

1 **Table S3:** Quantification of contribution from trends in SST, DIC, ALK and S on pH trends

**WAS**

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.051599	8.115545	0.063946a		
SENS_SST Detrended	8.061274	8.115545	0.054271b	0.009675	15.1299534
SENS_DIC Detrended	8.129511	8.115545	-0.013966c	0.077912	121.8403028
SENS_ALK Detrended	8.017422	8.115545	0.098123d	-0.034177	-53.44665812
SENS_S Detrended	8.054602	8.115545	0.060943e	0.003003	4.696149876
			Net Trend	0.056413	88.21974791

**NBoB-AI**

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.069491	8.129427	0.059936a		
SENS_SST Detrended	8.079555	8.129427	0.049872b	0.010064	16.79124399
SENS_DIC Detrended	8.075309	8.129427	0.054118c	0.005818	9.707020822
SENS_ALK Detrended	8.102815	8.129427	0.026612d	0.033324	55.59930593
SENS_S Detrended	8.070767	8.129427	0.05866e	0.001276	2.128937533
			Net Trend	0.050482	84.22650828

**EBoB-CIO**

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.060868	8.119941	0.059073a		
SENS_SST Detrended	8.070368	8.119941	0.049573b	0.0095	16.0817971
SENS_DIC Detrended	8.100911	8.119941	0.01903c	0.040043	67.78562118
SENS_ALK Detrended	8.062598	8.119941	0.057343d	0.00173	2.928579893
SENS_S Detrended	8.06441	8.119941	0.055531e	0.003542	5.995971087
			Net Trend	0.054815	92.79196926

**EEIO**

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.047877	8.117212	0.069335a		
SENS_SST Detrended	8.058076	8.117212	0.059136b	0.010199	14.70974255
SENS_DIC Detrended	8.104307	8.117212	0.012905c	0.05643	81.38746665
SENS_ALK Detrended	8.042102	8.117212	0.07511d	-0.005775	-8.329126704
SENS_S Detrended	8.051956	8.117212	0.065256e	0.004079	5.883031658
			Net Trend	0.064933	93.65111416

**SEIO**

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.064829	8.130278	0.065449a		
SENS_SST Detrended	8.074801	8.130278	0.055477b	0.009972	15.23629085
SENS_DIC Detrended	8.118597	8.130278	0.011681c	0.053768	82.1525157
SENS_ALK Detrended	8.060344	8.130278	0.069934d	-0.004485	-6.852663906
SENS_S Detrended	8.067424	8.130278	0.062854e	0.002595	3.96491925
			Net Trend	0.06185	94.5010619

**STIO**

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
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CTRL	8.074161	8.142468	0.068307a		
SENS_SST Detrended	8.081918	8.142468	0.06055b	0.007757	11.35608356
SENS_DIC Detrended	8.114091	8.142468	0.028377c	0.03993	58.45667355
SENS_ALK Detrended	8.09025	8.142468	0.052218d	0.016089	23.55395494
SENS_S Detrended	8.076031	8.142468	0.066437e	0.00187	2.737640359
			Net Trend	0.065646	96.10435241

#### SSIO

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.074133	8.146488	0.072355a		
SENS_SST Detrended	8.081526	8.146488	0.064962b	0.007393	10.21767673
SENS_DIC Detrended	8.122435	8.146488	0.024053c	0.048302	66.7569622
SENS_ALK Detrended	8.088453	8.146488	0.058035d	0.01432	19.79130675
SENS_S Detrended	8.075541	8.146488	0.070947e	0.001408	1.945960887
			Net Trend	0.071423	98.71190657

#### SOG

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.07249	8.143975	0.071485a		
SENS_SST Detrended	8.083552	8.143975	0.060423b	0.011062	15.47457509
SENS_DIC Detrended	8.113589	8.143975	0.030386c	0.041099	57.49318039
SENS_ALK Detrended	8.091962	8.143975	0.052013d	0.019472	27.23928097
SENS_S Detrended	8.073157	8.143975	0.070818e	0.000667	0.93306288
			Net Trend	0.0723	101.1400993

#### Indian Ocean region

Model Simulations	2010	1961	Difference	Trend [a-(b,c,d,e)]	%age [a-(b,c,d,e)]* 100/a
CTRL	8.0646	8.1321	0.0675a		
SENS_SST Detrended	8.0739	8.1321	0.0582b	0.0093	13.8279
SENS_DIC Detrended	8.1114	8.1321	0.0207c	0.0468	69.2879
SENS_ALK Detrended	8.0694	8.1321	0.0627d	0.0048	7.1249
SENS_S Detrended	8.0664	8.1321	0.0657e	0.0018	2.7629
			Net Trend	0.0627	93.0036