

**Supplementary Material for “Observed trends of anthropogenic acidification in North Atlantic water masses”** by M. Vázquez-Rodríguez, F.F. Pérez, A. Velo, A.F. Ríos and H. Mercier

**Tables S1 – S3** Temporal evolution (1981-2008) of the average  $\pm$  standard error values of salinity, potential temperature, AOU, silicate concentrations and pH for the water masses considered in the Irminger basin (**Table S1**), Iceland basin (**Table S2**) and Eastern North Atlantic basin (**Table S3**). The WOA05 climatological data are used as reference values.

Table S1

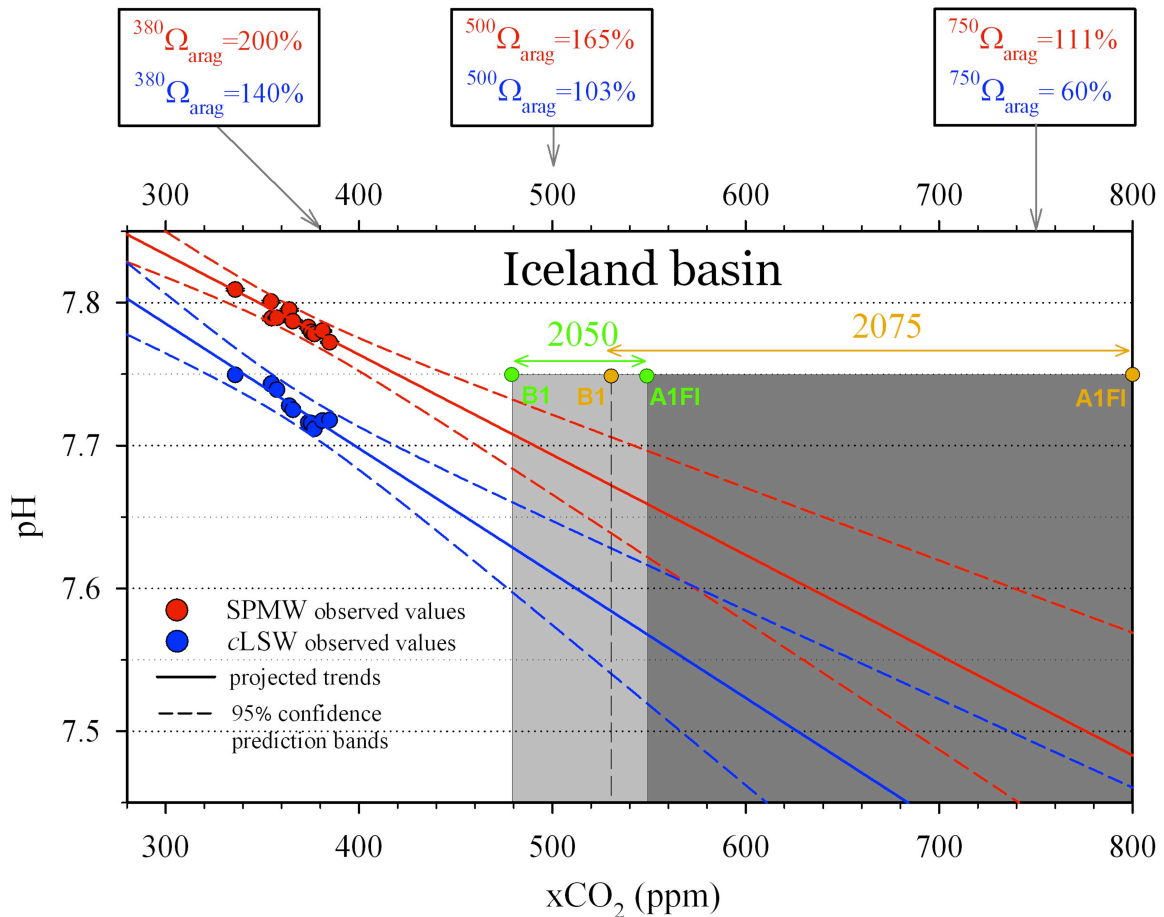
Year	Salinity	$\theta$ (°C)	AOU ( $\mu\text{mol}\cdot\text{kg}^{-1}$ )	$\text{Si}(\text{OH})_4$ ( $\mu\text{mol}\cdot\text{kg}^{-1}$ )	pH <sub>c</sub>
<b>SAIW (<math>\sigma_0 &lt; 27.68 \text{ kg m}^{-3}</math>)</b>					
1981	34.894 ± 0.002	5.370 ± 0.006	18.6 ± 0.3	7.96 ± 0.09	7.776 ± 0.002
1991	34.981 ± 0.002	5.228 ± 0.010	19.0 ± 0.5	8.50 ± 0.15	7.768 ± 0.002
1991	34.962 ± 0.001	5.482 ± 0.004	25.8 ± 0.2	8.96 ± 0.05	7.756 ± 0.001
1997	34.911 ± 0.001	5.902 ± 0.005	27.9 ± 0.2	7.69 ± 0.07	7.758 ± 0.001
1997	34.893 ± 0.001	5.134 ± 0.003	30.1 ± 0.2	8.83 ± 0.05	7.736 ± 0.001
2002	34.949 ± 0.001	5.362 ± 0.004	24.6 ± 0.2	8.08 ± 0.06	7.747 ± 0.001
2004	34.967 ± 0.001	5.611 ± 0.003	23.8 ± 0.1	7.93 ± 0.04	7.746 ± 0.001
2006	34.977 ± 0.001	5.660 ± 0.003	24.1 ± 0.1	7.88 ± 0.04	7.745 ± 0.001
2008	34.978 ± 0.001	5.926 ± 0.002	12.4 ± 0.1	7.17 ± 0.04	7.757 ± 0.001
WOA05	34.964 ± 0.004	5.544 ± 0.027	19.7 ± 0.3	7.89 ± 0.04	*
<b><i>u</i>LSW (<math>27.68 &lt; \sigma_0 &lt; 27.76 \text{ kg m}^{-3}</math>)</b>					
1981	34.865 ± 0.001	3.534 ± 0.004	28.1 ± 0.2	9.28 ± 0.07	7.749 ± 0.001
1991	34.889 ± 0.001	3.577 ± 0.004	24.2 ± 0.2	9.52 ± 0.07	7.745 ± 0.001
1991	34.900 ± 0.001	3.728 ± 0.003	28.7 ± 0.2	10.05 ± 0.05	7.740 ± 0.001
1997	34.877 ± 0.001	3.533 ± 0.005	35.6 ± 0.3	9.67 ± 0.08	7.725 ± 0.001
1997	34.869 ± 0.001	3.520 ± 0.003	35.9 ± 0.1	10.17 ± 0.04	7.716 ± 0.001
2002	34.896 ± 0.001	3.803 ± 0.003	35.0 ± 0.1	9.30 ± 0.04	7.725 ± 0.001
2004	34.888 ± 0.001	3.710 ± 0.003	37.2 ± 0.1	9.50 ± 0.04	7.719 ± 0.001
2006	34.902 ± 0.001	3.831 ± 0.002	34.4 ± 0.1	9.48 ± 0.04	7.720 ± 0.001
2008	34.908 ± 0.001	3.913 ± 0.002	27.2 ± 0.1	9.21 ± 0.03	7.721 ± 0.001
WOA05	34.925 ± 0.002	3.997 ± 0.020	33.5 ± 0.2	9.62 ± 0.04	*
<b><i>c</i>LSW (<math>27.6 &lt; \sigma_0 &lt; 27.81 \text{ kg m}^{-3}</math>)</b>					
1981	34.917 ± 0.002	3.375 ± 0.008	39.1 ± 0.4	10.58 ± 0.12	7.749 ± 0.002
1991	34.879 ± 0.001	3.137 ± 0.003	32.6 ± 0.2	10.16 ± 0.05	7.742 ± 0.001
1991	34.881 ± 0.001	3.156 ± 0.003	29.8 ± 0.1	10.30 ± 0.04	7.738 ± 0.001
1997	34.871 ± 0.001	2.986 ± 0.004	31.1 ± 0.2	9.94 ± 0.06	7.729 ± 0.001
1997	34.868 ± 0.001	2.989 ± 0.003	30.9 ± 0.1	10.43 ± 0.04	7.722 ± 0.001
2002	34.897 ± 0.001	3.184 ± 0.003	38.8 ± 0.2	10.23 ± 0.05	7.727 ± 0.001
2004	34.902 ± 0.001	3.232 ± 0.004	40.5 ± 0.2	10.44 ± 0.06	7.722 ± 0.001
2006	34.923 ± 0.001	3.369 ± 0.003	40.8 ± 0.2	10.58 ± 0.05	7.723 ± 0.001
2008	34.924 ± 0.001	3.383 ± 0.003	39.5 ± 0.2	10.72 ± 0.05	7.722 ± 0.001
WOA05	34.899 ± 0.001	3.314 ± 0.012	35.7 ± 0.1	10.25 ± 0.03	*
<b><i>u</i>NADW (<math>27.81 &lt; \sigma_0 &lt; 27.88 \text{ kg m}^{-3}</math>)</b>					
1981	34.948 ± 0.001	2.980 ± 0.005	44.3 ± 0.2	12.01 ± 0.07	7.750 ± 0.001
1991	34.940 ± 0.001	2.925 ± 0.003	48.4 ± 0.2	12.66 ± 0.05	7.745 ± 0.001
1991	34.935 ± 0.001	2.887 ± 0.003	44.9 ± 0.2	12.79 ± 0.05	7.745 ± 0.001
1997	34.917 ± 0.001	2.785 ± 0.005	41.5 ± 0.3	11.26 ± 0.08	7.740 ± 0.001
1997	34.924 ± 0.001	2.813 ± 0.004	44.2 ± 0.2	12.81 ± 0.06	7.733 ± 0.001
2002	34.918 ± 0.001	2.759 ± 0.003	43.7 ± 0.1	11.50 ± 0.04	7.732 ± 0.001
2004	34.916 ± 0.001	2.753 ± 0.003	44.4 ± 0.1	11.70 ± 0.04	7.726 ± 0.001
2006	34.930 ± 0.001	2.859 ± 0.003	43.2 ± 0.1	11.70 ± 0.04	7.728 ± 0.001
2008	34.931 ± 0.001	2.872 ± 0.003	41.4 ± 0.2	11.96 ± 0.05	7.726 ± 0.001
WOA05	34.915 ± 0.003	2.869 ± 0.028	42.7 ± 0.2	11.30 ± 0.10	*
<b>DSOW (<math>\sigma_0 &gt; 27.88 \text{ kg m}^{-3}</math>)</b>					
1981	34.892 ± 0.002	1.679 ± 0.008	36.7 ± 0.4	9.80 ± 0.12	7.749 ± 0.002
1991	34.897 ± 0.001	1.778 ± 0.005	41.6 ± 0.3	10.20 ± 0.08	7.742 ± 0.001
1991	34.896 ± 0.001	1.794 ± 0.006	38.1 ± 0.3	10.57 ± 0.09	7.742 ± 0.001
1997	34.897 ± 0.002	1.772 ± 0.009	38.0 ± 0.5	9.73 ± 0.14	7.726 ± 0.002
1997	34.894 ± 0.002	1.720 ± 0.008	38.8 ± 0.4	11.11 ± 0.13	7.724 ± 0.002
2002	34.887 ± 0.001	1.721 ± 0.005	39.4 ± 0.3	9.53 ± 0.08	7.731 ± 0.001
2004	34.869 ± 0.001	1.535 ± 0.005	36.3 ± 0.2	8.92 ± 0.07	7.723 ± 0.001
2006	34.906 ± 0.001	1.874 ± 0.004	37.7 ± 0.2	9.77 ± 0.07	7.726 ± 0.001
2008	34.908 ± 0.001	1.797 ± 0.006	36.4 ± 0.3	10.06 ± 0.09	7.721 ± 0.001
WOA05	34.895 ± 0.004	1.885 ± 0.064	40.1 ± 0.2	11.08 ± 0.19	*

Table S2.

Year	Salinity	$\theta$ (°C)	AOU ( $\mu\text{mol}\cdot\text{kg}^{-1}$ )	$\text{Si}(\text{OH})_4$ ( $\mu\text{mol}\cdot\text{kg}^{-1}$ )	$\text{pH}_e$
<b>SPMW (<math>\sigma_0 &lt; 27.60 \text{ kg m}^{-3}</math>)</b>					
1981	35.183 ± 0.001	8.242 ± 0.003	28.2 ± 0.1	6.89 ± 0.04	7.814 ± 0.000
1991	35.109 ± 0.001	7.030 ± 0.003	22.9 ± 0.2	7.73 ± 0.05	7.797 ± 0.000
1991	35.000 ± 0.002	6.935 ± 0.007	37.8 ± 0.3	8.94 ± 0.10	7.757 ± 0.001
1993	35.151 ± 0.001	7.889 ± 0.003	31.6 ± 0.1	6.68 ± 0.04	7.789 ± 0.000
1997	35.094 ± 0.001	7.931 ± 0.003	47.2 ± 0.2	8.17 ± 0.05	7.769 ± 0.000
1998	35.249 ± 0.001	8.563 ± 0.003	28.7 ± 0.2	7.22 ± 0.05	7.796 ± 0.000
2002	35.117 ± 0.001	7.614 ± 0.003	30.5 ± 0.2	7.33 ± 0.05	7.776 ± 0.000
2003	35.260 ± 0.001	8.826 ± 0.002	37.4 ± 0.1	6.68 ± 0.03	7.785 ± 0.000
2004	35.105 ± 0.001	7.719 ± 0.002	38.5 ± 0.1	7.40 ± 0.04	7.763 ± 0.000
2006	35.077 ± 0.001	7.906 ± 0.003	38.7 ± 0.1	7.20 ± 0.04	7.765 ± 0.000
2008	35.111 ± 0.001	7.809 ± 0.002	28.1 ± 0.1	6.84 ± 0.04	7.771 ± 0.000
WOA05	35.175 ± 0.002	7.954 ± 0.027	29.6 ± 0.4	7.36 ± 0.04	*
<b><i>u</i>LSW (<math>\sigma_0 &gt; 27.60 \text{ kg m}^{-3}</math> ; <math>\sigma_1 &lt; 32.35 \text{ kg m}^{-3}</math>)</b>					
1981	34.982 ± 0.001	4.637 ± 0.005	48.5 ± 0.3	10.56 ± 0.08	7.739 ± 0.001
1991	34.959 ± 0.001	4.488 ± 0.004	56.2 ± 0.2	10.87 ± 0.06	7.726 ± 0.000
1991	34.944 ± 0.001	4.340 ± 0.006	51.7 ± 0.3	11.16 ± 0.09	7.728 ± 0.001
1993	34.987 ± 0.001	4.754 ± 0.004	56.0 ± 0.2	10.43 ± 0.06	7.730 ± 0.000
1997	34.940 ± 0.001	4.345 ± 0.003	55.7 ± 0.2	11.11 ± 0.05	7.715 ± 0.000
1998	35.009 ± 0.002	4.938 ± 0.007	62.2 ± 0.3	11.72 ± 0.10	7.712 ± 0.001
2002	34.976 ± 0.001	4.657 ± 0.003	57.5 ± 0.2	10.60 ± 0.05	7.716 ± 0.000
2003	35.024 ± 0.001	4.979 ± 0.004	63.7 ± 0.2	11.24 ± 0.06	7.709 ± 0.000
2004	34.948 ± 0.001	4.408 ± 0.002	55.7 ± 0.1	10.68 ± 0.04	7.709 ± 0.000
2006	34.956 ± 0.001	4.494 ± 0.003	54.4 ± 0.1	10.74 ± 0.04	7.707 ± 0.000
2008	34.952 ± 0.001	4.451 ± 0.003	51.1 ± 0.1	10.50 ± 0.04	7.709 ± 0.000
WOA05	35.015 ± 0.002	4.924 ± 0.001	54.1 ± 0.3	10.79 ± 0.05	*
<b><i>c</i>LSW (<math>\sigma_1 &gt; 32.35 \text{ kg m}^{-3}</math> ; <math>\sigma_2 &lt; 37.00 \text{ kg m}^{-3}</math>)</b>					
1981	34.943 ± 0.001	3.517 ± 0.004	44.7 ± 0.2	12.13 ± 0.07	7.738 ± 0.000
1991	34.928 ± 0.001	3.376 ± 0.003	45.6 ± 0.1	11.59 ± 0.04	7.746 ± 0.000
1991	34.923 ± 0.001	3.308 ± 0.005	43.5 ± 0.3	12.31 ± 0.08	7.740 ± 0.001
1993	34.926 ± 0.001	3.458 ± 0.005	44.6 ± 0.2	11.27 ± 0.07	7.737 ± 0.000
1997	34.905 ± 0.001	3.170 ± 0.002	40.1 ± 0.1	11.72 ± 0.04	7.732 ± 0.000
1998	34.919 ± 0.002	3.372 ± 0.006	44.1 ± 0.3	12.08 ± 0.09	7.718 ± 0.001
2002	34.920 ± 0.001	3.273 ± 0.003	43.1 ± 0.1	11.06 ± 0.04	7.727 ± 0.000
2003	34.926 ± 0.001	3.387 ± 0.005	45.2 ± 0.3	11.79 ± 0.08	7.714 ± 0.001
2004	34.909 ± 0.001	3.226 ± 0.003	43.8 ± 0.1	11.32 ± 0.04	7.722 ± 0.000
2006	34.919 ± 0.001	3.297 ± 0.003	42.2 ± 0.1	11.39 ± 0.04	7.722 ± 0.000
2008	34.923 ± 0.001	3.299 ± 0.003	42.6 ± 0.1	11.50 ± 0.04	7.722 ± 0.000
WOA05	34.936 ± 0.001	3.414 ± 0.012	45.1 ± 0.1	11.67 ± 0.05	*
<b><i>u</i>NADW (<math>\sigma_2 &gt; 37.00 \text{ kg m}^{-3}</math> ; <math>\sigma_4 &lt; 45.84 \text{ kg m}^{-3}</math>)</b>					
1981	34.970 ± 0.002	2.732 ± 0.007	52.9 ± 0.3	10.74 ± 0.10	7.739 ± 0.001
1991	34.972 ± 0.001	2.762 ± 0.004	53.0 ± 0.2	14.66 ± 0.05	7.739 ± 0.000
1991	34.963 ± 0.001	2.718 ± 0.005	55.2 ± 0.2	18.44 ± 0.07	7.739 ± 0.000
1993	34.971 ± 0.003	2.816 ± 0.012	49.3 ± 0.6	12.95 ± 0.18	7.741 ± 0.001
1997	34.949 ± 0.001	2.689 ± 0.004	50.0 ± 0.2	15.53 ± 0.06	7.733 ± 0.000
1998	34.967 ± 0.004	2.749 ± 0.017	49.7 ± 0.9	13.69 ± 0.26	7.721 ± 0.002
2002	34.964 ± 0.001	2.704 ± 0.004	52.8 ± 0.2	15.52 ± 0.05	7.727 ± 0.000
2003	34.975 ± 0.003	2.833 ± 0.012	48.3 ± 0.6	13.51 ± 0.18	7.715 ± 0.001
2004	34.959 ± 0.001	2.675 ± 0.004	56.0 ± 0.2	17.09 ± 0.06	7.724 ± 0.000
2006	34.964 ± 0.001	2.705 ± 0.003	53.2 ± 0.2	17.54 ± 0.05	7.724 ± 0.000
2008	34.964 ± 0.001	2.701 ± 0.004	52.3 ± 0.2	16.37 ± 0.06	7.722 ± 0.000
WOA05	34.963 ± 0.004	2.710 ± 0.025	56.5 ± 0.3	18.77 ± 0.77	*

Table S3.

Year	Salinity	$\theta$ (°C)	AOU ( $\mu\text{mol}\cdot\text{kg}^{-1}$ )	$\text{Si}(\text{OH})_4$ ( $\mu\text{mol}\cdot\text{kg}^{-1}$ )	$\text{pH}_c$
<b>NACW (<math>\sigma_0 &lt; 27.20 \text{ kg m}^{-3}</math>)</b>					
1981	35.618 ± 0.001	12.472 ± 0.003	27.5 ± 0.2	3.74 ± 0.05	7.883 ± 0.000
1989	35.661 ± 0.001	12.448 ± 0.004	23.6 ± 0.2	2.86 ± 0.06	7.871 ± 0.000
1990	35.668 ± 0.001	12.160 ± 0.003	19.7 ± 0.1	3.52 ± 0.04	7.874 ± 0.000
1991	35.532 ± 0.004	11.163 ± 0.015	22.5 ± 0.8	4.66 ± 0.23	7.860 ± 0.002
1993	35.544 ± 0.001	11.500 ± 0.004	23.0 ± 0.2	3.02 ± 0.07	7.866 ± 0.000
1997	35.673 ± 0.000	12.375 ± 0.002	31.6 ± 0.1	3.58 ± 0.03	7.861 ± 0.000
1998	35.659 ± 0.001	12.293 ± 0.002	20.9 ± 0.1	3.62 ± 0.03	7.876 ± 0.000
2002	35.643 ± 0.000	12.170 ± 0.002	26.1 ± 0.1	3.58 ± 0.03	7.860 ± 0.000
2003	35.657 ± 0.000	12.492 ± 0.002	25.1 ± 0.1	3.47 ± 0.03	7.862 ± 0.000
2004	35.637 ± 0.000	12.116 ± 0.002	28.5 ± 0.1	3.63 ± 0.03	7.854 ± 0.000
2006	35.659 ± 0.000	12.146 ± 0.002	24.1 ± 0.1	3.43 ± 0.03	7.853 ± 0.000
2008	35.673 ± 0.000	12.562 ± 0.002	24.1 ± 0.1	3.45 ± 0.02	7.861 ± 0.000
WOA05	35.552 ± 0.004	11.832 ± 0.029	17.9 ± 0.3	3.47 ± 0.02	*
<b>MW (<math>\sigma_0 &gt; 27.20 \text{ kg m}^{-3}</math>; <math>\sigma_1 &lt; 32.35 \text{ kg m}^{-3}</math>)</b>					
1981	35.408 ± 0.001	7.812 ± 0.003	72.4 ± 0.1	10.29 ± 0.04	7.761 ± 0.000
1989	35.745 ± 0.001	9.679 ± 0.003	74.4 ± 0.2	9.34 ± 0.05	7.781 ± 0.000
1990	35.250 ± 0.001	7.156 ± 0.004	64.2 ± 0.2	10.07 ± 0.05	7.749 ± 0.000
1991	35.236 ± 0.001	7.602 ± 0.003	36.6 ± 0.2	8.20 ± 0.05	7.807 ± 0.000
1991	35.107 ± 0.001	6.650 ± 0.003	54.1 ± 0.2	10.07 ± 0.05	7.756 ± 0.000
1993	35.242 ± 0.001	7.125 ± 0.003	64.9 ± 0.1	9.08 ± 0.04	7.754 ± 0.000
1997	35.509 ± 0.000	8.413 ± 0.002	75.4 ± 0.1	9.77 ± 0.02	7.759 ± 0.000
1998	35.323 ± 0.001	7.542 ± 0.003	74.6 ± 0.2	10.46 ± 0.05	7.744 ± 0.000
2002	35.490 ± 0.000	8.262 ± 0.001	74.2 ± 0.1	9.66 ± 0.02	7.756 ± 0.000
2003	35.365 ± 0.001	7.771 ± 0.002	78.5 ± 0.1	10.21 ± 0.03	7.743 ± 0.000
2004	35.456 ± 0.000	8.038 ± 0.001	75.2 ± 0.1	9.86 ± 0.02	7.751 ± 0.000
2006	35.493 ± 0.000	8.218 ± 0.001	75.1 ± 0.1	9.76 ± 0.02	7.749 ± 0.000
2008	35.445 ± 0.000	7.998 ± 0.001	70.6 ± 0.1	9.69 ± 0.02	7.751 ± 0.000
WOA05	35.395 ± 0.004	8.176 ± 0.037	60.2 ± 0.7	9.28 ± 0.05	*
<b>LSW (<math>\sigma_1 &gt; 32.35 \text{ kg m}^{-3}</math>; <math>\sigma_2 &lt; 37.00 \text{ kg m}^{-3}</math>)</b>					
1981	35.057 ± 0.001	3.975 ± 0.004	56.0 ± 0.2	15.15 ± 0.06	7.746 ± 0.000
1989	35.107 ± 0.001	4.353 ± 0.006	62.7 ± 0.3	16.90 ± 0.09	7.734 ± 0.001
1990	35.002 ± 0.002	3.712 ± 0.006	54.5 ± 0.3	14.41 ± 0.10	7.734 ± 0.001
1991	34.947 ± 0.001	3.503 ± 0.004	52.5 ± 0.2	14.53 ± 0.06	7.755 ± 0.000
1991	34.920 ± 0.001	3.286 ± 0.004	45.4 ± 0.2	13.21 ± 0.06	7.743 ± 0.000
1993	34.946 ± 0.001	3.422 ± 0.004	47.2 ± 0.2	12.33 ± 0.05	7.743 ± 0.000
1997	34.997 ± 0.001	3.673 ± 0.002	55.0 ± 0.1	15.27 ± 0.03	7.734 ± 0.000
1998	34.962 ± 0.001	3.515 ± 0.004	50.2 ± 0.2	13.94 ± 0.05	7.730 ± 0.000
2002	34.990 ± 0.000	3.636 ± 0.002	51.9 ± 0.1	14.01 ± 0.03	7.732 ± 0.000
2003	34.957 ± 0.001	3.466 ± 0.003	52.6 ± 0.2	13.60 ± 0.05	7.734 ± 0.000
2004	34.986 ± 0.000	3.606 ± 0.002	53.0 ± 0.1	14.01 ± 0.02	7.730 ± 0.000
2006	34.989 ± 0.000	3.642 ± 0.002	50.7 ± 0.1	13.54 ± 0.03	7.729 ± 0.000
2008	34.994 ± 0.000	3.657 ± 0.002	51.8 ± 0.1	14.00 ± 0.03	7.731 ± 0.000
WOA05	34.990 ± 0.005	3.673 ± 0.031	55.4 ± 0.4	14.99 ± 0.13	*
<b><math>u</math>NADW (<math>\sigma_2 &gt; 37.00 \text{ kg m}^{-3}</math>; <math>\sigma_4 &lt; 45.84 \text{ kg m}^{-3}</math>)</b>					
1981	34.947 ± 0.001	2.610 ± 0.005	71.7 ± 0.2	30.40 ± 0.07	7.738 ± 0.000
1989	34.959 ± 0.001	2.738 ± 0.005	74.7 ± 0.3	31.98 ± 0.08	7.726 ± 0.001
1990	34.947 ± 0.002	2.571 ± 0.009	75.9 ± 0.5	32.14 ± 0.14	7.710 ± 0.001
1991	34.947 ± 0.002	2.724 ± 0.009	72.4 ± 0.4	27.87 ± 0.13	7.741 ± 0.001
1991	34.943 ± 0.001	2.574 ± 0.004	68.5 ± 0.2	28.34 ± 0.06	7.738 ± 0.000
1993	34.945 ± 0.001	2.585 ± 0.006	69.4 ± 0.3	28.53 ± 0.08	7.740 ± 0.001
1997	34.944 ± 0.001	2.597 ± 0.003	76.3 ± 0.1	32.62 ± 0.04	7.733 ± 0.000
1998	34.941 ± 0.001	2.564 ± 0.005	72.6 ± 0.2	31.22 ± 0.07	7.731 ± 0.000
2002	34.948 ± 0.000	2.611 ± 0.002	71.9 ± 0.1	30.97 ± 0.03	7.733 ± 0.000
2003	34.938 ± 0.001	2.515 ± 0.005	77.3 ± 0.2	31.52 ± 0.07	7.720 ± 0.000
2004	34.943 ± 0.000	2.588 ± 0.002	73.8 ± 0.1	31.17 ± 0.03	7.732 ± 0.000
2006	34.950 ± 0.000	2.626 ± 0.002	70.5 ± 0.1	30.81 ± 0.03	7.732 ± 0.000
2008	34.945 ± 0.000	2.597 ± 0.002	72.0 ± 0.1	31.78 ± 0.03	7.734 ± 0.000
WOA05	34.944 ± 0.001	2.589 ± 0.013	77.9 ± 0.2	33.02 ± 0.32	*
<b><math>l</math>NADW (<math>\sigma_4 &gt; 45.84 \text{ kg m}^{-3}</math>)</b>					
1981	34.907 ± 0.001	2.151 ± 0.006	85.2 ± 0.3	43.67 ± 0.09	7.728 ± 0.001
1989	34.905 ± 0.001	2.130 ± 0.005	85.2 ± 0.3	44.98 ± 0.08	7.719 ± 0.001
1990	34.909 ± 0.002	1.964 ± 0.009	90.3 ± 0.4	44.37 ± 0.13	7.723 ± 0.001
1991	34.910 ± 0.002	2.182 ± 0.008	87.5 ± 0.4	44.53 ± 0.11	7.728 ± 0.001
1993	34.915 ± 0.001	2.193 ± 0.005	84.5 ± 0.3	42.31 ± 0.08	7.735 ± 0.001
1997	34.904 ± 0.001	2.131 ± 0.003	87.4 ± 0.2	44.33 ± 0.05	7.732 ± 0.000
1998	34.911 ± 0.001	2.180 ± 0.005	87.0 ± 0.2	43.98 ± 0.07	7.728 ± 0.000
2002	34.911 ± 0.001	2.158 ± 0.002	86.0 ± 0.1	44.54 ± 0.03	7.731 ± 0.000
2003	34.912 ± 0.001	2.192 ± 0.005	85.6 ± 0.2	42.05 ± 0.07	7.724 ± 0.000
2004	34.906 ± 0.001	2.149 ± 0.002	87.0 ± 0.1	44.12 ± 0.03	7.732 ± 0.000
2006	34.914 ± 0.001	2.159 ± 0.002	85.2 ± 0.1	45.53 ± 0.03	7.732 ± 0.000
2008	34.909 ± 0.001	2.159 ± 0.002	85.4 ± 0.1	44.94 ± 0.04	7.734 ± 0.000
WOA05	34.908 ± 0.001	2.101 ± 0.046	88.7 ± 0.5	42.96 ± 0.63	*



**Figure S1** Extrapolation of the observed linear trends of acidification for the SPMW and cLSW in the Iceland basin. The projections are placed in context with two IPCC CO<sub>2</sub> emission scenarios (Nakicenovic et al., 2000), from the pre-industrial 280 ppm to future 800 ppm of atmospheric xCO<sub>2</sub> (molar fraction of CO<sub>2</sub>) for years 2050 and 2075. The A1FI is a business-as-usual, worst-case type scenario, while the B1 represents the family of most conservative emission scenarios. The prediction bands give the 95% confidence intervals for the projected pH estimates. Since the natural variability had been removed from the observations it is plausible to assume that the 95% confidence prediction bands represent the uncertainties associated with human-induced acidification. The aragonite saturation states ( $\Omega_{\text{arag}}$ ) for present xCO<sub>2</sub> (~380 ppm) and for the horizons of 500 and 750 ppm are given in the top boxes.