

**Supplementary Table S1.** List of original series along with mean, sd and trends. The number used to identify the series in the text and figures is also indicated. *S* and *Z*: statistics of the Mann-Kendall trend test. Significant ( $p < 0.05$ ) values were marked with a yellow background.

series	series no.	variable	units	mean	se	Mann-Kendall test			Description
						<i>S</i>	<i>Z</i>	<i>p</i>	
climate-meteorology	1	NAOm	EOF mode	0.035	0.117	-7	0.113	0.910	NAO index annual mean
	2	NAO_DM	EOF mode	0.669	0.227	-1	0.000	1.000	NAO index winter (Dec-Mar) mean
	3	NAO_JA	EOF mode	0.033	0.276	-40	0.732	0.464	NAO index summer (Jul-Aug) mean
	4	AMOm	°C	0.09	0.03	157	2.927	0.003	Atlantic Multidecadal Oscillation annual mean
	5	GLOTIm	°C	0.58	0.04	300	5.611	0.000	Global Average Temperature and SST Anomalies
	6	PDOm	°C	0.14	0.16	-20	0.356	0.722	Pacific Decadal Oscillation annual mean
	7	AOm	EOF mode	0.046	0.064	-6	0.094	0.925	Arctic Oscillation Index annual mean
	8	ENNm	°C	0.05	0.10	-56	1.032	0.302	El Niño 3.4 (North) annual mean
	9	SUNSPm	nº	77.1	11.3	-120	2.232	0.026	Sunspots annual mean
	10	PCOm	x10 L m <sup>-2</sup>	842.3	28.3	14	0.257	0.797	Precipitation A Coruña AEMET annual mean
	11	PCOsd	x10 L m <sup>-2</sup>	616.1	31.1	2	0.020	0.984	Precipitation A Coruña AEMET annual sd
	12	PSCOm	x10 L m <sup>-2</sup>	806.3	44.3	56	1.087	0.277	Precipitation A Coruña AEMET spring (Feb-May) mean
	13	PSCOsd	x10 L m <sup>-2</sup>	504.7	41.4	15	0.277	0.782	Precipitation A Coruña AEMET spring (Feb-May) sd
	14	UIm	m <sup>3</sup> s <sup>-1</sup> km <sup>-1</sup>	-264.0	29.7	-31	0.563	0.574	Upwelling index (Rias Altas) annual mean
	15	UIsd	m <sup>3</sup> s <sup>-1</sup> km <sup>-1</sup>	1741.0	44.2	48	0.882	0.378	Upwelling index (Rias Altas) annual sd
	16	Ulu	m <sup>3</sup> s <sup>-1</sup> km <sup>-1</sup>	447.5	29.8	-31	0.563	0.574	Upwelling index - upwelling (Rias Altas) annual mean of monthly means >0
	17	Uld	m <sup>3</sup> s <sup>-1</sup> km <sup>-1</sup>	-783.6	53.9	-20	0.356	0.722	Upwelling index - downwelling (Rias Altas) annual mean of monthly means <0

series	series no.	variable	units	mean	se	S	Z	p	Description
hydrography	18	t_0	°C	14.705	0.060	20	0.357	0.721	water temperature - surface (0-5 m) annual mean
	19	t_m	°C	14.126	0.060	9	0.150	0.881	water temperature annual mean water column (0-70m)
	20	t_sd	°C	0.618	0.017	11	0.188	0.851	water temperature annual sd water column (0-70m)
	21	S_0		35.294	0.053	-10	0.169	0.866	salinity - surface (0-5m) annual mean
	22	S_m		35.502	0.029	7	0.113	0.910	salinity - annual mean water column (0-70m)
	23	S_sd		0.185	0.029	5	0.075	0.940	salinity - annual sd water column (0-70m)
	24	NO3_0	μM	2.52	0.11	62	1.144	0.253	nitrate - surface (0-5m)
	25	NO3_m	μM	3.86	0.12	45	0.826	0.409	nitrate - annual mean water column (0-70m)
	26	NO3_sd	μM	1.83	0.06	55	1.014	0.311	nitrate - annual sd water column (0-70m)
	27	NO2_0	μM	0.23	0.01	-9	0.151	0.880	nitrite - surface (0-5m)
	28	NO2_m	μM	0.30	0.01	38	0.695	0.487	nitrite - annual mean water column (0-70m)
	29	NO2_sd	μM	0.13	0.00	135	2.535	0.011	nitrite - annual sd water column (0-70m)
	30	PO4_0	μM	0.19	0.02	159	2.970	0.003	phosphate- surface (0-5m)
	31	PO4_m	μM	0.26	0.02	141	2.629	0.009	phosphate - annual mean water column (0-70m)
	32	PO4_sd	μM	0.10	0.01	42	0.780	0.436	phosphate - annual sd water column (0-70m)
	33	SiO4_0	μM	1.92	0.14	119	2.215	0.027	silicate- surface (0-5m)
	34	SiO4_m	μM	2.30	0.13	156	2.910	0.004	silicate - annual mean water column (0-70m)
	35	SiO4_sd	μM	0.84	0.04	107	1.991	0.046	silicate - annual sd water column (0-70m)
	36	O2_0	mL O <sub>2</sub> L <sup>-1</sup>	6.13	0.02	-41	0.751	0.453	disolved oxygen - surface (0-5m) annual mean
	37	O2_m	mL O <sub>2</sub> L <sup>-1</sup>	5.80	0.02	-168	3.154	0.002	disolved oxygen - annual mean water column (0-70m)
	38	O2_sd	mL O <sub>2</sub> L <sup>-1</sup>	0.37	0.01	67	1.244	0.213	disolved oxygen - annual sd water column (0-70m)
	39	Chla_0	μg L <sup>-1</sup>	1.463	0.108	88	1.633	0.102	chlorophyll-a - surface (0-5m) annual mean
	40	Chla_m	μg L <sup>-1</sup>	1.020	0.059	87	1.614	0.107	chlorophyll-a - annual mean water column (0-70m)

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hydrography	41	Chla_sd	$\mu\text{g L}^{-1}$	0.688	0.046	55	1.013	0.311	chlorophyll-a - annual sd water column (0-70m)
	42	PP_0	$\text{mg C m}^{-3} \text{ h}^{-1}$	10.48	1.16	137	2.552	0.011	primary production ( $^{14}\text{C}$ ) - surface (0-5m) annual mean
	43	PP_m	$\text{mg C m}^{-3} \text{ h}^{-1}$	7.67	0.82	140	2.607	0.009	primary production ( $^{14}\text{C}$ ) - annual mean water column (0-40m)
	44	PP_sd	$\text{mg C m}^{-3} \text{ h}^{-1}$	5.97	0.63	146	2.720	0.007	primary production ( $^{14}\text{C}$ ) - annual sd water column (0-40m)
	45	POC_0	$\mu\text{M}$	11.10	0.30	53	0.976	0.329	particulate organic carbon - surface (0-5 m) annual mean
	46	POC_m	$\mu\text{M}$	7.96	0.21	-80	1.482	0.138	particulate organic carbon - annual mean water column (0-70m)
	47	POC_sd	$\mu\text{M}$	3.65	0.19	-25	0.450	0.652	particulate organic carbon - annual sd water column (0-70m)
	48	PON_0	$\mu\text{M}$	1.44	0.04	15	0.263	0.793	particulate organic nitrogen - surface (0-5m) annual mean
	49	PON_m	$\mu\text{M}$	1.05	0.03	-49	0.902	0.367	particulate organic nitrogen - annual mean water column (0-70m)
	50	PON_sd	$\mu\text{M}$	0.48	0.02	-59	1.090	0.276	particulate organic nitrogen - annual sd water column (0-70m)
phytoplankton	51	P_Dinoflag	$\text{cells mL}^{-1}$	61.1	5.8	4	0.059	0.953	Dinoflagellate abundance
	52	P_Diat	$\text{cells mL}^{-1}$	404.0	54.8	-126	2.470	0.014	Diatom abundance
	53	P_Cryp	$\text{cells mL}^{-1}$	79.0	10.9	-92	1.798	0.072	Cryptophyceae abundance

series	series no.	variable	units	mean	se	S	Z	p	Description
phytoplankton	54	P_Other-ph	cells mL <sup>-1</sup>	31.2	11.6	-52	1.008	0.314	Other phytoplankton taxa (Prymnesiophyceae, Solenicola setigera, Crysiophyceae, Euglenophyceae, Mesodinium rubrum)
	55	P_Flag	cells mL <sup>-1</sup>	121.6	33.7	50	0.968	0.333	Flagellate (8-10µm) abundance
	56	P_Phyto_to	cells mL <sup>-1</sup>	716.4	77.0	-68	1.324	0.186	Total phytoplankton abundance
microzooplankton	57	M_Cope	indiv. m <sup>-3</sup>	6633.5	1025.8	3	0.042	0.967	Copepod abundance - microzooplankton
	58	M_Biva	indiv. m <sup>-3</sup>	771.1	132.0	29	0.584	0.559	Bivalvia abundance - microzooplankton
	59	M_Tuni	indiv. m <sup>-3</sup>	173.6	43.7	-87	1.793	0.073	Tunicata abundance - microzooplankton
	60	M_Other_mi	indiv. m <sup>-3</sup>	16.7	6.8	-154	3.200	0.001	Other microzooplankton taxa (Rotifera, Chaetognatha, Echinodermata, Bryozoa)
	61	M_Cnid-Sip	indiv. m <sup>-3</sup>	24.9	13.4	-131	2.730	0.006	Cnidaria and Siphonophora abundance - microzooplankton
	62	M_Other-cr	indiv. m <sup>-3</sup>	26.1	8.1	-26	0.522	0.602	Other crustacean (eggs and larvae, Cladocera, Decapoda, Cirripedia) - microzooplankton
	63	M_Fora	indiv. m <sup>-3</sup>	74.1	20.2	-69	1.418	0.156	Foraminifera abundance - microzooplankton
	64	M_Tint	indiv. m <sup>-3</sup>	91.5	19.1	39	0.792	0.428	Tintinnida abundance - microzooplankton
	65	M_Gast	indiv. m <sup>-3</sup>	100.0	18.4	5	0.083	0.934	Gastropoda abundance - microzooplankton
	66	M_Anne	indiv. m <sup>-3</sup>	42.4	5.8	7	0.125	0.900	Annelida abundance - microzooplankton
	67	M_Micro-to	indiv. m <sup>-3</sup>	7973.6	1192.6	5	0.083	0.934	Total microzooplankton
mesozooplankton	68	E_Cope	indiv. m <sup>-3</sup>	2451.9	129.8	131	2.319	0.020	Copepoda abundance - mesozooplankton
	69	E_Tuni	indiv. m <sup>-3</sup>	51.1	4.4	42	0.732	0.464	Tunicata abundance - mesozooplankton
	70	E_Biva	indiv. m <sup>-3</sup>	131.0	24.7	149	2.641	0.008	Bivalvia abundance - mesozooplankton

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mesozooplankton	71	E_Fish	indiv. m <sup>-3</sup>	8.1	0.7	86	1.517	0.129	Fish eggs and larvae abundance – mesozooplankton
	72	E_Euph	indiv. m <sup>-3</sup>	59.4	9.0	172	3.051	0.002	Euphausiacea abundance - mesozooplankton
	73	E_Clad	indiv. m <sup>-3</sup>	179.7	17.1	161	2.855	0.004	Cladocera abundance - mesozooplankton
	74	E_Gast	indiv. m <sup>-3</sup>	50.8	7.0	166	2.944	0.003	Gastropoda abundance
	75	E_Anne	indiv. m <sup>-3</sup>	4.1	0.5	-8	0.125	0.900	Annelida abundance - mesozooplankton
	76	E_Deca	indiv. m <sup>-3</sup>	32.7	3.4	63	1.106	0.269	Decapoda abundance - mesozooplankton
	77	E_Chae	indiv. m <sup>-3</sup>	10.5	1.5	112	1.981	0.048	Chaetognatha abundance - mesozooplankton
	78	E_Cirr	indiv. m <sup>-3</sup>	218.9	36.4	57	0.999	0.318	Cirripedia abundance - mesozooplankton
	79	E_Bryo	indiv. m <sup>-3</sup>	9.7	1.1	0	-0.018	0.986	Bryozoa abundance - mesozooplankton
	80	E_Cnid	indiv. m <sup>-3</sup>	37.8	8.2	23	0.393	0.695	Cnidaria, Siphonophora and Ctenophora - mesozooplankton
	81	E_Fora	indiv. m <sup>-3</sup>	9.0	1.2	-51	0.893	0.372	Foraminifera abundance - mesozooplankton
	82	E_Other_me	indiv. m <sup>-3</sup>	12.8	3.1	18	0.304	0.761	Other mesozooplankton taxa (Tintinnida, Trematoda, Nemertea, Radiolaria, Rotifera, Cephalopoda, Cephalochordata, Echinodermata, Pteropoda, Cumacea, Mysida, Isopoda, Ostracoda, Amphipoda)
	83	E_Meso	indiv. m <sup>-3</sup>	3278.8	158.5	127	2.248	0.025	Total mesozooplankton abundance
	84	E_BMZ	mg m <sup>-3</sup>	26.8	1.4	97	1.713	0.087	Mesozooplankton biomass