

1    **Supplementary information to**

2    **Southern hemispheric halon trends and global halon**  
3    **emissions, 1978-2011**

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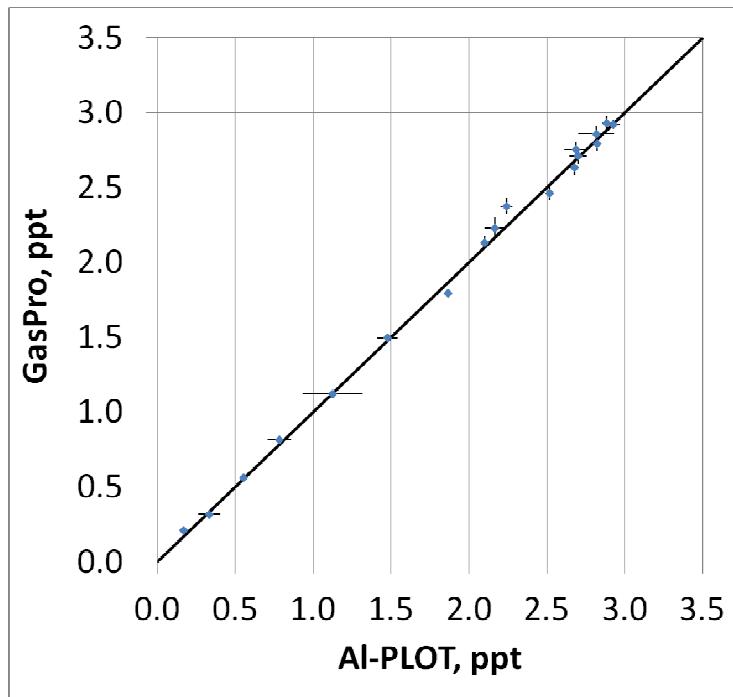
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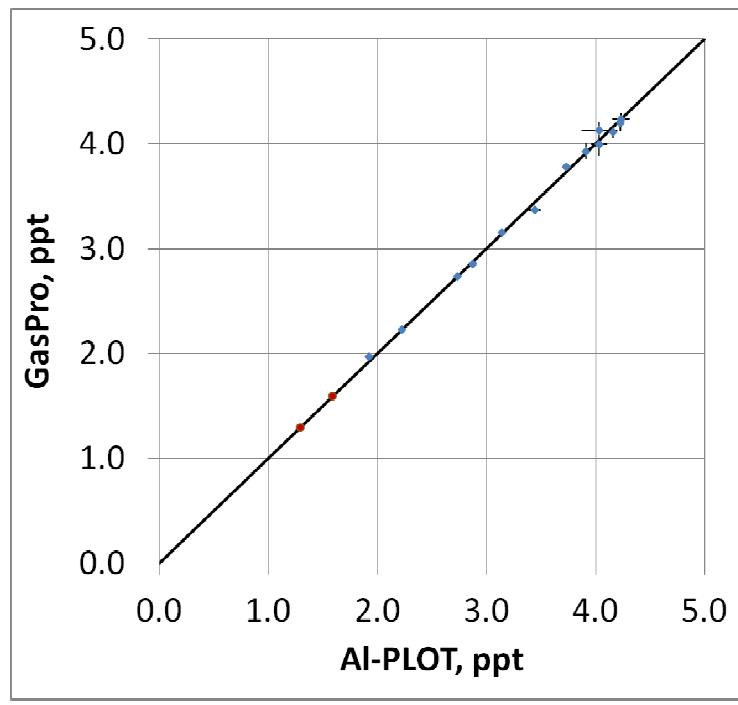
12    Correspondence to: M. J. Newland (m.newland@uea.ac.uk)

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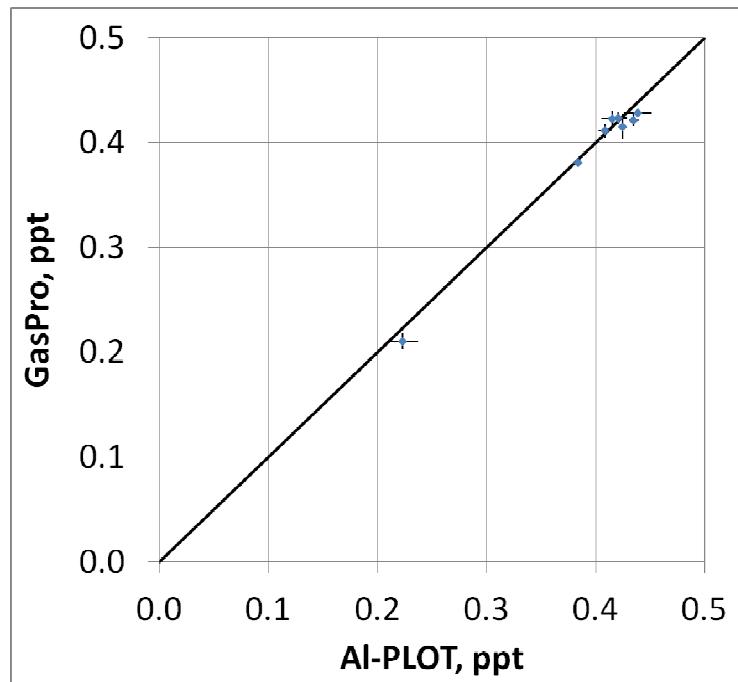
15    Figure S1. Comparison of mixing ratios of H-1301 measured on the AI-PLOT column and on  
16    the GasPro column.



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2 Figure S2. Comparison of mixing ratios of H-1211 measured on the Al-PLOT column and on  
3 the GasPro column.

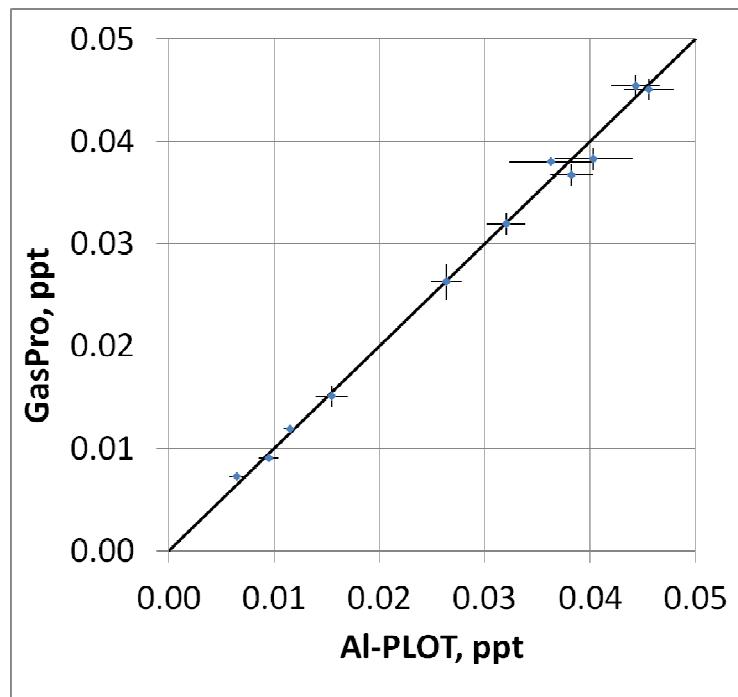
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6 Figure S3. Comparison of mixing ratios of H-2402 measured on the Al-PLOT column and on  
7 the GasPro column.

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2     Figure S4. Comparison of mixing ratios of H-1202 measured on the Al-PLOT column and on  
3     the GasPro column.  
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1 **Table S1** Model fit trends at Cape Grim inferred from measurements from 1978 - 2011.

<b>Year</b>	<b>Cape Grim Mixing Ratio</b>				<b>Measurement Uncertainty</b>			
	<b>from model fit [ppt]</b>				<b>Average [ppt]</b>			
	<b>H-1301</b>	<b>H-1211</b>	<b>H-1202</b>	<b>H-2402</b>	<b>H-1301</b>	<b>H-1211</b>	<b>H-1202</b>	<b>H-2402</b>
<b>1978</b>	0.20	0.42	0.007	0.09	0.010	0.008	0.001	0.004
<b>1979</b>	0.25	0.51	0.008	0.11	0.010	0.016	0.000	0.003
<b>1980</b>	0.32	0.61	0.009	0.12	0.024	0.012	0.001	0.006
<b>1981</b>	0.39	0.73	0.010	0.14	0.017	0.013	0.001	0.006
<b>1982</b>	0.46	0.86	0.011	0.16	0.009	0.013	0.000	0.006
<b>1983</b>	0.54	0.99	0.012	0.17	0.011	0.011	0.001	0.008
<b>1984</b>	0.64	1.13	0.013	0.19	0.020	0.013	0.001	0.007
<b>1985</b>	0.76	1.28	0.014	0.21	0.028	0.014	0.001	0.007
<b>1986</b>	0.91	1.46	0.016	0.23	0.018	0.014	0.000	0.007
<b>1987</b>	1.11	1.64	0.018	0.24	0.043	0.014	0.001	0.007
<b>1988</b>	1.32	1.82	0.020	0.26	0.022	0.019	0.001	0.006
<b>1989</b>	1.52	2.00	0.021	0.28	0.027	0.023	0.001	0.006
<b>1990</b>	1.69	2.18	0.022	0.31	0.042	0.022	0.001	0.006
<b>1991</b>	1.84	2.36	0.023	0.33	0.027	0.029	0.001	0.008
<b>1992</b>	1.98	2.56	0.024	0.35	0.044	0.025	0.001	0.008
<b>1993</b>	2.12	2.75	0.026	0.37	0.046	0.034	0.001	0.010
<b>1994</b>	2.25	2.94	0.028	0.39	0.042	0.048	0.001	0.010
<b>1995</b>	2.36	3.15	0.032	0.40	0.053	0.051	0.001	0.008
<b>1996</b>	2.45	3.36	0.037	0.41	0.047	0.030	0.001	0.009
<b>1997</b>	2.52	3.54	0.040	0.42	0.042	0.032	0.001	0.007
<b>1998</b>	2.60	3.67	0.043	0.42	0.053	0.041	0.001	0.008
<b>1999</b>	2.67	3.80	0.045	0.42	0.055	0.040	0.001	0.008
<b>2000</b>	2.73	3.92	0.046	0.42	0.043	0.042	0.001	0.008
<b>2001</b>	2.78	4.00	0.045	0.42	0.053	0.041	0.001	0.009
<b>2002</b>	2.82	4.07	0.043	0.42	0.032	0.043	0.001	0.006
<b>2003</b>	2.87	4.12	0.041	0.42	0.057	0.051	0.001	0.009
<b>2004</b>	2.93	4.17	0.038	0.42	0.049	0.052	0.002	0.011
<b>2005</b>	2.99	4.20	0.035	0.42	0.062	0.039	0.001	0.003
<b>2006</b>	3.03	4.20	0.032	0.41	0.059	0.040	0.001	0.006
<b>2007</b>	3.06	4.18	0.029	0.41	0.077	0.035	0.001	0.003
<b>2008</b>	3.09	4.14	0.026	0.40	0.049	0.047	0.001	0.006
<b>2009</b>	3.11	4.10	0.024	0.40	0.017	0.019	0.001	0.003
<b>2010</b>	3.14	4.04	0.021	0.40	0.023	0.013	0.001	0.004
<b>2011</b>	3.16	3.97	0.019	0.39	0.030	0.036	0.001	0.006

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1 **Table S2** Model derived annual global emissions (Gg) for the halons from 1978 - 2010.  
 2 Based on the reported lifetimes of Montzka and Reimann et al. (2011).

Year	Model Derived Global Emissions, Gg				Emission Uncertainty, Gg			
	H-1301	H-1211	H-1202	H-2402	H-1301	H-1211	H-1202	H-2402
<b>1978</b>	1.54	3.27	0.16	0.87	0.08	0.17	0.01	0.05
<b>1979</b>	1.73	4.05	0.19	0.91	0.09	0.21	0.01	0.05
<b>1980</b>	1.86	4.79	0.20	0.99	0.10	0.24	0.01	0.05
<b>1981</b>	2.08	4.99	0.22	1.07	0.11	0.25	0.01	0.06
<b>1982</b>	2.34	5.28	0.25	1.13	0.12	0.27	0.01	0.06
<b>1983</b>	2.68	5.81	0.26	1.19	0.14	0.29	0.01	0.06
<b>1984</b>	3.25	6.64	0.29	1.25	0.17	0.34	0.02	0.07
<b>1985</b>	4.30	7.31	0.35	1.32	0.23	0.37	0.02	0.07
<b>1986</b>	5.67	8.32	0.37	1.36	0.30	0.42	0.02	0.07
<b>1987</b>	5.95	8.13	0.38	1.40	0.31	0.41	0.02	0.07
<b>1988</b>	5.72	8.43	0.39	1.60	0.30	0.43	0.02	0.09
<b>1989</b>	4.93	8.60	0.42	1.64	0.26	0.44	0.02	0.09
<b>1990</b>	4.47	9.17	0.44	1.74	0.24	0.47	0.02	0.09
<b>1991</b>	4.20	10.14	0.45	1.77	0.22	0.51	0.03	0.09
<b>1992</b>	4.37	10.24	0.48	1.75	0.23	0.52	0.03	0.09
<b>1993</b>	4.29	10.34	0.52	1.62	0.23	0.52	0.03	0.09
<b>1994</b>	3.74	11.10	0.71	1.42	0.20	0.56	0.04	0.08
<b>1995</b>	2.77	12.71	0.80	1.15	0.15	0.64	0.04	0.06
<b>1996</b>	2.93	10.59	0.82	0.99	0.15	0.54	0.05	0.05
<b>1997</b>	2.90	10.11	0.84	1.05	0.15	0.51	0.05	0.06
<b>1998</b>	2.83	10.00	0.83	1.05	0.15	0.51	0.05	0.06
<b>1999</b>	2.72	10.59	0.79	1.05	0.14	0.54	0.04	0.06
<b>2000</b>	2.29	8.82	0.74	1.05	0.12	0.45	0.04	0.06
<b>2001</b>	1.93	9.51	0.66	0.87	0.10	0.48	0.04	0.05
<b>2002</b>	2.43	8.13	0.59	0.82	0.13	0.41	0.03	0.04
<b>2003</b>	2.61	9.21	0.57	0.80	0.14	0.47	0.03	0.04
<b>2004</b>	2.86	8.43	0.49	0.78	0.15	0.43	0.03	0.04
<b>2005</b>	1.86	7.07	0.44	0.74	0.10	0.36	0.02	0.04
<b>2006</b>	2.13	6.66	0.38	0.72	0.11	0.34	0.02	0.04
<b>2007</b>	1.77	6.22	0.36	0.71	0.09	0.32	0.02	0.04
<b>2008</b>	1.85	6.13	0.30	0.73	0.10	0.31	0.02	0.04
<b>2009</b>	1.85	5.64	0.27	0.73	0.10	0.29	0.02	0.04
<b>2010</b>	1.85	4.95	0.26	0.72	0.10	0.25	0.01	0.04

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1 **Table S3** Model derived annual global emissions (Gg) for the halons from 1978 – 2010.  
2 Based on the lifetimes calculated in this work (See Section 6).

Year	Model Derived Global Emissions, Gg				Emission Uncertainty, Gg			
	H-1301	H-1211	H-1202	H-2402	H-1301	H-1211	H-1202	H-2402
<b>1978</b>	1.54	3.21	0.15	0.86	0.18	0.08	0.05	0.01
<b>1979</b>	1.73	4.02	0.19	0.90	0.22	0.09	0.05	0.01
<b>1980</b>	1.86	4.74	0.20	0.93	0.26	0.09	0.05	0.01
<b>1981</b>	2.08	4.94	0.22	1.00	0.28	0.11	0.05	0.01
<b>1982</b>	2.24	5.33	0.24	1.07	0.30	0.11	0.06	0.01
<b>1983</b>	2.38	6.21	0.25	1.16	0.35	0.12	0.06	0.01
<b>1984</b>	2.50	7.11	0.28	1.30	0.40	0.13	0.07	0.01
<b>1985</b>	3.98	7.82	0.34	1.42	0.44	0.20	0.07	0.02
<b>1986</b>	5.67	8.90	0.36	1.50	0.50	0.29	0.08	0.02
<b>1987</b>	5.95	8.61	0.37	1.56	0.48	0.30	0.08	0.02
<b>1988</b>	5.72	8.93	0.38	1.80	0.50	0.29	0.10	0.02
<b>1989</b>	4.93	9.29	0.40	1.85	0.52	0.25	0.10	0.02
<b>1990</b>	4.47	10.02	0.43	2.02	0.56	0.23	0.11	0.02
<b>1991</b>	4.20	11.07	0.44	1.99	0.62	0.21	0.11	0.02
<b>1992</b>	4.07	11.18	0.47	1.79	0.62	0.21	0.09	0.02
<b>1993</b>	4.18	11.29	0.50	1.59	0.63	0.21	0.08	0.03
<b>1994</b>	3.72	12.12	0.69	1.49	0.68	0.19	0.08	0.04
<b>1995</b>	2.58	13.87	0.77	1.26	0.78	0.13	0.07	0.04
<b>1996</b>	2.73	11.54	0.79	1.16	0.65	0.14	0.06	0.04
<b>1997</b>	2.80	11.04	0.81	1.21	0.62	0.14	0.06	0.04
<b>1998</b>	2.64	11.14	0.81	1.21	0.62	0.13	0.06	0.04
<b>1999</b>	2.53	11.77	0.80	1.21	0.66	0.13	0.06	0.04
<b>2000</b>	2.13	9.82	0.75	1.21	0.55	0.11	0.06	0.04
<b>2001</b>	1.80	10.79	0.64	1.03	0.60	0.09	0.05	0.03
<b>2002</b>	2.27	9.24	0.58	0.98	0.52	0.12	0.05	0.03
<b>2003</b>	2.43	11.12	0.55	0.96	0.62	0.12	0.05	0.03
<b>2004</b>	2.66	10.16	0.48	0.95	0.57	0.13	0.05	0.03
<b>2005</b>	1.73	8.53	0.46	0.91	0.48	0.09	0.05	0.02
<b>2006</b>	1.99	8.03	0.37	0.89	0.45	0.10	0.05	0.02
<b>2007</b>	1.65	7.65	0.35	0.88	0.43	0.08	0.05	0.02
<b>2008</b>	1.72	7.54	0.28	0.90	0.42	0.09	0.05	0.01
<b>2009</b>	1.72	6.93	0.27	0.90	0.39	0.09	0.05	0.01
<b>2010</b>	1.72	6.08	0.26	0.89	0.34	0.09	0.05	0.01