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Contrasted release of insoluble elements (Fe, Al, rare earth elements, Th, Pa) after dust deposition in seawater: a tank experiment approach

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Tab. ES1: REE and Th GEOTRACES standard analyses

	light REE								medium REE										heavy REE										Thorium			
	La	$2\sigma_n$	Ce	$2\sigma_n$	Pr	$2\sigma_n$	Nd	$2\sigma_n$	Sm	$2\sigma_n$	Eu	$2\sigma_n$	Gd	$2\sigma_n$	Tb	$2\sigma_n$	Dy	$2\sigma_n$	Ho	$2\sigma_n$	Er	$2\sigma_n$	Tm	$2\sigma_n$	Yb	$2\sigma_n$	Lu	$2\sigma_n$	232Th	$2\sigma_n$	230Th	$2\sigma_n$
	(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(aM)	
BATS 2000 m_1	17.9	0.47	5.37	0.2	3.84	0.12	17.2	0.5	3.56	0.2	0.89	0.05	4.9	0.2	0.76	0.03	5.55	0.2	1.41	0.1	4.66	0.2	0.69	0.02	4.5	0.2	0.72	0.03	113	160	37.3	1.1
BATS 2000 m_2	16.9	0.35	4.86	0.1	3.77	0.12	17.22	0.4	3.57	0.2	0.91	0.06	4.7	0.2	0.75	0.03	5.65	0.2	1.4	0.0	4.66	0.1	0.68	0.03	4.42	3.43	0.69	0.02	140	165	36.1	2.1
BATS 2000 m_3	16.4	0.84	4.94	0.2	3.72	0.13	16.96	0.5	3.58	0.2	0.89	0.04	4.5	0.2	0.76	0.03	5.5	0.2	1.36	0.1	4.62	0.2	0.64	0.04	4.33	0.48	0.69	0.05	126	171	37.8	0.9
average	17.1	1.08	5.06	0.4	3.77	0.08	17.12	0.2	3.57	0	0.9	0.01	4.7	0.3	0.76	0.01	5.57	0.1	1.39	0.0	4.65	0.0	0.67	0.04	4.41	0.12	0.7	0.03	126	19	37	1
2σn																																
consensual value	23		5.0		3.9		16.9		3.4		0.9		4.7		0.8		5.7		1.5		4.9		0.7		4.6		0.8		208		38	
	2.7		2.2		0.3		1.2		0.3		0.1		0.5		0.1		0.4		0.1		0.2		0.0		0.2		0.0		42		6	

The uncertainties ($2\sigma_n$) given here are the twice the uncertainties on the mean for each analysis. Uncertainties on the blanks are also propagated.

Tab. ES2: Dissolved Fe and Al concentrations in the tank experiments from the Tyrrhenian Sea (TYR), Ionian Sea (ION) and Western Mediterranean (FAST).

Station	tank	time (h)	DFe (nM)	DAl (nM)	Station	tank	time (h)	DFe (nM)	DAl (nM)	Station	tank	time (h)	DFe (nM)	DAl (nM)
TYR	C1	0	1.54	46.3	ION	C1	0	2.49	69.6	FAST	C1	0	1.73	24.1
	C1	24	1.11	47.4		C1	24	1.60	80.3		C1	24	1.34	23.5
	C1	72	1.60	47.8		C1	72	1.37	81.1		C1	72	0.88	27.4
	C2	0	1.53	50.3		C2	0	2.49	79.6		C2	0	1.94	24
	C2	24	0.67	42.8		C2	24	1.78	80.2		C2	24	1.80	23.5
	C2	72	1.41	46.1		C2	72	1.55	71		C2	72	0.99	27.7
	D1	0	1.46	43.9		D1	0	2.84	70.7		D1	0	6.68	49
	D1	24	1.45	79		D1	24	1.64	115.7		D1	24	2.66	61
	D1	72	1.35	102.2		D1	72	1.64	138.4		D1	96	9.69	107.4
	D2	0	1.61	44.1		D2	0	NA	70.7		D2	0	6.14	22.4
	D2	24	0.53	81.2		D2	24	1.52	113.4		D2	24	3.93	62.7
	D2	72	0.87	98.7		D2	72	1.36	135.6		D2	96	2.01	99.3
	G1	0	1.73	45.4		G1	0	5.10	83		G1	0	3.05	25.4
	G1	24	0.71	86.6		G1	24	2.52	112.7		G1	24	2.29	62.7
	G1	72	3.21	109.9		G1	72	3.53	136.4		G1	96	2.85	107.7
	G2	0	1.13	48.8		G2	0	2.04	79.3		G2	0	1.59	23.6
	G2	24	1.05	76		G2	24	1.53	112.5		G2	24	3.89	60.5
	G2	72	0.90	101.3		G2	72	1.45	144.2		G2	96	1.16	104.3

Tab. ES3: Dissolved REE, Th and Pa concentrations and uncertainties ($2\sigma_n$) in the tanks experiments for the Ionian Sea (ION) and Western Mediterranean (FA). C, D and G correspond to the treatments described in the manuscript.

		light REE								medium REE																heavy REE												Thorium				Protactinium	
tank	time	La	$2\sigma_n$	Ce	2σ	Pr	$2\sigma_n$	Nd	$2\sigma_n$	Sm	$2\sigma_n$	Eu	$2\sigma_n$	Gd	$2\sigma_n$	Tb	$2\sigma_n$	Dy	$2\sigma_n$	Ho	$2\sigma_n$	Er	$2\sigma_n$	Tm	$2\sigma_n$	Yb	$2\sigma_n$	Lu	$2\sigma_n$	232Th	$2\sigma_n$	230Th	$2\sigma_n$	231Pa (a	2σn		
	(h)	(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(pM)		(aM)		(aM)			
ION C1	1	21	1	22	1	5.6	0.2	25.7	0.6	6.1	0.3	0.0	0.1	8.5	0.5	1.4	0.1	10.3	0.5	2.4	0.2	7.9	0.4	1.1	0.1	7.2	0.3	1.1	0.0	1.0	0.1	11.4	0.9				
ION C1	24	29	1	36	1	7.6	0.3	33.9	0.8	7.7	0.4	2.0	0.1	10.2	0.4	1.6	0.1	11.3	0.5	2.6	0.1	8.5	0.3	1.1	0.1	7.5	0.2	1.2	0.1	1.2	0.1	13.9	1.0				
ION C1	72	28	1	35	1	7.1	0.3	32.1	0.7	7.7	0.4	2.0	0.1	9.8	0.4	1.6	0.1	11.3	0.4	2.6	0.1	8.3	0.4	1.2	0.1	7.5	0.3	1.1	0.0	1.2	0.1	10.9	1.0				
ION C2	1	22	1	22	1	5.7	0.2	25.9	0.6	6.2	0.4	1.6	0.1	8.5	0.4	1.4	0.1	10.2	0.5	2.5	0.1	8.1	0.4	1.1	0.0	7.3	0.3	1.1	0.1	0.9	0.1	11.5	0.9				
ION C2	24	24	1	29	1	6.4	0.2	29.5	0.5	6.8	0.2	1.8	0.1	8.9	0.3	1.5	0.1	10.6	0.4	2.5	0.1	8.1	0.3	1.1	0.0	7.5	0.3	1.1	0.1	1.0	0.1	10.1	0.6				
ION C2	72	25	1	30	1	6.4	0.3	29.0	0.8	6.8	0.3	1.7	0.1	9.0	0.4	1.5	0.1	10.7	0.3	2.5	0.1	8.1	0.3	1.1	0.1	7.5	0.2	1.1	0.1	1.0	0.1	10.3	0.8				
ION D1	1	75	4	144	7	23.8	1.1	107.2	3.4	24.6	1.3	5.8	0.4	26.8	1.3	4.0	0.2	25.4	1.1	5.1	0.2	15.5	0.8	2.0	0.1	12.7	0.4	1.8	0.1	4.9	0.1	47.3	1.3				
ION D1	24	72	3	141	5	21.2	0.6	95.6	1.3	21.2	0.7	5.1	0.2	24.9	0.8	3.7	0.1	24.0	0.8	5.0	0.2	15.4	0.5	2.0	0.1	12.6	0.4	1.9	0.1	3.7	0.1	32.7	1.8				
ION D1	72	60	2	122	5	17.9	0.6	80.5	1.3	18.2	0.7	4.5	0.2	22.5	0.8	3.4	0.2	22.8	0.9	4.8	0.2	14.8	0.5	1.9	0.1	12.4	0.5	1.8	0.1	2.8	0.1	24.9	1.1				
ION D2	1	72	2	140	5	23.3	0.8	108.4	2.0	24.2	0.9	5.7	0.2	27.2	1.1	4.0	0.2	25.4	1.2	5.2	0.2	15.4	0.6	2.0	0.1	12.8	0.5	1.9	0.1	5.1	0.1	46.5	1.2				
ION D2	24	70	3	137	4	21.0	0.8	94.2	2.4	21.5	1.0	5.2	0.3	24.9	0.9	3.8	0.1	24.3	1.1	5.1	0.3	15.4	0.7	2.0	0.1	12.7	0.3	1.8	0.1	3.9	0.1	37.1	1.7				
ION D2	72	66	2	132	4	19.5	0.8	88.9	2.3	20.0	0.8	4.8	0.2	24.0	1.0	3.7	0.2	24.3	1.4	5.1	0.2	15.8	0.7	2.1	0.1	13.2	0.7	1.9	0.1	3.0	0.1	27.9	2.2				
ION G1	1	78	3	150	6	23.7	0.9	106.9	1.8	23.6	1.2	5.6	0.3	26.5	0.9	3.9	0.1	24.2	1.1	5.0	0.3	14.7	0.5	1.9	0.1	12.1	0.5	1.7	0.1	3.5	0.1	33.1	1.5				
ION G1	24	79	3	151	7	22.1	1.0	98.7	1.6	21.4	1.0	5.1	0.2	24.8	1.2	3.7	0.2	23.5	0.9	4.9	0.2	14.7	0.5	1.9	0.1	12.0	0.5	1.8	0.1	2.3	0.1	22.4	1.2				
ION G1	72	73	3	142	7	19.7	0.8	88.0	0.9	19.3	1.1	4.6	0.2	23.3	1.1	3.5	0.2	22.5	0.9	4.8	0.2	14.3	0.6	1.9	0.1	12.0	0.5	1.7	0.1	2.0	0.1	18.0	0.9				
ION G2	1	82	3	156	5	24.3	0.8	109.2	1.4	24.2	1.0	5.7	0.3	27.2	1.2	3.9	0.2	24.7	1.2	5.1	0.2	15.0	0.7	2.0	0.1	12.1	0.4	1.8	0.1	3.6	0.1	34.5	3.4				
ION G2	24	80	3	154	7	22.4	0.9	101.1	1.6	21.8	1.0	5.2	0.3	25.4	1.2	3.8	0.2	23.8	1.0	5.0	0.2	14.8	0.5	2.0	0.1	12.4	0.7	1.8	0.1	2.3	0.1	19.7	0.8				
ION G2	72	72	2	141	4	19.3	0.7	85.6	1.3	18.7	0.7	4.6	0.2	22.4	0.8	3.4	0.1	22.2	0.8	4.8	0.1	14.4	0.5	1.9	0.1	12.0	0.3	1.8	0.1	2.0	0.1	17.3	1.1				
FA C1	0	19	1	20	1	5.1	0.2	23.6	1.1	5.9	0.4	1.5	0.1	8.1	0.4	1.2	0.1	8.1	0.4	1.9	0.1	6.1	0.3	0.8	0.1	5.1	0.3	0.8	0.0	1.1	0.1	11.8	1.3	2.6	0.5		
FA C1	1	20	1	23	1	5.4	0.2	26.1	1.0	6.2	0.4	1.6	0.1	8.7	0.4	1.3	0.1	8.6	0.4	2.0	0.1	6.3	0.3	0.8	0.1	5.3	0.2	0.8	0.1	1.3	0.1	16.4	1.5	2.5	0.5		
FA C1	6	24	1	35	1	6.9	0.3	32.6	1.2	7.7	0.4	1.9	0.1	10.5	0.5	1.5	0.1	9.8	0.5	2.1	0.1	6.8	0.4	0.9	0.1	5.7	0.3	0.9	0.1	1.4	0.0	20.4	1.2	3.2	0.5		
FA C1	12	32	1	58	3	9.6	0.4	43.1	1.8	10.2	0.5	2.5	0.1	13.4	0.6	1.7	0.1	10.9	0.5	2.3	0.1	7.0	0.3	0.9	0.0	6.0	0.2	0.9	0.0	10.9	0.1	94.7	2.5	2.4	0.5		
FA C1	24	26	1	35	1	6.9	0.3	32.6	1.3	8.0	0.5	1.9	0.2	11.2	0.7	1.5	0.1	10.1	0.7	2.2	0.1	6.9	0.4	0.9	0.1	5.9	0.4	0.9	0.1	1.5	0.1	28.4	1.8	1.8	0.7		
FA C1	48	29	1	38	2	7.2	0.3	33.3	1.3	8.0	0.4	1.9	0.1	11.1	0.6	1.4	0.1	9.6	0.5	2.1	0.1	6.7	0.4	0.9	0.1	5.6	0.2	0.9	0.1	1.2	0.1	10.9	1.3	2.4	0.5		
FA C1	72	29	1	33	1	6.6	0.3	29.5	1.2	7.2	0.4	1.7	0.1	10.1	0.6	1.3	0.1	9.4	0.5	2.1	0.1	6.7	0.4	0.9	0.1	5.7	0.3	0.9	0.1	1.1	0.1	14.1	1.8	2.6	0.6		
FA C1	96	30	1	34	1	6.7	0.3	31.2	1.2	7.5	0.5	1.8	0.1	10.6	0.6	1.4	0.1	9.5	0.5	2.1	0.1	6.8	0.4	0.9	0.1	5.7	0.3	0.9	0.1	1.1	0.1	17.9	1.8	2.3	0.5		
FA C2	1	25	2	29	2	6.2	0.6	28.4	1.0	6.7	0.6	1.8	0.1	8.4	0.7	1.3	0.1	9	0.8	2.0	0.1	6.4	0.5	0.8	0.1	5.3	0.2	0.8	0.1	ND	ND	ND	ND				
FA C2	48	28	1	35	1	6.6	0.4	30.5	0.9	7.2	0.4	1.9	0.1	8.8	0.6	1.4	0.1	9	0.5	2.0	0.1	6.6	0.3	0.9	0.0	5.5	0.3	0.8	0.0	0.9	0.2	8.8	1				
FA C2	96	29	1	32	1	6.2	0.2	28.9	1.3	6.8	0.5	1.8	0.1	8.6	0.3	1.3	0.1	9	0.4	2.1	0.1	6.6	0.3	0.9	0.1	5.4	0.2	0.8	0.1	0.7	0.3	4.8	1.3				
FA D1	0	22	1	27	1	5.9	0.3	27.6	1.2	6.4	0.4	1.6	0.1	9.2	0.6	1.3	0.1	9	0.5	2.0	0.1	6.1	0.4	0.8	0.1	5.3	0.3	0.8	0.1	1.5	0.0	18.0	1.2	2.1	0.5		
FA D1	1	71	3	151	6	24.4	1.0	110.8	4.0	25.2	1.0	6.0	0.3	33.1	1.4	4.1	0.2	25	1.0	4.8	0.2	13.7	0.6	1.7	0.1	10.8	0.4	1.5	0.1	5.9	0.1	65.5	3.0	2.7	0.4		
FA D1	6	76	3	149	6	23.4	1.0	106.6	4.3	24.1	1.5	5.8	0.3	32.4	1.5	4.0	0.2	25	1.1	4.8	0.2	14.1	0.6	1.8	0.1	11.1	0.4	1.5	0.1	5.4	0.1	57.5	2.0	2.3	0.6		
FA D1	12	75	2	151	5	23.1	0.9	104.6	4.1	23.3	1.1	5.6	0.3	32.3	1.7	3.9	0.2	24	1.4	4.8	0.3	14.0	0.9	1.8	0.1	11.1	0.7	1.6	0.1	10.2	0.1	85.4	2.4	2.6	0.4		
FA D1	24	73	3	149	6	22.3	1.0	100.3	4.3	22.8	1.3	5.3	0.3	30.9	1.6	3.8	0.2	24	1.3	4.7	0.3	13.8	0.8	1.7	0.1	11.1	0.7	1.6	0.1	9.3	0.1	72.7	2.0	2.2	0.4		
FA D1	48	58	3	127	6	19.2	0.8	89.4	3.7	20.2	1.1	5.0	0.2	28.6	1.3	3.7	0.2	23	1.1	4.8	0.2	14.2	0.7	1.8	0.1	11.4	0.4	1.6	0.1	3.0	0.1	25.1	1.9	1.9	0.8		
FA D1	72	53	2	110	5	16.9	0.8	79.2	3.5	18.0	1.0	4.4	0.3	25.6	1.4	3.2	0.2	21	1.1	4.4	0.3	13.1	0.7	1.7	0.1	10.9	0.6	1.6	0.1	2.3	0.1	32.0	1.7	2.4	0.5		
FA D1	96	58	2	97	3	15.5	0.6	70.7	2.7	16.7	1.1	3.9	0.3	23.4	1.4	3.0	0.2	20	1.3	4.3	0.3	12.8	0.8	1.6	0.1	9.9	0.6	1.6	0.1	2.1	0.1	44.8	2.4	2.7	0.6		
FA D2	1	20	3	23	4	5.3	0.9	24.8	0.8	6.1	1.0	1.5	0.3	7.6	1.2	1.2	0.2	8	1.4	1.9	0.3	5.9	1.0	0.8	0.1	5.0	0.3	0.8	0.1	1.0	0.1	8.8	1.0				
FA D2	48	65	2	130	4	24.2	0.7	107.3	1.0	20.2	0.8	5.0	0.2	24.8	0.7	3.6	0.1	23	0.9	4.7	0.2	13.8	0.5	1.7	0.1	10.7	0.5	1.5	0.1	3.0	0.1	28.7	1.3				
FA D2	96	57	2	113	4	17.5	0.5	81.0	1.6	18.0	0.8	4.3	0.2	21.5	0.8	3.2	0.2	21	1.1	4.4	0.2	13.2	0.7	1.7	0.1	10.5	0.3	1.6	0.1	2.3	0.1	20.1	1.3				
FA G1	1	83	2	163	5	25.4	0.8	115.1	1.9	25.2	0.8	5.7	0.3	27.6	1.1	3.9	0.1	24	0.6	4.8	0.2	13.7	0.5	1.7	0.1	10.6	0.6	1.5	0.0	4.8	0.1	40.6	2.1				
FA G1	48	69	4	139	10	21.2	1.7	98.3	1.1	21.2	1.8	5.1	0.4	25.3	2.0	3.6	0.2	23	1.7	4.7	0.4	13.7	1.1	1.8	0.1	10.9	0.4	1.6	0.1	1.8	0.1	18.9	1.5				
FA G1	96	69	2	127	4	19.4	0.6	86.0	1.3	19.3	0.8	4.6	0.1	22.6	0.6	3.4	0.1	22	1.0	4.6	0.1	13.4	0.3	1.8	0.0	10.7	0.4	1.6	0.0	1.5	0.1	12.9	1.3				
FA G2	1	78	3	162	7	25.4	1.0	115.5	0.9	25.3	1.2	5.8	0.2	27.4	1.1	3.9	0.2	23	0.9	4.7	0.2	13.3	0.6	1.7	0.1	10.3	0.6	1.4	0.1	4.7	0.1	40.5	1.7				
FA G2	48	70	3	140	5	20.8	0.7	94.7	2.7	20.5	0.9	4.9	0.2	24.0	1.3	3.5	0.2	22	1.0	4.5	0.3	13.5	0.6	1.7	0.1	10.5	0.4	1.5	0.1	1.7	0.1	15.6	1.3				
FA G2	96	68	2	124	4	21.0	0.6	92.6	2	18.5	0.8	4.6	0.2	23.3	1.1	3.3	0.1	21	0.8	4.5	0.2	13.4	0.4	1.7	0.1	10.5	4.6	1.5	0.1	1.2	0.4	12.6	3.6				

The uncertainties ($2\sigma_n$) given here are the twice the uncertainties on the mean far each analysis. Uncertainties on the blanks are also propagated.

Tab. ES4: Flux of major elements in the sediment traps from the tank experiments

Sample	sampling period	Particulate mass flux	POC fluxe	total Al flux	total Fe flux	BSi fluxe	BioFe flux	Delta Fe	BioAlFlux	deltaAl	fraction of seeded Al in the trap
-	day	mg/m2/d	mg/m2/d	mg/m2/d	mg/m2/d	mg/m2/d	mg/m2/d	nmol/L	mg/m2/d	nmol/L	
Tyr C1	3	0.8	0.3	ND	ND	ND	0.0001	0.01			
Tyr C2	3	1.5	0.5	ND	ND	ND	0.0003	0.02			
Tyr D1	3	1 704	21.1	85	45	31	0.0098	0.63	0.103	13.7	62%
Tyr D2	3	1 652	22.7	78	42	34	0.0106	0.68	0.113	15.1	57%
Tyr G1	3	1 841	24.4	87	48	40	0.0113	0.73	0.136	18.1	64%
Tyr G2	3	1 805	27.2	89	47	41	0.0126	0.82	0.139	18.5	65%
Ion C1	3	2.0	0.3	ND	ND	ND	0.0001	0.01			-
Ion C2	3	0.8	0.4	ND	ND	ND	0.0002	0.01			-
Ion D1	3	1 680	22.4	81	44	29	0.0104	0.67	0.097	13.0	59%
Ion D2	3	756	10.8	37	20	15	0.0050	0.32	0.052	6.9	27%
Ion G1	3	1 349	19.0	66	35	27	0.0089	0.57	0.091	12.2	48%
Ion G2	3	1 257	17.5	59	32	20	0.0081	0.52	0.067	8.9	43%
Fast C1	4	0.5	0.1	ND	ND	ND	0.0001	0.01			
Fast C2	4	1.0	0.2	ND	ND	ND	0.0001	0.01			
Fast D1	4	758	9.7	36	19	10	0.0045	0.39	0.035	6.2	35%
Fast D2	4	881	11.9	42	23	12	0.0056	0.48	0.040	7.2	41%
Fast G1	4	684	10.3	33	18	10	0.0048	0.41	0.033	6.0	32%
Fast G2	4	628	9.3	30	16	10	0.0043	0.37	0.035	6.2	29%

bio-Fe-flux calculated based on a Fe/C ratio of 100 µmol/mol. bio-Al-flux calculated based on a Al/Si ratio of 8000 µmol/mol.

Tab. ES5: Release ratio of trace elements relative to thorium (mol/mol).

	Fe/Th	Al/Th	error	La/Th	error	Ce/Th	error	Pr/Th	error	Nd/Th	error	Sm/Th	error	Eu/Th	error	Gd/Th	error	Tb/Th	error	Dy/Th	error	Ho/Th	error	Er/Th	error	Tm/Th	error	Yb/Th	error	Lu/Th	error	Pa/Th
ION_D	<200	17000	3000	13	3	29	6	4.4	0.8	20	4	4.5	0.8	1.0	0.2	4.5	0.8	0.6	0.1	3.7	0.7	0.7	0.1	1.8	0.3	0.2	0.0	1.3	0.2	0.18	0.03	<0.0001
ION_G	<874	28000	3400	23	3	50	5	7.1	0.7	32	3	6.8	0.7	1.5	0.1	7.1	0.7	1.0	0.1	5.5	0.5	1.0	0.1	2.6	0.3	0.3	0.0	1.9	0.2	0.25	0.03	
FAST_D	<1515	17200	1400	10	1	26	3	3.9	0.4	17	2	3.9	0.4	0.9	0.1	5.0	0.6	0.6	0.1	3.4	0.4	0.6	0.1	1.6	0.2	0.2	0.0	1.1	0.1	0.16	0.02	
FAST_G	<717	23000	2800	17	4	38	7	5.4	0.9	24	4	5.2	0.7	1.1	0.2	5.1	0.7	0.7	0.1	4.2	0.5	0.8	0.1	2.0	0.3	0.2	0.0	1.4	0.2	0.17	0.02	

Uncertainties (2 SD) on the release ratios are calculated by propagating the uncertainties on the dissolution fractions to the ratio formula (Table 1 of the main text)

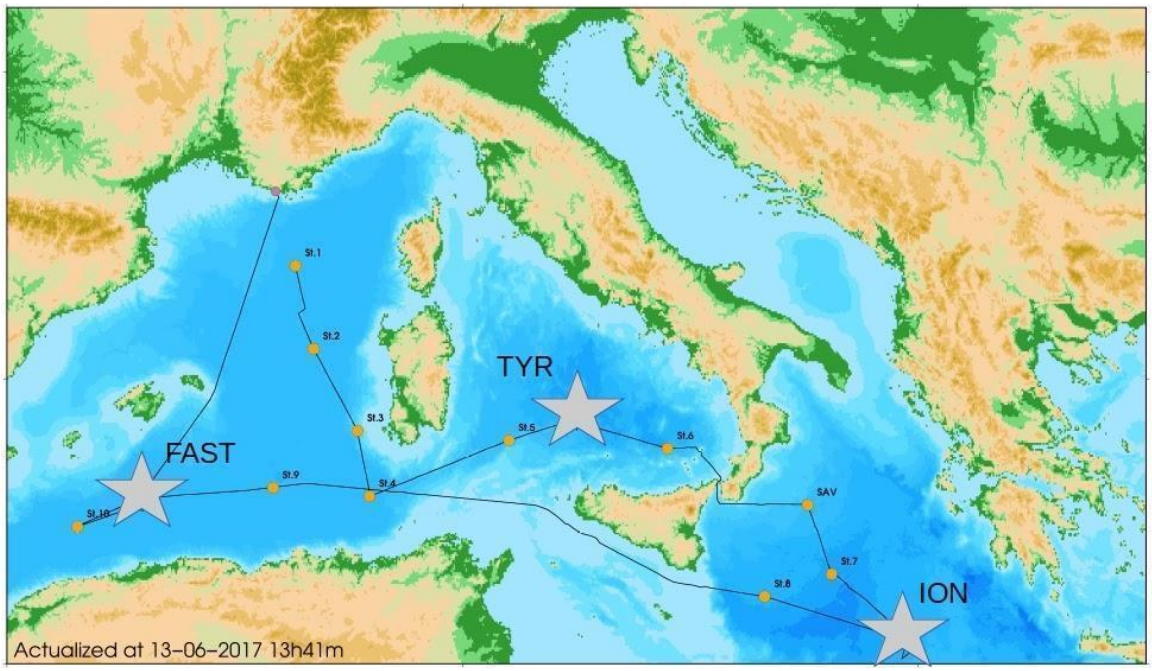

Fig. ES1: Transect of the PEACETIME cruise. 10 short stations are numbered from St.1 to St.10. Stars named TYR, ION, and FAST indicate the 3 long stations where tank experiments were conducted.

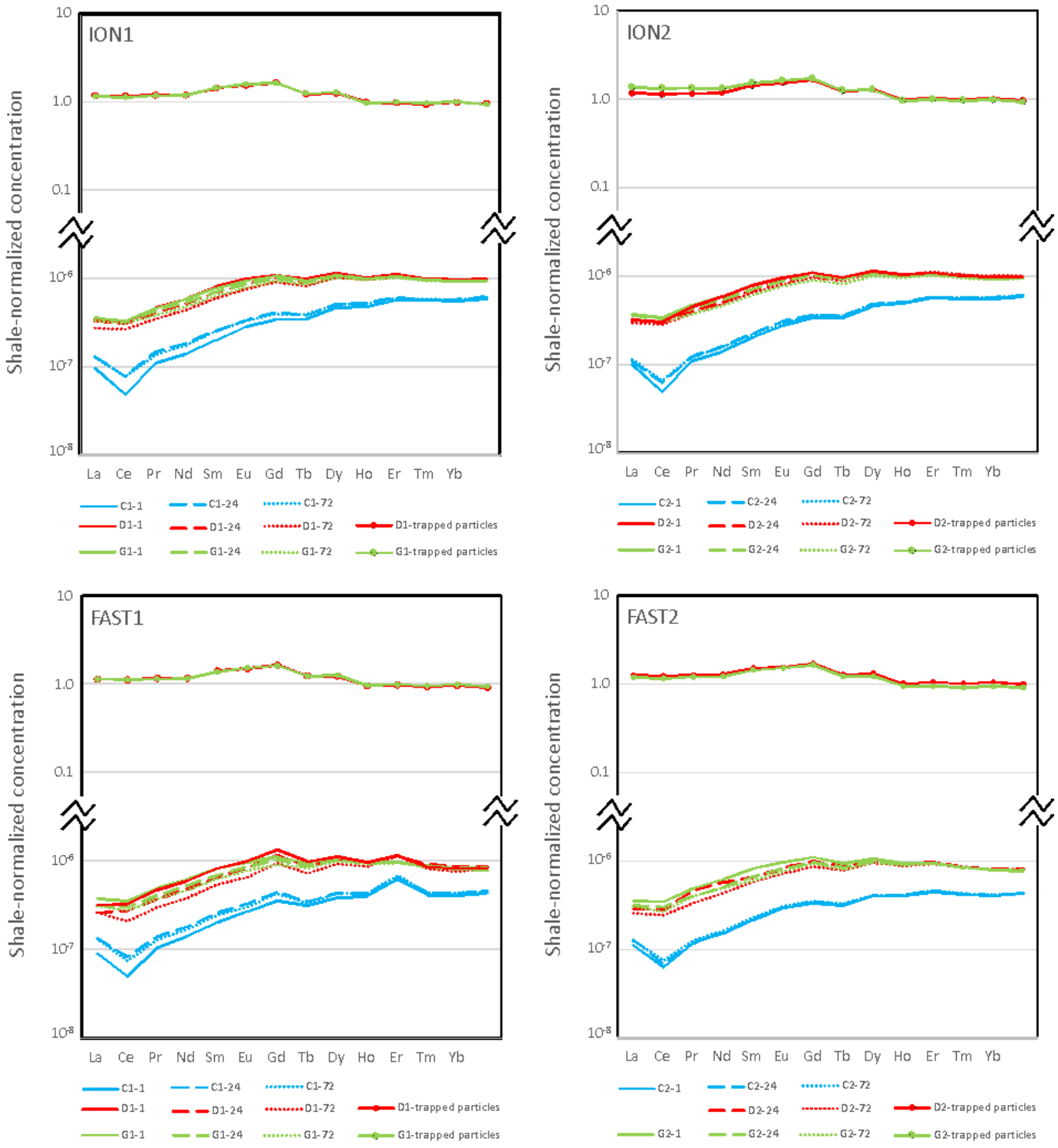

Fig. ES2: Shale-normalized concentrations of filtered seawater and sedimented particles in tank experiments for tank replicates 1 (right panels) and 2 (left panels) for the ION (upper panel) and FAST (lower panel) stations. Note the scale break in the middle of the graph.

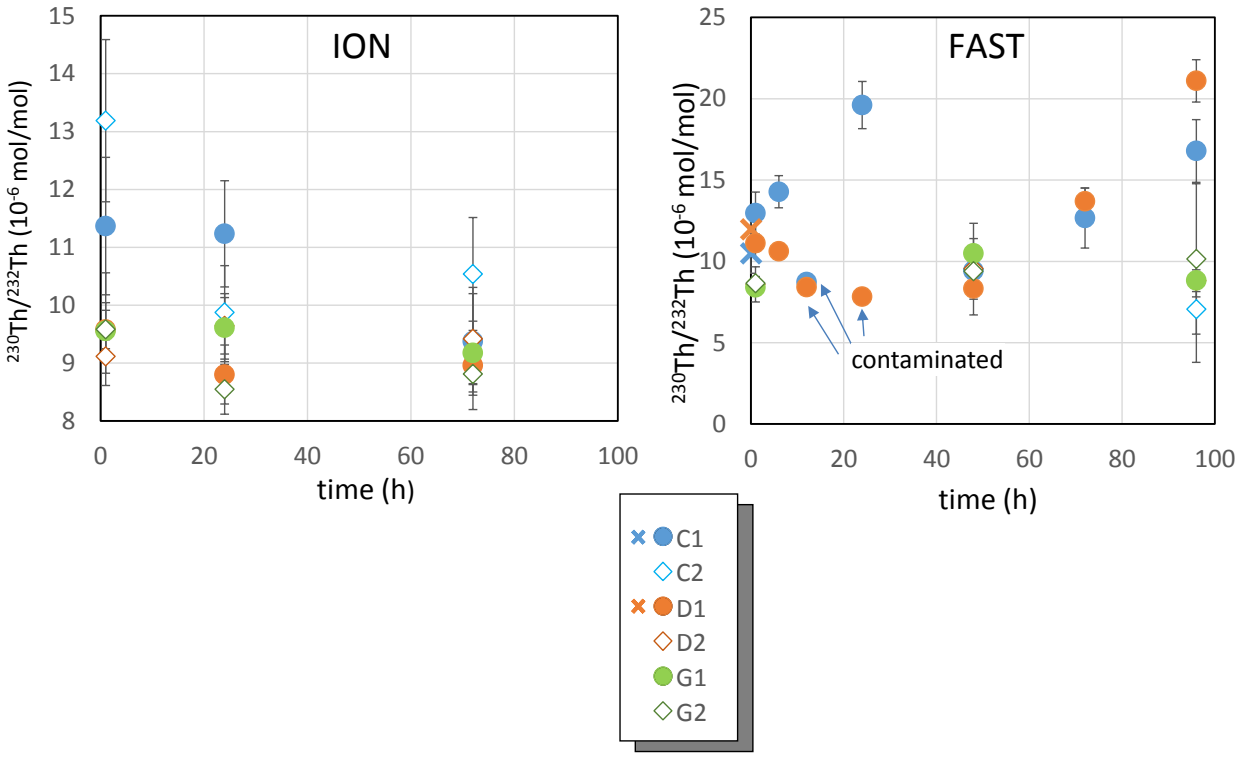

Fig. ES3: ^{230}Th/^{232}Th ratio during the tank experiments. a) ION station. b) FAST station. Crosses correspond to samples collected before dust addition (t = 0).

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