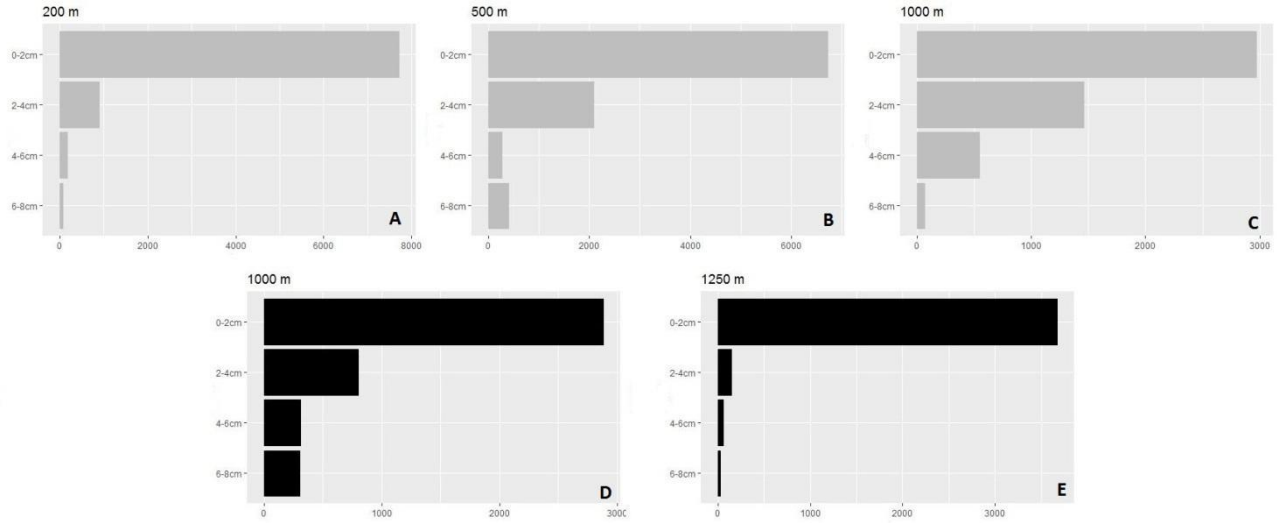
Supplementary Material



Annex A : Meiofauna abundance (ind 10 cm^{-2}) across the vertical depth gradient of the sediment for each station (just one replicate considered). **A:** Duse Bay 200 m.; **B:** Duse Bay 500 m; **C:** Duse Bay 1000 m; **D**: Prince Gustav Channel 1000 m; **E**: Prince Gustav Channel 1250 m. Just one replicate was considered, in order to show the analogous vertical gradient at different depths. Note the different scales of the graphs.

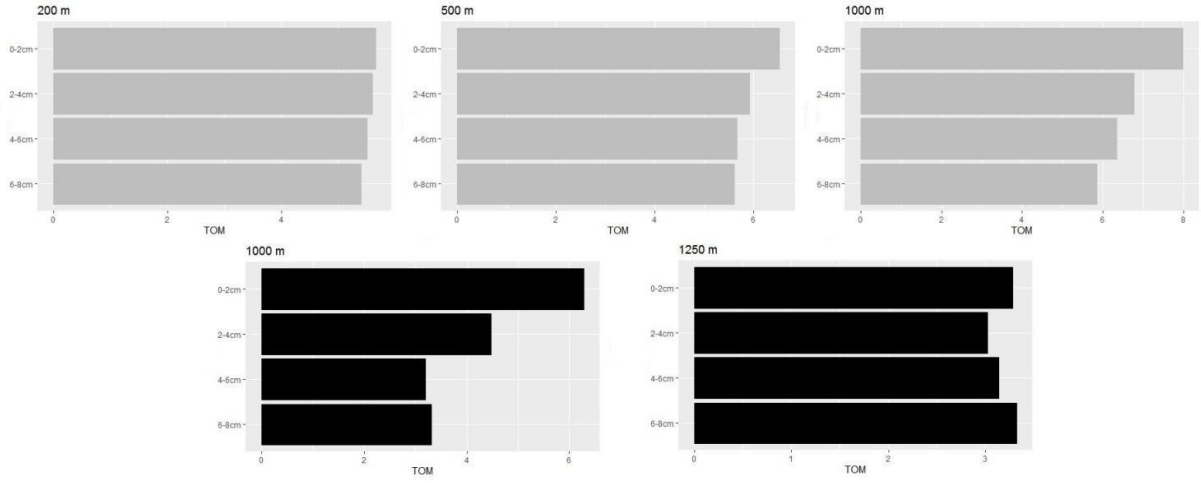
Annex B : A) PCR Condition for DNA Amplification. All samples have been analyzed including negative and positive controls. **B**) PCR conditions after indexing the pooled samples (8 µL per sample).

PCR Conditions			
18S: O.F. G18S4; O.R., 22R			
95 °C	2 min		
95 °C	1 min	x 30	
57 °C	45 sec		
72 °C	1 min		
72 °C	10 min		
Hold 20 °C			**A**

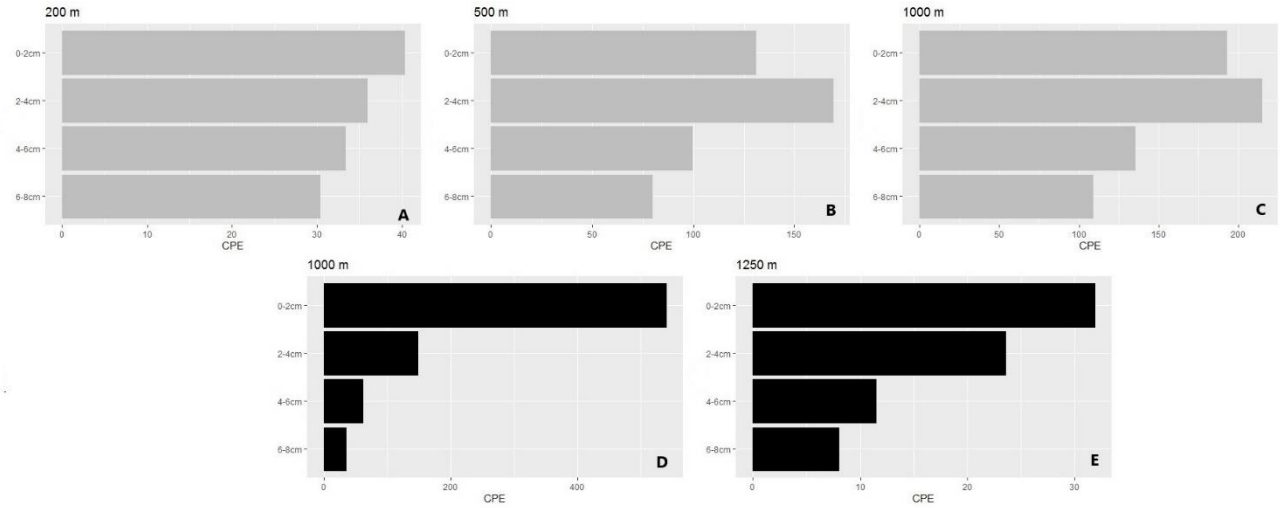
Index PCR Conditions			
95 °C	3 min		
95 °C	30 sec	x 8	
55 °C	30 sec		
72 °C	30 sec		
72 °C	5 min		
Hold 4°C			**B**

Annex C: Mean values ± standard deviation of Chlorophyll-a (Chl- a µg/g), Chloroplastic Pigment Equivalent (CPE), Total Organic Matter (%TOM), ratio between TOC and TN (TOC:TN, %), Chlorophyll-a and CPE ratio (Chl-a:CPE,%), Clay (%), Silt (%) and Sand (%) at each station (0-2 cm layer of three to four replicates).

	Duse Bay 200 m	Duse Bay 500 m	Duse Bay 1000 m	PGC 1000 m	PGC 1250 m
Chl a (µg/g)	13.24±5.96	52.64±2.29	56.57±19.33	131.42±48.47	9.45±1.45
CPE (µg/g)	32.7±9.97	122.4±7.59	148.5±40.05	367.5±172.63	27.3±3.8
TOM (%)	5.66±0.15	6.52±0.27	7.99±1.08	6.28±0.88	3.28±0.44
TOC:TN (%)	3.55±0.38	4.52±0.27	8.51±2.37	4.01±0.92	5.02±0.65
Chl a:CPE (%)	0.40±0.071	0.43±0.012	0.37±0.036	0.37±0.070	0.34±0.011
Clay (%)	7,30±1.56	10,5±2.69	11,86±1.04	8,13±1.14	10,67±2.65
Silt (%)	46,7±5.39	64,1±11.5	73,3±2.54	51,7±6.87	58,2±4.3
Sand (%)	45,98±6.66	25,4±14.05	14,9±3.29	40,2±7.42	31,1±6.47



Annex D: vertical gradient of the total organic matter (TOM, %) in the Area of interest. The top three graphs represent the three stations in Duse Bay (200 m, 500 m and 1000 m), whilst the bottom two show the gradient at the two PGC stations (1000 m and 1250 m depth).



Annex E: CPE vertical gradient within the sediment at each station (all replicates considered) expressed in µg/g **. A:** Duse Bay 200 m.; **B:** Duse Bay 500 m; **C:** Duse Bay 1000 m; **D**: Prince Gustav Channel 1000 m; **E**: Prince Gustav Channel 1250 m. Note the different scale of the graphs.

Annex F (1/2): Percentages of meiofauna taxa calculated on ind numb/ 10 cm^{-2} per replicate (three replicates considered) at every station (1/2).

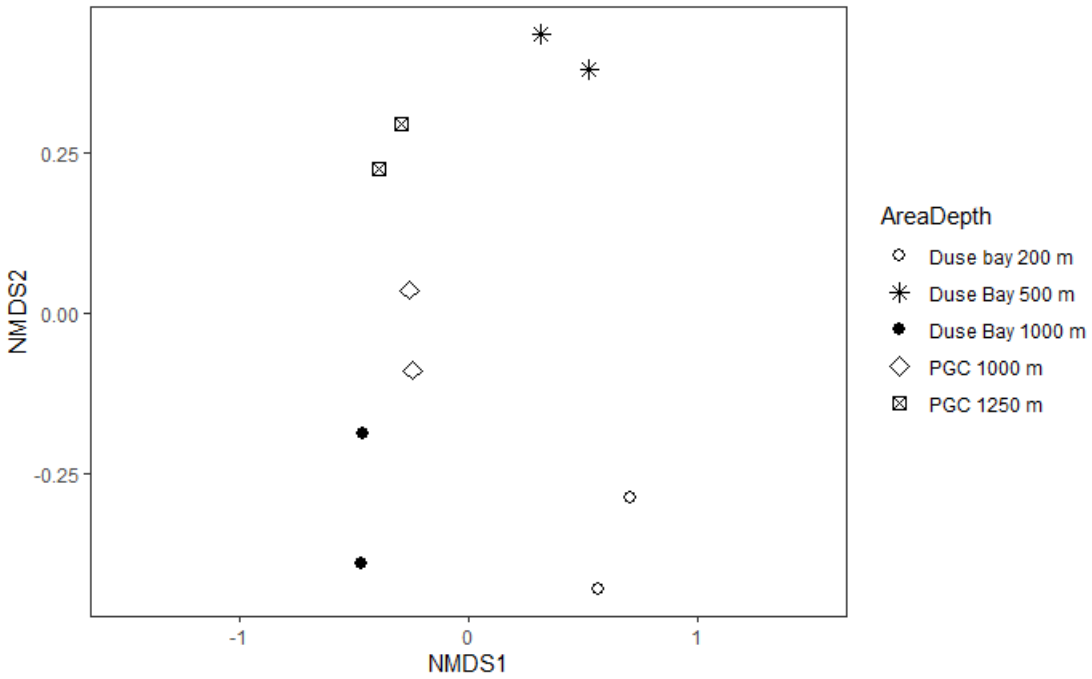
Station	*Replicate*	*Copepoda (%)*	*Gastrotricha (%)*	*Kinoryncha (%)*	*Isopoda (%)*	*Nauplii (%)*	*Nematoda (%)*
Duse Bay 200 m	A	11.2	0.2	1.0	0.0	12.0	69.6
	B	8.6	0.1	0.6	0.1	8.6	75.9
	C	7.3	0.1	0.9	0.0	6.8	80.2
Duse Bay 500 m	A	7.3	1.2	0.6	0.0	6.7	76.2
	B	6.1	0.7	1.3	0.0	7.8	73.8
	C	5.1	0.5	0.7	0.0	7.1	82.5
Duse Bay 1000 m	A	4.6	3.5	0.1	0.0	3.7	82.4
	B	4.6	4.1	0.6	0.0	4.3	80.1
	C	10.7	2.0	2.6	0.0	4.6	75.1
PGC 1000 m	A	5.1	0.1	0.7	0.0	0.4	91.0
	B	7.4	0.0	0.6	0.0	2.7	83.5
	C	7.2	0.0	1.6	0.0	2.8	83.7
PGC 1250 m	A	3.4	0.1	0.3	0.0	5.4	86.8
	B	3.8	0.2	0.2	0.0	3.2	87.8
	C	3.8	0.4	0.4	0.0	0.5	91.1

Annex F (continued, 2/2) : Percentages of meiofauna taxa calculated on ind numb/ 10 cm^{-2} per replicate (three replicates considered) at every station (2/2).

Nemertea (%)	*Oligochaeta (%)*	*Ostracoda (%)*	*Polichaeta (%)*	*Priapulida (%)*	*Turbellaria (%)*
0.0	0.2	2.9	0.5	0.6	1.8
0.3	0.2	2.1	0.5	0.5	2.5
0.0	0.2	2.1	0.4	0.5	1.6
0.0	0.2	2.2	0.7	0.5	4.4
0.0	0.2	1.5	2.2	1.0	5.4
0.0	0.0	1.6	0.5	0.4	1.4
0.0	0.0	2.1	1.2	0.7	1.6
0.0	0.2	1.2	1.8	2.1	1.0
0.0	0.0	1.4	1.2	1.5	0.9
0.2	0.1	0.8	0.8	0.3	0.6
0.1	0.2	2.6	1.6	0.3	0.9
0.0	0.1	2.2	1.2	0.6	0.4
0.0	0.0	1.1	0.3	1.7	0.8
0.0	0.0	0.9	0.5	2.1	1.3
0.0	0.2	1.5	0.1	0.6	1.3

Annex G: Meiofauna densities of the 0-2 cm layer per taxon at each station. Density means expressed in ind. / 10 cm^2, standard deviation (sd) showed for each mean value and median of the counted individuals. Three replicates considered at each station.

Taxon	**Duse Bay 200 m**			**Duse Bay 500 m**			**Duse Bay 1000 m**			**PGC 1000 m**			**PGC 1250 m**		
	mean	sd	median	mean	sd	median	mean	sd	median	mean	sd	median	mean	sd	median
Amphipoda	0.16	0.27	0.00	0.32	0.55	0.00	0.95	0.48	0.95	0.16	0.27	0.00	0.48	0.48	0.48
Bryozoa	0.00	0.00	0.00	0.16	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Copepoda	553.33	251.85	427.14	327.06	92.66	327.62	363.65	383.50	156.19	270.48	109.63	314.29	84.76	22.99	77.62
Cumacea	0.16	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.27	0.00	0.32	0.27	0.48
Gastrotricha	9.68	7.47	7.14	48.41	25.73	34.76	128.89	27.41	136.19	1.59	1.98	0.95	5.40	1.10	4.76
Kinoryncha	46.68	22.64	48.57	50.16	15.84	44.29	71.90	105.10	20.00	40.63	32.18	25.24	7.46	3.57	7.62
Isopoda	1.59	1.10	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.48	0.00	0.00	0.00
Nauplii	563.65	292.08	426.67	430.63	28.47	442.86	197.14	129.92	143.81	88.10	68.59	115.71	82.38	83.71	65.24
Nematoda	4430.79	7377.63	4293.33	4672.38	812.54	5014.29	3540.48	1826.62	2690.95	3408.57	761.32	3542.86	2062.54	649.11	1817.14
Nemertea	5.56	8.42	1.43	0.00	0.00	0.00	0.00	0.00	0.00	3.02	1.98	2.38	0.00	0.00	0.00
Oligochaeta	11.11	1.98	10.48	6.98	3.85	7.62	3.17	3.85	0.95	5.08	3.38	5.71	0.95	1.65	0.00
Ostracoda	142.86	62.08	112.38	109.21	34.86	101.90	67.94	33.70	57.14	81.75	50.60	110.00	26.67	8.90	25.24
Polychaeta	28.25	10.57	25.24	62.38	41.77	45.24	60.48	27.38	60.00	50.63	24.39	60.48	7.30	4.42	8.57
Priapulida	32.54	10.17	25.67	36.98	10.83	33.81	67.62	45.63	71.90	16.98	11.80	11.90	35.87	22.27	42.86
Syncarida	0.16	0.27	0.00	1.11	0.55	1.43	0.16	0.27	0.00	0.16	0.27	0.00	0.00	0.00	0.00
Tardigrada	0.00	0.00	0.00	0.32	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Turbellaria	113.81	26.23	125.24	217.78	109.36	271.90	49.05	17.93	45.24	26.19	12.24	21.90	25.40	2.25	26.19
Total	5943.33	1367.21	5355.23	6008.89	814.82	6371.42	4551.43	2577.60	3361.42	3993.97	1045.79	4242.85	2339.52	785.27	2069.05



Annex H:NMDS performed on the morphological dataset. The 0-2 cm layer of two replicates per station were analyze

Annex I (1/2) : Comparison between genera abundance (0-2 cm layer) detected in the ASVs analysis and the morphological dataset (Morph). At each station, the percentage of the most abundant genera (up to ~ 2%) are displayed for the two methods (Duse Bay area).

Duse Bay 200 m				Duse Bay 500 m				Duse Bay 1000 m			
Genera	**ASVs**	**Genera**	**Morph**	**Genera**	**ASVs**	**Genera**	**Morph**	**Genera**	**ASVs**	**Genera**	**Morph**
Molgolaimus	20,1%	*Desmodora*	18,7%	*Daptonema*	32,6%	*Diplolamelloides*	15,2%	*Sabatieria*	19,8%	*Anoplostoma*	15,0%
Halalaimus	15,8%	*Monoposthia*	11,2%	*Chromadorita*	22,4%	*Daptonema*	11,4%	*Bathylaimus*	12,0%	*Molgolaimus*	11,9%
Daptonema	13,1%	*Halalaimus*	7,5%	*Molgolaimus*	14,6%	*Chromadorita*	11,4%	*Daptonema*	11,9%	*Halalaimus*	8,1%
Chromadorita	10,4%	*Leptolaimus*	5,2%	*Sabatieria*	9,4%	*Retrotheristus*	7,6%	*Rhabdocoma*	10,8%	*Sabatieria*	5,0%
Viscosia	9,1%	*Molgolaimus*	5,2%	*Halalaimus*	6,7%	*Microlaimus*	7,6%	*Acantholaimus*	6,9%	*Chromadorita*	4,4%
Sabatieria	9,0%	*Graphonema*	4,5%	*Viscosia*	3,3%	*Paramonohystera*	4,5%	*Chromadorita*	6,6%	*Acantholaimus*	4,4%
Oxystomina	4,8%	*Diplolamelloides*	3,7%	*Bathyeurystomina*	3,1%	*Halalaimus*	3,8%	*Oxystomina*	4,6%	*Adoncholaimus*	4,4%
Manganonema	3,8%	*Aponema*	3,7%	*Bathylaimus*	2,3%	*Desmodora*	3,8%	*Viscosia*	4,6%	*Paracomesoma*	3,8%
Bathyeurystomina	3,4%	*Microlaimus*	3,0%			*Comesoma*	3,0%	*Halalaimus*	4,3%	*Southerniella*	3,1%
Halichoanolaimus	2,4%	*Daptonema*	2,2%			*Aegiolaimus*	2,3%	*Sphaerolaimus*	3,9%	*Neochromadora*	3,1%
		Filitonchus	2,2%			*Metadesmolaimus*	2,3%	*Desmoscolex*	2,9%	*Bathylaimus*	2,5%
		Chromadorita	2,2%			*Neochromadora*	2,3%	*Manganonema*	2,8%	*Marylynnia*	2,5%
		Neochromadora	2,2%			*Acantholaimus*	2,3%	*Subsphaerolaimus*	2,4%	*Spiliphera*	2,5%
								Molgolaimus	2,1%	*Halichoanlaimus*	2,5%

Annex I (continued, 2/2): Comparison between genera abundance (0-2 cm layer) detected in the ASVs analysis and the morphological dataset (Morph). At each station, the percentage of the most abundant genera (up to ~ 2%) are displayed for the two methods (Prince Gustav Channel area).

PGC 1000 m				**PGC 1250 m**			
Genera	**ASVs**	**Genera**	**Morph**	**Genera**	**ASVs**	**Genera**	**Morph**
Daptonema	34,9%	*Metacyatholaimus*	16,0%	*Chromadorita*	29,3%	*Chromadorita*	13,2%
Chromadorita	22,2%	*Adoncholaimus*	14,7%	*Daptonema*	24,7%	*Neochromadora*	10,6%
Molgolaimus	12,6%	*Monoposthia*	11,5%	*Sabatieria*	16,1%	*Adoncholaimus*	7,9%
Halalaimus	7,1%	*Cobbia*	10,9%	*Bathylaimus*	8,6%	*Sabatieria*	7,3%
Sabatieria	6,1%	*Rhabdodemania*	6,4%	*Rhabdocoma*	7,3%	*Paramonohystera*	5,3%
Bathylaimus	2,9%	*Anoplostoma*	4,5%	*Epacanthion*	3,8%	*Desmoscolex*	4,6%
Viscosia	2,9%	*Axonolaimus*	4,5%	*Halalaimus*	2,6%	*Anoplostoma*	4,6%
Oxystomina	2,7%	*Halichoanlaimus*	3,8%	*Phanodermopsis*	2,3%	*Halalaimus*	4,0%
		Cricolaimus	2,6%			*Halichoanlaimus*	4,0%
						Daptonema	2,6%
						Aponema	2,6%
						Paramesacanthion	2,0%
						Sphaerolaimus	2,0%

Annex J: Trophic community structure of nematode genera in the first 0-2 cm of the sediment. Comparison between the A) metabarcoding dataset (Unassigned ASVs not included) – mean of three or four replicates per station – and the B) morphologically identified dataset – mean of two replicates per station.