

Supplementary information 1: Raw data of in-situ water constituents and microplastic (MP) at the Trave river (T), the Elbe estuary (August: EA and June: EJ), and the Po delta (P). For the Trave all microplastics were analyzed with NIR spectroscopy. For the Elbe June campaign only FPA-based μ FTIR analysis was conducted and the results of the subsamples correspondingly extrapolated. Values of chlorophyll-a (Chl-A) and suspended particulate matter (SPM) in mg/L, Secchi depth in cm, Temperature (Temp) in °C, Salinity in PSU, CDOM in cm^{-1} , volume and microplastic particles per m^3 . Subsample refers to the percentage of the sample taken for FPA-based μ FTIR spectroscopy.

Sample	Date	Area	Chl-A	SPM	Secchi	Temp	PSU	CDOM	Volume	Subsample	MPs
T14	23.05.2014	WWTP	0.4058	12.560	72.5	20.4	NaN	3.3186	1.00	NaN	1.000
T15	24.05.2014	Coast	0.0032	3.557	475	16.6	NaN	0.6581	36.02	NaN	0.111
T16	24.05.2014	River	0.0154	4.257	228.5	16.8	NaN	1.4081	29.52	NaN	0.136
T17	24.05.2014	River	0.0213	5.371	215	18.1	NaN	1.9699	26.67	NaN	0.225
T18	24.05.2014	Coast	0.0047	3.557	350	16.6	NaN	1.0814	30.96	NaN	0.032
T19	24.05.2014	Coast	0.0035	3.414	550	16.6	NaN	0.7659	31.78	NaN	0.220
T20	24.05.2014	Coast	0.0022	3.871	600	16.4	NaN	0.593	27.47	NaN	0.000
T21	24.05.2014	Coast	0.0022	3.571	550	16.9	NaN	0.5828	29.31	NaN	0.068
T22	24.05.2014	Coast	0.0048	5.343	535	19.6	NaN	0.9412	31.93	NaN	0.000
T23	24.05.2014	River	0.0315	6.900	122.5	18.1	NaN	1.9382	14.35	NaN	0.000
T24	25.05.2014	River	0.3046	11.640	125	18.5	NaN	3.3792	33.38	NaN	0.360
T25	25.05.2014	River	0.3473	11.380	115	18.7	NaN	3.0557	23.92	NaN	1.213
T27	25.05.2014	WWTP	0.5399	21.560	50	22.7	NaN	3.2692	8.22	NaN	0.487
AL01	19.08.2015	Coast	NaN	21.489	55	18.97	25.62	0.967	21.414	100	1.090
AL02	19.08.2015	Coast	NaN	14.191	95	18.60	25.60	NaN	10.122	100	8.672
AL03	19.08.2015	Coast	NaN	22.172	65	18.08	26.67	NaN	20.619	50	3.443
AL04	19.08.2015	Coast	NaN	18.839	75	18.75	22.44	1.163	19.850	50	9.907
AL05	19.08.2015	Coast	NaN	21.956	65	19.13	22.23	1.28	25.770	50	5.131
AL06	20.08.2015	Coast	NaN	15.392	105	19.41	25.48	1.018	12.817	50	2.254
AL07	20.08.2015	Coast	NaN	27.639	70	19.19	26.63	0.859	18.022	50	5.487
AL08	20.08.2015	Coast	NaN	26.592	80	19.67	23.55	1.675	20.787	50	10.797
AL09	20.08.2015	Coast	NaN	26.622	65	19.67	21.24	1.539	20.713	50	10.138
AL10	20.08.2015	River	NaN	25.972	70	20.05	19.29	1.389	25.102	50	6.330

AL11	20.08.2015	River	NaN	42.272	50	19.82	17.79	1.606	18.083	100	1.413
AL12	20.08.2015	River	NaN	20.739	60	20.78	14.36	1.517	22.653	50	4.365
AL13	21.08.2015	River	NaN	67.838	25	20.57	7.56	3.094	24.216	10	3.671
AL14	21.08.2015	River	NaN	22.272	55	21.09	11.47	2.849	23.465	100	1.421
AL15	21.08.2015	River	NaN	25.789	60	20.84	9.69	2.189	13.282	100	0.753
AL16	21.08.2015	River	NaN	35.804	30	21.13	7.69	2.331	20.162	50	1.433
AL17	21.08.2015	River	NaN	34.524	60	21.30	6.41	1.978	17.201	100	0.000
AL18	21.08.2015	River	NaN	62.352	35	21.23	5.33	2.065	22.460	50	2.177
AL19	21.08.2015	River	NaN	38.385	30	22.04	2.65	2.654	23.172	50	5.754
AL20	21.08.2015	River	NaN	47.407	30	21.97	1.78	NaN	16.651	100	2.469
EL01	14.06.2015	River	NaN	49.476	38.75	20.4	0.5	2.446	38.638	50	1.006
EL02	15.06.2015	River	NaN	26.815	38.75	19.2	0.5	1.721	48.688	50	0.799
EL03	15.06.2015	River	NaN	23.048	48.75	18.7	0.5	1.820	50.184	50	0.376
EL04	16.06.2015	River	NaN	122.656	20	17.7	0.7	1.709	30.328	50	2.002
EL05	16.06.2015	River	NaN	130.322	15.5	18.1	0.6	1.625	23.915	50	1.742
EL06	16.06.2015	River	NaN	73.322	21.2	18.1	0.6	1.764	43.792	50	0.707
EL07	17.06.2015	River	NaN	323.867	9	16.9	1.2	1.327	17.018	50	4.440
EL08	17.06.2015	River	NaN	74.089	16	16.6	2.4	0.741	32.25	50	1.654
EL09	23.06.2015	Coast	NaN	4.452	NaN	15.2	28.7	1.727	64.381	50	0.052
EL10	23.06.2015	Coast	NaN	10.746	NaN	15.3	27.1	1.131	63.936	50	0.104
EL11	23.06.2015	Coast	NaN	25.624	65	15.4	25	1.457	78.279	50	0.298
EL12	25.06.2015	River	NaN	51.659	44.25	16.1	16	1.601	39.189	50	1.616
EL13	25.06.2015	River	NaN	90.348	27.75	16.2	17.9	1.393	51.436	50	2.506
EL14	25.06.2015	River	NaN	20.778	42.5	16.4	10.7	1.692	52.207	50	4.597
Po01	10.06.2016	River	0.008	21.839	81.25	21.45	0.14	0.775	12.091	12.5	17.354
Po02	10.06.2016	Mouth	0.008	20.992	55	22.05	0.26	1.409	24.393	25	2.986
Po03	10.06.2016	Coast	0.005	11.698	65	22.86	6.91	0.139	26.383	25	9.204
Po04	10.06.2016	Coast	0.013	12.922	112.5	22.56	26.67	0.704	39.162	25	6.099
Po05	10.06.2016	Mouth	0.010	15.604	47.5	21.89	0.28	0.424	47.652	50	1.004

Po06	15.06.2016	Mouth	0.005	25.180	45	22.00	1.20	1.467	43.582	12.5	12.295
Po07	15.06.2016	Coast	0.005	13.039	72.5	22.58	17.02	1.014	41.449	25	4.122
Po08	15.06.2016	Coast	0.014	10.263	90	22.94	23.74	0.224	53.207	1.6	56.061
Po09	15.06.2016	Coast	0.014	9.470	92.5	22.72	27.02	0.509	33.895	6.3	2.444
Po10	18.06.2016	Coast	0.010	31.290	38.75	21.95	0.29	0.231	55.060	12.5	12.275
Po11	18.06.2016	River	0.008	26.748	35	22.32	0.26	0.362	37.196	6.3	16.153
Po12	18.06.2016	Mouth	0.043	17.051	80	21.72	23.56	3.296	36.136	25	35.749
Po13	18.06.2016	Coast	0.009	10.593	162.5	23.12	31.91	0.074	32.374	12.5	78.299
Po14	18.06.2016	Coast	0.006	11.814	125	22.85	31.93	NaN	39.199	25	4.817
Po15	18.06.2016	Coast	0.005	21.276	46.25	22.88	9.61	0.259	27.628	50	3.360
Po16	18.06.2016	Coast	0.010	66.067	33.75	22.51	0.15	0.370	28.621	25	10.546
Po18	23.06.2016	River	0.006	61.816	36.25	21.58	0.12	3.541	30.565	1.6	13.887
Po19	23.06.2016	River	0.008	24.380	32.5	22.82	0.14	0.398	38.945	25	3.257
Po20	23.06.2016	Mouth	0.017	26.133	40	24.01	11.11	0.187	41.710	25	3.273
Po21	23.06.2016	Coast	NaN	7.689	122.5	25.99	23.91	1.326	42.417	25	3.590

Supplementary information 2: Pearson's correlation coefficient for analyzed water constituents of the three investigated river systems. Chl-A: chlorophyll-a, SPM: suspended particulate matter, CDOM: colored dissolved organic matter.

TRAVE			
	Chl-A	SPM	CDOM
Chl-A	-	-	-
SPM	0.96	-	-
CDOM	0.9	0.86	-
ELBE AUG			
	SPM		
CDOM	0.6		

PO DELTA			
	Chl-A	SPM	CDOM
Chl-A	-	-	-
SPM	-0.06	-	-
CDOM	0.27	0.08	-

Supplementary information 3: Fibers and particles (*) in negative controls for analyzed microplastic size class <0.5 mm. PP: Polypropylene, PET: Polyethylene terephthalate, PAN: Polyacrylonitrile, PBT: Polybutylene terephthalate.

Study site	ID Sample	PP	PET	PAN	PBT	SUM	
Elbe Aug	Blank1		0	2	2	0	4
Elbe Aug	Blank2		0	1	0	0	1
Elbe Aug	Blank3		0	1	0	0	1
Elbe Aug	Blank4		0	0	0	0	0
Elbe Aug	Blank5		0	1	0	0	1
Elbe Jun	Blank0		0	2	0	0	2
Elbe Jun	Blank1		0	2	0	0	2
Elbe Jun	Blank2		0	0	1	0	1
Elbe Jun	Blank3		0	2	3	0	5
Po delta	Blank2		0	10	0	0	10
Po delta	Blank3		0	5	0	1	6
Po delta	Blank4		1*	11	0	0	11
Po delta	Blank5		0	7	2	0	9
Po delta	Blank6		0	21	0	0	21
Po delta	Blank7		0	1	0	0	1