Supplement of Biogeosciences, 15, 2309–2323, 2018
https://doi.org/10.5194/bg-15-2309-2018-supplement

Biogeosciences
Open Access

Supplement of

Mercury distribution and transport in the North Atlantic Ocean along the GEOTRACES-GA01 transect

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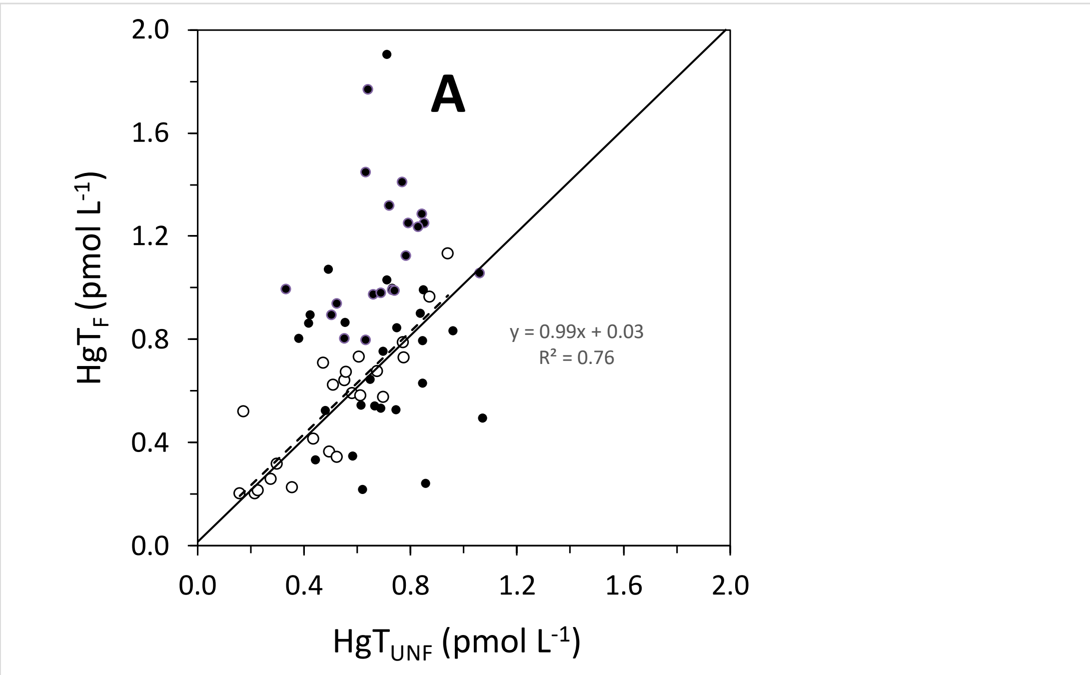
1. **Supplementary figures**

Figure S1. Relationship between HgT concentrations in filtered and unfiltered samples using different type of membranes, i.e., (A, black dot) untreated Sartobran (0.2 µm, cellulose acetate), (A, open dot) acid washed Acropak (0.2 µm, polyethersulfone) or (B) acid washed Nuclepore membranes (0.45 µm, polycarbonate) often used in the GEOTRACES protocols (Hammerschmidt, C., C. Lamborg, G. Gill and R. Mason. 2010. The GEOTRACES Hg Cookbook Last revised: 6/2/2010).



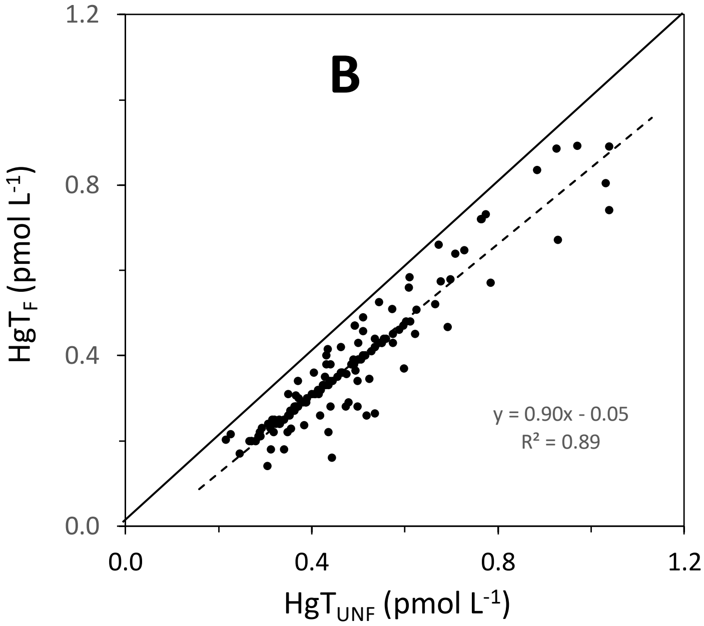


Figure S2. (a) Potential temperature (θ, in °C), (b) salinity, (c) oxygen (in μmol kg^{-1}), and (d) silicic acid (in μmol kg^{-1}) along 2014 GEOVIDE cruise (GEOTRACES-GA01 section, inset in subplot (a)), from Portugal (right) to Canada (left). The dashed horizontal black line in subplot (d) represents the isopycnal $\sigma 1 = 32.15$ kg m^{-3} (where σ1 is potential density referenced to 1000 dbar), which marks the limit between the upper and lower limbs of the Atlantic Meridional Overturning Circulation (AMOC) at the GEOTRACES-GA01 section (Zunino et al., this issue).

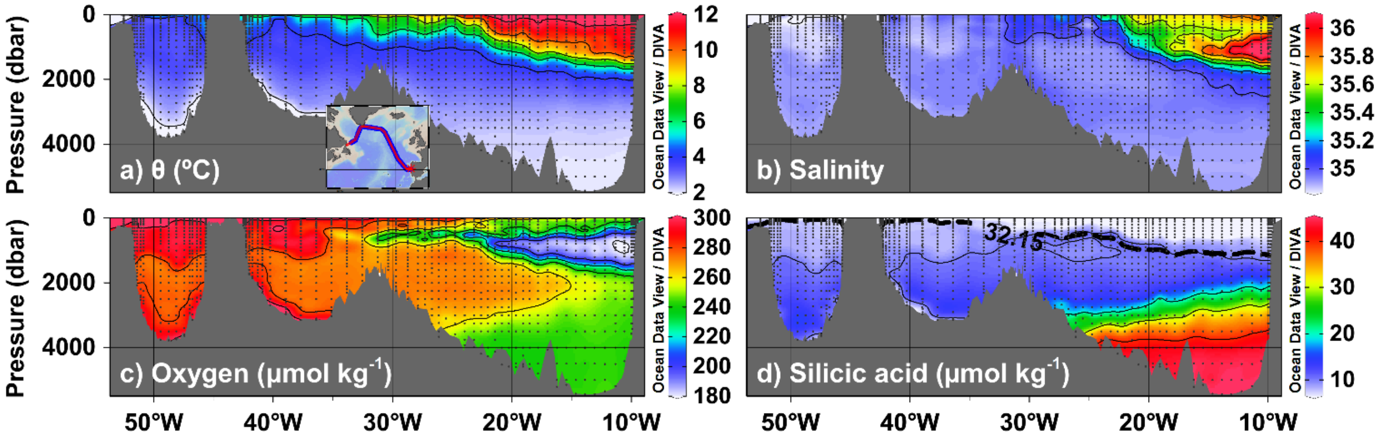


Figure S3. Frequency distribution of HgT_{UNF} concentrations measured in the 535 samples collected along the GEOTRACES-GA01 transect.

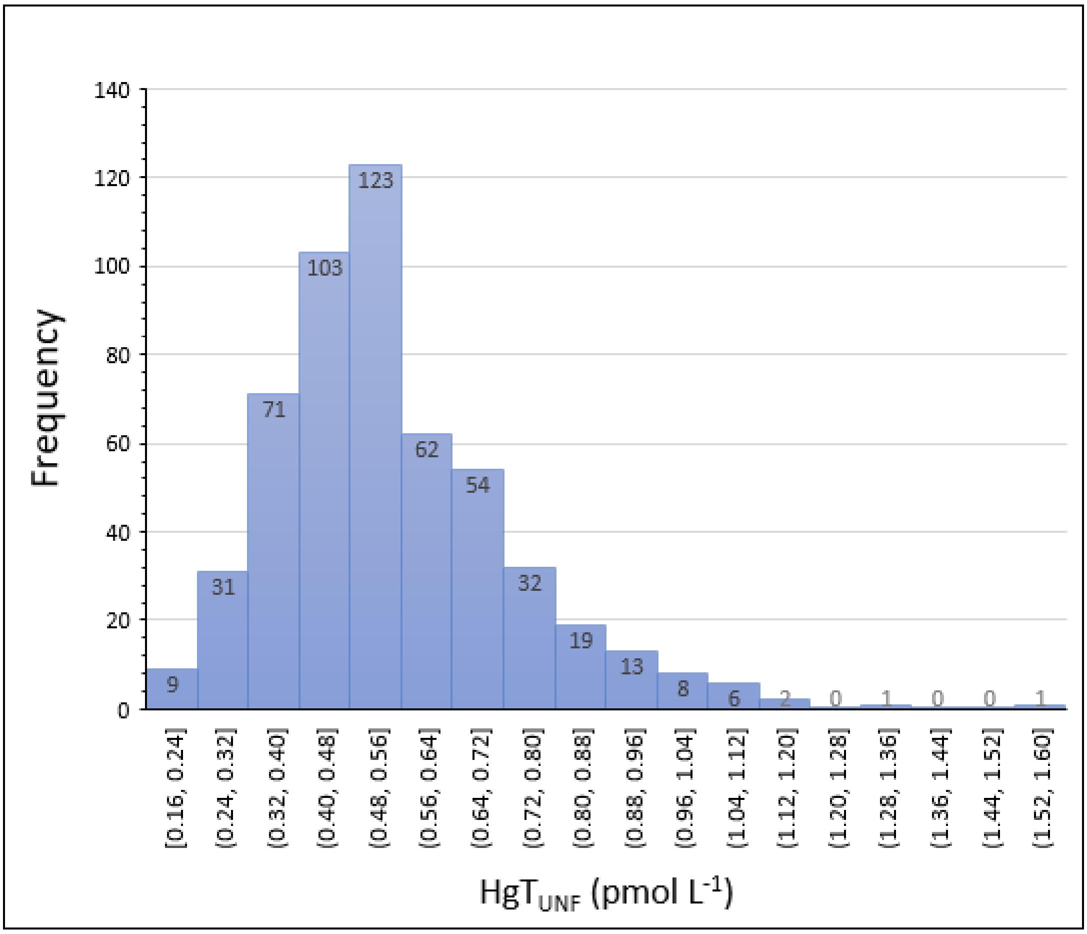
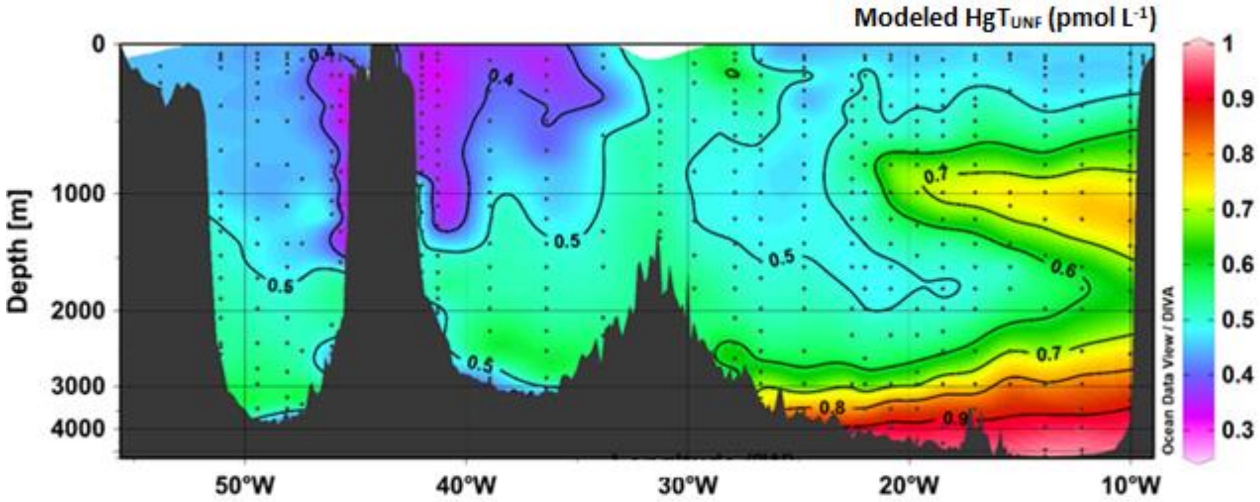


Figure S4. Distribution of HgT_{UNF} along the GEOTRACES-GA01 transect modelled by mixing of SWTs.



2. Supplementary tables

Table S1. Station coordinates along the GEOVIDE cruise (GEOTRACES-GA01 transect). IAP: Iberian Abyssal Plain; ENAB: Eastern North Atlantic basin. Latitude and longitude in decimal degrees.

Station	Latitude (°N)	Longitude (°W)	Basin
1	40.333	10.036	IAP
2	40.333	09.459	IAP
11	40.333	12.219	IAP
13	41.383	13.888	IAP
15	42.581	15.461	IAP
17	43.780	17.031	ENAB
19	45.051	18.505	ENAB
21	46.544	19.672	ENAB
23	48.039	20.848	ENAB
25	49.529	22.017	ENAB
26	50.278	22.605	ENAB
29	53.020	24.752	ENAB
32	55.506	26.710	ENAB
34	57.004	27.879	Iceland Basin
36	58.207	29.725	Iceland Basin
38	58.843	31.266	Iceland Basin
40	59.102	33.828	Iceland Basin
42	59.363	36.396	Irminger Sea
44	59.623	38.954	Irminger Sea
49	59.773	41.297	Irminger Sea

49	59.773	41.297	Irminger Sea
53	59.896	43.008	Irminger Sea
60	59.799	42.013	Irminger Sea
61	59.754	45.112	Labrador Sea
63	59.434	45.684	Labrador Sea
64	59.072	46.089	Labrador Sea
68	56.913	47.419	Labrador Sea
69	55.842	48.093	Labrador Sea
71	53.692	49.433	Labrador Sea
77	52.989	51.095	Labrador Sea
78	51.989	53.817	Labrador Sea

Modeled HgT_{UNF} (pmol L^{-1})

Table S2. Hydrological characteristics (Sal: salinity, T*p*: potential temperature, AOU: Apparent Oxygen Utilization, σ_Θ: potential density), total Hg (HgT) and anthropogenic Hg (Hg_{anth}) for the core of Labrador Sea Water (LSW) in the various basin of the North Atlantic Ocean. The core of LSW is defined as water masses with σ_Θ between 27.74- and 27.82. Hg_{Anth} is calculated as the difference between HgT and "Remineralized Hg". Due to the slope line Hg/P (1.02 ± 0.03 µmole of Hg per mole of P, according to Ref. 1), the "Remineralized Hg" (pmol L^{-1}) can be calculated with a Redfield ratio of 140 between P ("Remineralized P") and AOU (Ref. 2). IAP: Iberian Abyssal Plain; ENAB: Eastern North Atlantic basin. Ref. 1: Lamborg C.H., Hammerschmidt C.R., Bowman K.L., Swarr G.J., Munson K.M., Ohnemus D.C., Lam P.J., Heimbürger L.-E., Rijkenberg M.J.A., Saito M.A. 2014. A global ocean inventory of anthropogenic mercury based on water column measurements. *Nature*, 512, 65–68. Ref. 2: Minster, J.-F., and Boulahdid, M.: Redfield ratios along isopycnal surfaces---a complementary study. Deep Sea Res., 34, 1981-2003, 1987.

Station	Depth (m)	Sal	T*p* (°C)	AOU (µmol L^{-1})	σ_Θ	HgT_{UNF} (pmol L^{-1})	Hg_{Anth} (pmol L^{-1})	Basin
15	1582	35.03	4.30	58.3	27.78	0.68	0.25	IAP
15	1779	35.01	3.99	60.4	27.79	0.69	0.30	IAP
19	1582	34.94	3.89	51.1	27.75	0.54	0.17	ENAB
19	1779	34.93	3.59	51.6	27.77	0.55	0.17	ENAB
19	1975	34.92	3.34	51.8	27.79	0.56	0.18	ENAB
19	2221	34.92	3.14	53.5	27.81	0.57	0.18	ENAB
21	1482	34.99	4.34	66.5	27.75	0.53	0.13	ENAB
21	1976	34.92	3.44	66.7	27.78	0.59	0.21	ENAB
21	2269	34.92	3.16	69.6	27.81	0.56	0.17	ENAB
23	1385	35.01	4.50	67.3	27.74	0.67	0.27	ENAB
23	1582	34.94	3.96	63.9	27.75	0.73	0.25	ENAB
23	1778	34.92	3.67	64.2	27.76	0.58	0.21	ENAB
23	1974	34.92	3.44	66.2	27.78	0.62	0.24	ENAB
23	2269	34.91	3.15	68.9	27.81	0.70	0.26	ENAB
25	1580	34.92	3.82	60.0	27.74	0.60	0.25	ENAB
25	1778	34.92	3.67	62.6	27.76	0.75	0.22	ENAB
25	1974	34.92	3.51	65.6	27.77	0.56	0.18	ENAB
26	1384	34.92	3.79	58.6	27.74	0.69	0.34	ENAB
26	1580	34.92	3.63	61.5	27.76	0.68	0.31	ENAB
26	1974	34.92	3.31	65.6	27.79	0.76	0.32	ENAB
26	2268	34.92	3.08	68.3	27.82	0.73	0.33	ENAB
29	1185	34.91	3.83	53.0	27.74	0.47	0.16	ENAB
29	1382	34.91	3.72	57.1	27.75	0.56	0.22	ENAB
29	1581	34.92	3.57	60.9	27.77	0.49	0.22	ENAB
29	1776	34.92	3.42	62.9	27.78	0.55	0.19	ENAB
29	1973	34.92	3.26	64.3	27.80	0.59	0.26	ENAB
32	1383	34.91	3.73	56.4	27.75	0.55	0.22	Iceland basin
32	1532	34.92	3.64	59.2	27.76	0.49	0.29	Iceland basin
32	1680	34.92	3.55	61.1	27.77	0.69	0.30	Iceland basin
32	1974	34.92	3.29	63.4	27.80	0.72	0.31	Iceland basin
32	2218	34.93	3.10	65.9	27.82	0.63	0.29	Iceland basin
40	1282	34.94	3.70	56.8	27.77	0.63	0.30	Iceland basin
40	1578	34.93	3.42	59.0	27.79	0.58	0.24	Iceland basin
42	1185	34.90	3.72	50.2	27.74	0.42	0.22	Irminger Sea
42	1383	34.93	3.70	57.8	27.77	0.59	0.19	Irminger Sea

42	1580	34.94	3.53	59.9	27.79	0.65	0.23	Irminger Sea
42	1777	34.93	3.34	61.4	27.80	0.51	0.19	Irminger Sea
42	1972	34.94	3.19	62.9	27.82	0.53	0.19	Irminger Sea
44	1087	34.91	3.70	50.6	27.74	0.44	0.13	Irminger Sea
44	1236	34.91	3.63	55.0	27.76	0.49	0.16	Irminger Sea
44	1382	34.93	3.56	58.3	27.78	0.50	0.15	Irminger Sea
44	1581	34.93	3.40	60.1	27.79	0.50	0.15	Irminger Sea
44	1776	34.93	3.20	61.2	27.81	0.52	0.16	Irminger Sea
49	989	34.92	3.79	48.5	27.75	0.37	0.08	Irminger Sea
49	1088	34.93	3.74	50.8	27.76	0.39	0.09	Irminger Sea
49	1235	34.93	3.56	52.2	27.78	0.39	0.08	Irminger Sea
49	1482	34.91	3.17	53.4	27.80	0.43	0.12	Irminger Sea
49	1629	34.91	2.90	53.5	27.82	0.42	0.12	Irminger Sea
68	1382	34.86	3.42	41.5	27.74	0.37	0.15	Labrador Sea
68	1677	34.92	3.57	59.2	27.77	0.46	0.13	Labrador Sea
68	2463	34.92	2.89	66.4	27.82	0.50	0.14	Labrador Sea
69	1381	34.86	3.40	41.3	27.74	0.36	0.15	Labrador Sea
69	1580	34.89	3.53	51.9	27.75	0.44	0.15	Labrador Sea
69	1776	34.92	3.54	60.3	27.77	0.49	0.15	Labrador Sea
69	2071	34.92	3.26	62.8	27.80	0.52	0.15	Labrador Sea
69	2365	34.92	2.99	65.0	27.82	0.51	0.16	Labrador Sea
71	1383	34.91	3.64	43.9	27.75	0.46	0.14	Labrador Sea
71	1679	34.92	3.49	48.1	27.78	0.49	0.14	Labrador Sea
71	1974	34.92	3.21	48.6	27.80	0.51	0.16	Labrador Sea
71	2366	34.92	2.87	49.1	27.82	0.54	0.18	Labrador Sea