



Supplement of

Subsurface iron accumulation and rapid aluminum removal in the Mediterranean following African dust deposition

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Table S1 – Overview of the parameters presented in this study. Particulate Al concentrations were obtained from both the classical rosette at all the stations, and from the trace metal-clean (TMC) rosette at the 3 long stations (TYR, ION and FAST). Particulate Fe concentrations were only obtained from the TMC rosette at the 3 long stations.

Station	Lat (°N)	Lon (°E)	dAl	dFe	pAl	pFe	Reference
ST04	37.98	7.98	×	×			this study
						×	Jacquet et al. (in rev.)
ST05	38.95	11.02	×	×			this study
						×	Jacquet et al. (in rev.)
TYR	39.34	12.59	×	×	×	×	this study
						×	Jacquet et al. (in rev.)
ST06	38.81	14.50	×	×			this study
						×	Jacquet et al. (in rev.)
ST07	36.66	18.20	×	×			this study
ION	35.49	19.80	×	×	×	×	this study
						×	Jacquet et al. (in rev.)
ST08	36.21	16.63	×	×			this study
ST09	38.14	5.84	×	×			this study
FAST	37.95	2.91	×	×	×	×	this study
						×	Jacquet et al. (in rev.)
ST10	37.46	1.57	×	×			this study

Table S2 – Certified reference material recoveries (%) for Al and Fe obtained during the analysis of the suspended and sinking particulate fractions.

	Suspended fraction		Sinking fraction
	MESS-4 ($n = 5$)	PACS-3 ($n = 3$)	GBW 07313 ($n = 3$)
Al	105.9 ± 16.5	131.5 ± 11.3	93.5 ± 0.7
Fe	105.1 ± 16.5	119.4 ± 10.3	95.7 ± 1.7

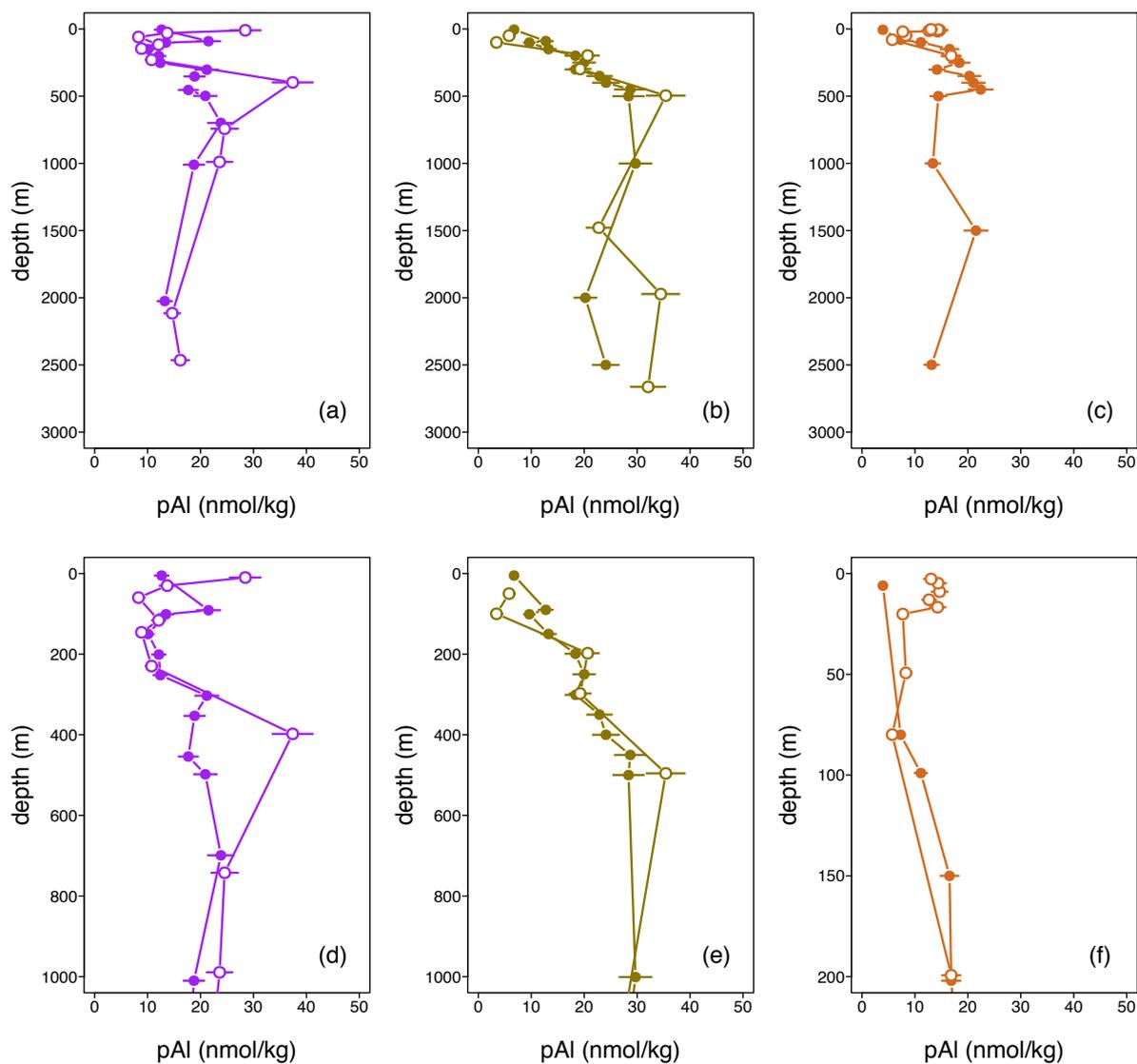


Fig. S1 – Comparison of the pAl vertical profiles obtained with the trace metal-clean (open circles) and classical rosette (filled circles) at the stations ION (**a** and **d**) and FAST the 03/06/2017 (**b** and **e**) and 05/06/2017 (**c** and **f**). The upper panels correspond to the entire vertical profile, and the lower panels correspond to the upper 1000 m (**d** and **e**) and 200 m (**f**). Note that trace metal-clean and classical rosettes were deployed a few hours apart.

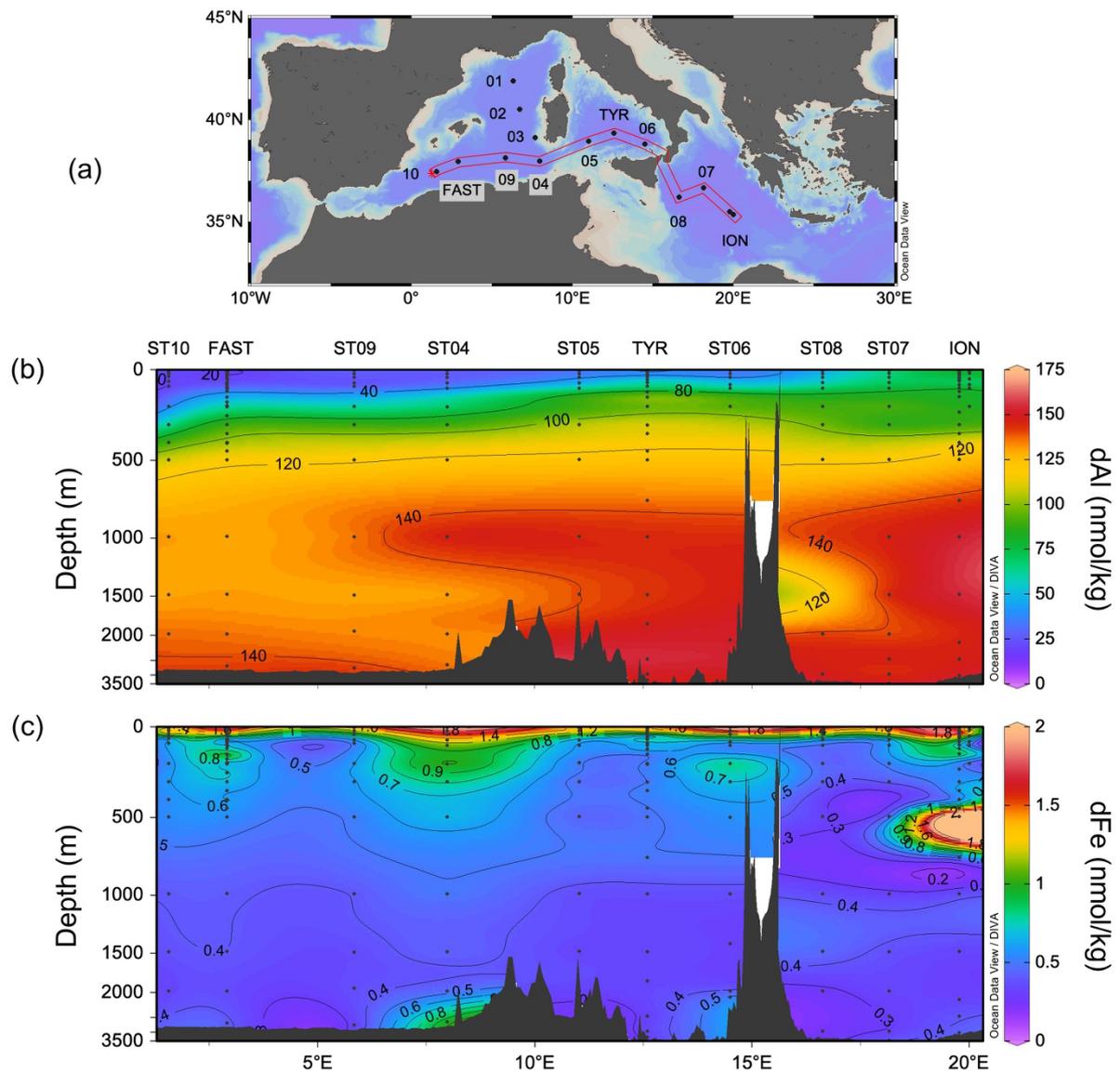


Fig. S2 – (a) Sampling locations during the PEACETIME cruise. The red line corresponds to the southern route of the cruise used to represent the longitudinal and vertical distributions of (b) dAl and (c) dFe concentrations. Note the non-linear y-axis in (b) and (c). This figure was created using Ocean Data View (Schlitzer, R., Ocean Data View, 2017, <http://odv.awi.de/>, last access: 27/10/2021).

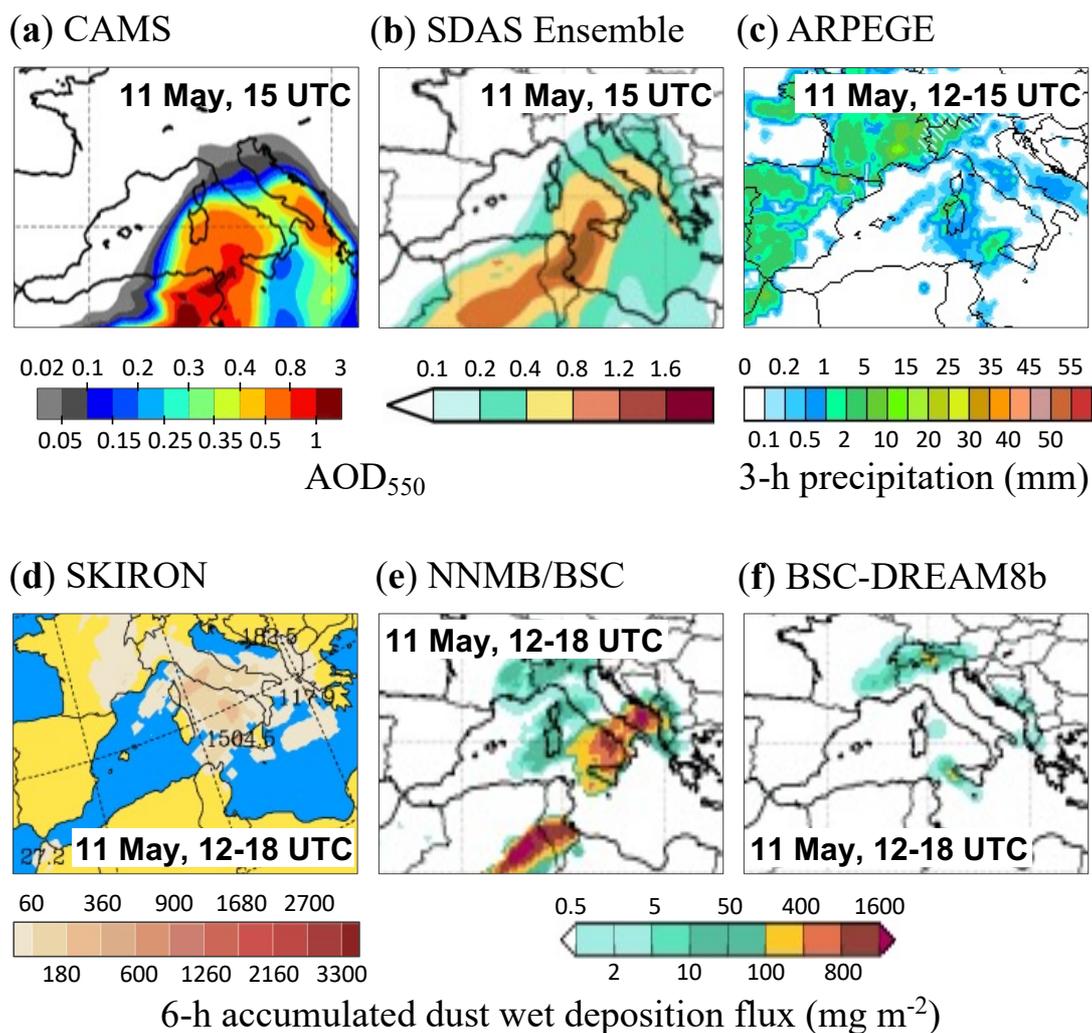


Fig. S3 – Forecast model products of the 11 May dust deposition event in the Tyrrhenian Sea produced during the PEACETIME cruise: (a) dust AOD₅₅₀ on 11 May, 15 UTC from ECMWF/CAMS model run of 10 May 0Z; (b) dust AOD₅₅₀ on 11 May, 18 UTC from WMO SDAS-WAS ensemble model run of 9 May; (c) 3-h accumulated precipitation on 11 May, 15 UTC from Météo-France/ARPEGE model run of 10 May, 6Z; (d), (e) and (f) 6-h accumulated dust wet deposition (mg m⁻²) on 11 May, 18 UTC from SKIRON/AM&WFG model run of 9 May, 0Z, from NNMB/BSC model run of 10 May, 12Z, and from BSC-DREAM8b model run of 10 May, 0Z, respectively.

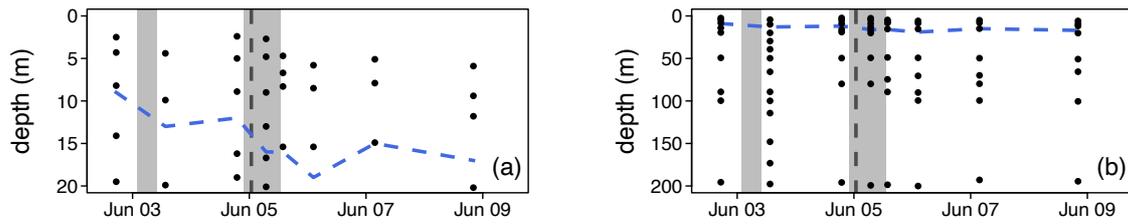


Fig. S4 – Temporal and vertical resolutions of dissolved and particulate Fe and Al measurements performed at the FAST station within the (a) 0-20 m and (b) 0-200 m depth ranges. Grey-shaded areas indicate the two dusty rain events that occurred in the FAST station area. The grey-dotted vertical line corresponds to the time of the dusty rainfall sampled on board the R/V. The blue-dotted line corresponds to the depth of the mixed-layer. Note that only dissolved concentrations were measured the 03/06/17 (2nd profile).