	1	0	
Se	0.631	1.382	0.444	1	5	
Rb	0.190	0.305	0.150	1	0	
Sr	1.256	2.196	0.846	2	2	
Mo	0.301	0.649	0.214	1	24	
Cd	0.146	0.278	0.111	1	8	
Sn	1.350	3.103	0.931	1	0	
Sb	1.934	3.971	0.986	3	0	
Cs	0.022	0.041	0.015	2	25	
Ba	3.538	7.504	2.072	2	6	
W	0.133	0.982	0.045	1	48	
Pb	9.358	24.934	5.993	1	2	
U	0.007	0.008	0.006	1	52	
Hg	0.746	0.458	0.619	2	0	

Detling			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	673 606	mm metals mm Hg	Samples Analysed	13 20	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition (g ha^{-1} y^{-1})**
Li	0.045	0.023	0.041	1	0	0.276
Be	0.003	0.002	0.003	0	8	0.018
Al	21.146	29.078	15.964	1	0	107.423
Sc	0.028	0.000	-	0	13	-
Ti	0.445	0.525	0.350	1	0	2.358
V	0.558	0.238	0.507	0	0	3.412
Cr	0.144	0.149	0.114	1	2	0.770
Mn	3.839	4.413	3.486	1	0	23.456
Fe	21.555	22.354	19.574	1	0	131.714
Co	0.034	0.027	0.031	1	0	0.207
Ni	0.543	0.701	0.261	1	0	1.756
Cu	1.429	0.816	1.218	1	0	8.193
Zn	7.629	4.049	6.928	0	0	46.616
As	0.178	0.111	0.150	1	0	1.010
Se	0.163	0.082	0.148	0	1	0.997
Rb	0.109	0.107	0.089	1	0	0.600
Sr	1.655	0.855	1.503	1	0	10.114
Mo	0.084	0.066	0.070	1	3	0.473
Cd	0.037	0.019	0.030	1	0	0.204
Sn	0.136	0.301	0.060	1	2	0.403
Sb	0.197	0.158	0.147	1	0	0.989
Cs	0.006	0.003	0.005	0	2	0.034
Ba	1.476	1.014	1.243	1	0	8.366
W	0.015	0.020	0.009	1	10	0.058
Pb	1.709	1.085	1.452	1	0	9.773
U	0.001	0.001	0.001	1	9	0.008
Hg (ng/l)	5.415	5.454	5.065	1	0	0.031

2010 Data – Harwell

Harwell			2010 Q4 Jan-Dec 2010			PM10 data
Data Capture	95 72	% metals % Hg	Filters Analysed:	54 18		metals Hg
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**		**No. Samples Below LoD**
Li	0.056	0.039	0.051	4		2
Be	0.010	0.005	0.009	4		50
Al	37.430	36.722	33.238	4		0
Sc	0.163	0.088	0.157	4		50
Ti	2.311	2.930	1.615	4		2
V	1.214	1.445	0.880	5		1
Cr	0.543	1.129	0.357	3		37
Mn	2.106	1.926	1.801	3		0
Fe	78.804	68.218	67.008	3		0
Co	0.047	0.039	0.039	4		24
Ni	0.821	0.907	0.694	3		1
Cu	2.422	2.060	2.278	3		1
Zn	7.509	5.823	6.989	2		24
As	0.470	0.348	0.445	2		0
Se	0.448	0.260	0.421	2		2
Rb	0.152	0.105	0.126	5		0
Sr	1.076	0.605	0.987	3		0
Mo	0.160	0.147	0.145	2		39
Cd	0.082	0.073	0.072	3		1
Sn	0.717	2.532	0.622	1		2
Sb	0.715	0.512	0.680	2		0
Cs	0.021	0.025	0.017	3		21
Ba	6.738	12.220	4.472	3		3
W	0.034	0.019	0.033	4		48
Pb	4.390	3.852	4.248	1		0
U	0.007	0.004	0.006	4		49
Hg	1.266	0.404	1.247	1		0

Harwell			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	604 449	mm metals mm Hg	Samples Analysed	14 22		metals Hg
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.041	0.036	0.034	1	0	0.205
Be	0.003	0.003	0.003	1	7	0.016
Al	17.127	22.963	13.574	1	0	82.026
Sc	0.028	0.000	-	0	14	-
Ti	0.424	0.693	0.325	1	1	1.962
V	0.348	0.225	0.294	1	0	1.779
Cr	0.058	0.078	0.044	1	6	0.265
Mn	2.265	3.939	1.681	1	0	10.160
Fe	16.848	27.890	12.735	1	0	76.955
Co	0.025	0.035	0.019	1	0	0.117
Ni	0.314	0.214	0.217	1	0	1.311
Cu	0.814	0.654	0.681	2	0	4.114
Zn	5.455	3.322	4.640	1	0	28.039
As	0.140	0.103	0.118	1	0	0.712
Se	0.137	0.100	0.116	1	1	0.700
Rb	0.067	0.088	0.052	1	0	0.315
Sr	2.097	2.398	1.707	1	0	10.314
Mo	0.082	0.190	0.026	2	7	0.154
Cd	0.021	0.011	0.019	1	0	0.115
Sn	0.034	0.021	0.031	0	1	0.185
Sb	0.134	0.069	0.103	1	0	0.623
Cs	0.003	0.003	0.002	2	4	0.013
Ba	22.395	43.492	16.492	2	0	99.655
W	0.038	0.105	0.011	1	8	0.068
Pb	2.257	2.627	1.797	1	0	10.858
U	0.003	0.008	0.002	1	7	0.011
Hg (ng/l)	4.447	3.159	4.251	2	0	0.019

2010 Data – Heigham Holmes

Heigham Holmes			2010 Q4 Jan-Dec 2010		PM10 data
Data	80	% metals	Filters	56	metals
Capture	31	% Hg	Analysed:	7	Hg
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**
Li	0.080	0.063	0.056	2	2
Be	0.012	0.012	0.010	2	49
Al	56.455	57.462	39.946	2	1
Sc	0.201	0.207	0.166	2	50
Ti	3.698	3.541	2.547	1	0
V	2.134	1.807	1.459	5	0
Cr	1.044	1.119	0.760	5	29
Mn	2.769	2.042	2.078	3	0
Fe	94.225	71.192	74.892	2	0
Co	0.071	0.049	0.055	2	18
Ni	1.301	0.970	0.934	4	0
Cu	2.389	1.546	1.937	2	1
Zn	9.804	6.206	7.743	4	15
As	0.596	0.460	0.476	2	0
Se	0.620	0.283	0.505	1	3
Rb	0.194	0.119	0.154	3	0
Sr	1.220	0.647	0.976	2	2
Mo	0.187	0.151	0.153	1	34
Cd	0.115	0.075	0.089	4	0
Sn	0.824	0.693	0.623	3	2
Sb	0.894	0.656	0.727	1	0
Cs	0.024	0.025	0.017	1	23
Ba	1.982	1.756	1.590	2	2
W	0.104	0.344	0.036	2	48
Pb	6.104	5.779	4.479	3	0
U	0.008	0.008	0.007	3	49
Hg	0.712	0.666	0.712	0	0

Heigham Holmes			2010 Q4 Jan 2010 - Dec 2010		Rain data
Rainfall	608	mm metals	Samples	10	metals
Collected	445	mm Hg	Analysed	20	Hg
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.078	0.058	0.086	1	0	0.525
Be	0.002	0.001	0.002	2	8	0.009
Al	6.841	9.761	6.517	1	0	39.643
Sc	0.023	0.000	0.025	10	10	0.152
Ti	0.181	0.243	0.201	1	2	1.221
V	0.324	0.157	0.360	1	0	2.189
Cr	0.060	0.061	0.067	1	5	0.408
Mn	1.997	2.327	1.570	1	0	9.552
Fe	13.274	13.011	14.729	1	0	89.589
Co	0.018	0.012	0.020	1	0	0.124
Ni	0.538	0.774	0.453	1	0	2.757
Cu	0.588	0.386	0.612	1	0	3.720
Zn	4.218	4.761	4.039	1	0	24.570
As	0.115	0.037	0.127	1	0	0.774
Se	0.157	0.097	0.150	1	0	0.910
Rb	0.114	0.074	0.108	1	0	0.656
Sr	3.258	2.621	3.048	1	0	18.537
Mo	0.047	0.038	0.053	0	4	0.319
Cd	0.017	0.009	0.018	0	0	0.112
Sn	0.021	0.021	0.019	1	2	0.115
Sb	0.069	0.035	0.077	0	0	0.468
Cs	0.005	0.006	0.004	1	1	0.023
Ba	0.757	0.709	0.764	1	0	4.646
W	0.014	0.028	0.008	1	7	0.051
Pb	0.712	0.346	0.790	0	0	4.803
U	0.001	0.002	0.001	1	9	0.006
Hg (ng/l)	5.419	3.462	5.296	1	0	0.024

2010 Data –Monks Wood

Monks Wood			2010 Q4 Jan-Dec 2010			PM10 data
Data Capture	75 66	% metals % Hg	Filters Analysed:	57 16	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.090	0.040	0.063	1	0	
Be	0.014	0.012	0.010	1	50	
Al	60.963	34.322	39.671	3	1	
Sc	0.218	0.198	0.166	1	51	
Ti	4.060	4.617	2.500	1	1	
V	1.672	1.005	1.108	1	0	
Cr	0.965	1.056	0.532	3	25	
Mn	3.297	1.487	2.317	2	0	
Fe	140.399	70.106	99.650	2	0	
Co	0.072	0.036	0.053	3	12	
Ni	1.036	0.493	0.738	1	0	
Cu	4.411	1.456	3.227	1	0	
Zn	12.508	6.322	9.223	2	11	
As	0.813	0.379	0.611	2	0	
Se	0.743	0.227	0.567	1	1	
Rb	0.213	0.082	0.158	1	0	
Sr	1.331	0.670	0.882	3	0	
Mo	0.286	0.154	0.212	2	20	
Cd	0.133	0.069	0.097	2	0	
Sn	1.086	0.408	0.801	1	0	
Sb	1.398	0.585	0.976	2	0	
Cs	0.027	0.028	0.017	2	20	
Ba	4.655	6.419	2.316	2	0	
W	0.051	0.042	0.039	1	46	
Pb	7.424	3.553	5.436	2	0	
U	0.010	0.009	0.007	2	48	
Hg	0.998	1.366	0.654	1	0	

Monks Wood			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	503 407	mm metals mm Hg	Samples Analysed	34 20	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.046	0.086	0.033	2	0	0.168
Be	0.002	0.002	0.002	3	25	0.010
Al	11.073	15.306	8.941	2	0	44.983
Sc	0.025	0.000	0.025	0	34	0.126
Ti	0.254	0.377	0.192	3	4	0.965
V	0.266	0.233	0.256	1	0	1.287
Cr	0.073	0.077	0.060	3	8	0.303
Mn	1.649	2.849	1.270	2	0	6.388
Fe	14.052	19.449	11.233	2	0	56.518
Co	0.022	0.025	0.019	2	1	0.097
Ni	0.422	0.935	0.360	2	0	1.813
Cu	1.109	2.354	0.891	2	0	4.483
Zn	5.880	13.260	4.967	2	1	24.990
As	0.142	0.122	0.131	2	0	0.657
Se	0.120	0.113	0.109	3	3	0.547
Rb	0.087	0.146	0.074	2	0	0.375
Sr	1.032	1.175	0.971	4	0	4.884
Mo	0.121	0.355	0.053	2	9	0.266
Cd	0.039	0.158	0.031	1	0	0.157
Sn	0.042	0.054	0.036	1	3	0.183
Sb	0.114	0.084	0.107	3	0	0.538
Cs	0.003	0.005	0.003	2	11	0.016
Ba	0.857	1.105	0.719	2	0	3.616
W	0.015	0.024	0.013	2	20	0.065
Pb	0.767	0.880	0.706	2	0	3.550
U	0.002	0.002	0.001	3	28	0.005
Hg (ng/l)	4.460	2.566	4.121	1	0	0.017

2010 Data – Wytham Wood

Wytham Wood			2010 Q4 Jan-Dec 2010			PM10 data
Data Capture	90 56	% metals % Hg	Filters Analysed:	56 13		metals Hg
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**		**No. Samples Below LoD**
Li	0.063	0.042	0.053	3		2
Be	0.011	0.034	0.010	1		51
Al	44.235	33.760	33.826	2		1
Sc	0.177	0.566	0.159	1		51
Ti	3.278	5.415	2.011	2		2
V	1.127	0.720	0.931	2		1
Cr	0.929	1.085	0.758	4		22
Mn	2.463	1.515	2.026	2		0
Fe	107.128	76.236	85.600	2		1
Co	0.052	0.072	0.047	1		21
Ni	0.701	0.417	0.571	3		1
Cu	2.963	1.405	2.481	2		1
Zn	10.022	11.916	9.104	1		16
As	0.654	0.341	0.554	2		1
Se	0.569	0.365	0.486	3		1
Rb	0.166	0.076	0.135	3		1
Sr	1.048	0.735	0.878	2		2
Mo	0.202	0.351	0.183	1		29
Cd	0.097	0.053	0.083	2		1
Sn	0.758	0.635	0.690	1		2
Sb	1.017	0.504	0.878	1		1
Cs	0.024	0.034	0.017	3		20
Ba	2.304	1.672	1.916	1		1
W	0.055	0.131	0.040	2		44
Pb	5.629	3.168	4.818	1		1
U	0.007	0.023	0.006	1		50
Hg	0.970	0.495	0.970	0		0

Wytham Wood			2010 Q4 Jan 2010 - Dec 2010		Rain data
Rainfall Collected	534 414	mm metals mm Hg	Samples Analysed	10 22	metals Hg
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.024	0.024	0.030	1	0	0.160
Be	0.001	0.002	0.002	1	7	0.009
Al	8.311	13.870	8.258	1	0	44.082
Sc	0.020	0.000	0.025	10	10	0.133
Ti	0.184	0.472	0.157	1	2	0.840
V	0.207	0.152	0.258	1	0	1.377
Cr	0.039	0.050	0.048	1	3	0.256
Mn	1.454	2.966	1.811	1	0	9.669
Fe	10.623	20.585	9.996	1	0	53.359
Co	0.016	0.023	0.020	1	0	0.107
Ni	0.186	0.192	0.191	1	0	1.017
Cu	0.747	0.682	0.930	1	0	4.967
Zn	2.904	2.692	3.619	3	0	19.317
As	0.170	0.115	0.196	1	0	1.047
Se	0.106	0.089	0.121	1	0	0.646
Rb	0.054	0.090	0.067	3	0	0.359
Sr	0.948	0.967	1.181	1	0	6.303
Mo	0.053	0.177	0.037	1	4	0.197
Cd	0.015	0.011	0.019	1	0	0.099
Sn	0.018	0.040	0.017	1	3	0.091
Sb	0.099	0.077	0.123	1	0	0.657
Cs	0.002	0.003	0.003	1	2	0.015
Ba	0.873	0.862	1.088	2	0	5.808
W	0.005	0.006	0.006	1	7	0.030
Pb	0.689	0.620	0.784	1	0	4.183
U	0.001	0.001	0.001	1	8	0.006
Hg (ng/l)	4.207	2.557	4.081	1	0	0.017

2010 Data – Yarner Wood

Yarner Wood			2010 Q4 Jan-Dec 2010		PM10 data
Data	90	% metals	Filters	56	metals
Capture	68	% Hg	Analysed:	14	Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.049	0.031	0.045	3	0
Be	0.009	0.002	0.009	2	53
Al	26.115	22.706	22.506	3	2
Sc	0.153	0.038	0.151	2	53
Ti	1.634	1.626	1.320	4	8
V	1.117	1.332	0.906	2	0
Cr	0.632	0.971	0.372	5	36
Mn	1.499	1.182	1.331	3	0
Fe	50.315	42.791	42.257	4	0
Co	0.036	0.032	0.030	3	34
Ni	0.685	0.691	0.574	2	0
Cu	1.547	1.320	1.413	2	0
Zn	5.252	4.152	4.633	3	38
As	0.511	0.323	0.471	2	0
Se	0.398	0.241	0.352	3	5
Rb	0.146	0.075	0.132	3	0
Sr	0.759	0.342	0.732	2	1
Mo	0.144	0.121	0.125	2	42
Cd	0.063	0.048	0.056	3	6
Sn	0.434	0.432	0.373	3	10
Sb	0.546	0.371	0.497	3	0
Cs	0.022	0.036	0.018	1	23
Ba	1.033	0.815	0.865	4	6
W	0.033	0.016	0.030	3	51
Pb	3.236	2.270	3.029	2	0
U	0.006	0.002	0.006	2	53
Hg	1.244	0.504	1.244	0	0

Yarner Wood			2010 Q4 Jan 2010 - Dec 2010		Rain data
Rainfall	1123	mm metals	Samples	43	metals
Collected	773	mm Hg	Analysed	22	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.026	0.028	0.025	4	0	0.286
Be	0.002	0.001	0.002	2	39	0.018
Al	3.881	12.478	3.403	4	3	38.207
Sc	0.025	0.004	0.025	1	42	0.281
Ti	0.067	0.289	0.058	3	18	0.652
V	0.355	0.285	0.352	1	0	3.951
Cr	0.029	0.055	0.027	5	23	0.307
Mn	0.860	2.814	0.743	3	0	8.344
Fe	3.720	15.795	3.238	3	3	36.355
Co	0.008	0.019	0.007	4	10	0.082
Ni	0.231	0.504	0.215	3	0	2.411
Cu	0.360	0.533	0.230	4	0	2.585
Zn	1.546	2.767	1.506	2	8	16.906
As	0.073	0.074	0.071	3	0	0.800
Se	0.099	0.078	0.098	2	4	1.104
Rb	0.097	0.266	0.084	3	0	0.939
Sr	1.055	0.876	1.030	4	0	11.561
Mo	0.100	0.393	0.059	2	24	0.668
Cd	0.006	0.012	0.006	4	4	0.069
Sn	0.094	0.403	0.035	1	16	0.393
Sb	0.035	0.045	0.034	2	3	0.381
Cs	0.002	0.008	0.002	2	14	0.022
Ba	0.195	0.520	0.171	3	3	1.916
W	0.016	0.015	0.008	1	34	0.088
Pb	0.248	0.586	0.234	3	3	2.624
U	0.001	0.001	0.001	3	40	0.011
Hg (ng/l)	3.902	3.388	3.316	1	0	0.026

2010 – Rainfall Only Sites – Inverpolly and Lough Navar

Inverpolly			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall	1693	mm	Samples	12	metals	
Collected	-	metals	Analysed	-	Hg	
		mm Hg				

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.047	0.018	0.045	0	0	0.763
Be	0.002	0.001	0.002	1	10	0.029
Al	3.527	7.716	1.658	2	0	28.067
Sc	0.026	0.000	0.025	0	12	0.423
Ti	0.286	0.827	0.084	2	1	1.428
V	0.090	0.056	0.088	1	0	1.482
Cr	0.021	0.007	0.020	1	11	0.339
Mn	0.894	0.740	0.820	1	0	13.882
Fe	5.233	14.209	2.295	1	3	38.856
Co	0.006	0.010	0.005	1	9	0.082
Ni	0.088	0.044	0.070	1	0	1.185
Cu	0.146	0.079	0.136	1	0	2.304
Zn	1.219	3.322	0.812	1	8	13.741
As	0.049	0.022	0.044	1	0	0.737
Se	0.113	0.073	0.109	0	1	1.849
Rb	0.074	0.084	0.065	1	0	1.106
Sr	1.968	0.816	1.904	0	0	32.239
Mo	0.018	0.012	0.016	1	10	0.274
Cd	0.010	0.047	0.004	1	1	0.076
Sn	0.007	0.007	0.004	1	10	0.072
Sb	0.010	0.008	0.009	1	7	0.149
Cs	0.001	0.001	0.001	1	10	0.019
Ba	0.115	0.115	0.103	1	1	1.744
W	0.009	0.005	0.007	0	9	0.127
Pb	0.082	0.079	0.079	1	5	1.343
U	0.001	0.000	0.001	0	12	0.017
Hg (ng/l)	-	-	-	-	-	-

Lough Navar			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall	1196	mm	Samples	12	metals	
Collected	-	metals	Analysed	-	Hg	
		mm Hg				

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.053	0.037	0.034	1	0	0.410
Be	0.002	0.001	0.002	1	10	0.020
Al	3.142	6.191	2.905	2	0	34.755
Sc	0.031	0.008	0.025	1	11	0.299
Ti	0.216	0.253	0.190	1	1	2.276
V	0.106	0.076	0.094	1	0	1.128
Cr	0.050	0.036	0.046	0	6	0.551
Mn	1.703	1.944	0.965	1	0	11.541
Fe	3.972	9.497	3.247	1	2	38.847
Co	0.006	0.008	0.005	1	5	0.060
Ni	0.179	0.180	0.118	1	0	1.413
Cu	0.254	0.177	0.235	1	0	2.806
Zn	1.228	1.126	1.136	1	6	13.588
As	0.248	0.127	0.207	0	0	2.481
Se	0.122	0.049	0.097	1	0	1.160
Rb	0.075	0.171	0.052	1	0	0.627
Sr	2.288	1.563	1.485	1	0	17.768
Mo	0.027	0.074	0.021	1	9	0.251
Cd	0.006	0.005	0.005	1	3	0.063
Sn	0.175	0.272	0.018	1	5	0.217
Sb	0.023	0.022	0.020	1	2	0.245
Cs	0.002	0.002	0.001	1	7	0.015
Ba	0.156	0.186	0.136	1	1	1.629
W	0.051	0.080	0.005	1	11	0.060
Pb	0.159	0.137	0.147	1	2	1.759
U	0.001	0.000	0.001	1	11	0.012
Hg (ng/l)	-	-	-	-	-	-

2010 – Rainfall Only Sites – Penallt

Penallt			2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall	752	mm	Samples	1	metals	
Collected	-	metals mm Hg	Analysed	-	Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition (g ha^{-1} y^{-1})**
Li	0.005	-	0.042	0	0	0.316
Be	0.000	-	0.002	0	1	0.011
Al	0.386	-	19.600	0	0	147.423
Sc	0.003	-	0.025	0	1	0.188
Ti	0.018	-	0.578	0	0	4.347
V	0.039	-	0.293	0	0	2.204
Cr	0.003	-	0.061	0	1	0.459
Mn	0.521	-	4.790	0	0	36.028
Fe	0.475	-	28.700	0	0	215.869
Co	0.001	-	0.035	0	0	0.263
Ni	0.041	-	0.204	0	0	1.534
Cu	0.052	-	0.876	0	0	6.589
Zn	0.292	-	6.320	0	0	47.536
As	0.042	-	0.213	0	0	1.602
Se	0.009	-	0.110	0	0	0.827
Rb	0.035	-	0.118	0	0	0.888
Sr	0.175	-	1.380	0	0	10.380
Mo	0.002	-	0.015	0	1	0.113
Cd	0.002	-	0.044	0	0	0.331
Sn	0.002	-	0.024	0	0	0.181
Sb	0.009	-	0.116	0	0	0.873
Cs	0.000	-	0.009	0	0	0.068
Ba	0.075	-	1.900	0	0	14.291
W	0.001	-	0.035	0	1	0.263
Pb	0.081	-	1.480	0	0	11.132
U	0.000	-	0.004	0	1	0.030
Hg (ng/l)	-	-	-	-	-	-

2011 Q1 Data – Auchencorth

Auchencorth		2011 Q1 April 2010 - March 2011			PM10 data
Data	96	% metals	Filters	54	metals
Capture	84	% Hg	Analysed:	23	Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.037	0.026	0.032	2	13
Be	0.010	0.001	0.009	1	54
Al	19.939	16.839	15.115	4	5
Sc	0.159	0.020	0.149	1	54
Ti	1.211	1.050	1.049	2	11
V	0.602	1.144	0.416	1	4
Cr	0.324	0.566	0.207	2	45
Mn	0.981	0.911	0.740	3	0
Fe	35.942	31.959	27.883	3	3
Co	0.027	0.021	0.021	4	45
Ni	0.562	0.758	0.341	4	2
Cu	1.164	1.595	0.909	1	3
Zn	4.307	2.808	3.372	3	46
As	0.242	0.144	0.204	3	0
Se	0.318	0.196	0.261	4	12
Rb	0.075	0.054	0.056	5	0
Sr	0.679	0.295	0.620	1	2
Mo	0.115	0.053	0.093	3	48
Cd	0.038	0.030	0.032	3	8
Sn	0.518	1.353	0.305	1	5
Sb	0.350	0.269	0.284	3	0
Cs	0.012	0.016	0.009	2	42
Ba	0.771	0.749	0.585	3	17
W	0.037	0.038	0.030	1	53
Pb	2.122	1.559	1.863	2	0
U	0.006	0.001	0.006	1	54
Hg	0.561	5.019	0.561	0	0

Auchencorth		2011 Q1 April 2010 - March 2011			Rain data
Rainfall	857	mm metals	Samples	39	metals
Collected	803	mm Hg	Analysed	29	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.029	0.029	0.027	3	0	0.230
Be	0.029	0.001	0.002	0	33	0.013
Al	0.002	17.956	4.482	4	2	38.427
Sc	5.870	0.019	0.025	0	38	0.214
Ti	0.028	0.551	0.129	3	8	1.104
V	0.147	0.131	0.091	3	0	0.782
Cr	0.126	0.055	0.033	0	22	0.279
Mn	0.039	2.487	0.592	3	0	5.073
Fe	0.753	27.873	6.647	4	2	56.987
Co	0.151	0.024	0.007	0	15	0.063
Ni	0.009	0.194	0.139	7	0	1.188
Cu	0.156	0.407	0.290	7	0	2.483
Zn	0.327	2.576	1.629	4	7	13.965
As	1.877	0.052	0.068	0	0	0.586
Se	0.076	0.072	0.073	2	6	0.628
Rb	0.081	0.076	0.039	1	0	0.332
Sr	0.043	0.911	0.816	10	0	6.996
Mo	1.146	0.238	0.047	0	20	0.399
Cd	0.095	0.013	0.006	0	4	0.052
Sn	0.007	0.033	0.018	3	9	0.151
Sb	0.025	0.057	0.063	7	2	0.543
Cs	0.069	0.003	0.002	0	24	0.013
Ba	0.002	1.960	0.376	2	0	3.225
W	0.532	0.016	0.012	0	29	0.101
Pb	0.014	0.349	0.217	6	6	1.864
U	0.260	0.001	0.001	0	32	0.009
Hg (ng/l)	3.207	6.307	2.950	1	0	0.024

2011 Q1 Data – Banchory

Banchory		2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	101 71	% metals % Hg	Filters Analysed:	54 24	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.036	0.041	0.027	4	21
Be	0.009	0.003	0.009	3	52
Al	21.592	30.624	15.963	4	15
Sc	0.154	0.043	0.151	3	52
Ti	2.122	3.966	1.514	2	14
V	0.539	0.936	0.430	1	10
Cr	0.293	0.636	0.185	3	43
Mn	1.195	1.499	0.939	3	0
Fe	41.738	62.188	29.843	4	12
Co	0.030	0.027	0.025	3	41
Ni	0.354	0.468	0.285	2	8
Cu	0.997	1.173	0.844	4	7
Zn	3.803	2.210	3.469	2	45
As	0.278	0.175	0.245	4	1
Se	0.310	0.487	0.247	1	21
Rb	0.120	0.073	0.110	4	0
Sr	0.587	0.391	0.554	3	3
Mo	0.109	0.063	0.096	4	47
Cd	0.049	0.054	0.038	3	6
Sn	0.411	1.179	0.252	1	15
Sb	0.355	0.485	0.298	1	3
Cs	0.014	0.023	0.010	2	40
Ba	0.890	1.164	0.681	3	18
W	0.034	0.015	0.031	3	49
Pb	2.331	3.430	1.924	1	3
U	0.006	0.002	0.006	3	52
Hg	1.217	5.798	1.217	0	0

Banchory		2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	732 730	mm metals mm Hg	Samples Analysed	37 28	metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.039	0.047	0.030	1	0	0.219
Be	0.001	0.000	0.002	37	37	0.011
Al	6.353	16.719	5.264	3	0	38.530
Sc	0.023	0.000	0.025	37	37	0.183
Ti	0.266	0.682	0.209	1	5	1.528
V	0.155	0.111	0.144	2	0	1.057
Cr	0.032	0.072	0.033	2	23	0.238
Mn	3.550	4.827	2.760	2	0	20.207
Fe	7.659	16.503	6.529	2	2	47.791
Co	0.010	0.011	0.009	3	9	0.067
Ni	0.185	0.205	0.159	3	0	1.161
Cu	0.428	0.690	0.311	2	0	2.277
Zn	2.416	1.689	2.150	2	5	15.741
As	0.113	0.107	0.116	2	0	0.846
Se	0.110	0.084	0.096	2	5	0.704
Rb	0.259	0.232	0.268	1	0	1.958
Sr	1.551	1.865	1.196	1	0	8.751
Mo	0.063	0.084	0.057	1	20	0.419
Cd	0.012	0.015	0.011	3	4	0.078
Sn	0.945	5.454	0.022	1	15	0.160
Sb	0.050	0.121	0.049	1	1	0.357
Cs	0.005	0.010	0.003	2	16	0.023
Ba	0.589	0.626	0.501	2	0	3.669
W	0.031	0.069	0.016	2	27	0.118
Pb	0.386	0.550	0.308	2	3	2.253
U	0.001	0.001	0.001	2	34	0.008
Hg (ng/l)	4.393	2.700	3.931	1	0	0.029

2011 Q1 Data – Beacon Hill

Beacon Hill			2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	96 80	% metals % Hg	Filters Analysed:	56 21	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.094	0.085	0.084	2	3	
Be	0.010	0.007	0.009	2	54	
Al	59.228	84.792	50.141	2	1	
Sc	0.167	0.113	0.154	2	54	
Ti	4.370	13.838	3.219	1	3	
V	1.005	0.882	0.810	3	1	
Cr	1.135	1.340	0.998	4	15	
Mn	3.612	3.829	3.000	3	1	
Fe	131.025	149.797	113.663	2	1	
Co	0.066	0.059	0.057	3	12	
Ni	0.793	0.541	0.624	5	1	
Cu	4.649	6.848	3.469	2	1	
Zn	12.127	8.829	10.244	2	11	
As	0.679	0.520	0.584	1	1	
Se	0.628	0.359	0.558	2	3	
Rb	0.184	0.169	0.163	2	1	
Sr	1.212	1.217	0.975	2	1	
Mo	0.308	0.219	0.263	2	17	
Cd	0.119	0.099	0.099	2	5	
Sn	1.128	0.826	0.925	3	1	
Sb	1.330	1.027	1.120	1	1	
Cs	0.038	0.081	0.026	1	19	
Ba	3.035	2.931	2.458	2	3	
W	0.037	0.026	0.032	3	51	
Pb	6.723	6.060	5.400	2	1	
U	0.007	0.006	0.006	3	53	
Hg	1.194	0.713	1.087	1	0	

Beacon Hill			2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	526 466	mm metals mm Hg	Samples Analysed	13 24	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.044	0.047	0.036	1	0	0.191
Be	0.004	0.004	0.002	2	8	0.011
Al	22.465	30.722	18.258	2	0	96.142
Sc	0.036	0.021	0.025	1	12	0.132
Ti	0.522	0.711	0.426	1	0	2.242
V	0.334	0.211	0.297	0	0	1.565
Cr	0.087	0.104	0.072	1	5	0.377
Mn	5.573	5.902	3.979	1	0	20.951
Fe	30.454	42.675	24.723	2	0	130.186
Co	0.035	0.039	0.028	1	0	0.149
Ni	0.230	0.197	0.176	1	0	0.929
Cu	1.418	1.043	1.189	1	0	6.263
Zn	6.751	4.879	5.677	1	0	29.895
As	0.235	0.128	0.209	0	0	1.100
Se	0.128	0.084	0.114	0	2	0.600
Rb	0.200	0.226	0.130	1	0	0.682
Sr	1.151	1.147	0.939	2	0	4.943
Mo	0.088	0.053	0.067	0	2	0.355
Cd	0.026	0.018	0.022	1	0	0.115
Sn	0.027	0.023	0.024	0	3	0.127
Sb	0.155	0.102	0.131	1	0	0.689
Cs	0.007	0.007	0.006	1	2	0.034
Ba	2.284	2.099	1.916	1	0	10.089
W	0.013	0.013	0.009	1	8	0.049
Pb	1.611	1.282	1.353	1	0	7.125
U	0.003	0.004	0.002	2	8	0.010
Hg (ng/l)	7.569	12.860	6.015	1	0	0.028

2011 Q1 Data – Cockley Beck

Cockley Beck			2011 Q1 April 2010 - March 2011		PM10 data
Data Capture	85 90	% metals % Hg	Filters Analysed:	52 22	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.043	0.414	0.039	1	13
Be	0.010	0.062	0.010	1	48
Al	31.131	390.998	28.278	1	6
Sc	0.173	1.029	0.161	1	48
Ti	2.157	51.407	1.887	1	13
V	0.598	2.710	0.557	1	3
Cr	0.950	12.510	0.861	1	23
Mn	1.501	16.599	1.370	1	0
Fe	58.438	879.162	52.651	1	7
Co	0.035	0.373	0.032	1	32
Ni	0.424	3.316	0.391	1	8
Cu	1.325	10.591	1.221	1	11
Zn	5.530	60.099	5.051	1	34
As	0.402	0.973	0.325	2	0
Se	0.418	1.932	0.390	1	5
Rb	0.096	0.659	0.089	1	0
Sr	0.881	4.867	0.819	1	1
Mo	0.134	0.618	0.125	1	40
Cd	0.047	0.136	0.044	1	12
Sn	0.436	2.491	0.405	1	1
Sb	0.452	1.621	0.423	1	1
Cs	0.018	0.046	0.014	3	32
Ba	3.084	21.011	2.220	2	16
W	0.036	0.206	0.033	1	47
Pb	2.617	9.581	2.446	1	2
U	0.007	0.041	0.007	1	47
Hg	1.402	0.698	1.307	1	0

Cockley Beck			2011 Q1 April 2010 - March 2011		Rain data
Rainfall Collected	2252 2092	mm metals mm Hg	Samples Analysed	43 28	metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.027	0.025	0.025	3	0	0.568
Be	0.002	0.001	0.002	2	40	0.035
Al	3.987	18.588	3.537	3	1	79.663
Sc	0.026	0.000	0.025	0	43	0.563
Ti	0.067	0.430	0.058	3	13	1.296
V	0.199	0.156	0.192	2	0	4.325
Cr	0.025	0.054	0.023	4	33	0.525
Mn	0.568	2.215	0.529	3	0	11.919
Fe	3.964	20.678	3.666	3	8	82.576
Co	0.008	0.018	0.008	2	15	0.176
Ni	0.177	0.301	0.120	2	0	2.693
Cu	0.309	0.353	0.287	3	0	6.454
Zn	1.664	2.363	1.594	3	13	35.905
As	0.082	0.061	0.080	2	0	1.792
Se	0.132	0.101	0.125	4	0	2.816
Rb	0.043	0.067	0.041	4	0	0.915
Sr	1.102	0.892	1.012	4	0	22.802
Mo	0.038	0.061	0.030	3	26	0.672
Cd	0.012	0.022	0.011	1	2	0.256
Sn	0.041	0.056	0.027	2	9	0.610
Sb	0.069	0.061	0.049	3	1	1.113
Cs	0.002	0.003	0.002	4	21	0.043
Ba	0.314	0.584	0.299	3	0	6.740
W	0.014	0.017	0.006	5	32	0.141
Pb	0.544	0.533	0.328	3	2	7.387
U	0.001	0.001	0.001	2	38	0.023
Hg (ng/l)	3.474	2.430	3.312	1	0	0.069

2011 Q1 Data - Cwymstwyth

Cwymstwyth			2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	76 94	% metals % Hg	Filters Analysed:	44 22	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.045	4.131	0.042	1	6	
Be	0.010	0.451	0.010	1	40	
Al	21.616	1413.549	20.916	1	6	
Sc	0.165	7.510	0.161	1	40	
Ti	1.260	146.697	1.187	1	7	
V	0.656	68.633	0.622	1	1	
Cr	0.572	5.985	0.569	1	29	
Mn	1.336	88.592	1.292	1	0	
Fe	39.714	3152.303	38.152	1	7	
Co	0.032	1.988	0.031	1	31	
Ni	0.440	36.587	0.422	1	4	
Cu	1.223	47.892	1.199	1	4	
Zn	5.048	344.452	4.878	1	33	
As	0.311	22.897	0.300	1	0	
Se	0.434	41.778	0.414	1	2	
Rb	0.103	7.997	0.099	1	0	
Sr	0.868	119.863	0.808	1	0	
Mo	0.132	4.507	0.130	1	36	
Cd	0.049	3.399	0.048	1	4	
Sn	0.395	19.309	0.386	1	0	
Sb	0.413	21.521	0.403	1	0	
Cs	0.025	0.672	0.024	1	25	
Ba	0.749	37.744	0.730	1	16	
W	0.051	1.506	0.050	1	37	
Pb	2.738	119.164	2.679	1	1	
U	0.007	0.300	0.006	1	40	
Hg	1.865	4.536	1.865	0	0	

Cwymstwyth			2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	1326 1107	mm mm Hg	Samples Analysed	12 25	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.030	0.017	0.029	0	0	0.384
Be	0.002	0.000	0.002	1	11	0.020
Al	5.076	9.435	4.934	1	0	65.449
Sc	0.026	0.000	0.025	0	12	0.332
Ti	0.077	0.203	0.054	1	7	0.717
V	0.165	0.089	0.150	1	0	1.985
Cr	0.035	0.045	0.031	1	7	0.405
Mn	1.083	1.700	0.923	1	0	12.239
Fe	5.708	13.243	4.420	2	4	58.634
Co	0.013	0.049	0.008	1	6	0.103
Ni	0.259	0.362	0.151	1	0	2.007
Cu	0.234	0.336	0.198	1	0	2.624
Zn	1.386	5.147	0.805	1	7	10.676
As	0.115	0.044	0.112	0	0	1.481
Se	0.093	0.089	0.083	1	2	1.097
Rb	0.046	0.090	0.035	1	0	0.464
Sr	1.131	0.613	1.099	0	0	14.576
Mo	0.019	0.011	0.015	1	8	0.199
Cd	0.016	0.103	0.004	1	1	0.058
Sn	0.015	0.021	0.012	1	7	0.161
Sb	0.026	0.028	0.022	1	1	0.285
Cs	0.002	0.002	0.001	1	8	0.017
Ba	0.217	0.372	0.174	1	0	2.305
W	0.057	0.066	0.014	1	9	0.182
Pb	0.268	0.502	0.213	1	0	2.828
U	0.001	0.002	0.001	1	11	0.013
Hg (ng/l)	4.134	2.752	3.695	2	0	0.041

2011 Q1 Data – Detling

Detling		2011 Q1 April 2010 - March 2011		PM10 data
Data Capture	98 69	% metals % Hg	Filters Analysed: 52 21	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.069	0.102	0.056	1	7
Be	0.011	0.012	0.009	1	50
Al	39.415	54.851	33.192	1	0
Sc	0.177	0.192	0.154	1	50
Ti	2.426	3.421	1.917	2	2
V	1.731	1.837	1.455	2	0
Cr	1.068	1.347	0.984	2	18
Mn	3.537	7.140	2.620	1	0
Fe	126.214	233.832	96.149	1	0
Co	0.076	0.124	0.060	1	13
Ni	1.344	1.526	1.115	2	0
Cu	4.640	8.460	3.224	2	1
Zn	14.121	24.478	11.117	1	17
As	0.858	1.855	0.617	1	0
Se	0.673	1.419	0.487	1	5
Rb	0.200	0.315	0.161	1	0
Sr	1.305	2.219	0.896	2	2
Mo	0.334	0.665	0.248	1	18
Cd	0.157	0.289	0.122	1	8
Sn	1.360	3.166	0.941	1	0
Sb	1.990	4.017	1.043	3	0
Cs	0.034	0.071	0.021	2	21
Ba	3.576	7.610	2.108	2	6
W	0.044	0.054	0.034	2	46
Pb	9.843	25.399	6.487	1	2
U	0.007	0.008	0.006	1	50
Hg	0.731	4.795	0.731	0	0

Detling		2011 Q1 April 2010 - March 2011		Rain data
Rainfall Collected	647 581	mm metals mm Hg	Samples Analysed	13 24 metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.041	0.030	0.040	0	0	0.260
Be	0.002	0.002	0.002	1	9	0.014
Al	21.475	30.786	17.449	1	0	113.007
Sc	0.026	0.000	0.026	0	13	0.168
Ti	0.470	0.550	0.460	1	0	2.979
V	0.461	0.330	0.451	1	0	2.922
Cr	0.132	0.215	0.117	1	3	0.755
Mn	3.937	5.225	3.851	1	0	24.942
Fe	21.576	26.522	21.108	1	0	136.704
Co	0.032	0.033	0.032	1	0	0.206
Ni	0.463	0.399	0.270	1	0	1.748
Cu	1.390	1.088	1.297	1	0	8.398
Zn	6.832	6.107	6.291	1	0	40.740
As	0.153	0.113	0.137	1	0	0.887
Se	0.123	0.086	0.120	1	1	0.778
Rb	0.102	0.110	0.089	1	0	0.577
Sr	1.553	1.189	1.520	1	0	9.843
Mo	0.100	0.063	0.097	0	1	0.631
Cd	0.030	0.021	0.028	1	0	0.181
Sn	0.132	0.302	0.057	1	2	0.369
Sb	0.162	0.087	0.154	1	0	0.994
Cs	0.007	0.029	0.004	1	3	0.028
Ba	1.489	1.292	1.382	1	0	8.950
W	0.018	0.033	0.015	1	9	0.098
Pb	1.475	1.273	1.443	2	0	9.344
U	0.001	0.001	0.001	1	8	0.008
Hg (ng/l)	5.268	5.110	4.896	2	0	0.028

2011 Q1 Data – Harwell

Harwell		2011 Q1 April 2010 - March 2011		PM10 data
Data Capture	97 61	% metals % Hg	Filters Analysed: 54 22	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.059	0.040	0.052	3	1
Be	0.010	0.010	0.009	3	51
Al	45.518	77.436	38.887	1	0
Sc	0.159	0.159	0.152	3	51
Ti	2.078	2.782	1.440	3	2
V	1.131	0.886	0.945	4	1
Cr	0.432	0.677	0.329	3	34
Mn	2.288	2.098	1.899	3	0
Fe	89.668	76.253	73.539	4	0
Co	0.049	0.040	0.041	5	23
Ni	0.949	1.011	0.790	3	1
Cu	2.809	2.399	2.501	3	1
Zn	8.590	7.195	7.486	4	21
As	0.545	0.393	0.511	3	0
Se	0.484	0.291	0.436	3	2
Rb	0.159	0.119	0.130	6	0
Sr	1.163	0.671	1.039	3	0
Mo	0.193	0.199	0.150	5	35
Cd	0.090	0.077	0.082	4	1
Sn	0.743	2.525	0.650	1	2
Sb	0.861	0.595	0.804	2	0
Cs	0.025	0.029	0.021	2	19
Ba	8.997	14.865	5.627	4	2
W	0.041	0.056	0.033	2	48
Pb	5.017	3.759	4.460	3	0
U	0.007	0.006	0.006	3	50
Hg	1.283	0.466	1.209	1	0

Harwell		2011 Q1 April 2010 - March 2011		Rain data
Rainfall Collected	540 490	mm metals mm Hg	Samples Analysed	14 28 metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.046	0.040	0.037	1	0	0.202
Be	0.004	0.004	0.003	1	5	0.018
Al	19.383	24.870	16.918	1	0	91.335
Sc	0.029	0.007	0.025	1	13	0.135
Ti	0.477	0.754	0.357	1	2	1.927
V	0.338	0.237	0.276	1	0	1.488
Cr	0.060	0.091	0.043	2	7	0.232
Mn	2.743	4.313	2.027	1	0	10.943
Fe	18.610	29.844	13.712	1	0	74.029
Co	0.027	0.037	0.020	1	0	0.108
Ni	0.318	0.216	0.207	1	0	1.118
Cu	0.889	0.830	0.732	1	0	3.952
Zn	5.535	3.944	4.831	0	0	26.080
As	0.139	0.107	0.112	1	0	0.607
Se	0.147	0.099	0.121	1	1	0.653
Rb	0.075	0.091	0.057	1	0	0.310
Sr	2.419	2.631	2.112	0	0	11.400
Mo	0.095	0.187	0.032	2	5	0.172
Cd	0.021	0.014	0.018	0	0	0.099
Sn	0.031	0.025	0.027	0	2	0.146
Sb	0.129	0.077	0.113	1	0	0.608
Cs	0.003	0.003	0.003	1	4	0.015
Ba	27.169	45.880	19.940	1	0	107.651
W	0.043	0.105	0.013	1	7	0.069
Pb	2.490	2.952	1.933	1	0	10.438
U	0.004	0.008	0.002	1	6	0.012
Hg (ng/l)	4.556	3.981	4.229	2	0	0.021

2011 Q1 Data – Heigham Holmes

Heigham Holmes		2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	95 38	% metals % Hg	Filters Analysed:	54 23	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.071	0.045	0.061	2	1
Be	0.010	0.009	0.010	2	51
Al	38.489	32.252	31.676	2	1
Sc	0.163	0.151	0.154	2	52
Ti	2.810	3.415	2.110	1	0
V	2.111	1.802	1.702	3	0
Cr	0.720	0.916	0.456	4	32
Mn	2.490	1.400	2.220	3	0
Fe	80.299	47.778	66.175	2	0
Co	0.068	0.045	0.061	3	14
Ni	1.343	0.989	1.170	5	0
Cu	2.006	1.028	1.764	2	1
Zn	9.479	6.322	8.286	2	13
As	0.591	0.394	0.543	1	0
Se	0.594	0.247	0.543	2	1
Rb	0.187	0.103	0.167	2	0
Sr	1.160	0.561	1.073	2	0
Mo	0.196	0.162	0.173	2	29
Cd	0.114	0.076	0.099	2	0
Sn	0.722	0.648	0.623	3	2
Sb	0.801	0.453	0.740	1	0
Cs	0.025	0.024	0.020	1	18
Ba	1.677	1.118	1.599	2	1
W	0.040	0.040	0.033	3	48
Pb	5.707	5.365	4.843	2	0
U	0.007	0.006	0.006	3	51
Hg	1.133	6.938	1.133	0	0

Heigham Holmes		2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	549 468	mm metals mm Hg	Samples Analysed	10 20	metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.064	0.040	0.060	1	0	0.329
Be	0.001	0.001	0.002	2	8	0.008
Al	8.843	10.373	10.524	1	0	57.816
Sc	0.021	0.000	0.025	10	10	0.137
Ti	0.214	0.254	0.254	0	1	1.397
V	0.261	0.139	0.311	1	0	1.708
Cr	0.051	0.049	0.061	1	4	0.334
Mn	2.398	2.340	2.854	1	0	15.682
Fe	14.955	14.571	17.798	0	0	97.780
Co	0.019	0.015	0.022	1	0	0.123
Ni	0.740	1.458	0.669	1	0	3.673
Cu	0.688	0.611	0.819	1	0	4.497
Zn	4.431	5.114	4.540	1	0	24.942
As	0.110	0.055	0.131	2	0	0.721
Se	0.119	0.049	0.142	1	0	0.779
Rb	0.108	0.071	0.106	1	0	0.581
Sr	2.566	1.689	2.345	1	0	12.884
Mo	0.062	0.035	0.074	0	1	0.405
Cd	0.016	0.018	0.019	1	0	0.103
Sn	0.019	0.020	0.017	1	1	0.093
Sb	0.077	0.072	0.081	1	0	0.443
Cs	0.004	0.004	0.004	1	1	0.024
Ba	0.915	0.783	1.089	0	0	5.984
W	0.015	0.028	0.009	1	7	0.050
Pb	0.695	0.603	0.746	1	0	4.098
U	0.001	0.001	0.001	1	8	0.006
Hg (ng/l)	5.322	4.322	5.372	1	0	0.001

2011 Q1 Data – Monks Wood

Monks Wood			2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	92 64	% metals % Hg	Filters Analysed:	53 21	metals Hg	

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.080	0.041	0.072	1	0
Be	0.011	0.013	0.010	1	48
Al	60.281	56.775	48.477	2	0
Sc	0.164	0.203	0.155	1	50
Ti	3.004	4.746	2.230	1	0
V	1.264	0.766	1.080	3	0
Cr	0.649	0.726	0.468	3	19
Mn	2.989	1.645	2.645	2	0
Fe	126.441	68.029	111.154	2	0
Co	0.061	0.035	0.056	2	8
Ni	0.855	0.458	0.743	3	0
Cu	3.725	1.496	3.276	2	0
Zn	11.633	7.067	10.537	2	6
As	0.668	0.336	0.627	1	0
Se	0.650	0.292	0.569	3	1
Rb	0.187	0.088	0.168	2	0
Sr	1.143	0.648	0.951	3	0
Mo	0.256	0.176	0.224	3	15
Cd	0.108	0.060	0.094	2	0
Sn	0.922	0.504	0.798	3	0
Sb	1.192	0.605	1.041	3	0
Cs	0.027	0.030	0.021	2	14
Ba	3.986	6.620	2.539	2	0
W	0.042	0.045	0.039	1	44
Pb	6.049	3.426	5.230	2	0
U	0.007	0.008	0.007	1	48
Hg	0.790	0.368	0.739	1	0

Monks Wood			2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	426 368	mm metals mm Hg	Samples Analysed	30 24	metals Hg	

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.030	0.041	0.028	4	0	0.121
Be	0.002	0.002	0.002	3	23	0.007
Al	11.168	16.679	8.777	2	0	37.406
Sc	0.025	0.000	0.025	30	30	0.107
Ti	0.263	0.418	0.211	4	3	0.899
V	0.216	0.176	0.203	2	0	0.865
Cr	0.068	0.072	0.059	3	6	0.253
Mn	1.781	3.050	1.357	2	0	5.782
Fe	14.695	21.573	11.555	3	0	49.242
Co	0.021	0.027	0.018	2	1	0.076
Ni	0.318	0.762	0.305	2	0	1.301
Cu	0.877	1.279	0.815	1	0	3.473
Zn	4.265	6.336	3.961	1	1	16.880
As	0.128	0.096	0.123	3	0	0.522
Se	0.107	0.110	0.099	2	5	0.421
Rb	0.079	0.119	0.075	1	0	0.318
Sr	0.881	1.017	0.834	3	0	3.555
Mo	0.138	0.378	0.059	2	10	0.253
Cd	0.035	0.165	0.026	1	0	0.110
Sn	0.038	0.059	0.033	2	3	0.139
Sb	0.106	0.083	0.099	2	0	0.421
Cs	0.003	0.005	0.003	3	10	0.014
Ba	0.847	1.217	0.694	2	0	2.957
W	0.019	0.025	0.017	2	15	0.072
Pb	0.707	0.805	0.678	2	0	2.891
U	0.002	0.003	0.001	2	23	0.005
Hg (ng/l)	5.441	3.564	4.823	2	0	0.018

2011 Q1 Data – Wytham Wood

Wytham Wood			2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	95 56	% metals % Hg	Filters Analysed:	54 23	metals Hg	

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.064	0.044	0.055	4	0
Be	0.010	0.035	0.009	1	52
Al	44.010	34.989	36.957	2	0
Sc	0.163	0.576	0.152	1	52
Ti	2.781	5.498	1.660	2	1
V	1.198	0.745	1.047	2	0
Cr	0.627	0.797	0.435	5	24
Mn	2.539	1.676	2.102	3	0
Fe	113.182	84.735	91.004	3	0
Co	0.050	0.074	0.048	1	22
Ni	0.751	0.469	0.636	3	0
Cu	3.149	1.699	2.790	2	0
Zn	10.111	12.185	9.575	1	14
As	0.698	0.368	0.647	1	0
Se	0.577	0.384	0.548	1	0
Rb	0.174	0.082	0.150	2	0
Sr	1.083	0.709	0.954	2	0
Mo	0.220	0.367	0.208	1	26
Cd	0.104	0.059	0.087	4	0
Sn	0.779	0.696	0.707	2	1
Sb	1.083	0.548	0.975	2	0
Cs	0.028	0.036	0.022	3	13
Ba	2.407	1.779	2.019	2	0
W	0.039	0.117	0.036	1	48
Pb	5.986	3.209	5.380	2	0
U	0.007	0.023	0.006	1	51
Hg	1.050	0.494	1.050	0	0

Wytham Wood			2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	512 439	mm metals mm Hg	Samples Analysed	12 27	metals Hg	

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.029	0.029	0.033	1	0	0.167
Be	0.002	0.002	0.002	1	8	0.009
Al	10.227	16.631	10.462	2	0	53.584
Sc	0.023	0.000	0.025	12	12	0.128
Ti	0.242	0.488	0.204	2	1	1.046
V	0.220	0.163	0.244	1	0	1.251
Cr	0.046	0.067	0.047	1	4	0.242
Mn	1.770	3.232	1.963	1	0	10.056
Fe	12.463	22.900	10.858	2	0	55.612
Co	0.019	0.028	0.021	1	1	0.108
Ni	0.198	0.183	0.180	1	0	0.923
Cu	0.887	0.913	0.984	1	0	5.038
Zn	3.487	3.429	3.868	1	0	19.811
As	0.199	0.125	0.207	2	0	1.059
Se	0.111	0.085	0.113	1	0	0.580
Rb	0.065	0.086	0.073	3	0	0.372
Sr	1.175	1.022	1.303	0	0	6.673
Mo	0.073	0.168	0.055	1	3	0.281
Cd	0.018	0.012	0.020	1	0	0.104
Sn	0.023	0.042	0.020	1	3	0.104
Sb	0.109	0.081	0.120	1	0	0.616
Cs	0.003	0.004	0.003	2	3	0.018
Ba	0.996	1.010	1.104	1	0	5.656
W	0.017	0.031	0.015	1	7	0.078
Pb	0.725	0.647	0.805	1	0	4.121
U	0.001	0.001	0.001	1	9	0.006
Hg (ng/l)	4.569	3.759	4.173	2	0	0.018

2011 Q1 Data – Yarner Wood

Yarner Wood			2011 Q1 April 2010 - March 2011			PM10 data
Data Capture	95 52	% metals % Hg	Filters Analysed:	54 22	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.055	0.037	0.049	3	0	
Be	0.009	0.002	0.009	2	52	
Al	27.547	25.603	22.476	4	2	
Sc	0.152	0.039	0.151	2	52	
Ti	1.467	1.706	1.134	4	10	
V	1.232	1.389	1.079	1	0	
Cr	0.587	0.918	0.322	5	34	
Mn	1.526	1.357	1.340	2	0	
Fe	51.832	51.578	45.139	3	2	
Co	0.035	0.035	0.028	3	37	
Ni	0.731	0.785	0.566	3	0	
Cu	1.366	1.249	1.119	4	1	
Zn	5.217	4.544	4.398	3	39	
As	0.509	0.333	0.469	2	0	
Se	0.409	0.261	0.348	4	4	
Rb	0.160	0.093	0.141	4	0	
Sr	0.860	0.374	0.822	2	0	
Mo	0.138	0.120	0.118	2	42	
Cd	0.059	0.051	0.050	3	7	
Sn	0.381	0.393	0.297	4	10	
Sb	0.508	0.367	0.454	3	0	
Cs	0.027	0.042	0.020	2	23	
Ba	1.007	0.915	0.806	4	10	
W	0.032	0.015	0.030	2	51	
Pb	2.831	2.153	2.617	2	1	
U	0.006	0.002	0.006	2	52	
Hg	1.319	0.472	1.319	0	0	

Yarner Wood			2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	907 904	mm metals mm Hg	Samples Analysed	37 26	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.027	0.054	0.026	1	0	0.237
Be	0.001	0.000	0.002	1	36	0.014
Al	3.615	13.194	3.017	4	2	27.372
Sc	0.025	0.004	0.025	1	36	0.227
Ti	0.077	0.306	0.066	3	14	0.599
V	0.350	0.367	0.340	2	0	3.081
Cr	0.030	0.058	0.029	5	19	0.265
Mn	0.997	2.982	0.855	3	0	7.760
Fe	3.665	16.804	3.068	3	4	27.836
Co	0.008	0.020	0.007	1	9	0.065
Ni	0.251	0.540	0.231	3	0	2.098
Cu	0.410	0.579	0.398	4	0	3.611
Zn	1.625	2.976	1.577	1	6	14.304
As	0.075	0.081	0.073	3	0	0.660
Se	0.099	0.129	0.095	2	5	0.866
Rb	0.113	0.282	0.099	2	0	0.899
Sr	1.091	2.083	1.037	1	0	9.404
Mo	0.122	0.421	0.072	2	15	0.654
Cd	0.006	0.013	0.006	4	4	0.051
Sn	0.044	0.051	0.032	2	13	0.293
Sb	0.034	0.048	0.032	2	2	0.294
Cs	0.003	0.008	0.002	2	11	0.019
Ba	0.196	0.552	0.165	3	2	1.497
W	0.027	0.028	0.010	2	27	0.095
Pb	0.242	0.626	0.224	2	3	2.036
U	0.001	0.001	0.001	2	34	0.009
Hg (ng/l)	3.732	3.226	3.211	3	0	0.029

2011 Q1 – Rainfall Only Sites – Inverpolly and Lough Navar

Inverpolly		2011 Q1 April 2010 - March 2011			Rain data
Rainfall Collected	1687 mm -	metals mm Hg	Samples Analysed	12 metals -	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.054	0.037	0.041	1	0	0.686
Be	0.002	0.001	0.002	1	10	0.029
Al	3.603	7.777	1.611	2	0	27.185
Sc	0.028	0.000	0.025	0	12	0.422
Ti	0.276	0.837	0.068	2	2	1.149
V	0.106	0.061	0.096	0	0	1.616
Cr	0.022	0.000	0.020	0	12	0.337
Mn	0.877	0.711	0.750	1	0	12.661
Fe	5.129	14.356	2.030	1	4	34.249
Co	0.005	0.008	0.003	2	10	0.051
Ni	0.092	0.044	0.069	1	0	1.159
Cu	0.178	0.095	0.161	0	0	2.721
Zn	1.022	0.946	0.925	1	8	15.613
As	0.061	0.033	0.048	1	0	0.812
Se	0.111	0.072	0.101	0	1	1.704
Rb	0.076	0.080	0.062	1	0	1.050
Sr	2.238	1.444	1.709	1	0	28.839
Mo	0.019	0.012	0.016	1	10	0.272
Cd	0.005	0.006	0.003	1	1	0.056
Sn	0.006	0.006	0.003	1	11	0.051
Sb	0.011	0.008	0.010	0	6	0.171
Cs	0.001	0.001	0.001	1	10	0.019
Ba	0.122	0.111	0.102	1	1	1.725
W	0.009	0.005	0.007	0	9	0.124
Pb	0.093	0.082	0.084	0	5	1.421
U	0.001	0.000	0.001	0	12	0.017
Hg (ng/l)	-	-	-	-	-	-

Lough Navar		2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	991 mm -	metals mm Hg	Samples Analysed	10 metals -	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.053	0.041	0.030	1	0	0.295
Be	0.002	0.000	0.002	1	9	0.015
Al	3.453	6.608	3.091	2	0	30.626
Sc	0.032	0.009	0.025	1	9	0.248
Ti	0.252	0.261	0.225	0	0	2.233
V	0.100	0.082	0.085	1	0	0.840
Cr	0.054	0.038	0.049	0	5	0.482
Mn	1.988	2.005	1.780	1	0	17.637
Fe	4.547	10.025	4.071	1	1	40.339
Co	0.006	0.009	0.005	1	5	0.047
Ni	0.170	0.189	0.095	1	0	0.943
Cu	0.212	0.150	0.190	0	0	1.883
Zn	0.856	0.759	0.766	0	6	7.594
As	0.255	0.138	0.228	0	0	2.258
Se	0.129	0.048	0.097	1	0	0.966
Rb	0.080	0.187	0.052	1	0	0.515
Sr	2.406	1.715	1.406	1	0	13.928
Mo	0.027	0.082	0.019	1	8	0.185
Cd	0.005	0.006	0.005	1	3	0.045
Sn	0.204	0.299	0.014	1	5	0.138
Sb	0.022	0.024	0.018	1	2	0.182
Cs	0.002	0.002	0.001	1	6	0.012
Ba	0.162	0.201	0.145	1	1	1.437
W	0.061	0.088	0.005	1	9	0.050
Pb	0.151	0.151	0.135	1	2	1.339
U	0.001	0.000	0.001	1	9	0.010
Hg (ng/l)	-	-	-	-	-	-

2011 Q1 – Rainfall Only Sites – Penallt

Penallt		2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	734 mm - metals mm Hg	Samples Analysed	2 metals - Hg		

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.013	0.025	0.042	1	0	0.308
Be	0.001	0.002	0.002	0	1	0.011
Al	0.998	1.697	19.600	1	0	143.955
Sc	0.006	0.000	0.025	2	2	0.184
Ti	0.033	0.002	0.578	2	0	4.245
V	0.095	0.138	0.293	1	0	2.152
Cr	0.017	0.071	0.061	0	1	0.448
Mn	1.031	0.375	4.790	2	0	35.181
Fe	1.180	1.796	28.700	1	0	210.792
Co	0.003	0.001	0.035	2	0	0.257
Ni	0.067	0.057	0.204	2	0	1.498
Cu	0.170	0.439	0.876	0	0	6.434
Zn	0.669	0.757	6.320	1	0	46.418
As	0.123	0.275	0.213	1	0	1.564
Se	0.029	0.069	0.110	0	0	0.808
Rb	0.055	0.055	0.118	2	0	0.867
Sr	0.441	0.693	1.380	1	0	10.136
Mo	0.006	0.013	0.015	1	1	0.110
Cd	0.004	0.004	0.044	2	0	0.323
Sn	0.002	0.006	0.024	0	1	0.176
Sb	0.019	0.013	0.116	2	0	0.852
Cs	0.001	0.001	0.009	1	0	0.066
Ba	0.170	0.177	1.900	2	0	13.955
W	0.001	0.000	0.035	2	2	0.257
Pb	0.180	0.169	1.480	2	0	10.870
U	0.000	0.000	0.004	2	2	0.029
Hg (ng/l)	-	-	-	-	-	-

2011 Q2 Data – Auchencorth

Auchencorth			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	101 83	% metals % Hg	Filters Analysed:	53 22	metals Hg	
Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD	
Li	0.037	0.031	0.031	4	13	
Be	0.009	0.000	0.009	2	53	
Al	22.425	23.086	18.640	3	5	
Sc	0.148	0.001	0.148	2	53	
Ti	1.372	1.736	1.129	2	11	
V	0.385	0.277	0.349	2	5	
Cr	0.207	0.253	0.140	4	43	
Mn	1.097	1.077	0.905	3	0	
Fe	41.783	41.246	34.935	3	3	
Co	0.025	0.018	0.021	4	44	
Ni	0.431	0.588	0.303	3	4	
Cu	1.045	1.548	0.853	1	4	
Zn	4.156	2.927	3.594	3	44	
As	0.219	0.140	0.185	5	2	
Se	0.289	0.164	0.270	2	10	
Rb	0.076	0.063	0.057	6	0	
Sr	0.632	0.314	0.611	1	2	
Mo	0.105	0.052	0.089	5	48	
Cd	0.032	0.027	0.027	3	10	
Sn	0.475	1.365	0.289	1	5	
Sb	0.320	0.266	0.273	3	1	
Cs	0.013	0.017	0.010	2	36	
Ba	0.774	0.776	0.595	4	16	
W	0.035	0.027	0.031	1	50	
Pb	1.879	1.471	1.646	3	1	
U	0.006	0.000	0.006	2	53	
Hg	0.688	4.768	0.688	0	0	

Auchencorth			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	930 862	mm metals mm Hg	Samples Analysed	41 28	metals Hg	
Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.029	0.029	0.029	2	0	0.266
Be	0.029	0.002	0.002	0	34	0.015
Al	0.002	12.624	4.724	4	2	43.939
Sc	5.507	0.018	0.025	0	40	0.233
Ti	0.026	0.523	0.121	1	7	1.121
V	0.191	0.101	0.093	1	0	0.868
Cr	0.096	0.055	0.030	1	25	0.282
Mn	0.035	2.115	0.593	4	0	5.514
Fe	0.747	18.505	5.767	4	2	53.638
Co	0.143	0.018	0.007	0	15	0.064
Ni	0.008	0.227	0.134	6	0	1.242
Cu	0.149	0.488	0.302	5	0	2.811
Zn	0.326	2.566	1.412	5	8	13.137
As	1.517	0.046	0.066	0	0	0.614
Se	0.066	0.062	0.075	4	4	0.694
Rb	0.076	0.165	0.042	1	0	0.390
Sr	0.049	0.968	1.131	9	0	10.518
Mo	1.135	0.232	0.049	0	20	0.456
Cd	0.090	0.009	0.005	0	4	0.047
Sn	0.006	0.051	0.020	3	12	0.185
Sb	0.024	0.045	0.051	6	0	0.543
Cs	0.069	0.003	0.002	0	24	0.013
Ba	0.002	1.960	0.376	2	0	3.225
W	0.532	0.016	0.012	0	29	0.101
Pb	0.014	0.349	0.217	6	6	1.864
U	0.260	0.001	0.001	0	32	0.009
Hg (ng/l)	2.846	1.356	2.846	0	0	0.001

2011 Q2 Data – Banchory

Banchory		2011 Q2 July 2010 - June 2011		PM10 data
Data Capture	101 69	% metals % Hg	Filters Analysed: 52 24	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.031	0.033	0.025	3	21
Be	0.009	0.002	0.009	1	51
Al	18.834	27.034	12.971	4	15
Sc	0.150	0.037	0.151	1	51
Ti	1.421	2.081	1.009	4	14
V	0.505	0.935	0.403	1	11
Cr	0.278	0.415	0.183	4	41
Mn	0.992	1.033	0.818	3	0
Fe	30.906	38.858	22.516	4	12
Co	0.026	0.020	0.022	3	42
Ni	0.348	0.469	0.284	2	7
Cu	0.788	0.906	0.593	4	9
Zn	3.835	2.369	3.570	3	43
As	0.259	0.173	0.233	3	2
Se	0.300	0.489	0.242	1	22
Rb	0.121	0.074	0.108	4	0
Sr	0.539	0.306	0.501	3	3
Mo	0.107	0.054	0.095	4	45
Cd	0.045	0.053	0.035	3	8
Sn	0.339	1.195	0.181	1	16
Sb	0.314	0.473	0.262	1	3
Cs	0.012	0.022	0.009	2	40
Ba	0.814	1.090	0.643	2	17
W	0.032	0.014	0.030	3	49
Pb	2.006	3.322	1.621	1	4
U	0.007	0.006	0.006	1	50
Hg	1.118	5.755	1.118	0	0

Banchory		2011 Q2 July 2010 - June 2011		Rain data
Rainfall Collected	732 792	mm metals mm Hg	Samples Analysed 37 28	metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.039	0.047	0.030	1	0	0.219
Be	0.001	0.000	0.002	37	37	0.011
Al	6.353	16.719	5.264	3	0	38.530
Sc	0.023	0.000	0.025	37	37	0.183
Ti	0.266	0.682	0.209	1	5	1.528
V	0.155	0.111	0.144	2	0	1.057
Cr	0.032	0.072	0.033	2	23	0.238
Mn	3.550	4.827	2.760	2	0	20.207
Fe	7.659	16.503	6.529	2	2	47.791
Co	0.010	0.011	0.009	3	9	0.067
Ni	0.185	0.205	0.159	3	0	1.161
Cu	0.428	0.690	0.311	2	0	2.277
Zn	2.416	1.689	2.150	2	5	15.741
As	0.113	0.107	0.116	2	0	0.846
Se	0.110	0.084	0.096	2	5	0.704
Rb	0.259	0.232	0.268	1	0	1.958
Sr	1.551	1.865	1.196	1	0	8.751
Mo	0.063	0.084	0.057	1	20	0.419
Cd	0.012	0.015	0.011	3	4	0.078
Sn	0.945	5.454	0.022	1	15	0.160
Sb	0.050	0.121	0.049	1	1	0.357
Cs	0.005	0.010	0.003	2	16	0.023
Ba	0.589	0.626	0.501	2	0	3.669
W	0.031	0.069	0.016	2	27	0.118
Pb	0.386	0.550	0.308	2	3	2.253
U	0.001	0.001	0.001	2	34	0.008
Hg (ng/l)	4.798	2.798	4.341	1	0	0.034

2011 Q2 Data – Beacon Hill

Beacon Hill		2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	85 81	% metals % Hg	Filters Analysed:	55 22	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.099	0.080	0.092	2	2
Be	0.011	0.029	0.010	1	47
Al	59.452	67.906	54.067	3	0
Sc	0.185	0.486	0.171	1	47
Ti	2.967	5.882	2.368	2	2
V	0.910	1.195	0.838	2	0
Cr	0.907	1.575	0.799	2	15
Mn	3.654	3.429	3.166	4	0
Fe	129.517	121.082	118.793	4	0
Co	0.068	0.075	0.062	3	10
Ni	0.812	0.904	0.752	2	0
Cu	3.812	3.257	3.315	2	0
Zn	12.636	11.425	11.087	2	9
As	0.730	0.516	0.636	1	0
Se	0.661	0.458	0.616	2	2
Rb	0.191	0.173	0.175	3	0
Sr	1.221	1.073	0.999	2	0
Mo	0.329	0.333	0.308	3	17
Cd	0.129	0.108	0.111	1	4
Sn	1.172	0.863	0.986	2	0
Sb	1.388	1.018	1.199	1	0
Cs	0.042	0.083	0.028	1	17
Ba	3.166	2.891	2.600	1	2
W	0.041	0.097	0.038	1	44
Pb	7.173	6.290	5.695	2	0
U	0.007	0.019	0.007	1	47
Hg	1.558	0.709	1.471	1	0

Beacon Hill		2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	526 438	mm metals mm Hg	Samples Analysed	13 25	metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.044	0.047	0.036	1	0	0.191
Be	0.004	0.004	0.002	2	8	0.011
Al	22.465	30.722	18.258	2	0	96.142
Sc	0.036	0.021	0.025	1	12	0.132
Ti	0.522	0.711	0.426	1	0	2.242
V	0.334	0.211	0.297	0	0	1.565
Cr	0.087	0.104	0.072	1	5	0.377
Mn	5.573	5.902	3.979	1	0	20.951
Fe	30.454	42.675	24.723	2	0	130.186
Co	0.035	0.039	0.028	1	0	0.149
Ni	0.230	0.197	0.176	1	0	0.929
Cu	1.418	1.043	1.189	1	0	6.263
Zn	6.751	4.879	5.677	1	0	29.895
As	0.235	0.128	0.209	0	0	1.100
Se	0.128	0.084	0.114	0	2	0.600
Rb	0.200	0.226	0.130	1	0	0.682
Sr	1.151	1.147	0.939	2	0	4.943
Mo	0.088	0.053	0.067	0	2	0.355
Cd	0.026	0.018	0.022	1	0	0.115
Sn	0.027	0.023	0.024	0	3	0.127
Sb	0.155	0.102	0.131	1	0	0.689
Cs	0.007	0.007	0.006	1	2	0.034
Ba	2.284	2.099	1.916	1	0	10.089
W	0.013	0.013	0.009	1	8	0.049
Pb	1.611	1.282	1.353	1	0	7.125
U	0.003	0.004	0.002	2	8	0.010
Hg (ng/l)	7.191	12.404	5.526	1	0	0.024

2011 Q2 Data – Cockley Beck

Cockley Beck			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	80 96	% metals % Hg	Filters Analysed:	52 23	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.042	0.030	0.030	3	13	
Be	0.011	0.005	0.009	3	49	
Al	27.987	36.267	16.231	4	6	
Sc	0.186	0.077	0.153	3	49	
Ti	1.351	2.797	0.762	1	13	
V	0.536	0.288	0.411	2	3	
Cr	0.644	1.348	0.446	3	32	
Mn	1.242	1.188	0.881	2	0	
Fe	39.955	39.260	26.198	3	7	
Co	0.031	0.020	0.022	4	39	
Ni	0.348	0.264	0.266	3	8	
Cu	1.071	0.891	0.750	3	11	
Zn	4.868	2.871	3.679	3	41	
As	0.388	0.429	0.259	2	0	
Se	0.451	0.219	0.367	2	4	
Rb	0.091	0.070	0.065	2	0	
Sr	0.981	0.673	0.821	1	1	
Mo	0.138	0.079	0.106	2	43	
Cd	0.038	0.033	0.028	3	14	
Sn	0.404	0.306	0.302	3	1	
Sb	0.369	0.229	0.287	1	2	
Cs	0.017	0.022	0.010	2	38	
Ba	1.594	18.060	0.709	1	17	
W	0.043	0.038	0.031	2	48	
Pb	2.241	2.285	1.820	1	3	
U	0.008	0.004	0.006	3	48	
Hg	1.551	0.725	1.467	1	0	

Cockley Beck			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	2643 2364	mm metals mm Hg	Samples Analysed	44 27	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.029	0.037	0.028	2	0	0.751
Be	0.002	0.003	0.002	2	40	0.041
Al	4.302	34.302	4.113	1	1	108.732
Sc	0.025	0.000	0.025	0	44	0.661
Ti	0.161	1.003	0.061	2	15	1.608
V	0.205	0.253	0.201	2	0	5.323
Cr	0.025	0.137	0.025	1	34	0.648
Mn	0.578	6.732	0.544	1	0	14.388
Fe	4.425	37.780	4.220	1	8	111.550
Co	0.008	0.050	0.008	1	17	0.209
Ni	0.303	0.636	0.169	2	0	4.463
Cu	0.315	1.434	0.305	1	0	8.051
Zn	1.548	5.653	1.503	1	16	39.743
As	0.081	0.083	0.079	1	0	2.097
Se	0.133	0.078	0.129	3	0	3.410
Rb	0.043	0.179	0.041	2	0	1.089
Sr	1.180	1.490	1.156	3	0	30.561
Mo	0.034	0.052	0.028	3	29	0.737
Cd	0.011	0.019	0.010	2	2	0.264
Sn	0.034	0.104	0.026	2	13	0.695
Sb	0.062	0.080	0.051	2	1	1.337
Cs	0.002	0.005	0.002	1	27	0.052
Ba	0.309	2.392	0.295	1	0	7.808
W	0.012	0.019	0.010	3	36	0.258
Pb	0.488	1.159	0.477	1	2	12.602
U	0.001	0.005	0.001	1	42	0.027
Hg (ng/l)	3.286	1.884	3.138	1	0	0.074

2011 Q2 Data - Cwymstwyth

Cwymstwyth		2011 Q2 July 2010 - June 2011		PM10 data
Data	78	% metals	Filters	45	metals
Capture	89	% Hg	Analysed:	20	Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.061	4.083	0.059	1	5
Be	0.010	0.446	0.010	1	41
Al	36.687	1396.580	36.005	1	6
Sc	0.165	7.426	0.161	1	41
Ti	1.746	145.006	1.675	1	7
V	0.701	67.860	0.667	1	1
Cr	0.581	5.917	0.578	1	28
Mn	1.747	87.554	1.704	1	0
Fe	54.838	3115.273	53.315	1	7
Co	0.039	1.964	0.038	1	28
Ni	0.474	36.174	0.456	1	4
Cu	2.421	47.496	2.398	1	7
Zn	6.148	340.463	5.981	1	29
As	0.325	22.640	0.313	1	0
Se	0.456	41.309	0.435	1	4
Rb	0.134	7.904	0.130	1	0
Sr	1.084	118.496	1.026	1	0
Mo	0.141	4.456	0.139	1	35
Cd	0.054	3.361	0.052	1	7
Sn	0.411	19.092	0.401	1	2
Sb	0.427	21.280	0.417	1	3
Cs	0.028	0.664	0.028	1	21
Ba	1.017	37.299	0.999	1	19
W	0.051	1.489	0.050	1	38
Pb	2.837	117.824	2.779	1	4
U	0.007	0.297	0.007	1	40
Hg	1.467	4.091	1.467	0	0

Cwymstwyth		2011 Q2 July 2010 - June 2011		Rain data
Rainfall	1326	mm metals	Samples	12	metals
Collected	1162	mm Hg	Analysed	25	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.030	0.017	0.029	0	0	0.384
Be	0.002	0.000	0.002	1	11	0.020
Al	5.076	9.435	4.934	1	0	65.449
Sc	0.026	0.000	0.025	0	12	0.332
Ti	0.077	0.203	0.054	1	7	0.717
V	0.165	0.089	0.150	1	0	1.985
Cr	0.035	0.045	0.031	1	7	0.405
Mn	1.083	1.700	0.923	1	0	12.239
Fe	5.708	13.243	4.420	2	4	58.634
Co	0.013	0.049	0.008	1	6	0.103
Ni	0.259	0.362	0.151	1	0	2.007
Cu	0.234	0.336	0.198	1	0	2.624
Zn	1.386	5.147	0.805	1	7	10.676
As	0.115	0.044	0.112	0	0	1.481
Se	0.093	0.089	0.083	1	2	1.097
Rb	0.046	0.090	0.035	1	0	0.464
Sr	1.131	0.613	1.099	0	0	14.576
Mo	0.019	0.011	0.015	1	8	0.199
Cd	0.016	0.103	0.004	1	1	0.058
Sn	0.015	0.021	0.012	1	7	0.161
Sb	0.026	0.028	0.022	1	1	0.285
Cs	0.002	0.002	0.001	1	8	0.017
Ba	0.217	0.372	0.174	1	0	2.305
W	0.057	0.066	0.014	1	9	0.182
Pb	0.268	0.502	0.213	1	0	2.828
U	0.001	0.002	0.001	1	11	0.013
Hg (ng/l)	4.150	2.486	3.865	1	0	0.045

2011 Q2 Data – Detling

Detling		2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	101 84	% metals % Hg	Filters Analysed:	52 22	metals Hg

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.081	0.106	0.070	1	3
Be	0.010	0.011	0.009	1	51
Al	50.963	64.443	39.291	3	0
Sc	0.171	0.186	0.148	1	51
Ti	2.468	3.355	1.984	2	2
V	2.135	1.901	1.893	2	0
Cr	0.792	0.992	0.732	1	23
Mn	4.283	7.265	3.426	1	0
Fe	148.035	234.813	119.866	1	0
Co	0.091	0.126	0.077	1	6
Ni	1.607	1.526	1.402	2	0
Cu	5.223	8.357	4.245	1	1
Zn	16.351	24.412	13.538	1	8
As	0.917	1.839	0.687	1	0
Se	0.738	1.405	0.560	1	2
Rb	0.229	0.323	0.192	1	0
Sr	1.473	2.205	1.088	2	1
Mo	0.366	0.662	0.284	1	9
Cd	0.181	0.287	0.148	1	5
Sn	1.515	3.140	1.116	1	0
Sb	2.099	3.975	1.195	3	0
Cs	0.037	0.071	0.025	2	17
Ba	3.950	7.525	2.556	2	1
W	0.043	0.054	0.034	2	46
Pb	10.687	25.283	7.480	1	1
U	0.007	0.008	0.006	1	48
Hg	0.797	4.640	0.797	0	0

Detling		2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	647 607	mm metals mm Hg	Samples Analysed	13 26	metals Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.041	0.030	0.040	0	0	0.260
Be	0.002	0.002	0.002	1	9	0.014
Al	21.475	30.786	17.449	1	0	113.007
Sc	0.026	0.000	0.026	0	13	0.143
Ti	0.470	0.550	0.460	1	0	2.979
V	0.461	0.330	0.451	1	0	2.922
Cr	0.132	0.215	0.117	1	3	0.755
Mn	3.937	5.225	3.851	1	0	24.942
Fe	21.576	26.522	21.108	1	0	136.704
Co	0.032	0.033	0.032	1	0	0.206
Ni	0.463	0.399	0.270	1	0	1.748
Cu	1.390	1.088	1.297	1	0	8.398
Zn	6.832	6.107	6.291	1	0	40.740
As	0.153	0.113	0.137	1	0	0.887
Se	0.123	0.086	0.120	1	1	0.778
Rb	0.102	0.110	0.089	1	0	0.577
Sr	1.553	1.189	1.520	1	0	9.843
Mo	0.100	0.063	0.097	0	1	0.631
Cd	0.030	0.021	0.028	1	0	0.181
Sn	0.132	0.302	0.057	1	2	0.369
Sb	0.162	0.087	0.154	1	0	0.994
Cs	0.007	0.029	0.004	1	3	0.028
Ba	1.489	1.292	1.382	1	0	8.950
W	0.018	0.033	0.015	1	9	0.098
Pb	1.475	1.273	1.443	2	0	9.344
U	0.001	0.001	0.001	1	8	0.008
Hg (ng/l)	5.423	5.459	4.748	3	0	0.029

2011 Q2 Data – Harwell

Harwell			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	99 73	% metals % Hg	Filters Analysed:	54 22	metals Hg	

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.068	0.056	0.057	3	0
Be	0.009	0.009	0.009	2	52
Al	52.617	83.357	42.558	2	0
Sc	0.156	0.150	0.152	2	52
Ti	1.959	2.248	1.497	3	2
V	1.075	0.764	0.958	4	0
Cr	0.366	0.466	0.296	4	30
Mn	2.529	2.185	2.049	4	0
Fe	99.260	82.375	80.841	4	0
Co	0.054	0.044	0.045	5	21
Ni	0.952	1.004	0.798	3	0
Cu	3.001	2.344	2.611	3	0
Zn	9.456	7.490	8.457	3	17
As	0.563	0.399	0.547	1	0
Se	0.497	0.295	0.436	4	1
Rb	0.168	0.134	0.146	3	0
Sr	1.386	0.836	1.207	4	0
Mo	0.203	0.205	0.151	6	33
Cd	0.090	0.072	0.080	3	0
Sn	0.761	2.526	0.671	1	2
Sb	0.907	0.645	0.816	3	0
Cs	0.026	0.029	0.022	2	16
Ba	14.465	20.265	9.373	4	0
W	0.040	0.055	0.033	2	49
Pb	5.470	3.870	5.127	3	0
U	0.007	0.006	0.007	2	49
Hg	1.467	0.656	1.385	1	0

Harwell			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	540 507	mm metals mm Hg	Samples Analysed	14 26	metals Hg	

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.046	0.040	0.037	1	0	0.202
Be	0.004	0.004	0.003	1	5	0.018
Al	19.383	24.870	16.918	1	0	91.335
Sc	0.029	0.007	0.025	1	13	0.135
Ti	0.477	0.754	0.357	1	2	1.927
V	0.338	0.237	0.276	1	0	1.488
Cr	0.060	0.091	0.043	2	7	0.232
Mn	2.743	4.313	2.027	1	0	10.943
Fe	18.610	29.844	13.712	1	0	74.029
Co	0.027	0.037	0.020	1	0	0.108
Ni	0.318	0.216	0.207	1	0	1.118
Cu	0.889	0.830	0.732	1	0	3.952
Zn	5.535	3.944	4.831	0	0	26.080
As	0.139	0.107	0.112	1	0	0.607
Se	0.147	0.099	0.121	1	1	0.653
Rb	0.075	0.091	0.057	1	0	0.310
Sr	2.419	2.631	2.112	0	0	11.400
Mo	0.095	0.187	0.032	2	5	0.172
Cd	0.021	0.014	0.018	0	0	0.099
Sn	0.031	0.025	0.027	0	2	0.146
Sb	0.129	0.077	0.113	1	0	0.608
Cs	0.003	0.003	0.003	1	4	0.015
Ba	27.169	45.880	19.940	1	0	107.651
W	0.043	0.105	0.013	1	7	0.069
Pb	2.490	2.952	1.933	1	0	10.438
U	0.004	0.008	0.002	1	6	0.012
Hg (ng/l)	4.831	3.105	4.831	0	0	0.025

2011 Q2 Data – Heigham Holmes

Heigham Holmes			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	97 57	% metals % Hg	Filters Analysed:	59 23	metals Hg	

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.079	0.044	0.066	2	1
Be	0.011	0.011	0.009	1	55
Al	43.935	36.965	33.631	3	1
Sc	0.174	0.188	0.154	1	56
Ti	2.484	2.644	1.949	2	0
V	2.322	1.944	1.746	2	0
Cr	0.823	2.370	0.428	2	33
Mn	2.836	1.501	2.293	4	0
Fe	94.927	59.976	76.507	4	0
Co	0.086	0.067	0.069	3	13
Ni	1.723	1.703	1.296	2	0
Cu	2.281	1.202	1.780	2	1
Zn	10.602	6.576	9.141	2	13
As	0.612	0.386	0.532	1	0
Se	0.679	0.252	0.587	2	1
Rb	0.203	0.105	0.173	3	0
Sr	1.274	0.562	1.118	2	0
Mo	0.235	0.187	0.188	3	28
Cd	0.125	0.077	0.104	1	0
Sn	0.756	0.629	0.619	2	2
Sb	0.834	0.444	0.729	1	0
Cs	0.027	0.023	0.021	1	17
Ba	1.852	1.145	1.613	1	1
W	0.044	0.045	0.037	1	49
Pb	6.079	5.120	4.926	2	0
U	0.007	0.008	0.007	1	54
Hg	1.298	5.638	1.298	0	0

Heigham Holmes			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	549 482	mm metals mm Hg	Samples Analysed	10 27	metals Hg	

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.064	0.040	0.060	1	0	0.329
Be	0.001	0.001	0.002	2	8	0.008
Al	8.843	10.373	10.524	1	0	57.816
Sc	0.021	0.000	0.025	10	10	0.137
Ti	0.214	0.254	0.254	0	1	1.397
V	0.261	0.139	0.311	1	0	1.708
Cr	0.051	0.049	0.061	1	4	0.334
Mn	2.398	2.340	2.854	1	0	15.682
Fe	14.955	14.571	17.798	0	0	97.780
Co	0.019	0.015	0.022	1	0	0.123
Ni	0.740	1.458	0.669	1	0	3.673
Cu	0.688	0.611	0.819	1	0	4.497
Zn	4.431	5.114	4.540	1	0	24.942
As	0.110	0.055	0.131	2	0	0.721
Se	0.119	0.049	0.142	1	0	0.779
Rb	0.108	0.071	0.106	1	0	0.581
Sr	2.566	1.689	2.345	1	0	12.884
Mo	0.062	0.035	0.074	0	1	0.405
Cd	0.016	0.018	0.019	1	0	0.103
Sn	0.019	0.020	0.017	1	1	0.093
Sb	0.077	0.072	0.081	1	0	0.443
Cs	0.004	0.004	0.004	1	1	0.024
Ba	0.915	0.783	1.089	0	0	5.984
W	0.015	0.028	0.009	1	7	0.050
Pb	0.695	0.603	0.746	1	0	4.098
U	0.001	0.001	0.001	1	8	0.006
Hg (ng/l)	6.323	5.215	6.079	2	0	0.029

2011 Q2 Data –Monks Wood

Monks Wood			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	95 77	% metals % Hg	Filters Analysed:	52 22	metals Hg	

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.083	0.042	0.073	3	0
Be	0.010	0.012	0.010	1	49
Al	63.231	61.390	52.754	2	0
Sc	0.158	0.200	0.152	1	50
Ti	2.416	2.327	2.099	1	0
V	1.133	0.716	0.989	3	0
Cr	0.424	0.403	0.364	3	23
Mn	3.106	1.724	2.769	3	0
Fe	128.466	62.438	112.210	3	0
Co	0.061	0.037	0.056	3	8
Ni	0.812	0.506	0.684	4	0
Cu	3.713	1.555	3.332	3	0
Zn	11.552	7.608	10.694	2	7
As	0.649	0.378	0.607	1	0
Se	0.671	0.295	0.591	3	0
Rb	0.197	0.109	0.173	3	0
Sr	1.091	0.530	0.993	2	0
Mo	0.258	0.186	0.239	3	17
Cd	0.109	0.063	0.100	1	0
Sn	0.933	0.518	0.851	2	0
Sb	1.185	0.606	1.059	3	0
Cs	0.028	0.031	0.023	2	14
Ba	2.676	1.327	2.419	2	0
W	0.042	0.045	0.041	1	42
Pb	5.949	3.492	5.255	2	0
U	0.006	0.008	0.006	1	49
Hg	0.989	0.427	0.989	0	0

0

Monks Wood			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	416 355	mm metals mm Hg	Samples Analysed	29 24	metals Hg	

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.027	0.040	0.027	4	0	0.112
Be	0.002	0.003	0.002	2	22	0.007
Al	11.953	24.224	8.078	2	0	33.612
Sc	0.025	0.021	0.025	1	28	0.104
Ti	0.232	0.405	0.217	3	3	0.904
V	0.192	0.269	0.182	3	0	0.759
Cr	0.059	0.068	0.058	2	7	0.239
Mn	1.753	3.323	1.367	2	0	5.687
Fe	12.337	19.573	11.769	4	0	48.967
Co	0.019	0.030	0.015	2	1	0.062
Ni	0.339	0.778	0.331	1	0	1.376
Cu	0.756	0.728	0.730	2	0	3.035
Zn	3.488	3.473	3.353	3	1	13.950
As	0.107	0.083	0.103	2	0	0.427
Se	0.078	0.088	0.078	2	5	0.325
Rb	0.076	0.094	0.078	3	0	0.325
Sr	0.904	1.339	0.718	4	0	2.987
Mo	0.055	0.068	0.046	2	12	0.192
Cd	0.015	0.017	0.014	3	0	0.056
Sn	0.034	0.040	0.034	2	3	0.143
Sb	0.089	0.075	0.086	2	0	0.356
Cs	0.003	0.006	0.003	2	12	0.011
Ba	0.834	1.165	0.670	2	0	2.789
W	0.016	0.022	0.016	1	14	0.068
Pb	0.601	0.626	0.592	3	0	2.464
U	0.002	0.002	0.001	4	22	0.005
Hg (ng/l)	5.668	6.784	5.376	2	0	0.019

2011 Q2 Data – Wytham Wood

Wytham Wood			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	97 64	% metals % Hg	Filters Analysed:	54 23	metals Hg	
Metal	**time weighted annual mean (ng/m^3)**	**Std. Dev.**	**Filtered Mean (ng/m^3)**	**No. Outliers**	**No. Samples Below LoD**	
Li	0.066	0.050	0.058	3	0	
Be	0.010	0.035	0.009	1	52	
Al	44.090	37.276	35.480	3	0	
Sc	0.159	0.576	0.151	1	53	
Ti	1.965	2.431	1.622	1	1	
V	1.084	0.630	0.942	3	0	
Cr	0.315	0.511	0.301	1	30	
Mn	2.472	1.676	2.152	2	0	
Fe	105.948	73.640	91.791	2	0	
Co	0.050	0.075	0.048	1	25	
Ni	0.698	0.462	0.572	4	0	
Cu	3.559	3.074	3.096	1	0	
Zn	10.514	12.516	10.064	1	14	
As	0.677	0.395	0.633	1	0	
Se	0.584	0.404	0.543	2	0	
Rb	0.173	0.106	0.148	3	0	
Sr	1.147	0.758	0.990	2	0	
Mo	0.218	0.374	0.208	1	30	
Cd	0.102	0.063	0.083	5	0	
Sn	0.782	0.725	0.718	2	1	
Sb	1.025	0.596	0.928	2	0	
Cs	0.030	0.041	0.021	4	15	
Ba	2.389	1.879	2.029	2	0	
W	0.038	0.117	0.036	1	49	
Pb	5.837	3.602	5.275	2	0	
U	0.007	0.023	0.006	1	51	
Hg	1.084	0.414	0.148	1	0	

Wytham Wood			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	512 434	mm metals mm Hg	Samples Analysed	12 25	metals Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition ($g\ ha^{-1}\ y^{-1}$)**
Li	0.029	0.029	0.033	1	0	0.167
Be	0.002	0.002	0.002	1	8	0.009
Al	10.227	16.631	10.462	2	0	53.584
Sc	0.023	0.000	0.025	12	12	0.128
Ti	0.242	0.488	0.204	2	1	1.046
V	0.220	0.163	0.244	1	0	1.251
Cr	0.046	0.067	0.047	1	4	0.242
Mn	1.770	3.232	1.963	1	0	10.056
Fe	12.463	22.900	10.858	2	0	55.612
Co	0.019	0.028	0.021	1	1	0.108
Ni	0.198	0.183	0.180	1	0	0.923
Cu	0.887	0.913	0.984	1	0	5.038
Zn	3.487	3.429	3.868	1	0	19.811
As	0.199	0.125	0.207	2	0	1.059
Se	0.111	0.085	0.113	1	0	0.580
Rb	0.065	0.086	0.073	3	0	0.372
Sr	1.175	1.022	1.303	0	0	6.673
Mo	0.073	0.168	0.055	1	3	0.281
Cd	0.018	0.012	0.020	1	0	0.104
Sn	0.023	0.042	0.020	1	3	0.104
Sb	0.109	0.081	0.120	1	0	0.616
Cs	0.003	0.004	0.003	2	3	0.018
Ba	0.996	1.010	1.104	1	0	5.656
W	0.017	0.031	0.015	1	7	0.078
Pb	0.725	0.647	0.805	1	0	4.121
U	0.001	0.001	0.001	1	9	0.006
Hg (ng/l)	4.525	2.931	4.404	2	0	0.019

2011 Q2 Data – Yarner Wood

Yarner Wood			2011 Q2 July 2010 - June 2011			PM10 data
Data Capture	97 74	% metals % Hg	Filters Analysed:	54 21	metals Hg	

Metal	time weighted annual mean (ng/m^3)	Std. Dev.	Filtered Mean (ng/m^3)	No. Outliers	No. Samples Below LoD
Li	0.059	0.047	0.050	3	0
Be	0.009	0.000	0.009	3	53
Al	28.743	31.984	22.467	3	2
Sc	0.150	0.000	0.150	3	53
Ti	1.170	1.466	0.812	4	10
V	1.235	1.028	1.011	4	0
Cr	0.287	0.310	0.235	3	37
Mn	1.616	1.622	1.302	3	0
Fe	51.529	56.471	40.344	3	2
Co	0.038	0.036	0.030	4	36
Ni	0.771	0.706	0.614	4	0
Cu	1.496	1.594	1.148	4	1
Zn	5.397	4.856	4.310	4	40
As	0.494	0.339	0.454	2	0
Se	0.442	0.276	0.384	4	3
Rb	0.168	0.111	0.150	3	0
Sr	0.962	0.492	0.908	2	0
Mo	0.142	0.125	0.117	3	42
Cd	0.057	0.054	0.046	4	9
Sn	0.387	0.403	0.303	4	11
Sb	0.463	0.364	0.425	2	0
Cs	0.028	0.043	0.021	2	24
Ba	0.955	0.861	0.800	3	12
W	0.032	0.014	0.030	1	52
Pb	2.598	2.147	2.317	3	1
U	0.006	0.001	0.006	1	52
Hg	1.648	0.670	1.495	0	0

Yarner Wood			2011 Q2 July 2010 - June 2011			Rain data
Rainfall Collected	907 893	mm metals mm Hg	Samples Analysed	37 30	metals Hg	

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition ($g\ ha^{-1}\ y^{-1}$)
Li	0.027	0.054	0.026	1	0	0.237
Be	0.001	0.000	0.002	1	36	0.014
Al	3.615	13.194	3.017	4	2	27.372
Sc	0.025	0.004	0.025	1	36	0.227
Ti	0.077	0.306	0.066	3	14	0.599
V	0.350	0.367	0.340	2	0	3.081
Cr	0.030	0.058	0.029	5	19	0.265
Mn	0.997	2.982	0.855	3	0	7.760
Fe	3.665	16.804	3.068	3	4	27.836
Co	0.008	0.020	0.007	1	9	0.065
Ni	0.251	0.540	0.231	3	0	2.098
Cu	0.410	0.579	0.398	4	0	3.611
Zn	1.625	2.976	1.577	1	6	14.304
As	0.075	0.081	0.073	3	0	0.660
Se	0.099	0.129	0.095	2	5	0.866
Rb	0.113	0.282	0.099	2	0	0.899
Sr	1.091	2.083	1.037	1	0	9.404
Mo	0.122	0.421	0.072	2	15	0.654
Cd	0.006	0.013	0.006	4	4	0.051
Sn	0.044	0.051	0.032	2	13	0.293
Sb	0.034	0.048	0.032	2	2	0.294
Cs	0.003	0.008	0.002	2	11	0.019
Ba	0.196	0.552	0.165	3	2	1.497
W	0.027	0.028	0.010	2	27	0.095
Pb	0.242	0.626	0.224	2	3	2.036
U	0.001	0.001	0.001	2	34	0.009
Hg (ng/l)	4.324	5.248	4.124	1	0	0.002

2011 Q2 – Rainfall Only Sites – Inverpolly and Lough Navar

Inverpolly		2011 Q2 July 2010 - June 2011				Rain data
Rainfall Collected	1687 mm	metals	Samples Analysed	12	metals	
	-	mm Hg	-		Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition (g ha^{-1} y^{-1})**
Li	0.054	0.037	0.041	1	0	0.686
Be	0.002	0.001	0.002	1	10	0.029
Al	3.603	7.777	1.611	2	0	27.185
Sc	0.028	0.000	0.025	0	12	0.422
Ti	0.276	0.837	0.068	2	2	1.149
V	0.106	0.061	0.096	0	0	1.616
Cr	0.022	0.000	0.020	0	12	0.337
Mn	0.877	0.711	0.750	1	0	12.661
Fe	5.129	14.356	2.030	1	4	34.249
Co	0.005	0.008	0.003	2	10	0.051
Ni	0.092	0.044	0.069	1	0	1.159
Cu	0.178	0.095	0.161	0	0	2.721
Zn	1.022	0.946	0.925	1	8	15.613
As	0.061	0.033	0.048	1	0	0.812
Se	0.111	0.072	0.101	0	1	1.704
Rb	0.076	0.080	0.062	1	0	1.050
Sr	2.238	1.444	1.709	1	0	28.839
Mo	0.019	0.012	0.016	1	10	0.272
Cd	0.005	0.006	0.003	1	1	0.056
Sn	0.006	0.006	0.003	1	11	0.051
Sb	0.011	0.008	0.010	0	6	0.171
Cs	0.001	0.001	0.001	1	10	0.019
Ba	0.122	0.111	0.102	1	1	1.725
W	0.009	0.005	0.007	0	9	0.124
Pb	0.093	0.082	0.084	0	5	1.421
U	0.001	0.000	0.001	0	12	0.017
Hg (ng/l)	-	-	-	-	-	-

Lough Navar		2010 Q4 Jan 2010 - Dec 2010				Rain data
Rainfall Collected	991 mm	metals	Samples Analysed	10	metals	
	-	mm Hg	-		Hg	
Metal	**volume-weighted Annual Mean (µg/l)**	**Std. Dev.**	**Filtered Annual Mean (ug/l)**	**No. Outliers**	**No. Samples Below LoD**	**Wet Deposition (g ha^{-1} y^{-1})**
Li	0.053	0.041	0.030	1	0	0.295
Be	0.002	0.000	0.002	1	9	0.015
Al	3.453	6.608	3.091	2	0	30.626
Sc	0.032	0.009	0.025	1	9	0.248
Ti	0.252	0.261	0.225	0	0	2.233
V	0.100	0.082	0.085	1	0	0.840
Cr	0.054	0.038	0.049	0	5	0.482
Mn	1.988	2.005	1.780	1	0	17.637
Fe	4.547	10.025	4.071	1	1	40.339
Co	0.006	0.009	0.005	1	5	0.047
Ni	0.170	0.189	0.095	1	0	0.943
Cu	0.212	0.150	0.190	0	0	1.883
Zn	0.856	0.759	0.766	0	6	7.594
As	0.255	0.138	0.228	0	0	2.258
Se	0.129	0.048	0.097	1	0	0.966
Rb	0.080	0.187	0.052	1	0	0.515
Sr	2.406	1.715	1.406	1	0	13.928
Mo	0.027	0.082	0.019	1	8	0.185
Cd	0.005	0.006	0.005	1	3	0.045
Sn	0.204	0.299	0.014	1	5	0.138
Sb	0.022	0.024	0.018	1	2	0.182
Cs	0.002	0.002	0.001	1	6	0.012
Ba	0.162	0.201	0.145	1	1	1.437
W	0.061	0.088	0.005	1	9	0.050
Pb	0.151	0.151	0.135	1	2	1.339
U	0.001	0.000	0.001	1	9	0.010
Hg (ng/l)	-	-	-	-	-	-

2011 Q2 – Rainfall Only Sites – Penallt

Penallt		2010 Q4 Jan 2010 - Dec 2010			Rain data
Rainfall Collected	734 mm -	metals mm Hg	Samples Analysed	2 metals -	Hg

Metal	volume-weighted Annual Mean (µg/l)	Std. Dev.	Filtered Annual Mean (ug/l)	No. Outliers	No. Samples Below LoD	Wet Deposition (g ha^{-1} y^{-1})
Li	0.013	0.025	0.042	1	0	0.308
Be	0.001	0.002	0.002	0	1	0.011
Al	0.998	1.697	19.600	1	0	143.955
Sc	0.006	0.000	0.025	2	2	0.184
Ti	0.033	0.002	0.578	2	0	4.245
V	0.095	0.138	0.293	1	0	2.152
Cr	0.017	0.071	0.061	0	1	0.448
Mn	1.031	0.375	4.790	2	0	35.181
Fe	1.180	1.796	28.700	1	0	210.792
Co	0.003	0.001	0.035	2	0	0.257
Ni	0.067	0.057	0.204	2	0	1.498
Cu	0.170	0.439	0.876	0	0	6.434
Zn	0.669	0.757	6.320	1	0	46.418
As	0.123	0.275	0.213	1	0	1.564
Se	0.029	0.069	0.110	0	0	0.808
Rb	0.055	0.055	0.118	2	0	0.867
Sr	0.441	0.693	1.380	1	0	10.136
Mo	0.006	0.013	0.015	1	1	0.110
Cd	0.004	0.004	0.044	2	0	0.323
Sn	0.002	0.006	0.024	0	1	0.176
Sb	0.019	0.013	0.116	2	0	0.852
Cs	0.001	0.001	0.009	1	0	0.066
Ba	0.170	0.177	1.900	2	0	13.955
W	0.001	0.000	0.035	2	2	0.257
Pb	0.180	0.169	1.480	2	0	10.870
U	0.000	0.000	0.004	2	2	0.029
Hg (ng/l)	-	-	-	-	-	-

The 2010/11 concentrations are similar to those reported in earlier years (Malcolm et al., 2010), with higher concentrations reported at the sites in the South East of England, especially at Harwell, Detling, Heigham Holmes, Monks Wood and Beacon Hill. A full analysis of the concentrations will be provided in the next project report.

2010 Deposition Data

The UK heavy metals deposition budget for 2010 is listed below. These data were calculated based upon the 2010 rainfall data produced by the Met Office and can therefore be considered as final deposition values (as compared to interim values based upon a 10 year average rainfall dataset that are sometimes supplied when the rainfall data are not available). The 2010 deposition values were calculated using concentration data from all operational sampling sites in the network, including both the Wytham Wood and Harwell sites in Oxfordshire. Note that as the Harwell site was only established in late 2008, the deposition budgets for the years 2004 to 2008 were based upon monitoring data at 13 sites. To allow evaluation of the effects of adding the Harwell site to the network, two versions of the 2009 deposition budget are presented, 13 sites which excludes the Harwell data, and 14 sites which includes it.

Note that as the rainfall data used to calculate the deposition data is only available as calendar years (either for an individual year, or a 10 year long term average), it has not been possible to calculate total deposition for the quarterly updates. The 2011 deposition will be calculated at the end of quarter 4, ie for samples collected between Jan and December 2011.

Maps of Concentration & Deposition

The data from the heavy metals monitoring network are used to produce annual maps of concentration and deposition of each metal. These are generated by taking the annual mean concentration data from each site and interpolating these values across the UK using GIS and modelling techniques outlined in Malcolm *et al* (2010).

UK annual average maps for samples collected in 2010 are presented in Figure 2. Final maps have been produced for all metals measured as follows:

Concentration in air (ng/m^3)
Concentration in rain (µg/l)
Total Deposition (g/ha/year)
Dry Deposition (g/ha/year)
Wet Deposition (g/ha/year)
Cloud Deposition (g/ha/year)
Deposition to grassland (g/ha/year)
Deposition to moorland (g/ha/year)

The 2010 maps included in this report were derived from measurements at all operational sampling sites, ie including both the Wytham Wood and Harwell sites in Oxfordshire.

Deposition Budgets 2004 – 2010.

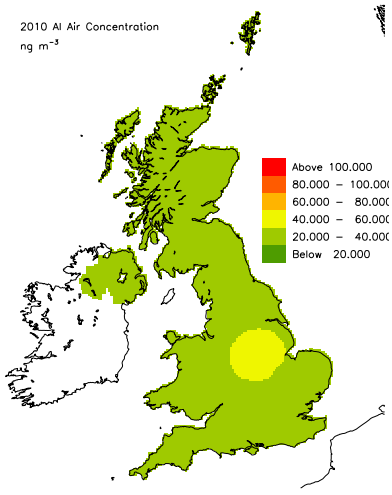
		2004 13 sites	2005 13 sites	2006 13 sites	2007 13 sites	2008 13 sites	2009 13 sites	2009 14 sites	2010 14 sites	units
Al	dry		2291.17	2037.58	1522.51	1533.15	1266.84	1273.12	1298.82	tonnes
Al	wet		3221.47	3181.98	1992.90	3498.79	2498.77	2581.50	2086.06	tonnes
Al	cloud		86.64	76.12	47.80	75.51	60.39	62.27	63.47	tonnes
Al	**total**		**5599.28**	**5295.68**	**3563.21**	**5107.45**	**3826.00**	**3916.90**	**3448.35**	**tonnes**
As	dry	23.07	22.01	22.46	19.00	18.97	16.25	16.48	20.02	tonnes
As	wet	51.68	50.13	53.59	44.57	50.70	45.40	44.66	37.78	tonnes
As	cloud	0.95	1.02	0.99	0.81	0.86	0.87	0.85	0.91	tonnes
As	**total**	**75.70**	**73.17**	**77.04**	**64.37**	**70.52**	**62.51**	**62.00**	**58.70**	**tonnes**
Ba	dry		69.04	58.30	54.48	54.43	49.15	76.98	68.16	tonnes
Ba	wet		223.80	237.26	163.12	261.13	220.35	818.74	388.38	tonnes
Ba	cloud		6.10	5.71	3.80	5.67	5.32	18.26	11.13	tonnes
Ba	**total**		**298.94**	**301.26**	**221.40**	**321.23**	**274.83**	**913.97**	**467.67**	**tonnes**
Be	dry		0.64	0.47	0.42	0.51	0.41	0.41	0.40	tonnes
Be	wet		0.72	0.83	0.85	0.86	0.69	0.71	0.57	tonnes
Be	cloud		0.02	0.02	0.02	0.02	0.02	0.02	0.02	tonnes
Be	**total**		**1.38**	**1.32**	**1.29**	**1.39**	**1.12**	**1.13**	**0.99**	**tonnes**
Cd	dry	2.54	2.77	2.61	2.11	2.39	1.65	1.66	1.96	tonnes
Cd	wet	7.49	7.00	6.74	3.87	6.76	5.76	5.79	4.37	tonnes
Cd	cloud	0.20	0.21	0.18	0.10	0.16	0.15	0.15	0.15	tonnes
Cd	**total**	**10.23**	**9.97**	**9.52**	**6.08**	**9.31**	**7.55**	**7.60**	**6.47**	**tonnes**
Co	dry		4.07	1.95	1.63	1.89	1.56	1.56	1.66	tonnes
Co	wet		5.93	6.00	4.48	6.12	5.28	5.36	4.02	tonnes
Co	cloud		0.16	0.14	0.10	0.13	0.13	0.13	0.12	tonnes
Co	**total**		**10.16**	**8.09**	**6.22**	**8.14**	**6.96**	**7.05**	**5.81**	**tonnes**
Cr	dry	20.15	25.63	22.20	31.91	35.06	37.09	37.55	24.62	tonnes
Cr	wet	39.91	25.24	38.50	27.98	29.98	32.18	32.72	13.61	tonnes
Cr	cloud	1.09	0.78	1.05	0.78	0.77	0.92	0.94	0.48	tonnes
Cr	**total**	**61.14**	**51.65**	**61.76**	**60.67**	**65.82**	**70.20**	**71.20**	**38.71**	**tonnes**
Cs	dry		0.92	0.95	0.61	0.83	0.45	0.45	0.66	tonnes
Cs	wet		1.02	1.34	0.65	1.19	0.88	0.87	0.88	tonnes
Cs	cloud		0.03	0.03	0.02	0.03	0.02	0.02	0.03	tonnes
Cs	**total**		**1.98**	**2.32**	**1.27**	**2.04**	**1.35**	**1.35**	**1.57**	**tonnes**
Cu	dry	95.55	113.75	85.54	91.87	103.58	103.04	105.52	114.04	tonnes
Cu	wet	221.82	212.49	225.59	148.87	217.30	186.36	187.89	146.80	tonnes
Cu	cloud	6.51	6.87	6.49	4.14	5.72	5.43	5.47	5.40	tonnes
Cu	**total**	**323.87**	**333.11**	**317.62**	**244.88**	**326.61**	**294.82**	**298.88**	**266.25**	**tonnes**
Fe	dry		3363.49	2807.38	2931.16	2709.08	2331.75	2340.35	2724.95	tonnes
Fe	wet		3803.96	4752.86	2971.31	4145.17	3570.94	3666.45	2689.11	tonnes
Fe	cloud		102.27	114.11	71.88	89.83	86.89	89.04	82.04	tonnes
Fe	**total**		**7269.72**	**7674.35**	**5974.35**	**6944.07**	**5989.57**	**6095.84**	**5496.10**	**tonnes**
Hg	dry		0.00	0.00	0.00	0.00	0.00	0.00	0.00	kg
Hg	wet		1791.00	2075.97	2518.84	2046.79	1580.70	1601.66	1201.68	kg
Hg	cloud		46.57	48.56	59.01	44.98	38.58	39.04	37.42	kg
Hg	**total**		**1837.57**	**2124.53**	**2577.85**	**2091.76**	**1619.28**	**1640.70**	**1239.10**	**kg**
Li	dry		3.47	2.75	2.01	2.75	1.81	1.81	2.04	tonnes
Li	wet		17.70	22.04	18.46	19.72	14.67	14.78	11.19	tonnes
Li	cloud		0.45	0.51	0.42	0.42	0.35	0.35	0.35	tonnes
Li	**total**		**21.62**	**25.31**	**20.89**	**22.89**	**16.83**	**16.94**	**13.57**	**tonnes**
Mn	dry		82.73	85.61	69.78	68.19	59.18	59.44	70.59	tonnes
Mn	wet		622.34	772.01	433.67	715.16	680.61	683.31	503.90	tonnes

Mn	cloud		16.65	18.47	10.14	15.34	16.23	16.32	15.95	tonnes
Mn	**total**		**721.72**	**876.09**	**513.58**	**798.69**	**756.02**	**759.07**	**590.44**	**tonnes**
Mo	dry		14.59	8.36	6.18	6.73	5.38	5.38	6.36	tonnes
Mo	wet		13.78	12.03	8.79	9.90	9.62	9.72	12.39	tonnes
Mo	cloud		0.37	0.29	0.21	0.22	0.24	0.24	0.39	tonnes
Mo	**total**		**28.74**	**20.68**	**15.18**	**16.84**	**15.23**	**15.34**	**19.14**	**tonnes**
Ni	dry	31.48	50.65	32.79	20.35	26.70	22.65	23.04	21.43	tonnes
Ni	wet	73.96	102.13	88.05	49.89	64.17	51.96	54.51	57.71	tonnes
Ni	cloud	1.74	2.58	2.06	1.10	1.36	1.24	1.30	1.75	tonnes
Ni	**total**	**107.17**	**155.36**	**122.90**	**71.34**	**92.22**	**75.85**	**78.85**	**80.89**	**tonnes**
Pb	dry	146.16	128.49	132.07	103.65	97.01	84.02	86.56	104.45	tonnes
Pb	wet	337.22	262.63	219.81	140.88	207.74	195.09	223.13	176.57	tonnes
Pb	cloud	7.92	6.93	5.21	3.17	4.41	4.59	5.19	5.15	tonnes
Pb	**total**	**491.30**	**398.05**	**357.08**	**247.70**	**309.16**	**283.71**	**314.87**	**286.16**	**tonnes**
Rb	dry		6.78	6.50	4.59	5.51	4.17	4.20	5.02	tonnes
Rb	wet		35.86	37.55	31.79	38.03	37.10	36.81	28.26	tonnes
Rb	cloud		0.95	0.93	0.78	0.84	0.93	0.92	0.94	tonnes
Rb	**total**		**43.59**	**44.98**	**37.16**	**44.38**	**42.20**	**41.94**	**34.22**	**tonnes**
Sb	dry		28.96	29.42	25.06	24.10	20.06	20.25	26.10	tonnes
Sb	wet		24.74	26.34	12.95	21.90	19.62	19.85	20.32	tonnes
Sb	cloud		0.67	0.63	0.30	0.47	0.48	0.48	0.62	tonnes
Sb	**total**		**54.37**	**56.39**	**38.30**	**46.47**	**40.16**	**40.58**	**47.03**	**tonnes**
Sc	dry		7.52	6.52	6.52	7.49	6.79	6.79	6.71	tonnes
Sc	wet		9.90	11.38	10.96	11.68	10.46	10.46	7.26	tonnes
Sc	cloud		0.26	0.27	0.26	0.26	0.26	0.26	0.23	tonnes
Sc	**total**		**17.68**	**18.17**	**17.74**	**19.42**	**17.51**	**17.50**	**14.20**	**tonnes**
Se	dry	13.64	15.41	15.44	13.55	15.30	12.39	12.37	14.54	tonnes
Se	wet	68.04	67.38	62.37	56.98	67.46	44.92	45.12	35.02	tonnes
Se	cloud	2.08	2.22	1.91	1.72	1.90	1.43	1.44	1.40	tonnes
Se	**total**	**83.76**	**85.00**	**79.73**	**72.25**	**84.66**	**58.75**	**58.93**	**50.96**	**tonnes**
Sn	dry		60.78	2.76	17.92	32.29	20.09	20.15	23.19	tonnes
Sn	wet		14.94	16.56	11.72	8.75	9.51	9.43	6.98	tonnes
Sn	cloud		0.40	0.41	0.28	0.19	0.24	0.24	0.21	tonnes
Sn	**total**		**76.13**	**19.73**	**29.92**	**41.23**	**29.83**	**29.81**	**30.39**	**tonnes**
Sr	dry		52.74	37.51	34.00	39.12	33.71	35.11	33.69	tonnes
Sr	wet		729.96	763.70	773.77	805.52	588.24	615.03	433.14	tonnes
Sr	cloud		17.94	17.66	17.54	17.04	13.99	14.58	13.45	tonnes
Sr	**total**		**800.65**	**818.86**	**825.31**	**861.68**	**635.94**	**664.72**	**480.28**	**tonnes**
Ti	dry		58.92	71.08	60.90	68.10	62.00	62.02	90.32	tonnes
Ti	wet		115.10	107.60	64.92	96.30	96.09	99.90	59.57	tonnes
Ti	cloud		3.02	2.56	1.59	2.06	2.29	2.37	1.82	tonnes
Ti	**total**		**177.04**	**181.24**	**127.42**	**166.46**	**160.37**	**164.30**	**151.72**	**tonnes**
U	dry		1.29	0.47	0.30	0.41	0.27	0.27	0.27	tonnes
U	wet		0.67	0.76	0.49	0.75	0.55	0.56	0.42	tonnes
U	cloud		0.02	0.02	0.01	0.02	0.01	0.01	0.01	tonnes
U	**total**		**1.97**	**1.25**	**0.80**	**1.18**	**0.83**	**0.85**	**0.70**	**tonnes**
V	dry	59.55	70.10	85.51	54.56	56.64	47.05	47.22	38.26	tonnes
V	wet	130.14	129.22	131.91	98.64	106.13	83.39	85.08	65.65	tonnes
V	cloud	3.26	3.59	3.32	2.39	2.39	2.12	2.16	2.09	tonnes
V	**total**	**192.94**	**202.91**	**220.74**	**155.60**	**165.16**	**132.56**	**134.45**	**106.00**	**tonnes**
W	dry		3.64	2.43	1.89	2.74	1.41	1.41	1.49	tonnes
W	wet		12.25	4.92	4.32	4.16	3.35	3.34	3.19	tonnes
W	cloud		0.32	0.12	0.10	0.09	0.08	0.08	0.10	tonnes
W	**total**		**16.21**	**7.46**	**6.31**	**6.99**	**4.85**	**4.83**	**4.79**	**tonnes**

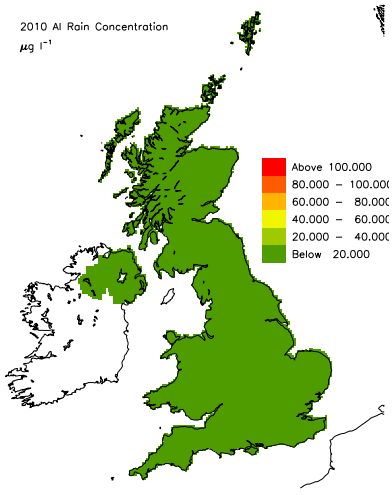
Zn	dry	380.26	338.90	364.88	323.22	350.96	262.10	263.46	286.21	tonnes
Zn	wet	1861.45	1816.31	1523.14	850.49	1441.58	1060.25	1098.51	875.78	tonnes
Zn	cloud	28.74	31.59	24.01	12.87	19.98	16.23	16.79	17.11	tonnes
Zn	**total**	**2270.44**	**2186.80**	**1912.02**	**1186.59**	**1812.52**	**1338.58**	**1378.76**	**1179.11**	**tonnes**

Metal: Aluminium Year: 2010

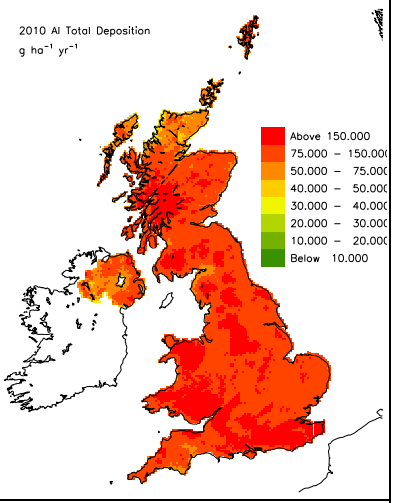
Concentration in air



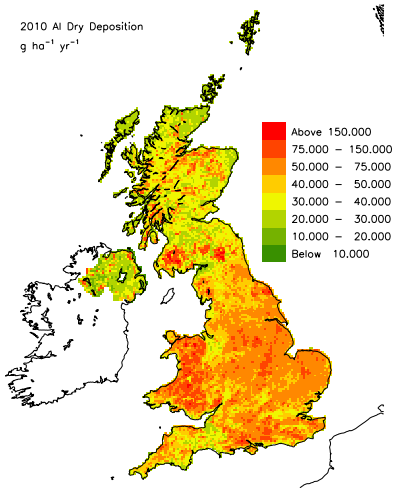
Concentration in rain



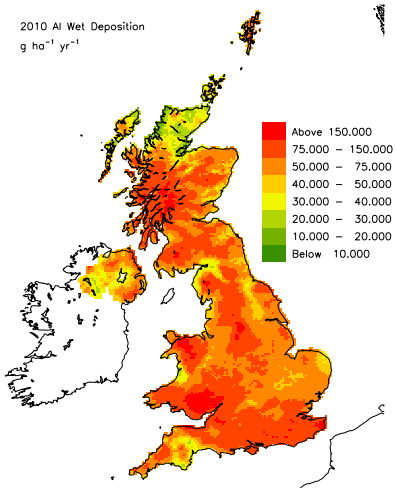
Total Deposition



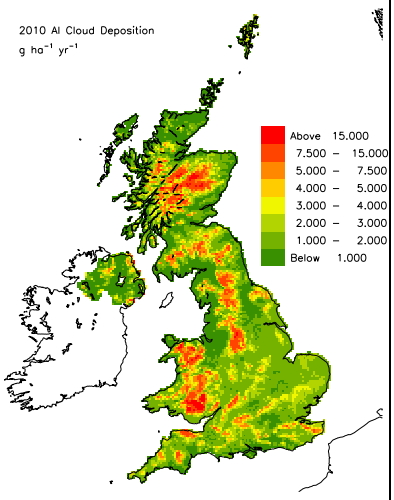
Dry Deposition



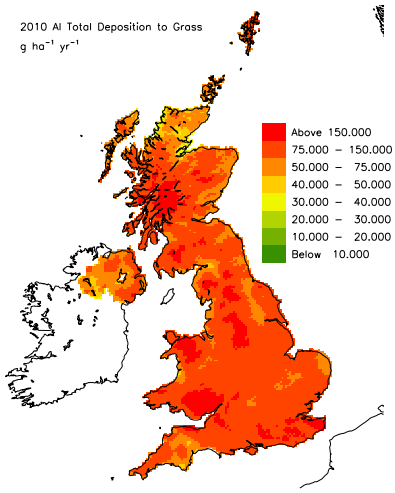
Wet Deposition



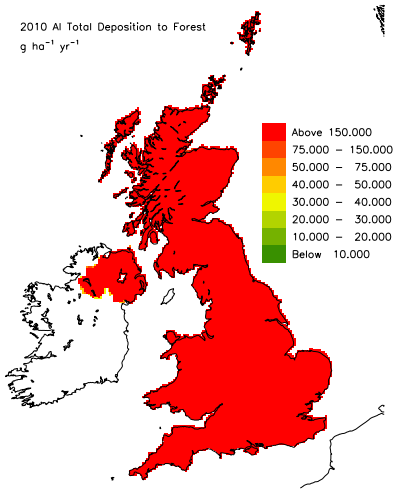
Cloud Deposition



Total Deposition to Grassland

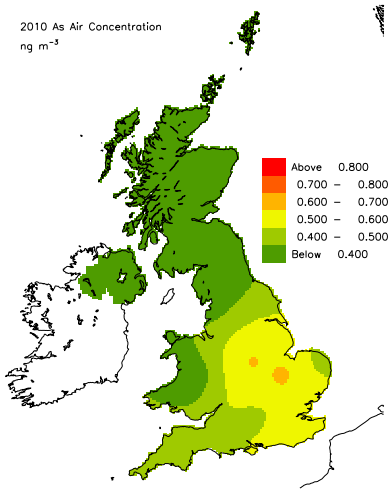


Total Deposition to Forest

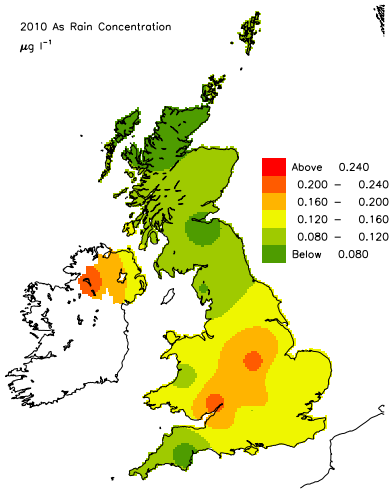


Metal: Arsenic Year: 2010

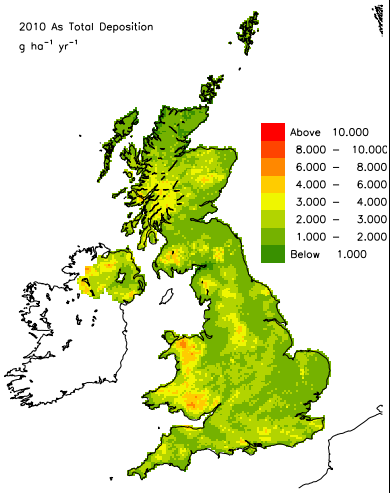
Concentration in air



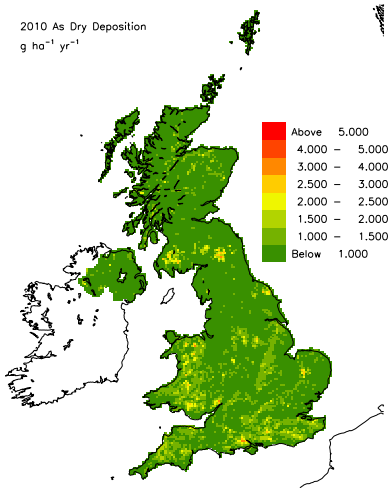
Concentration in rain



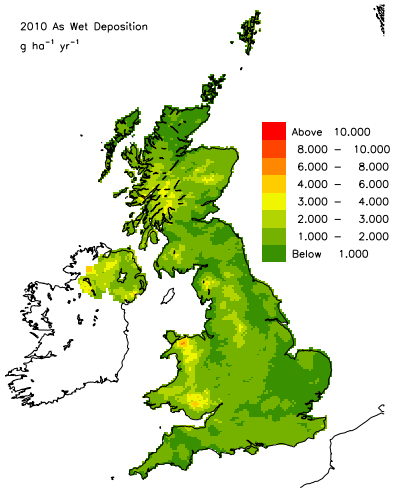
Total Deposition



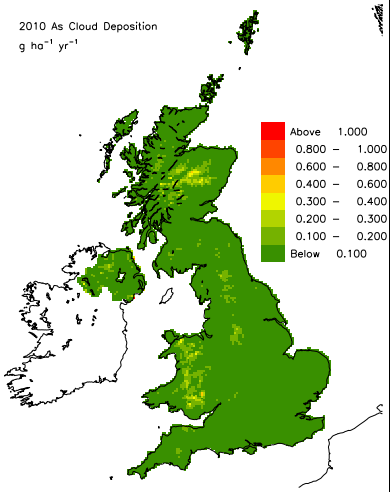
Dry Deposition



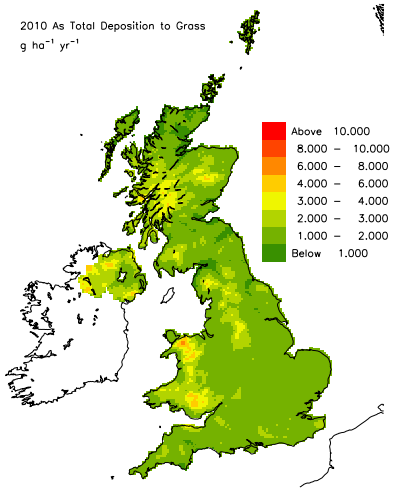
Wet Deposition



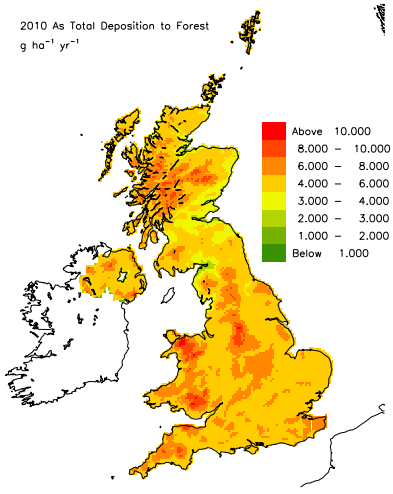
Cloud Deposition



Total Deposition to Grassland

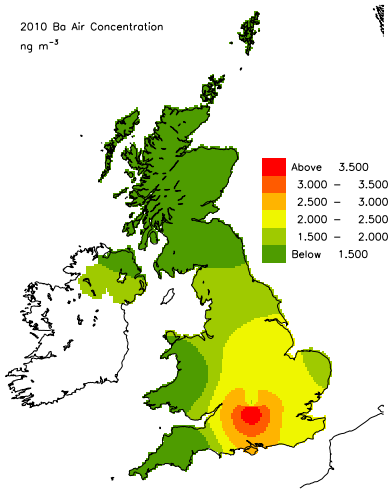


Total Deposition to Forest

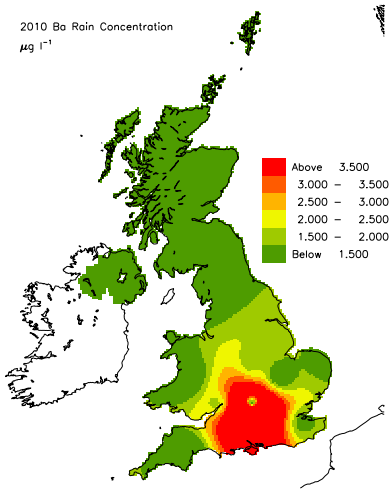


Metal: Barium Year: 2010

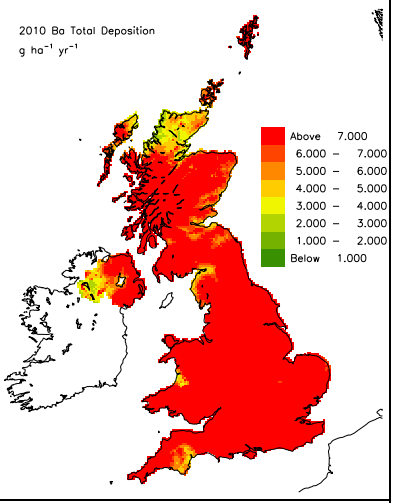
Concentration in air



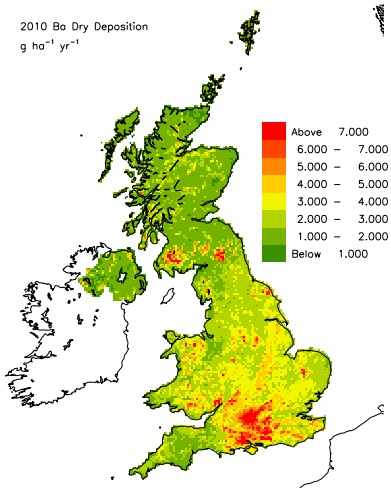
Concentration in rain



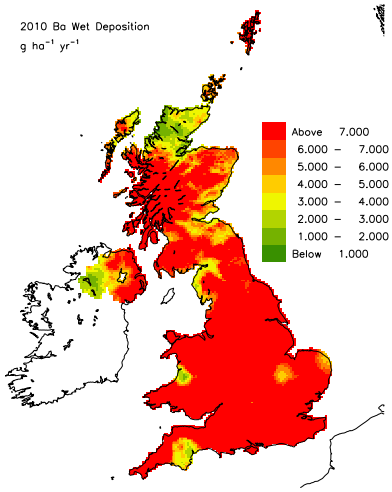
Total Deposition



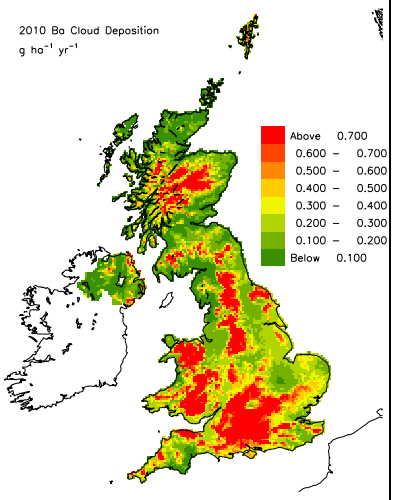
Dry Deposition



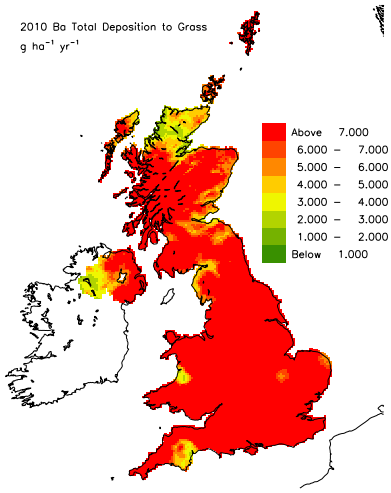
Wet Deposition



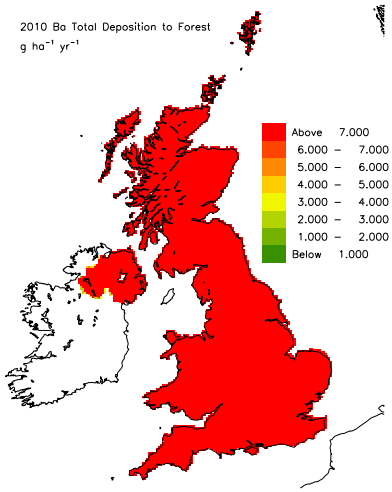
Cloud Deposition



Total Deposition to Grassland

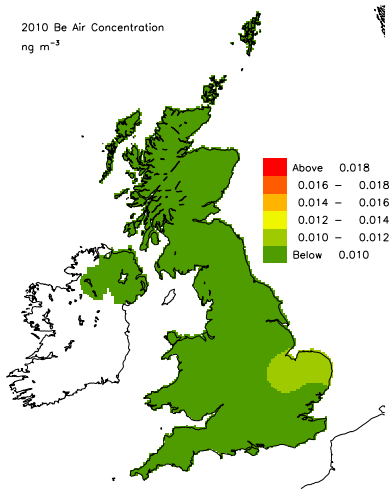


Total Deposition to Forest

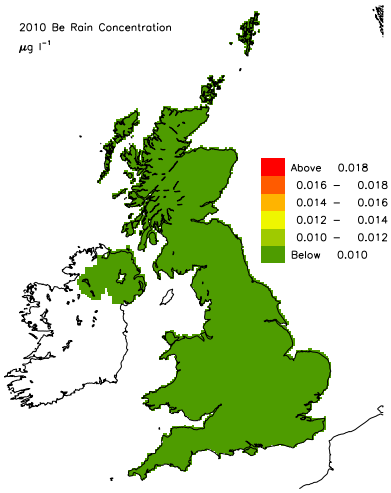


Metal: Beryllium Year: 2010

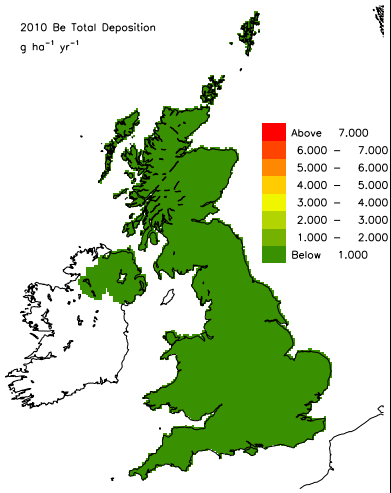
Concentration in air



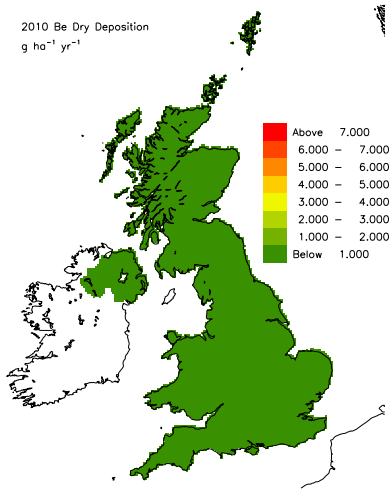
Concentration in rain



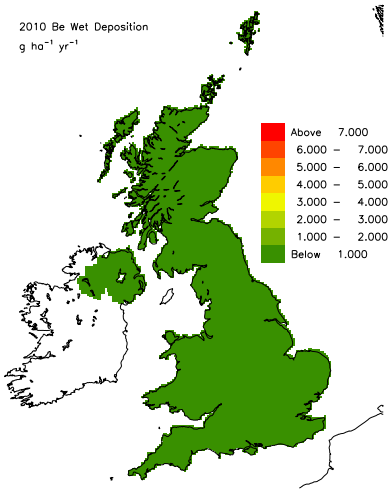
Total Deposition



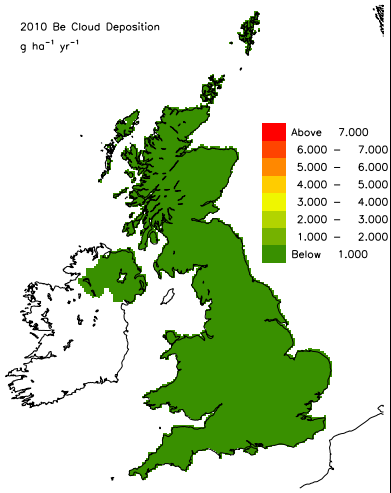
Dry Deposition



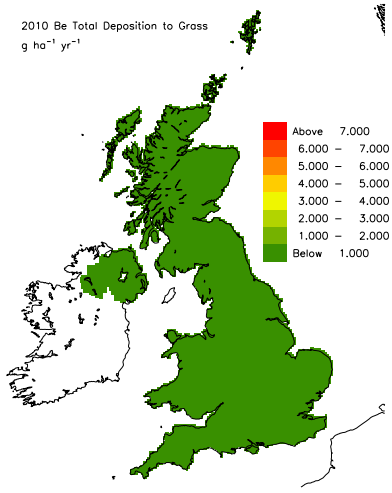
Wet Deposition



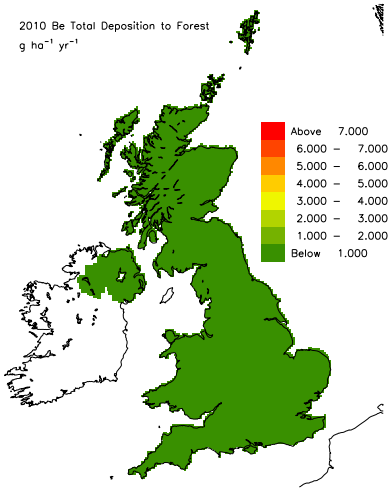
Cloud Deposition



Total Deposition to Grassland

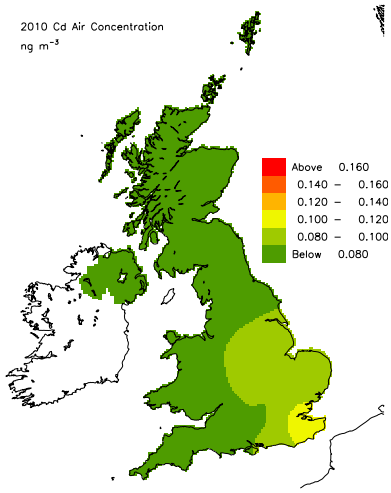


Total Deposition to Forest

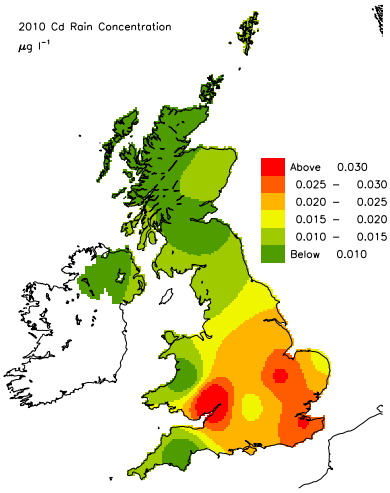


Metal: Cadmium Year: 2010

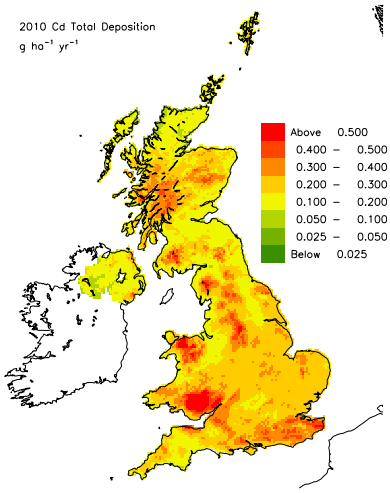
Concentration in air



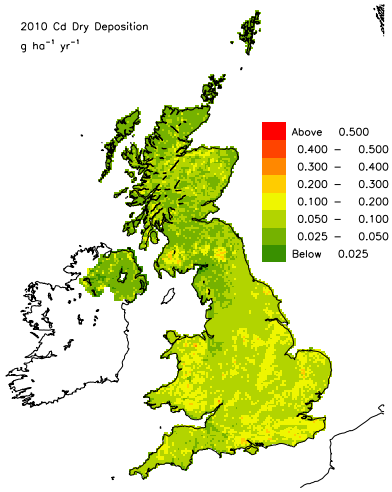
Concentration in rain



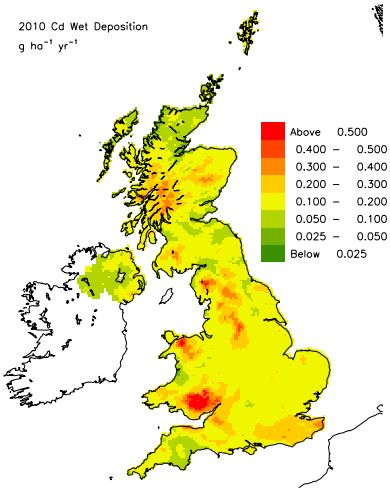
Total Deposition



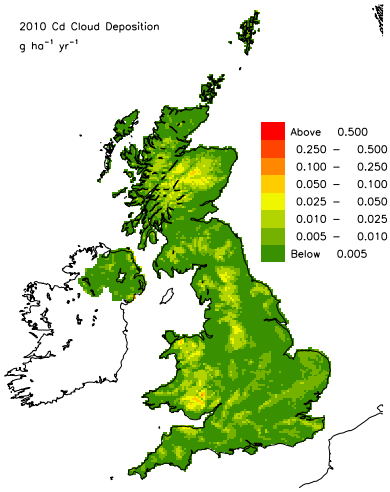
Dry Deposition



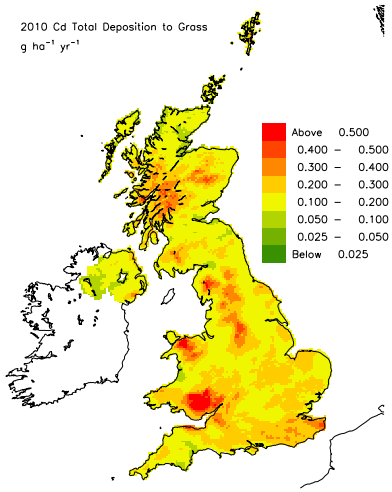
Wet Deposition



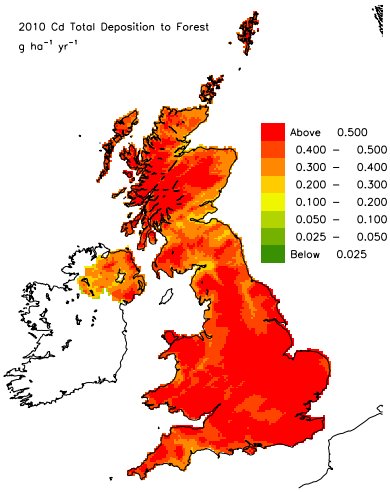
Cloud Deposition



Total Deposition to Grassland

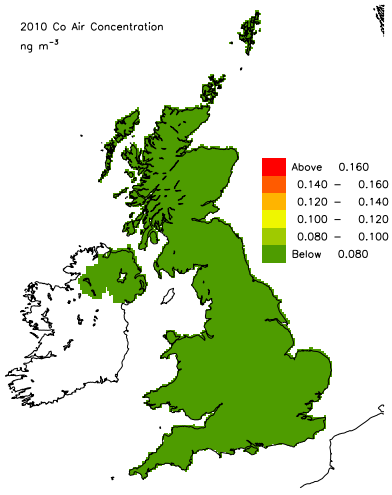


Total Deposition to Forest

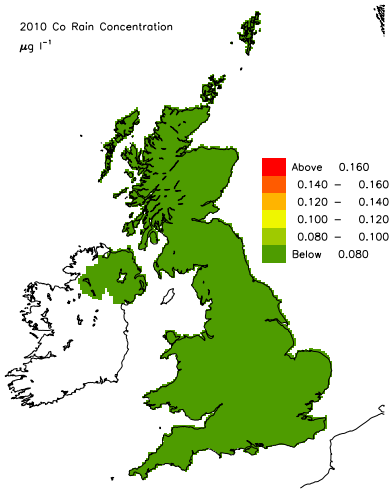


Metal: Cobalt Year: 2010

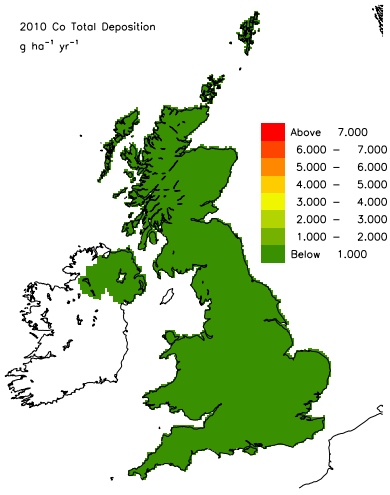
Concentration in air



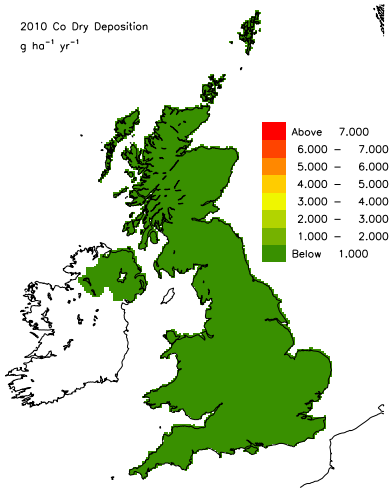
Concentration in rain



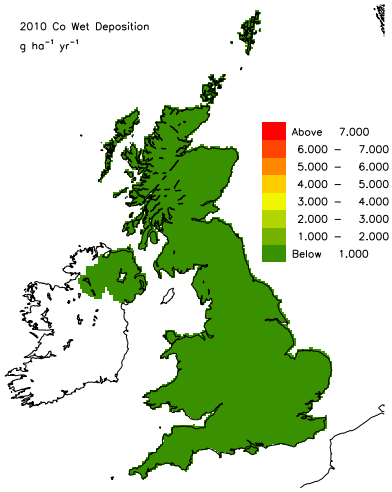
Total Deposition



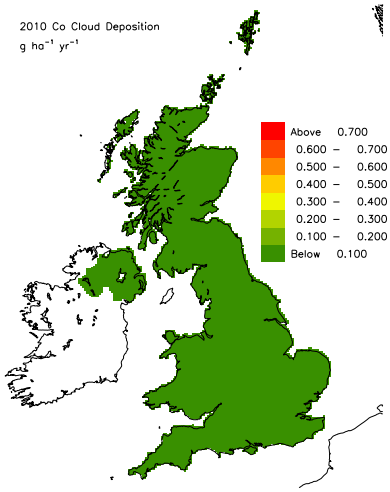
Dry Deposition



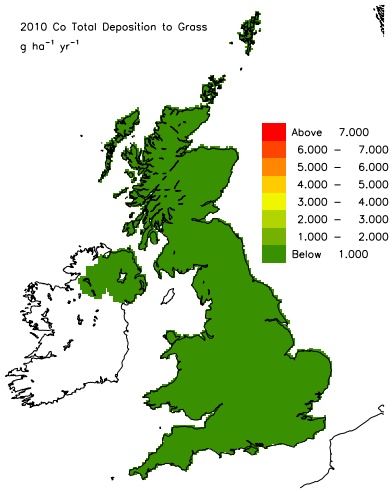
Wet Deposition



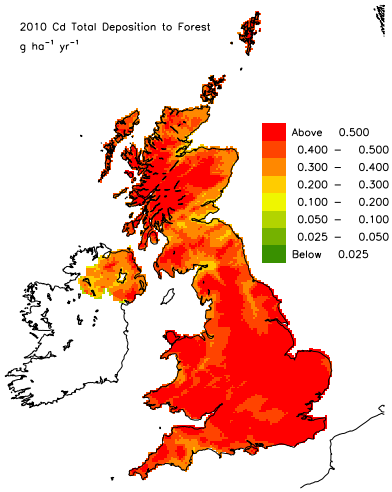
Cloud Deposition



Total Deposition to Grassland

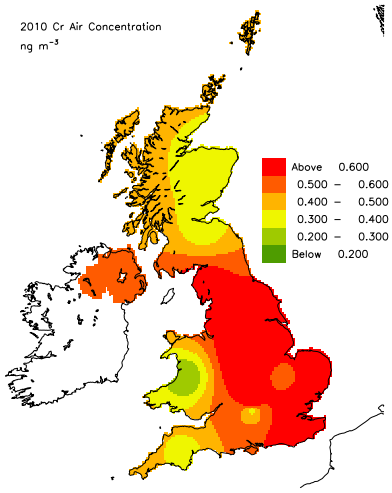


Total Deposition to Forest

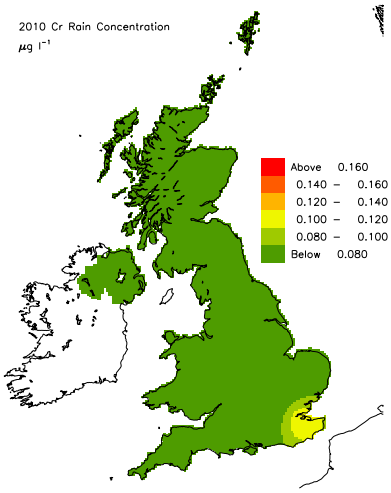


Metal: Chromium Year: 2010

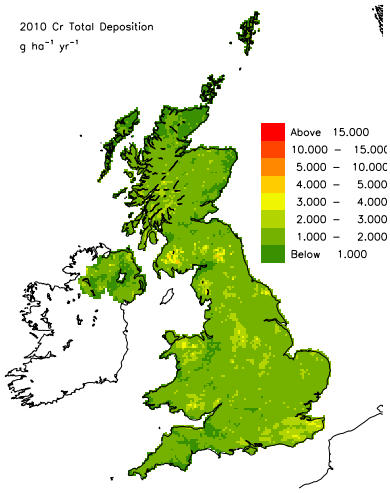
Concentration in air



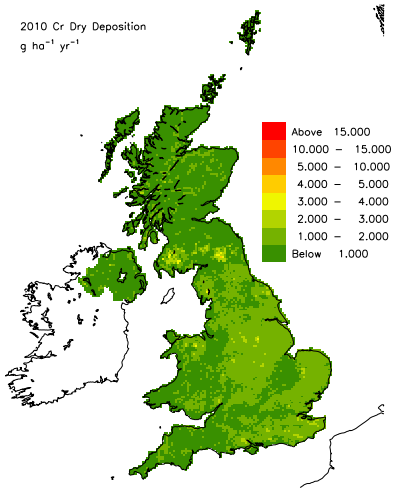
Concentration in rain



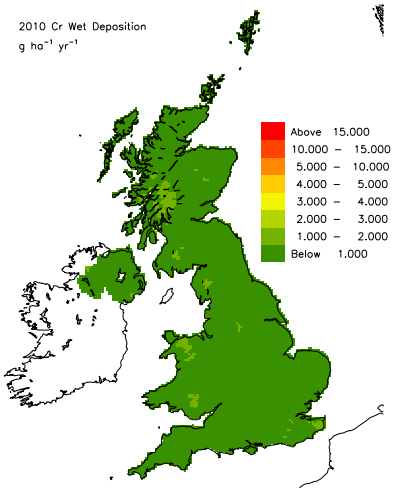
Total Deposition



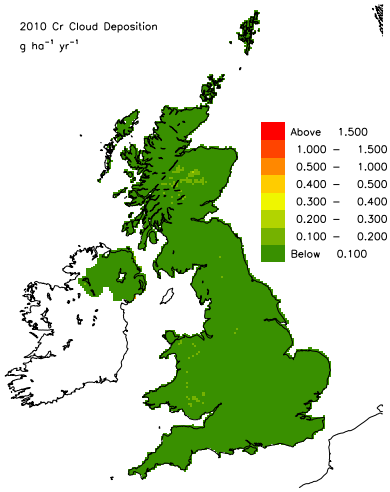
Dry Deposition



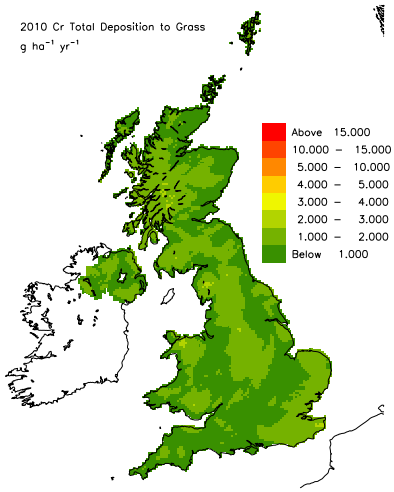
Wet Deposition



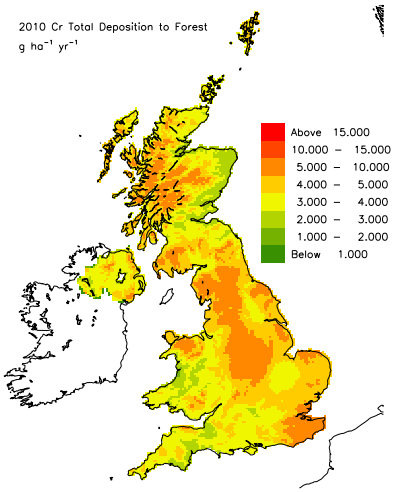
Cloud Deposition



Total Deposition to Grassland

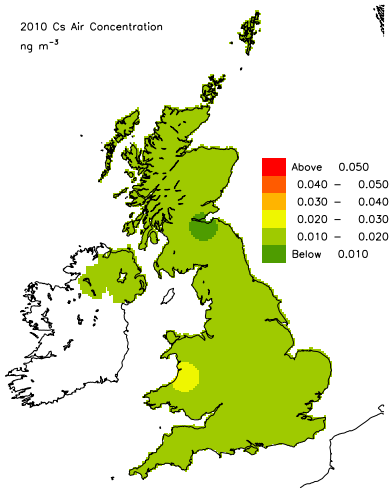


Total Deposition to Forest

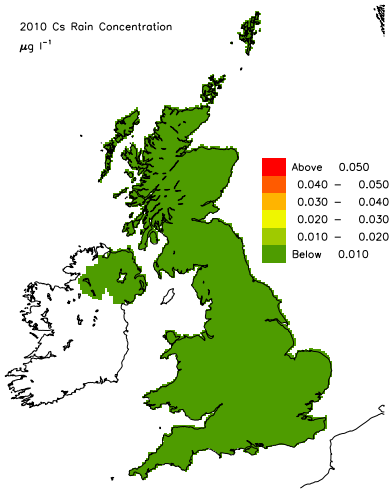


Metal: Cesium Year: 2010

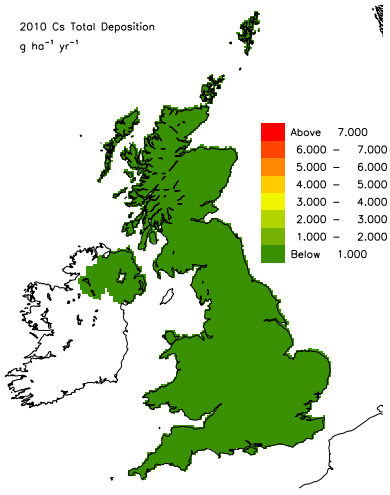
Concentration in air



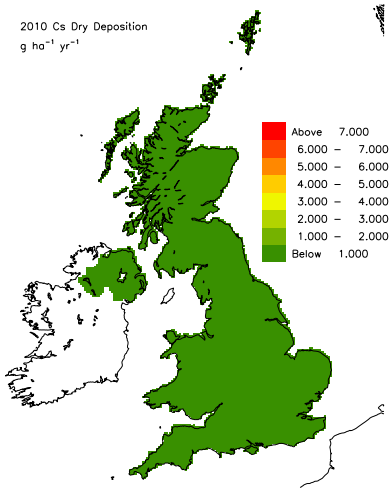
Concentration in rain



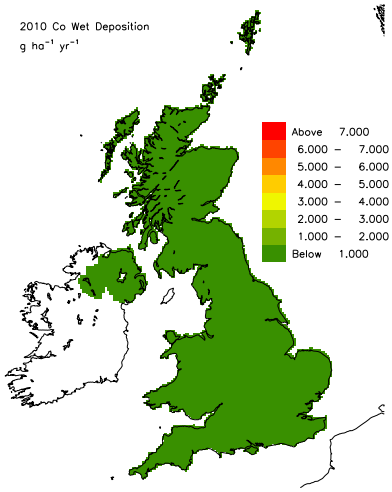
Total Deposition



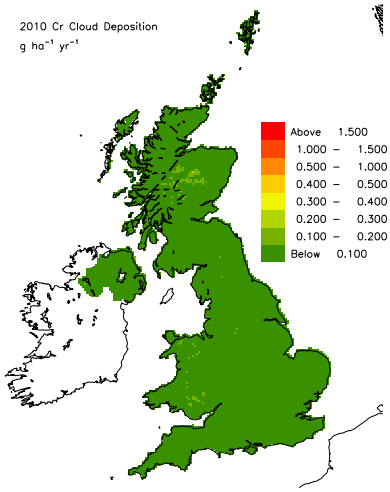
Dry Deposition



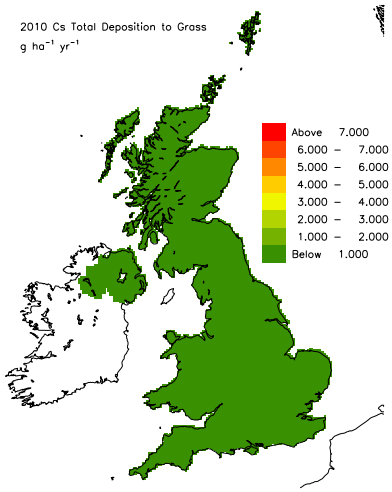
Wet Deposition



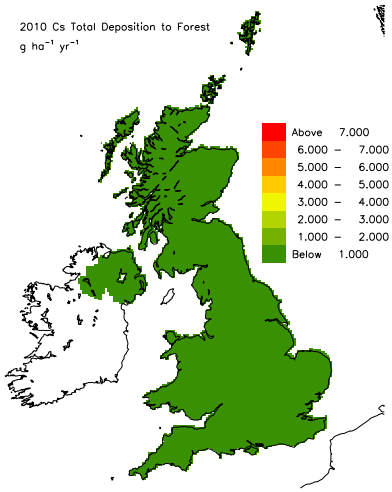
Cloud Deposition



Total Deposition to Grassland

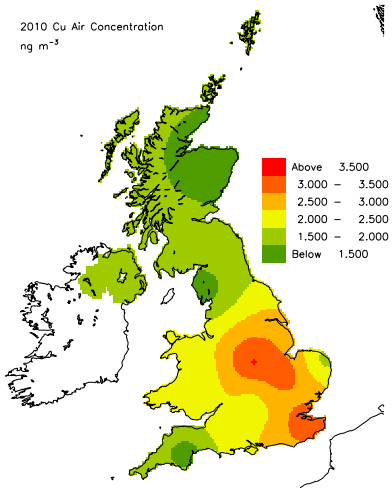


Total Deposition to Forest

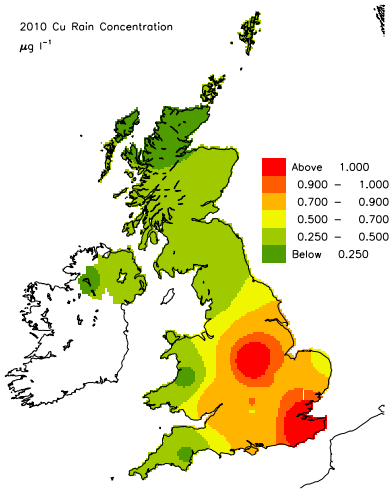


Metal: Copper Year: 2010

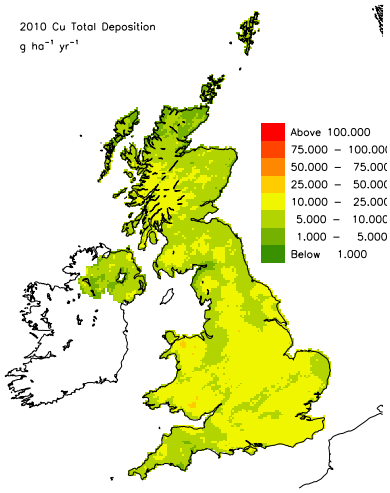
Concentration in air



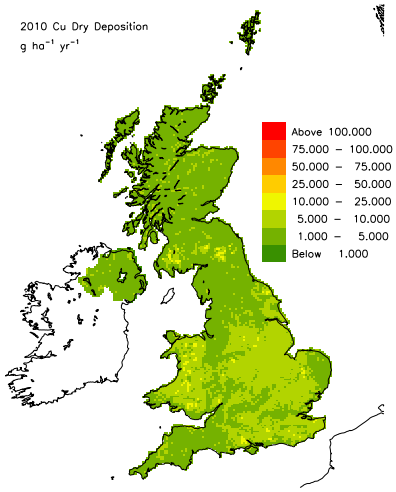
Concentration in rain



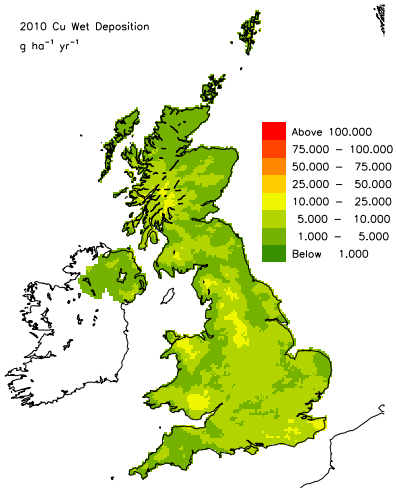
Total Deposition



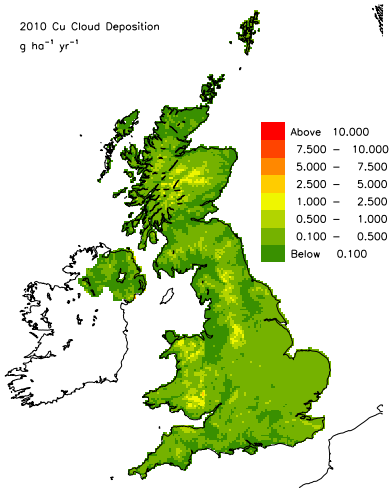
Dry Deposition



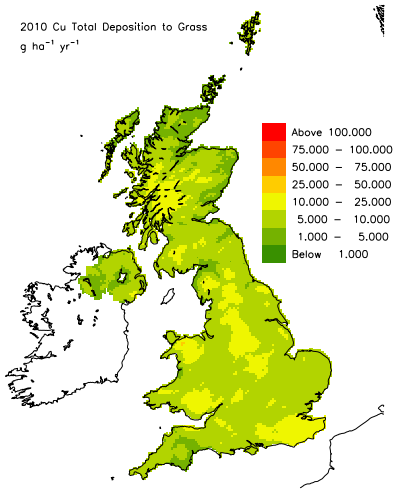
Wet Deposition



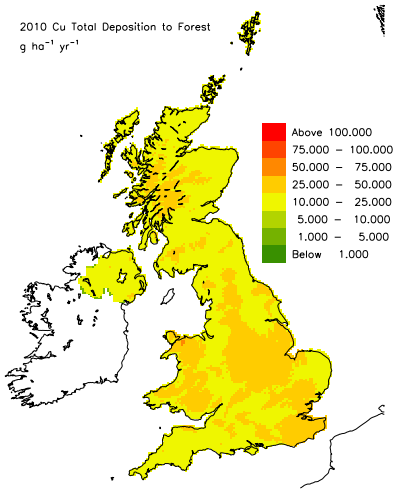
Cloud Deposition



Total Deposition to Grassland



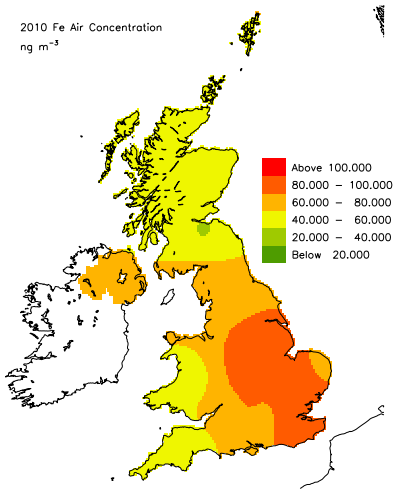
Total Deposition to Forest



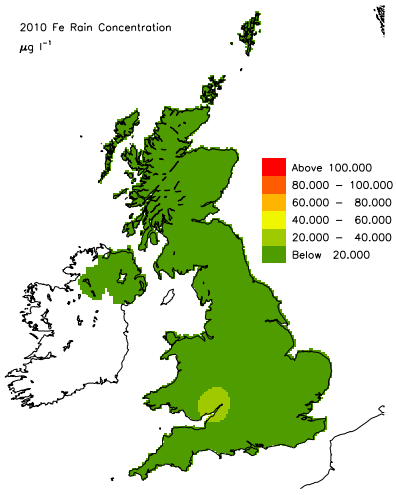
Metal: Iron

Year: 2010

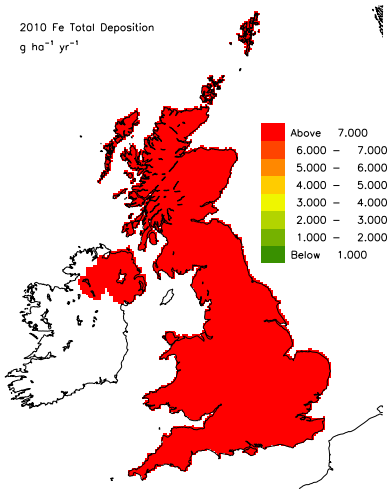
Concentration in air



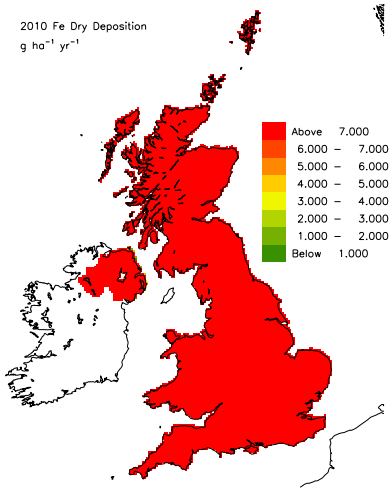
Concentration in rain



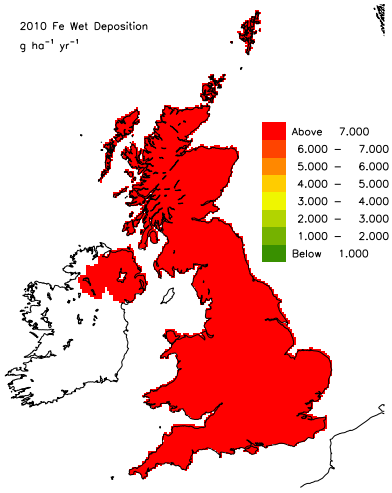
Total Deposition



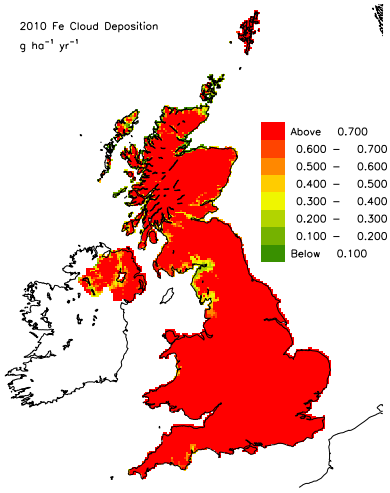
Dry Deposition



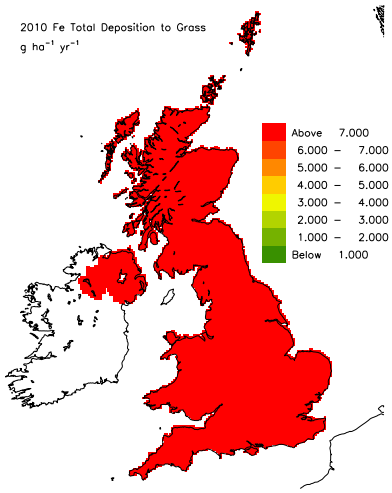
Wet Deposition



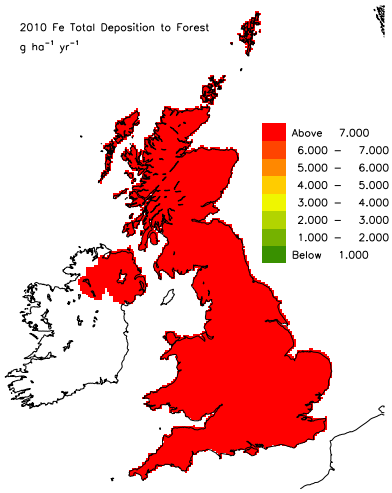
Cloud Deposition



Total Deposition to Grassland

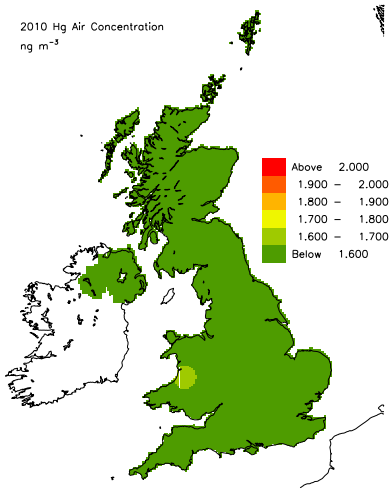


Total Deposition to Forest

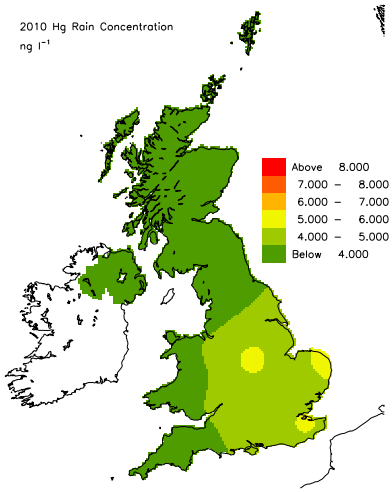


Metal: Mercury Year: 2010

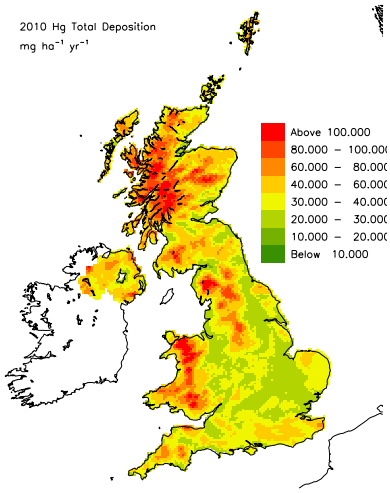
Concentration in air



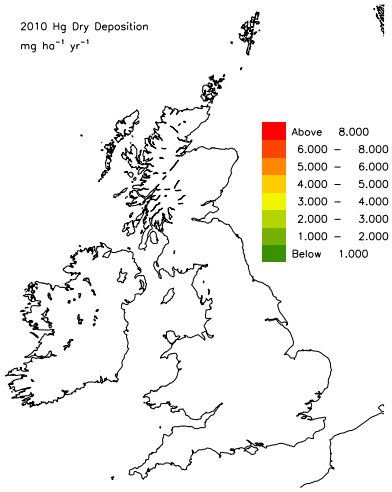
Concentration in rain



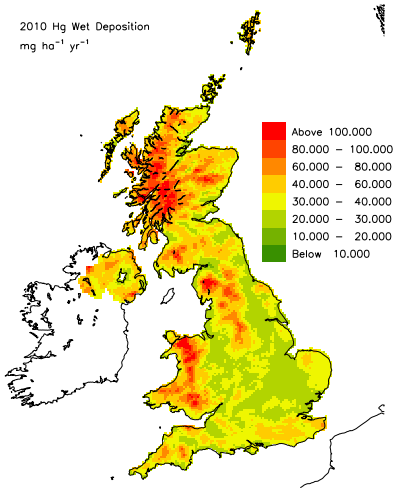
Total Deposition



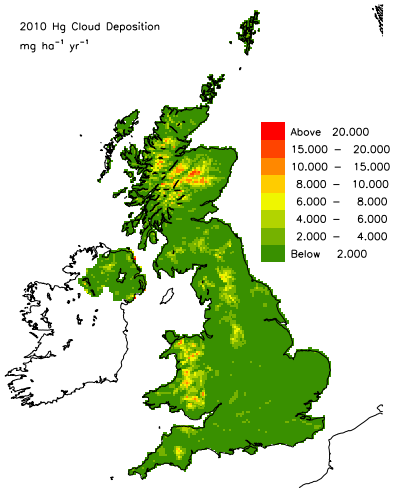
Dry Deposition



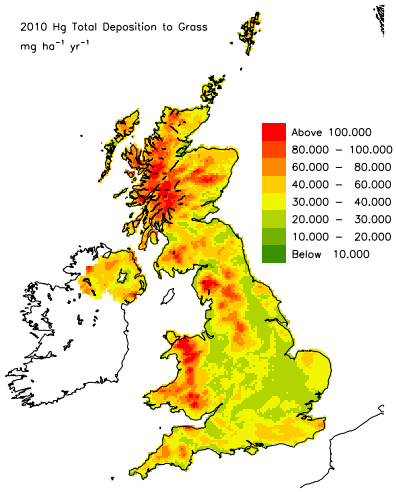
Wet Deposition



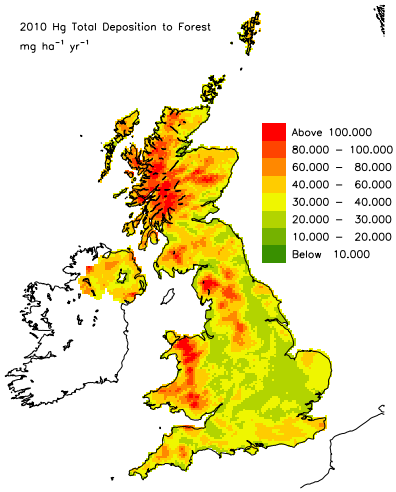
Cloud Deposition



Total Deposition to Grassland

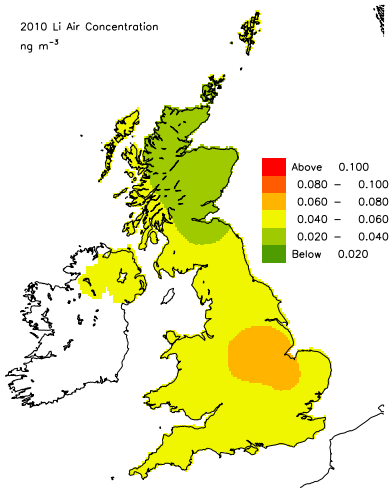


Total Deposition to Forest

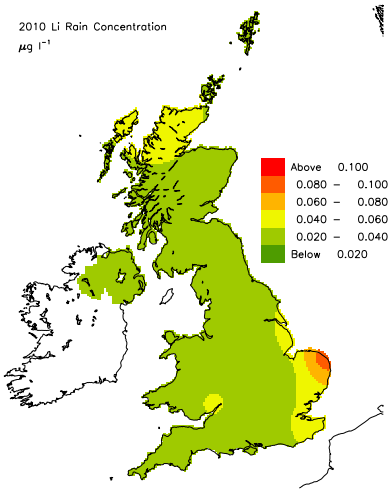


Metal: Lithium Year: 2010

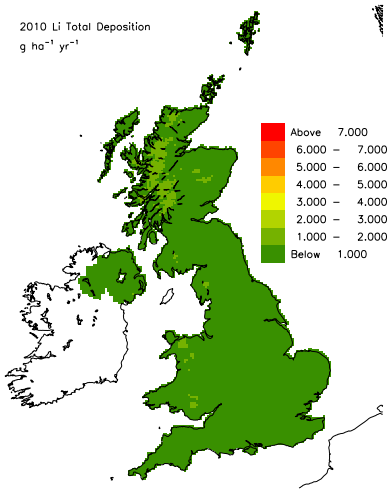
Concentration in air



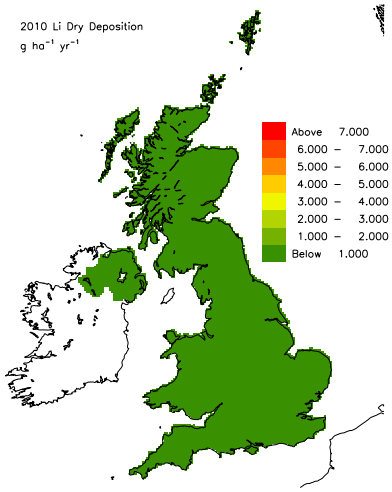
Concentration in rain



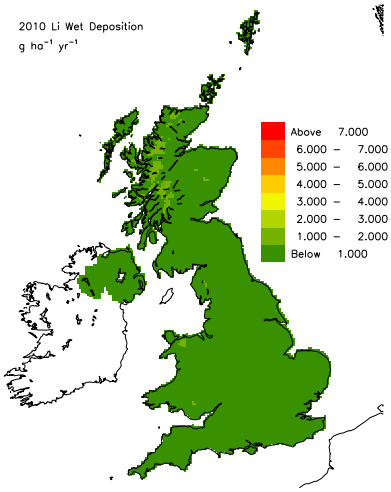
Total Deposition



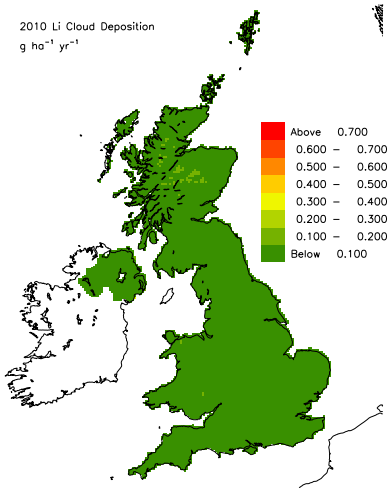
Dry Deposition



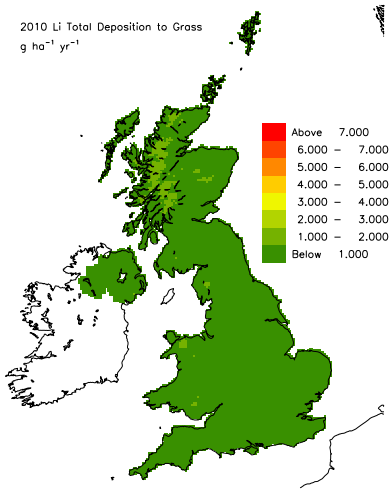
Wet Deposition



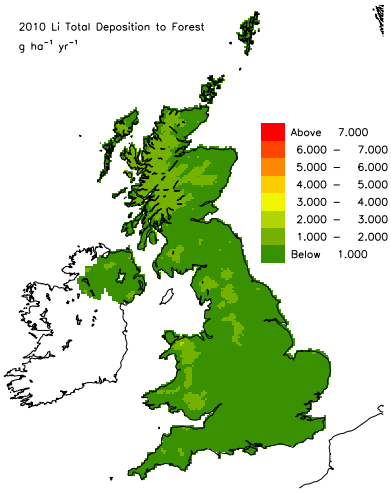
Cloud Deposition



Total Deposition to Grassland

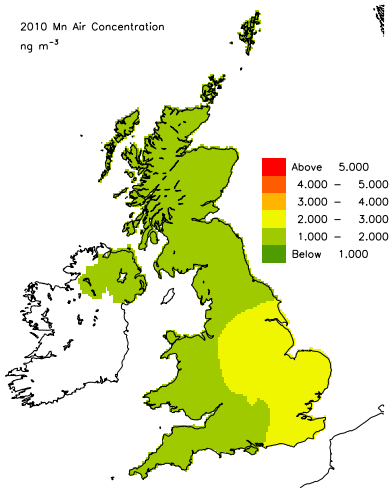


Total Deposition to Forest

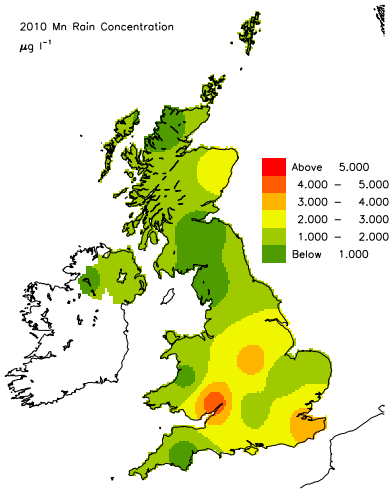


Metal: Manganese Year: 2010

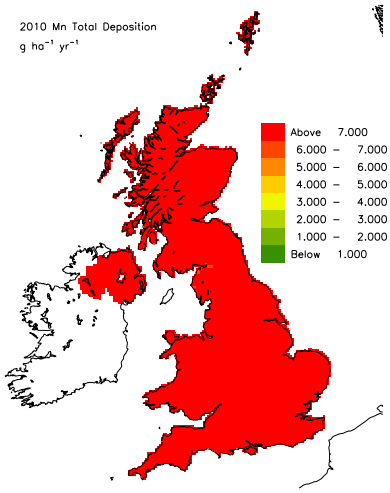
Concentration in air



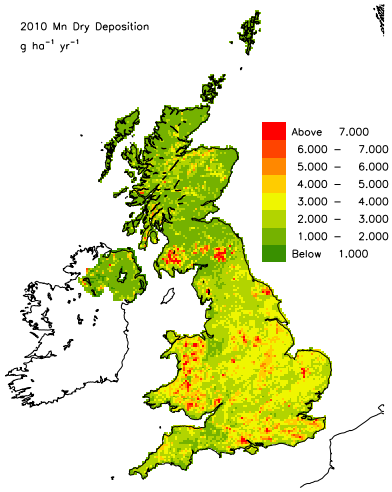
Concentration in rain



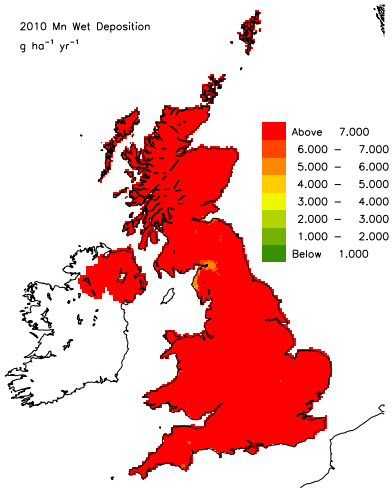
Total Deposition



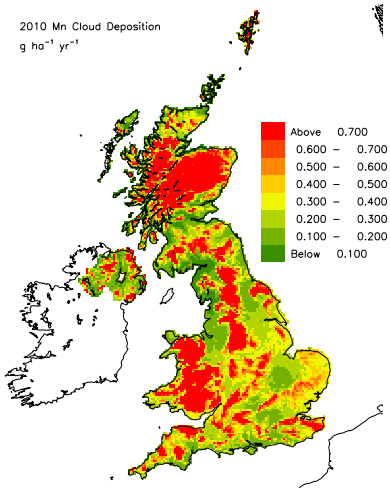
Dry Deposition



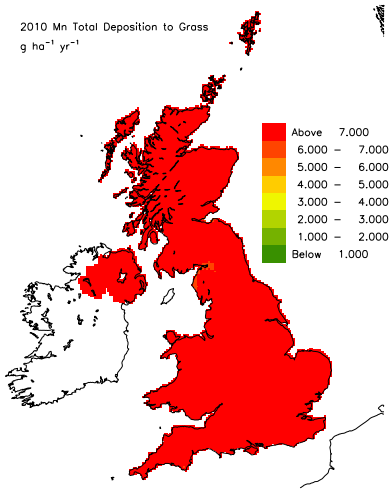
Wet Deposition



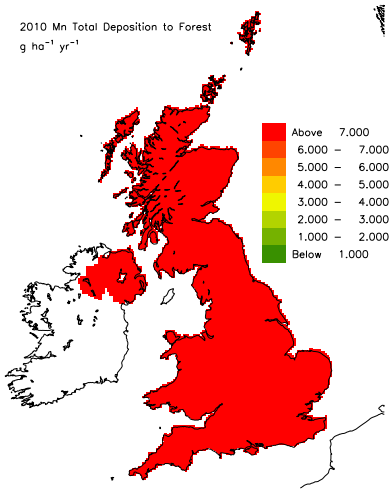
Cloud Deposition



Total Deposition to Grassland

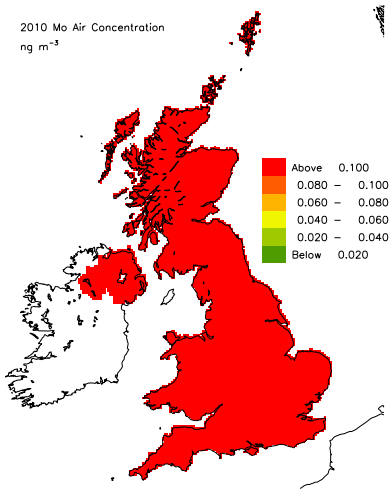


Total Deposition to Forest

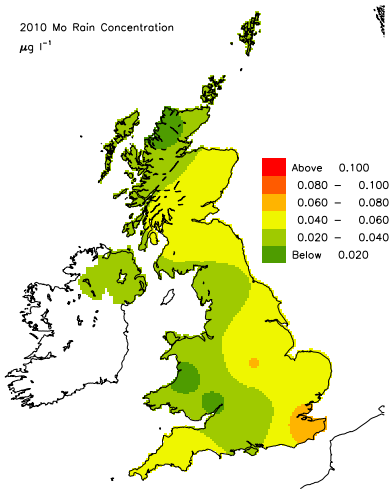


Metal: Molybdenum Year: 2010

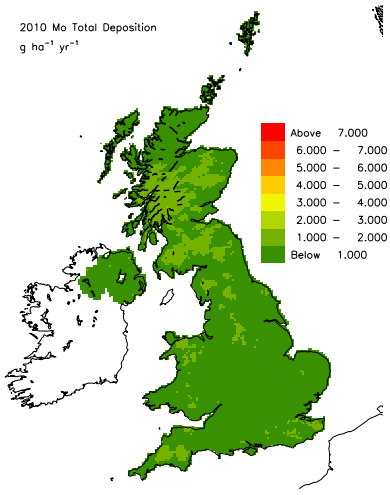
Concentration in air



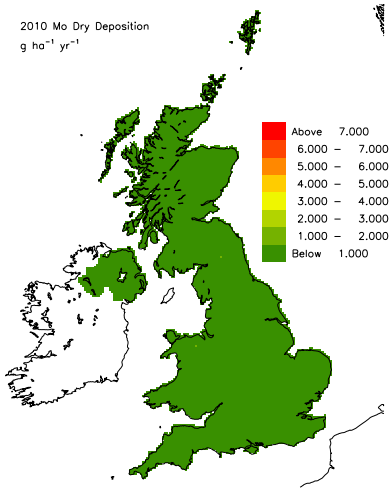
Concentration in rain



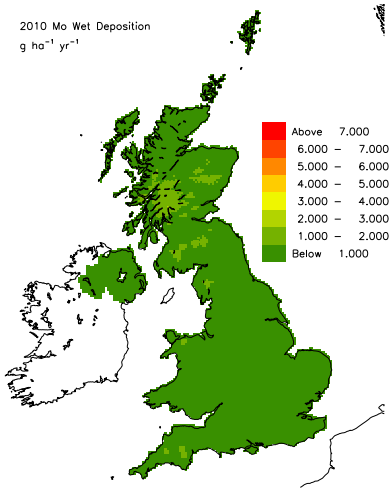
Total Deposition



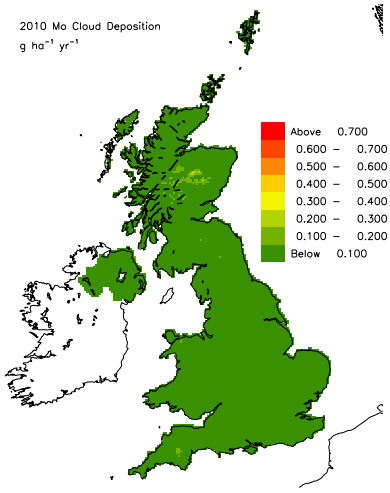
Dry Deposition



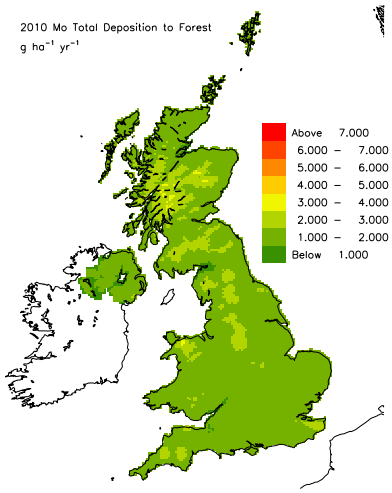
Wet Deposition



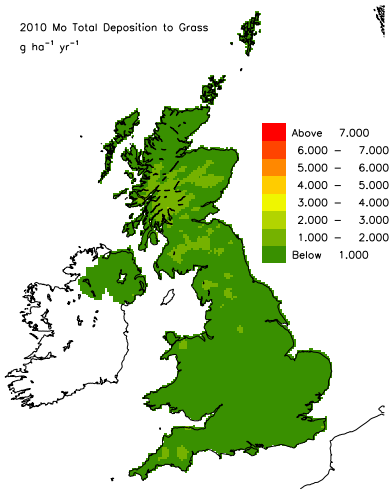
Cloud Deposition



Total Deposition to Grassland

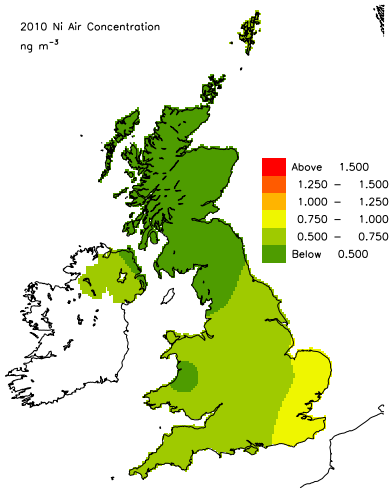


Total Deposition to Forest

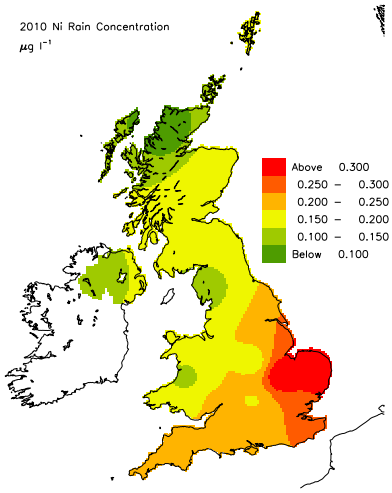


Metal: Nickel Year: 2010

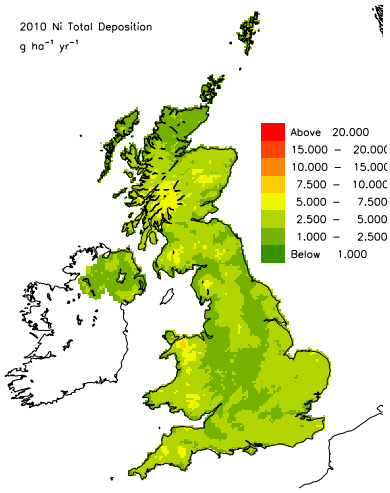
Concentration in air



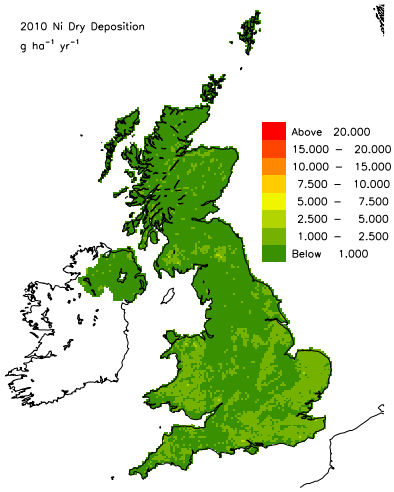
Concentration in rain



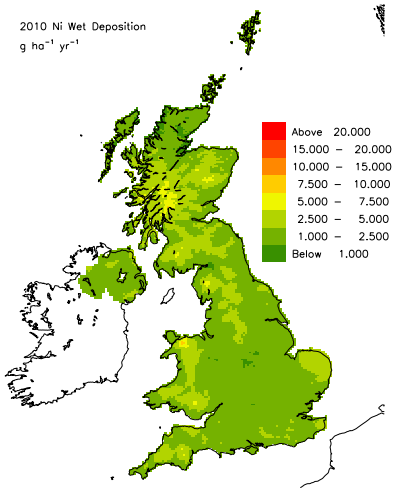
Total Deposition



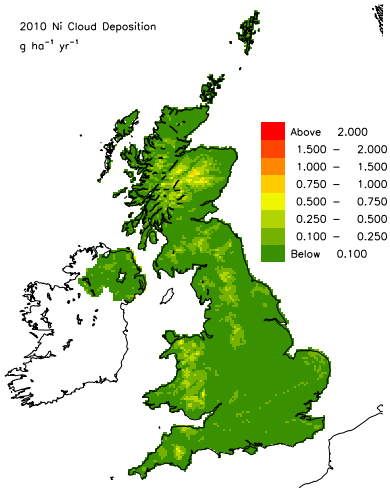
Dry Deposition



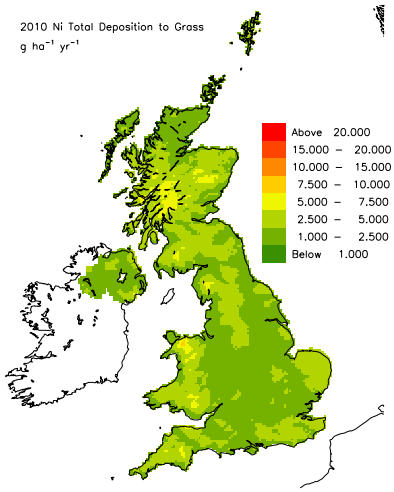
Wet Deposition



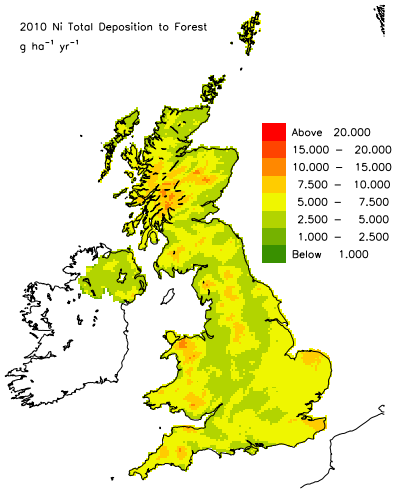
Cloud Deposition



Total Deposition to Grassland

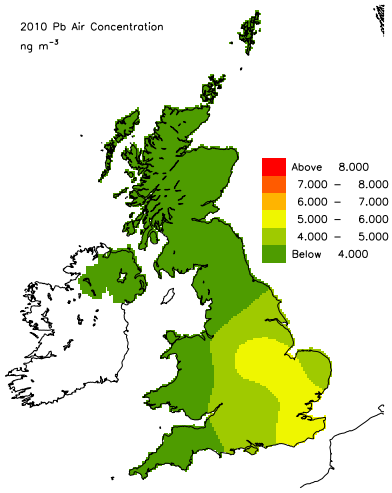


Total Deposition to Forest

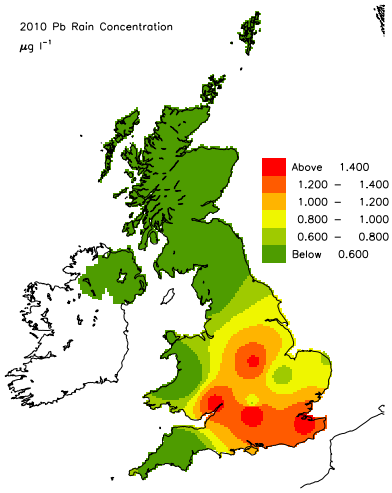


Metal: Lead Year: 2010

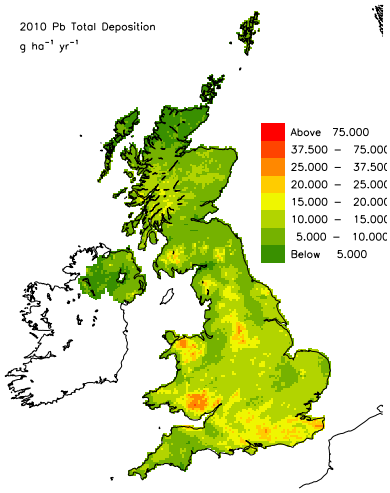
Concentration in air



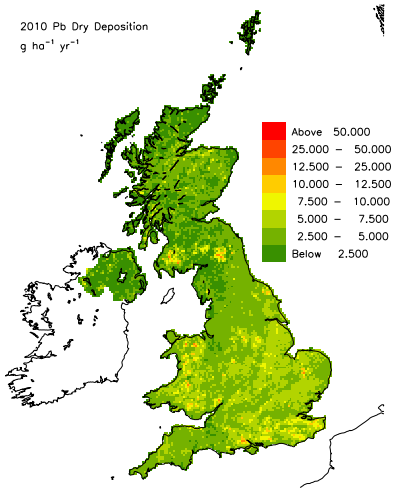
Concentration in rain



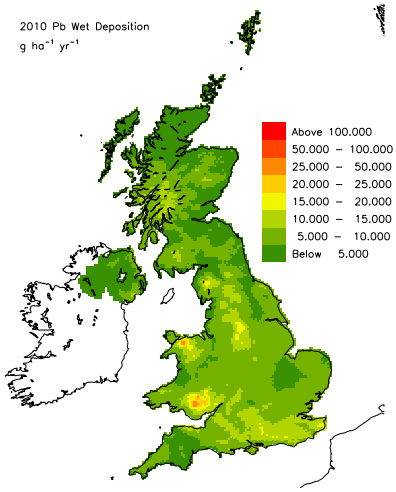
Total Deposition



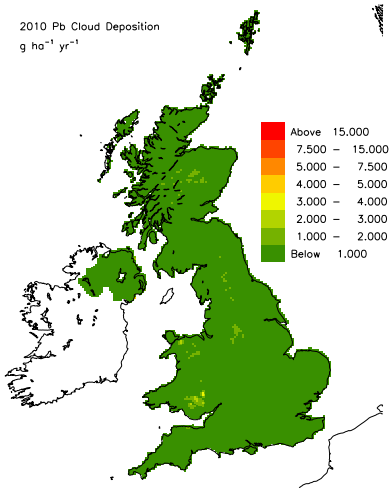
Dry Deposition



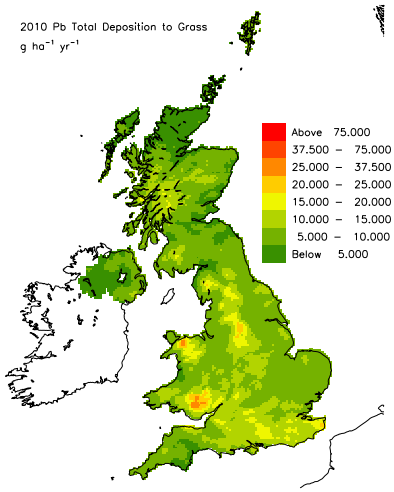
Wet Deposition



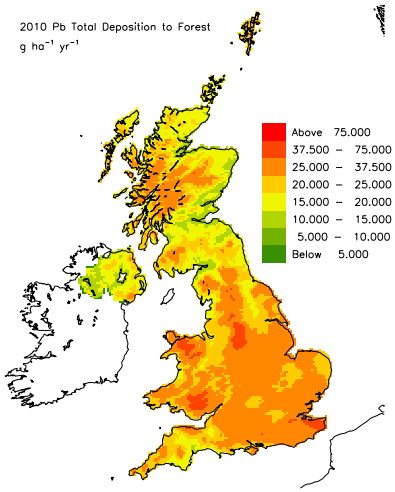
Cloud Deposition



Total Deposition to Grassland

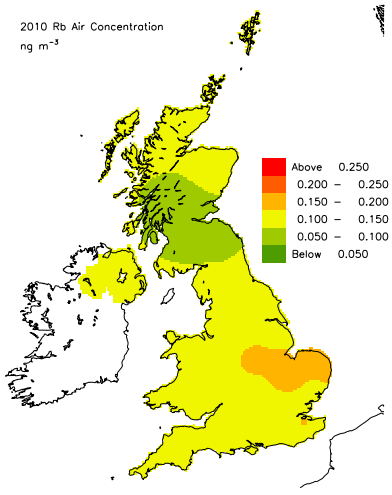


Total Deposition to Forest

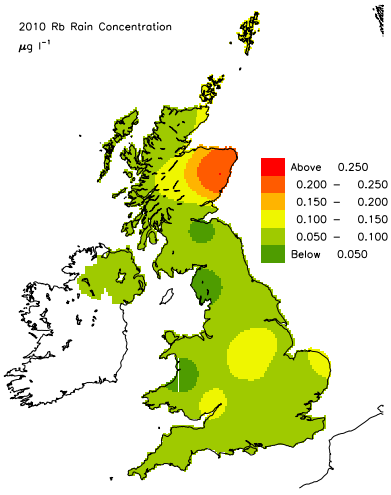


Metal: Rubidium Year: 2010

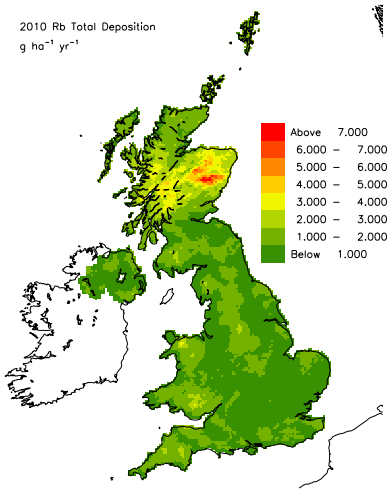
Concentration in air



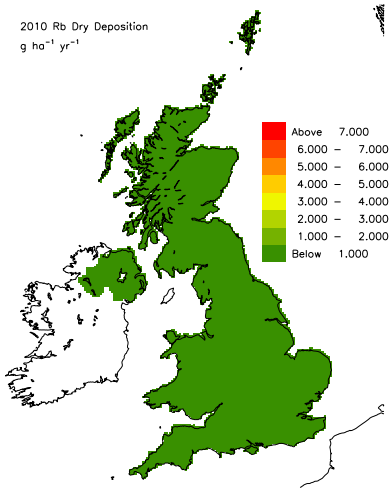
Concentration in rain



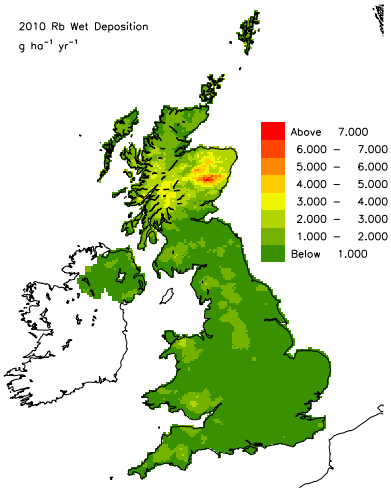
Total Deposition



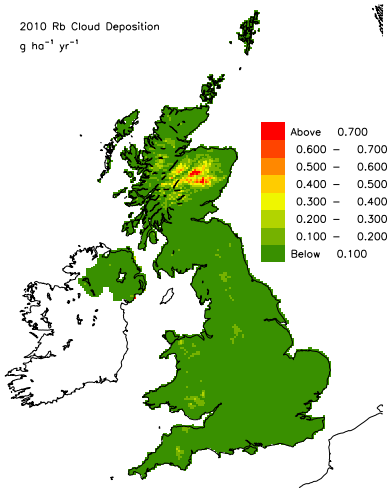
Dry Deposition



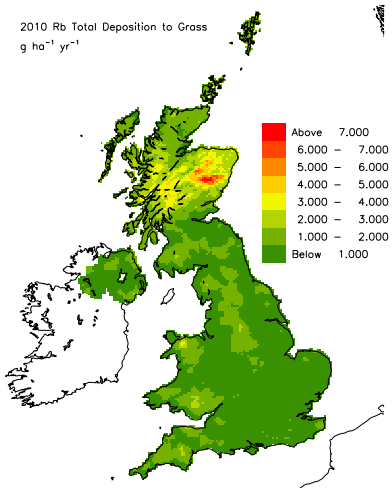
Wet Deposition



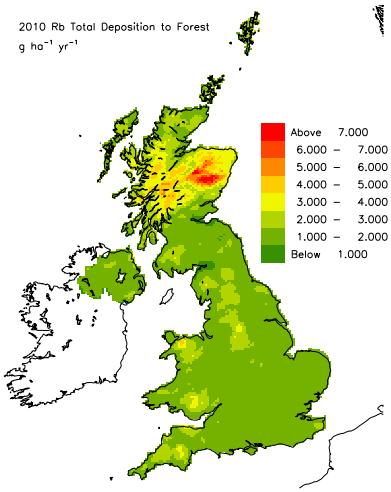
Cloud Deposition



Total Deposition to Grassland

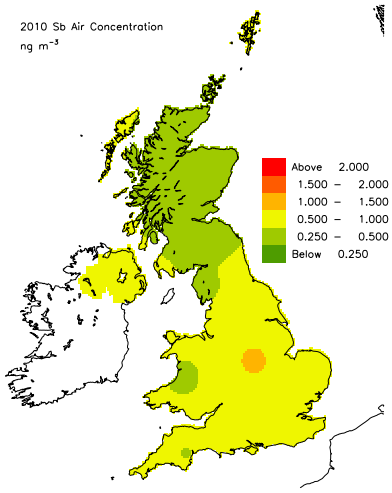


Total Deposition to Forest

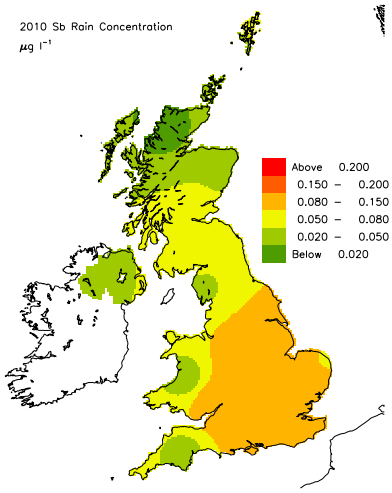


Metal: Antimony Year: 2010

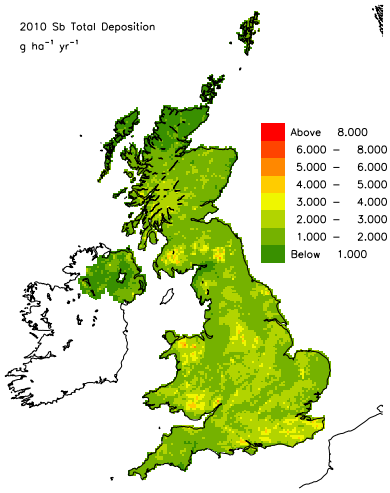
Concentration in air



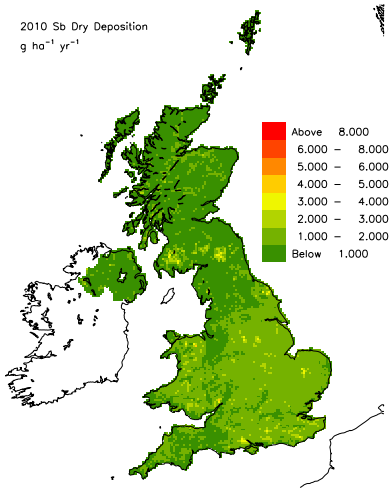
Concentration in rain



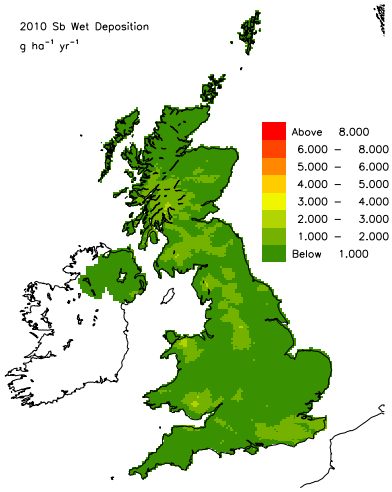
Total Deposition



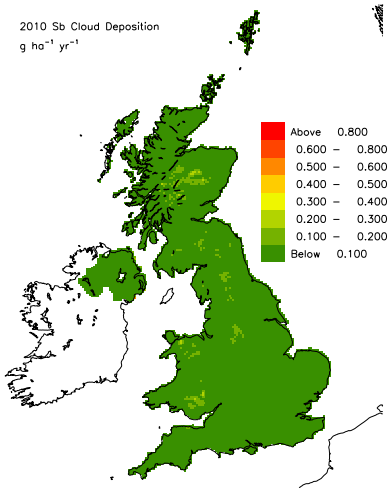
Dry Deposition



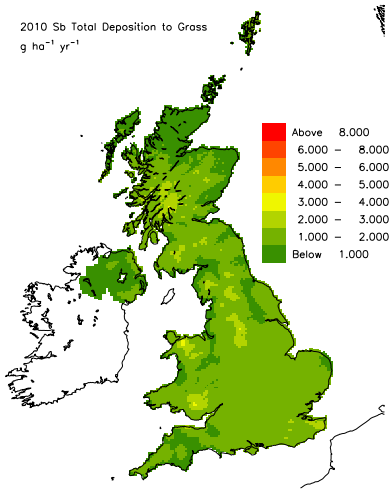
Wet Deposition



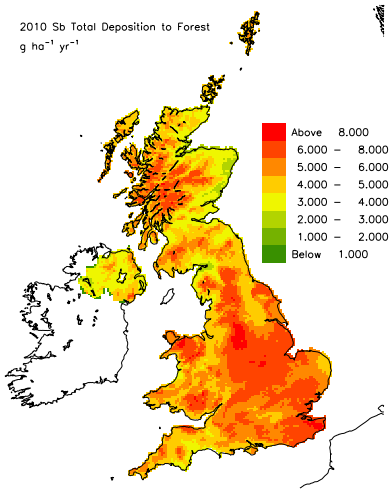
Cloud Deposition



Total Deposition to Grassland

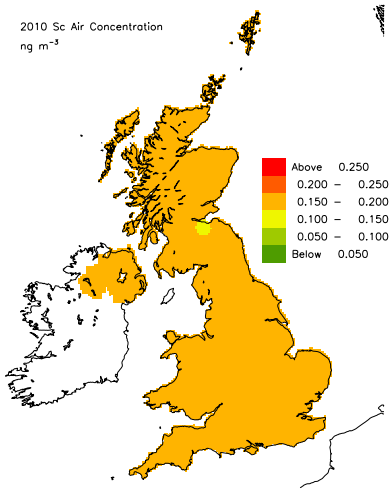


Total Deposition to Forest

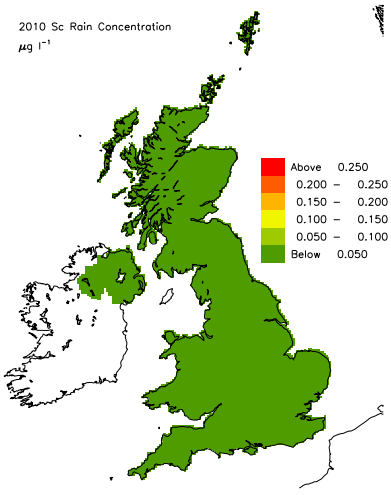


Metal: Scandium Year: 2010

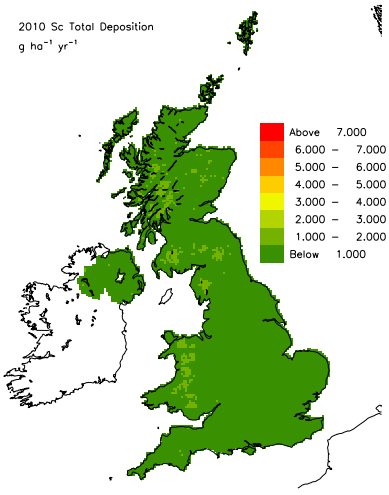
Concentration in air



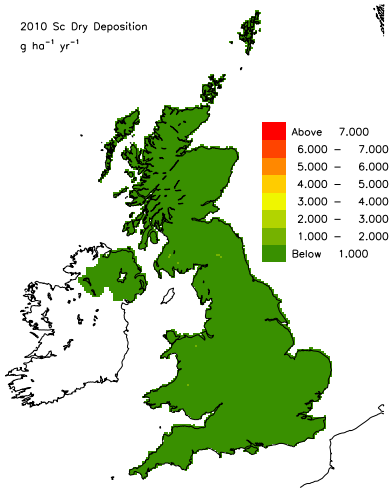
Concentration in rain



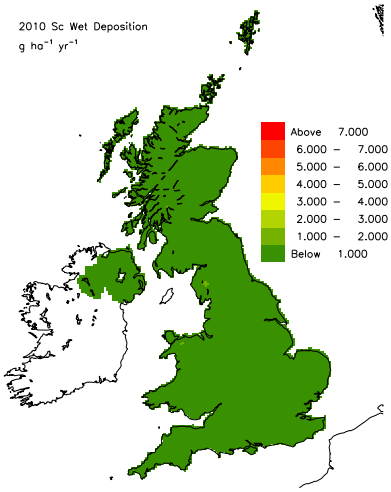
Total Deposition



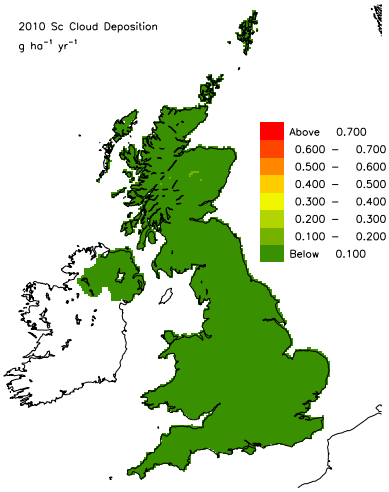
Dry Deposition



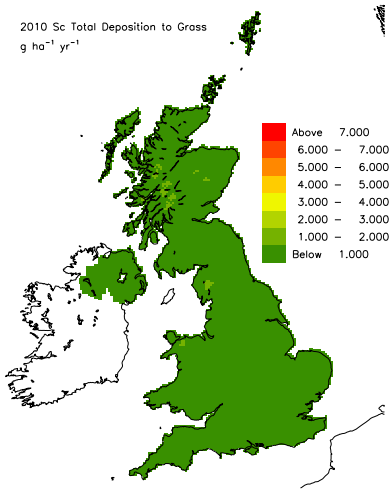
Wet Deposition



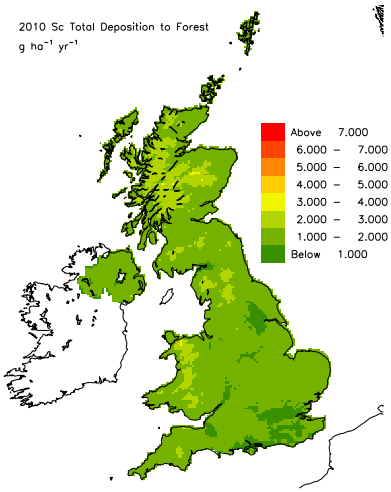
Cloud Deposition



Total Deposition to Grassland

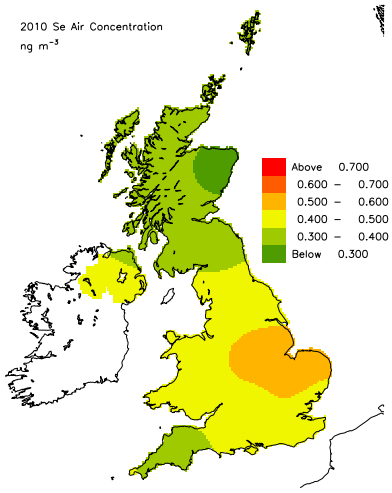


Total Deposition to Forest

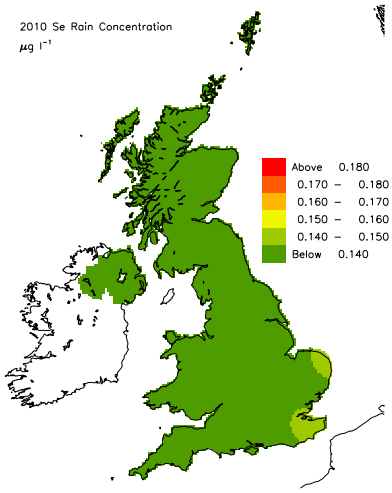


Metal: Selenium Year: 2010

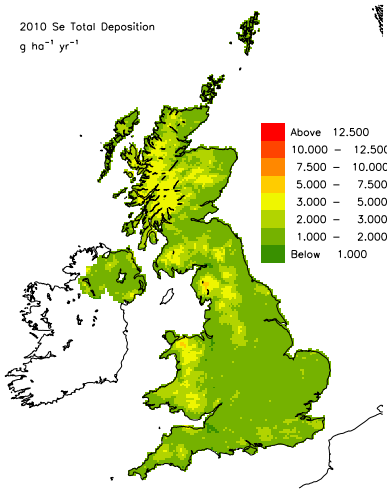
Concentration in air



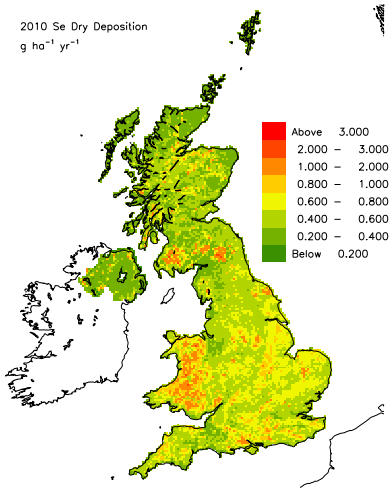
Concentration in rain



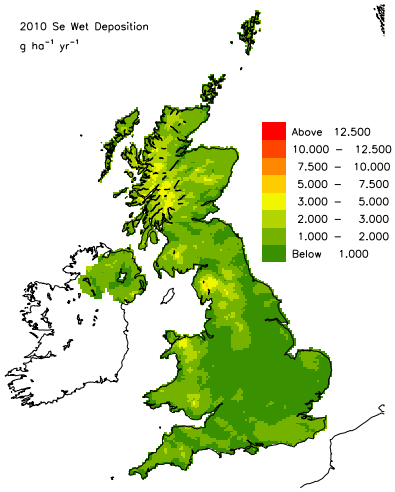
Total Deposition



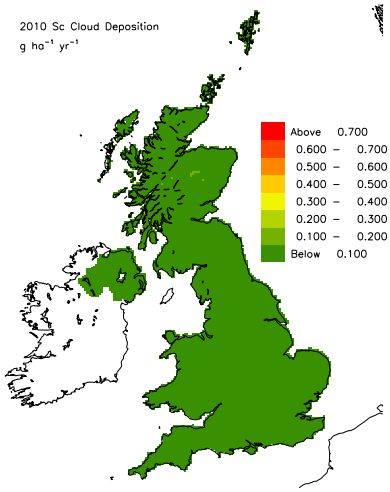
Dry Deposition



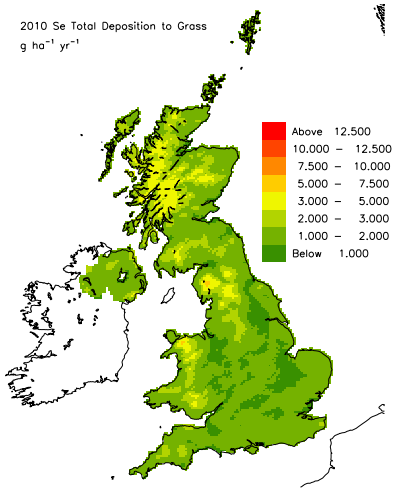
Wet Deposition



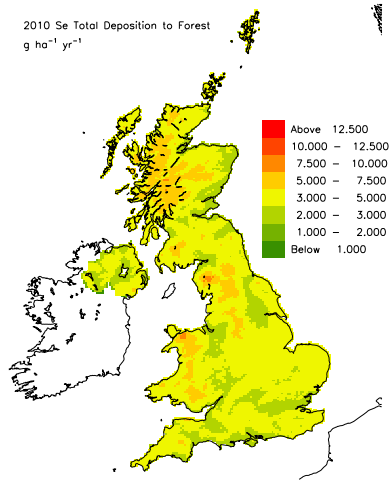
Cloud Deposition



Total Deposition to Grassland



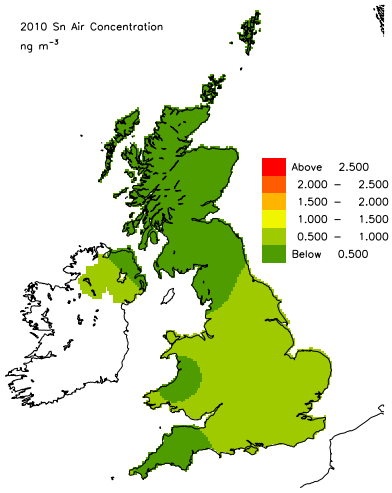
Total Deposition to Forest



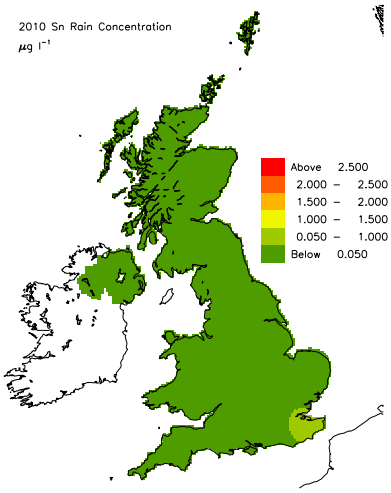
Metal: Tin

Year: 2010

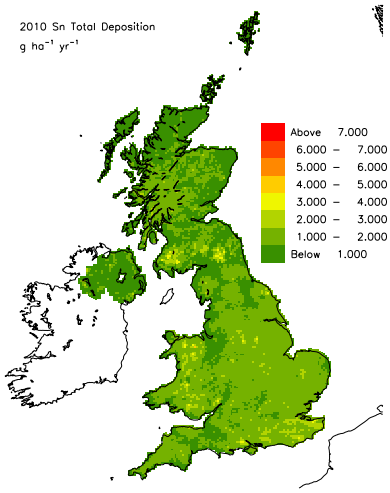
Concentration in air



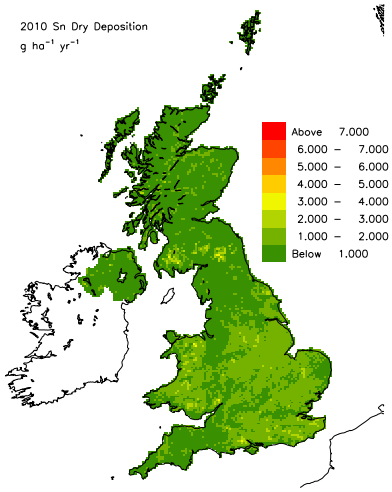
Concentration in rain



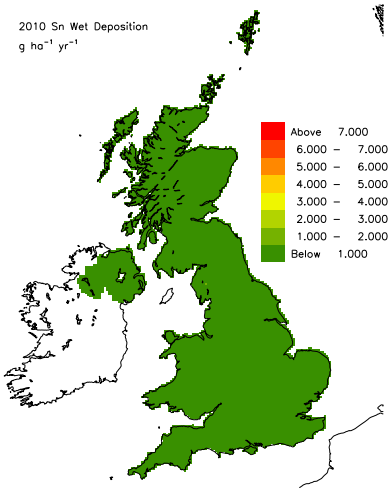
Total Deposition



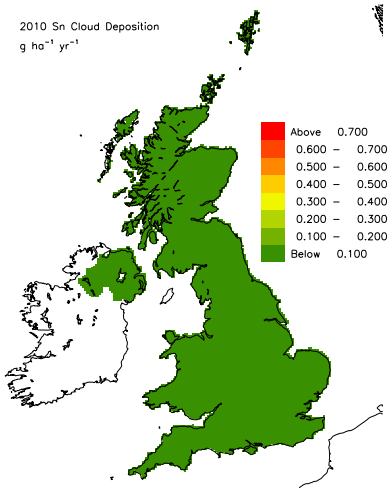
Dry Deposition



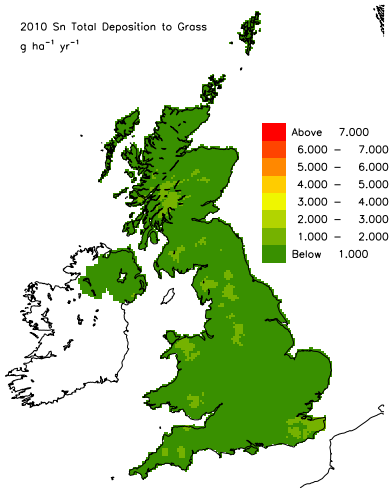
Wet Deposition



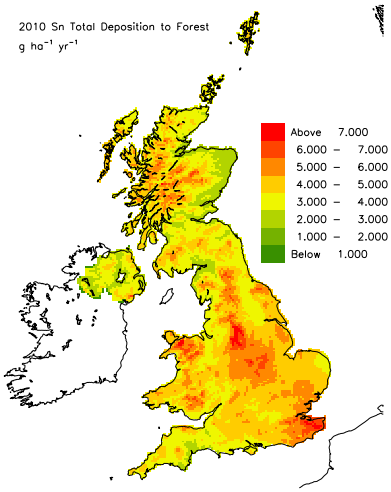
Cloud Deposition



Total Deposition to Grassland

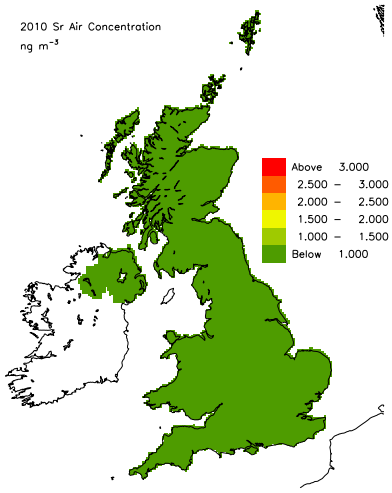


Total Deposition to Forest

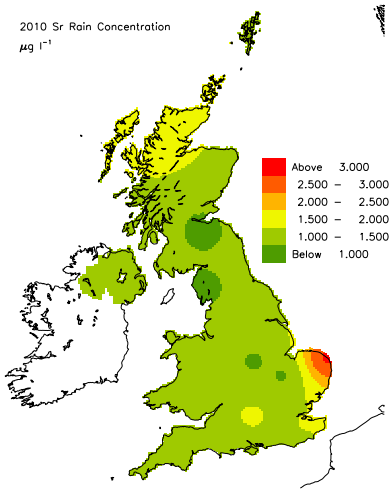


Metal: Strontium Year: 2010

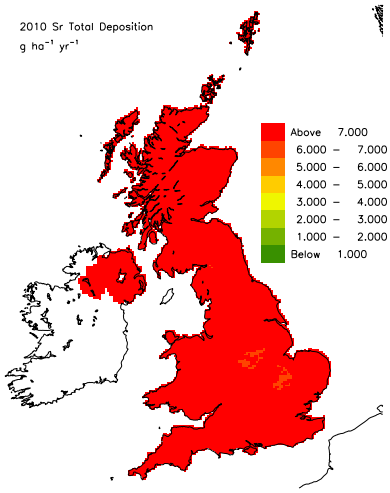
Concentration in air



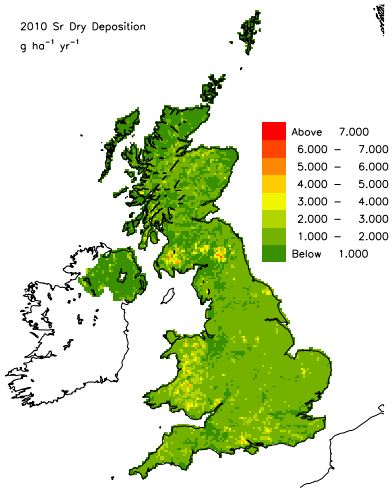
Concentration in rain



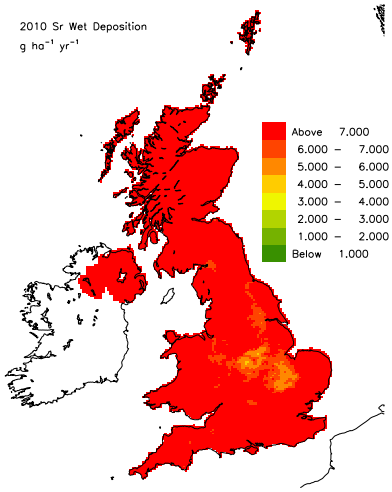
Total Deposition



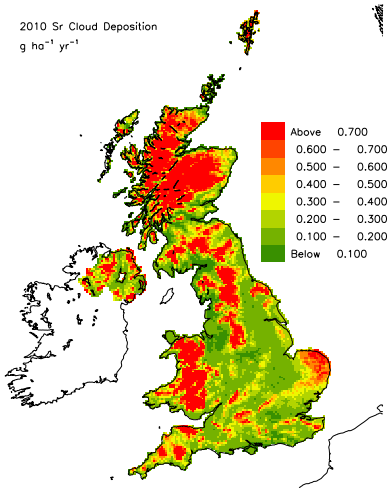
Dry Deposition



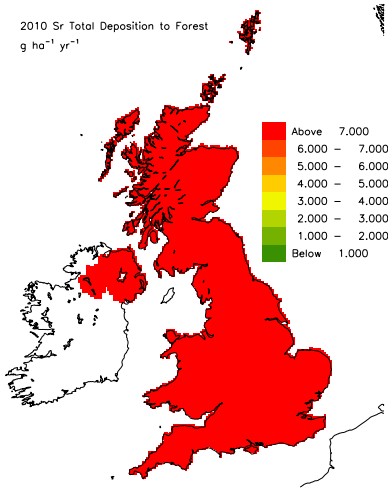
Wet Deposition



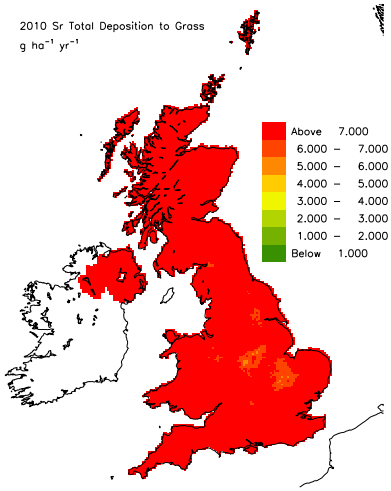
Cloud Deposition



Total Deposition to Grassland

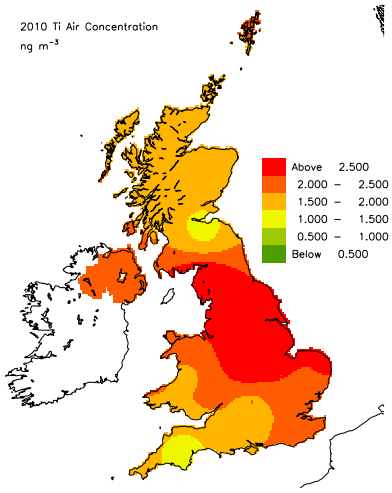


Total Deposition to Forest

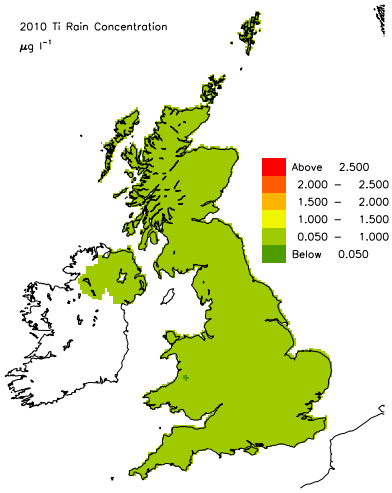


Metal: Titanium Year: 2010

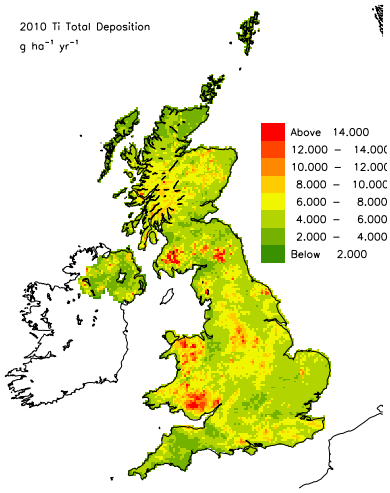
Concentration in air



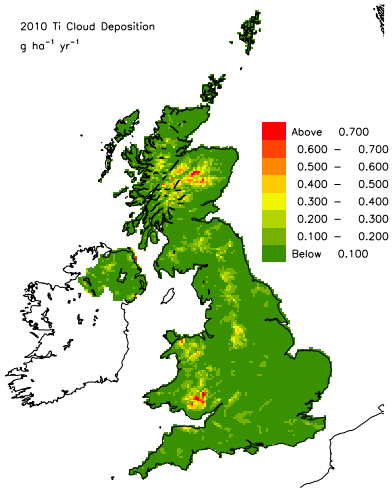
Concentration in rain



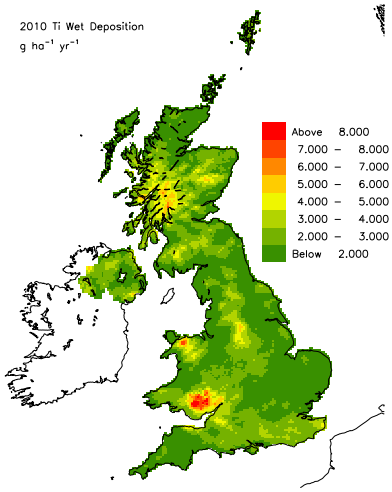
Total Deposition



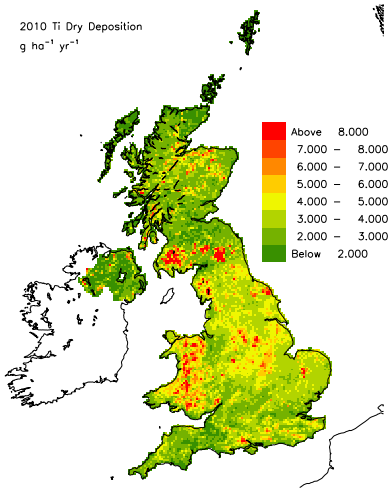
Dry Deposition



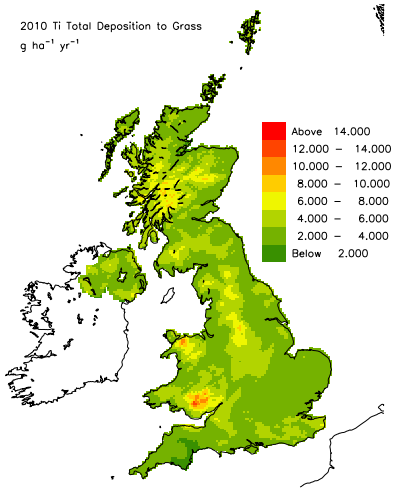
Wet Deposition



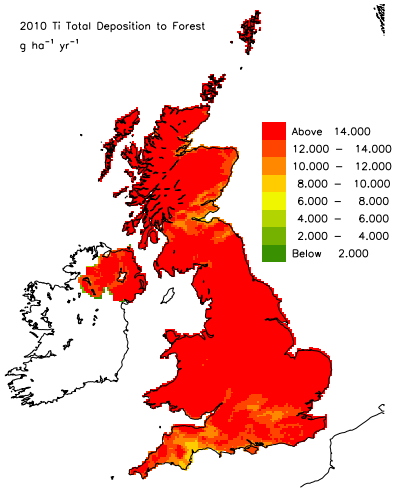
Cloud Deposition



Total Deposition to Grassland

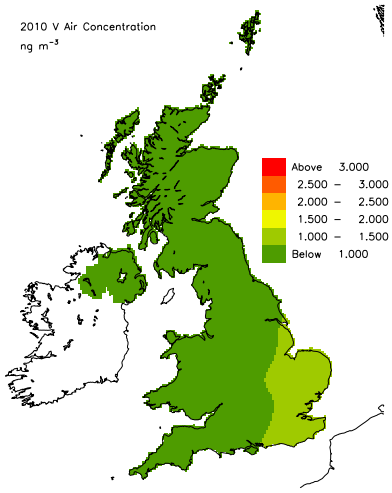


Total Deposition to Forest

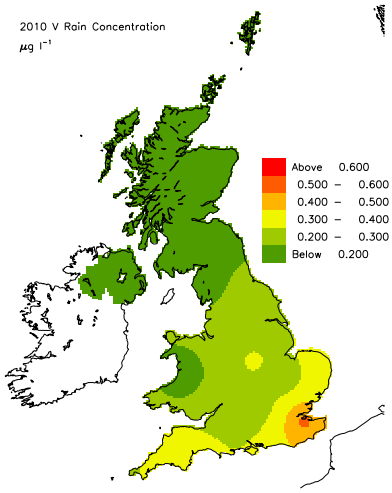


Metal: Vanadium Year: 2010

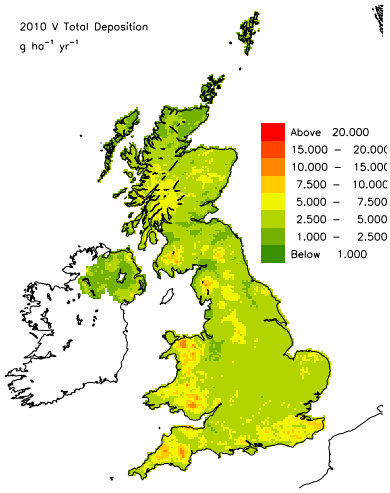
Concentration in air



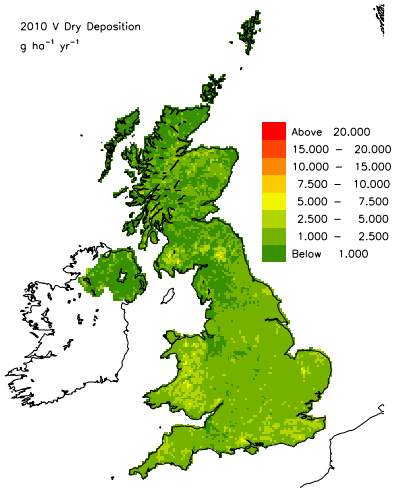
Concentration in rain



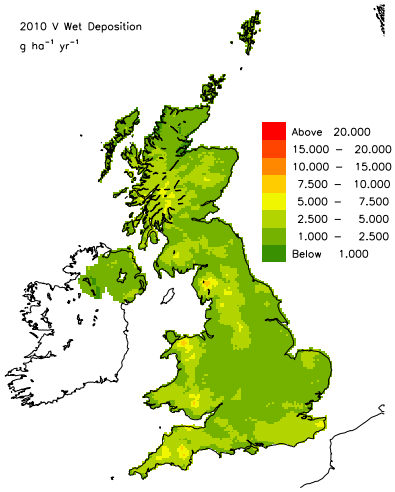
Total Deposition



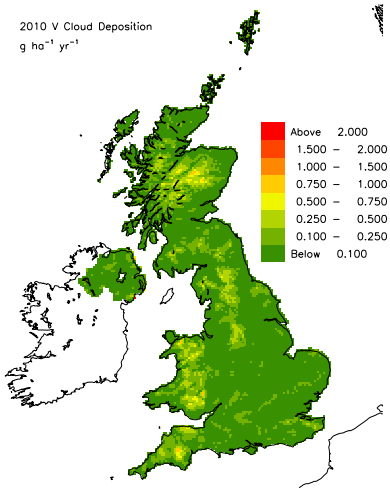
Dry Deposition



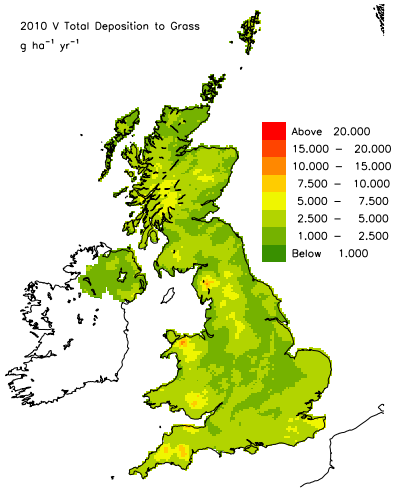
Wet Deposition



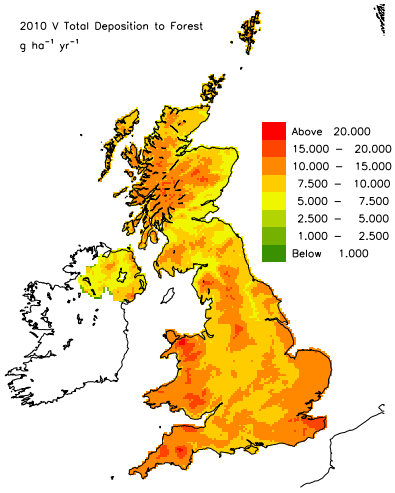
Cloud Deposition



Total Deposition to Grassland

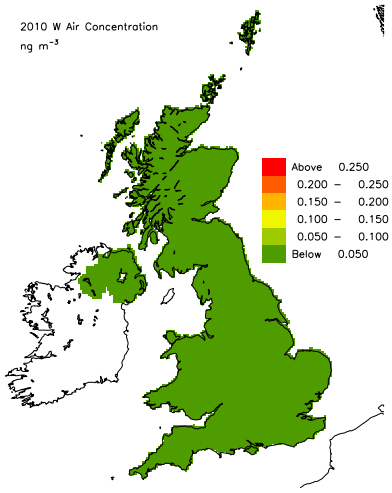


Total Deposition to Forest

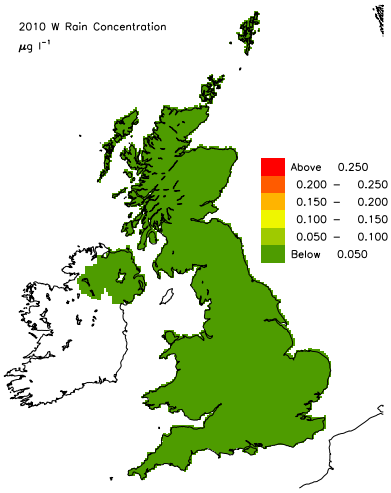


Metal: Tungsten Year: 2010

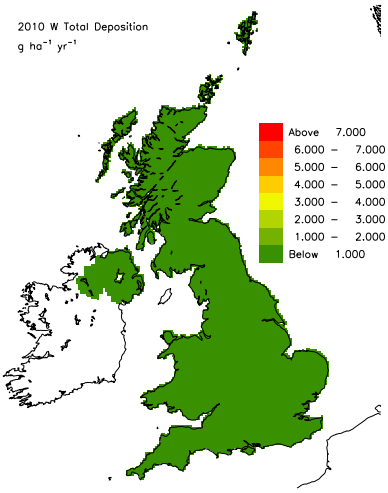
Concentration in air



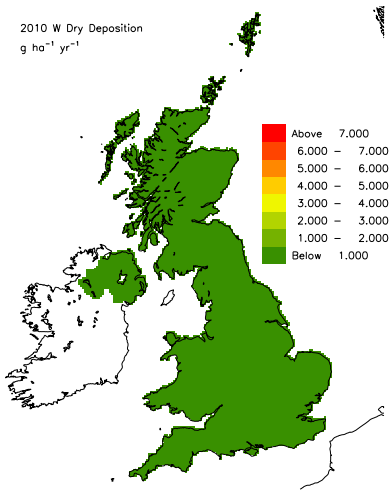
Concentration in rain



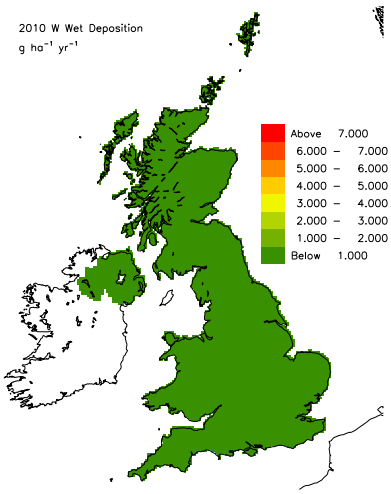
Total Deposition



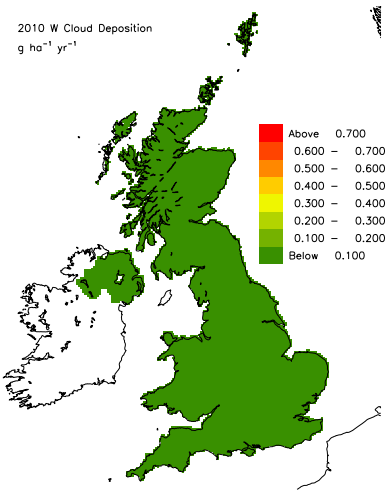
Dry Deposition



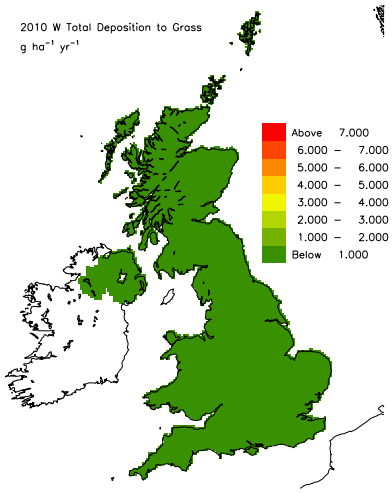
Wet Deposition



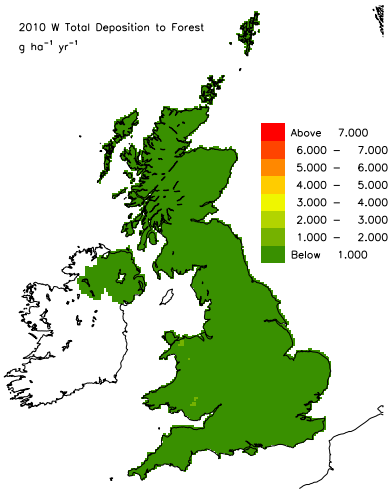
Cloud Deposition



Total Deposition to Grassland

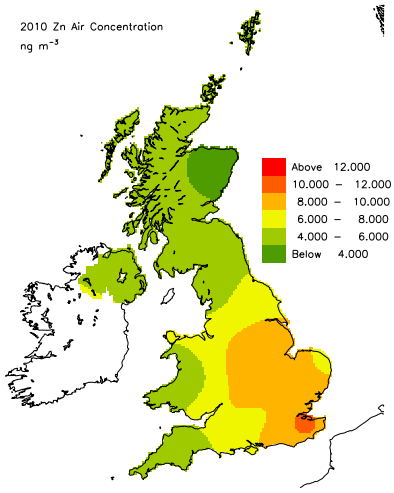


Total Deposition to Forest

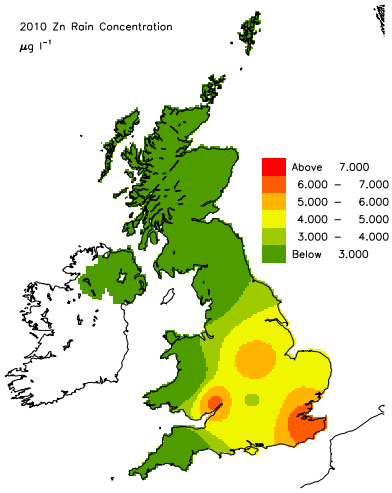


Metal: Zinc — Year: 2010

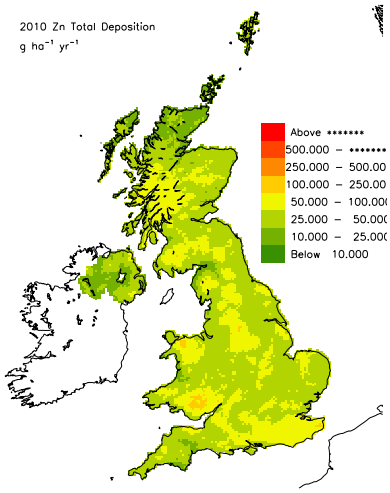
Concentration in air



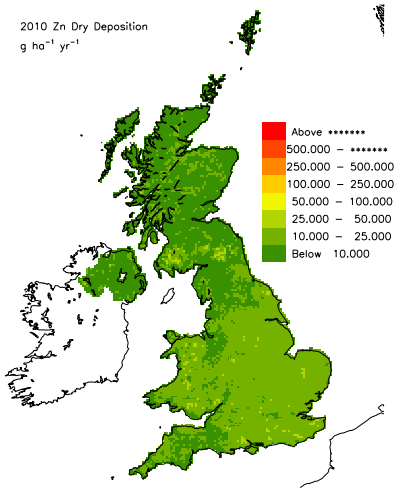
Concentration in rain



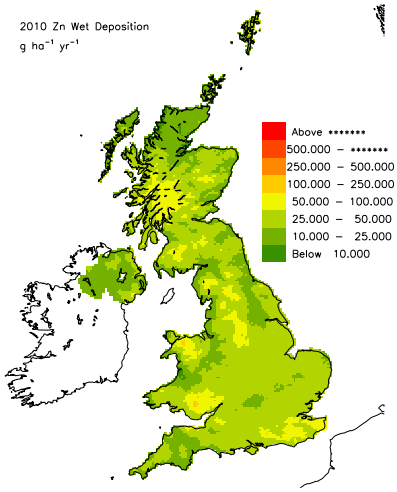
Total Deposition



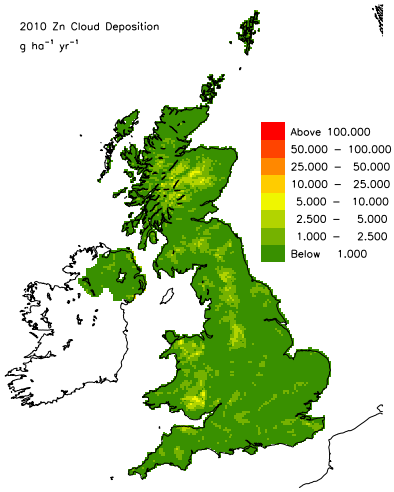
Dry Deposition



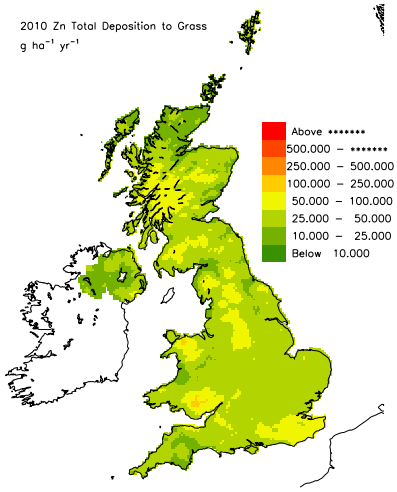
Wet Deposition



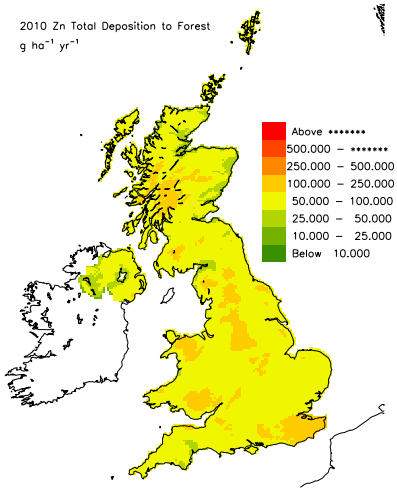
Cloud Deposition



Total Deposition to Grassland



Total Deposition to Forest



Additional Activities Relevant to the Project

All concentrations and annual averages were submitted to AEA in time for inclusion in the UK reporting questionnaire for compliance with the EU Framework Directive on Air Quality and the OSPAR convention.

Two papers have been published in the scientific literature, one covering concentrations of total gaseous mercury across the UK, and one outlining the methodologies used in the monitoring scheme for collection and analysis of samples. The reference details are as follows:

- Kentisbeer, J., Leaver, D., and Cape, J.N. (2011) An analysis of total gaseous mercury (TGM) concentrations across the UK from a rural sampling network. *Journal of Environmental Monitoring* ***13 (6),*** *1653-1661.*

- Malcolm, H & Crossley, A (2010) Heavy Metals Monitoring: Monitoring Airborne Heavy Metals in Rural Areas. *AWE International* **23** 58-61

Two additional papers are currently being prepared for submission to peer reviewed journals, one examining the discrepancy between reported emissions and calculated deposition of heavy metals in the UK, and one on improving the representation of heavy metal data in atmospheric models.

The whole of the Rural Heavy Metals dataset is being prepared for inclusion in the EMEP database. Previously only the data from the Auchencorth sire were included in the EMEP database.

The CEH Pollutant Deposition website is currently being transformed to match Defra's agreed web style. The new version of this website will allow users to download the data of interest.

References

Malcolm, H., Fowler, D., Crossley, A., Kentisbeer, J., Hallsworth, S., Lawlor, A., Rowland, P., Guyatt, H., Thacker, S., Halford, A., Rogers, S., Cape, J.N., Harmens, H., Nemitz, E., Leaver, D., Robinson, L., Sleep, D., Woods, C., Hockenhull, K., McDonald, A., and Ainsworth, G. (2010): Heavy Metal Deposition Mapping: Concentrations and Deposition of Heavy Metals in Rural Areas of the UK. Draft Report for Comment, pp. 94, Contract Report to the Department for Environment, Food and Rural Affairs, Centre for Ecology and Hydrology, Edinburgh.