

# Temporal dynamics of surface ocean carbonate chemistry in response to natural and simulated upwelling events during the 2017 coastal El Niño near Callao, Peru

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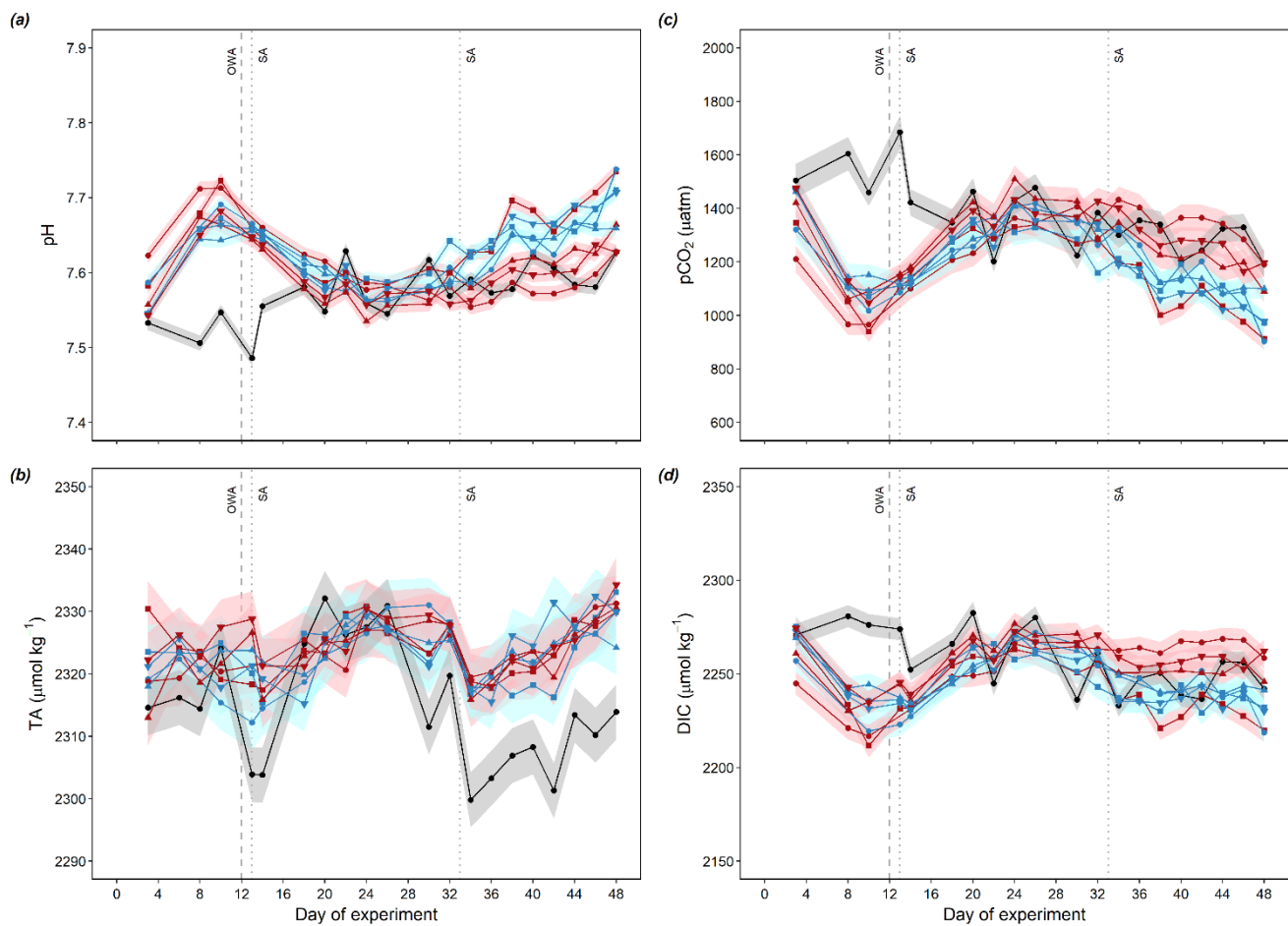
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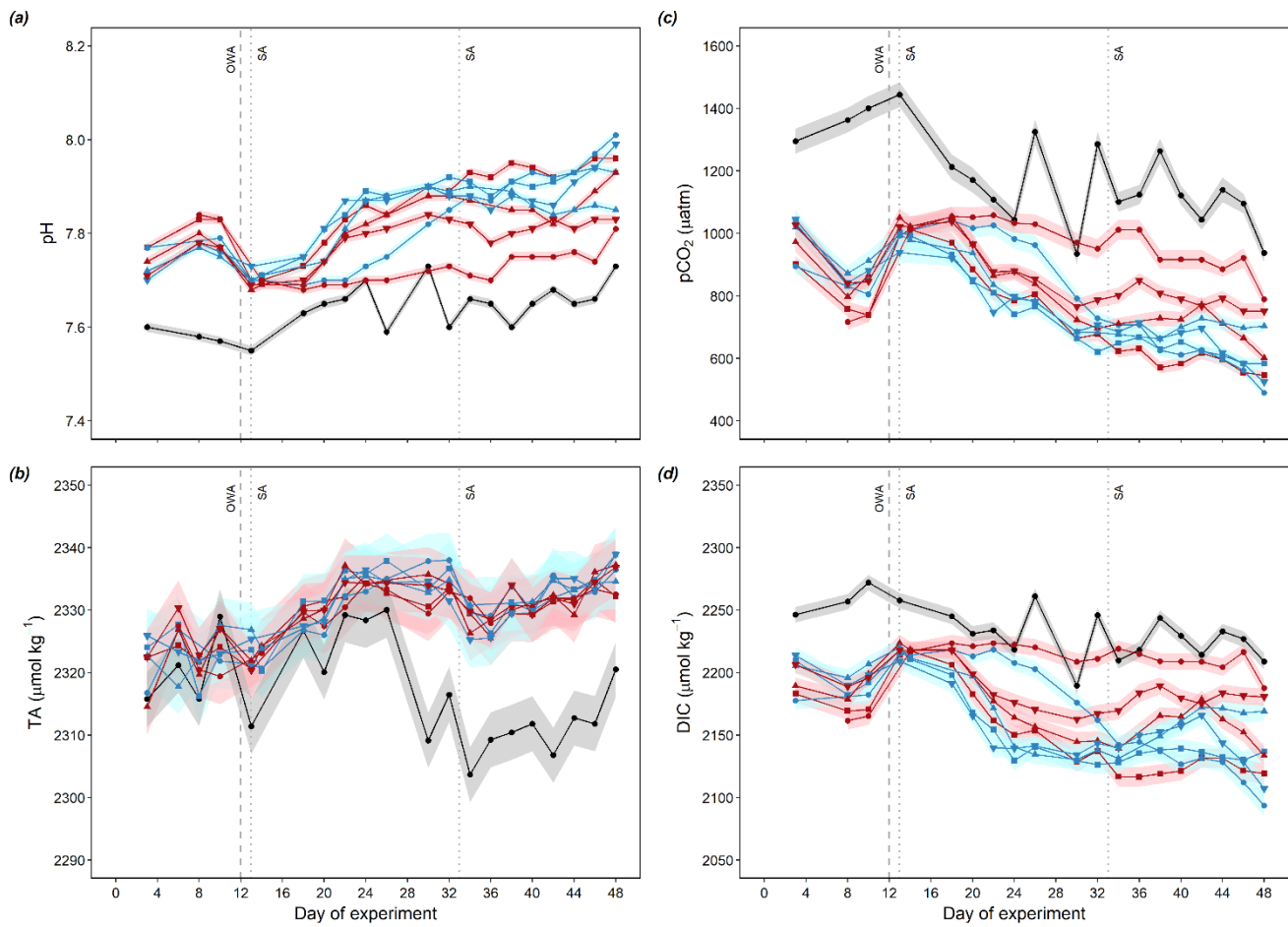
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15 **Table S1: The drawdown of surface DIC, DIN and PO<sub>4</sub><sup>3-</sup> (μmol L<sup>-1</sup>) in the mesocosms from t13 to t24 following OMZ water addition and the molar ratio of DIC: DIN and DIN: PO<sub>4</sub><sup>3-</sup> (mol: mol) drawdown. The DIC concentration in μmol L<sup>-1</sup> was estimated by applying an approximate seawater density of 1.025 kg L<sup>-1</sup> (T = 20 °C, S = 35 psu, P = 5 dbar). M3 and M4 were excluded from the calculations for each treatment (“Low DIN” and “Very Low DIN”, n = 3) due to their unique carbonate chemistry responses (in bold).**

	M1	M2	M3	M4	M5	M6	M7	M8	Low DIN	Very Low DIN
ΔDIC	134.8	169.9	<b>44.3</b>	<b>9.1</b>	127.2	162.6	148.3	92.7	160.3 ± 11.0	118.2 ± 22.5
ΔDIN	1.7	3.5	6.2	1.1	1.6	4.6	3.9	0.9	4.0 ± 0.6	1.4 ± 0.4
ΔPO <sub>4</sub> <sup>3-</sup>	0.1	0.4	0.4	0.1	0.2	0.4	0.4	0.2	0.4 ± 0.0	0.2 ± 0.1
ΔDIC: DIN	80.1	49.2	<b>7.1</b>	<b>8.3</b>	77.4	35.0	37.9	101.9	40.7 ± 7.5	86.5 ± 13.5
ΔDIN: PO <sub>4</sub> <sup>3-</sup>	16.8	8.6	15.5	11.0	8.2	11.6	9.8	4.5	10.0 ± 1.5	9.9 ± 6.3



**Figure S1: Temporal dynamics of depth-integrated bottom pH<sub>T</sub> (a), TA (b), pCO<sub>2</sub> (c) and DIC (d). The error ribbons present the propagated standard uncertainties of the calculations. Abbreviation: OWA, OMZ water addition. SA, salt addition.**



**Figure S2: Temporal dynamics of depth-integrated pH<sub>T</sub> (a), TA (b), pCO<sub>2</sub> (c) and DIC (d) averaged over the entire water column (0-17 m). The error ribbons present the propagated standard uncertainties of the calculations. Abbreviation: OWA, OMZ water addition. SA, salt addition.**