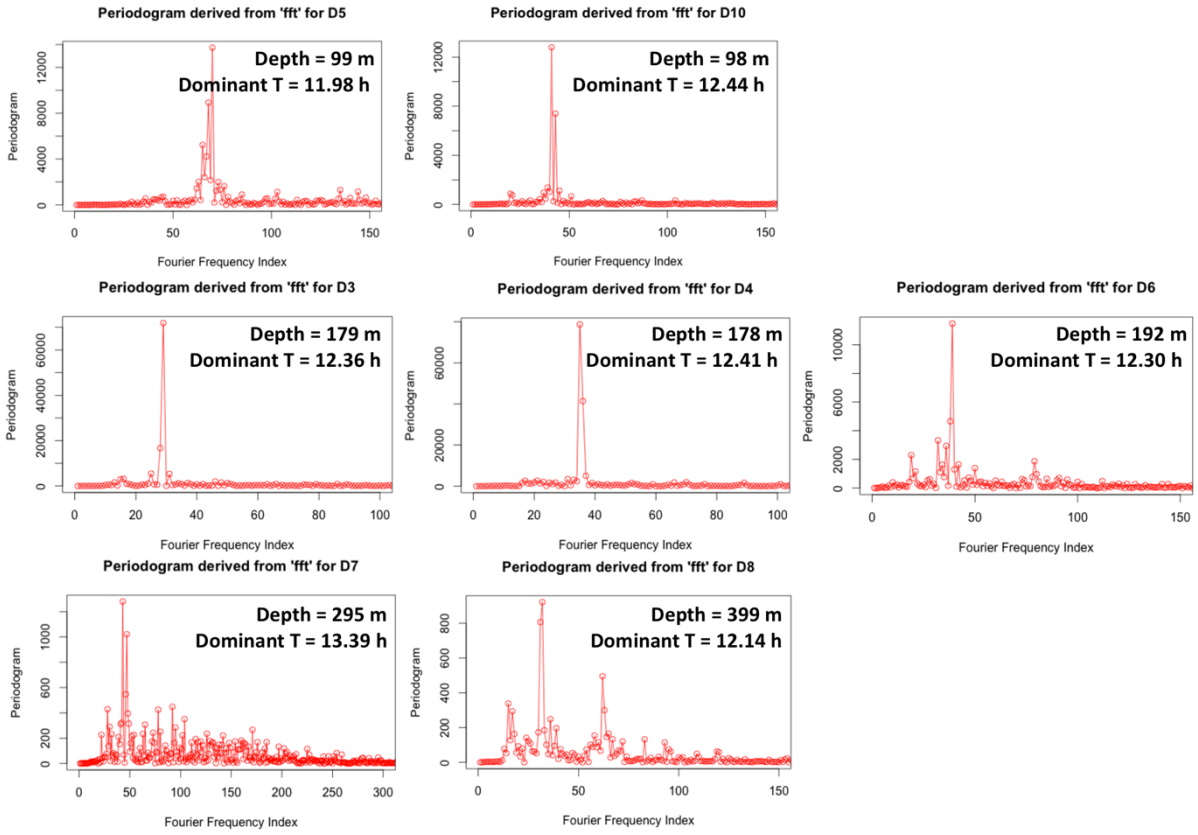
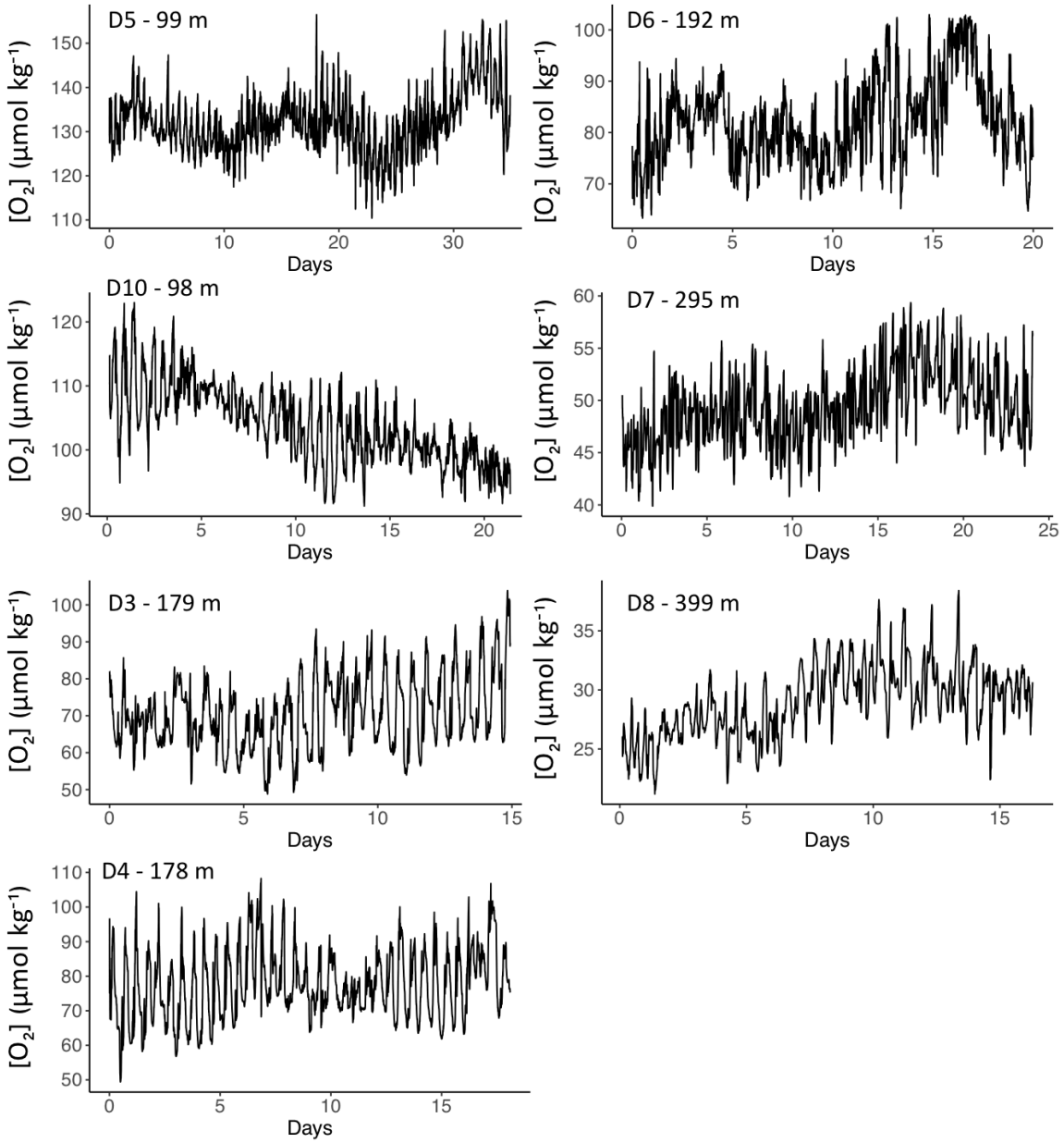
Supplement 1A

Periodograms are shown for each of the seven deployments. Periodograms are organized by deployment and deployment depth from shallowest (top) to deepest (bottom), and deployment depths are indicated. The dominant period identified is indicated, which corresponds to the highest peak on the periodogram. Note the differences in y-axis scale, across the periodograms: shallower deployments have a larger amplitude signal than deeper deployments. From upper left to lower right: D5 = D100-DM-Fall, D10 = D100-DM-Spr, D3 = D200-LJ-1, D4 = D200-LJ-2, D6 = D200-DM, D7 = D300-DM, D8 = D400-DM.

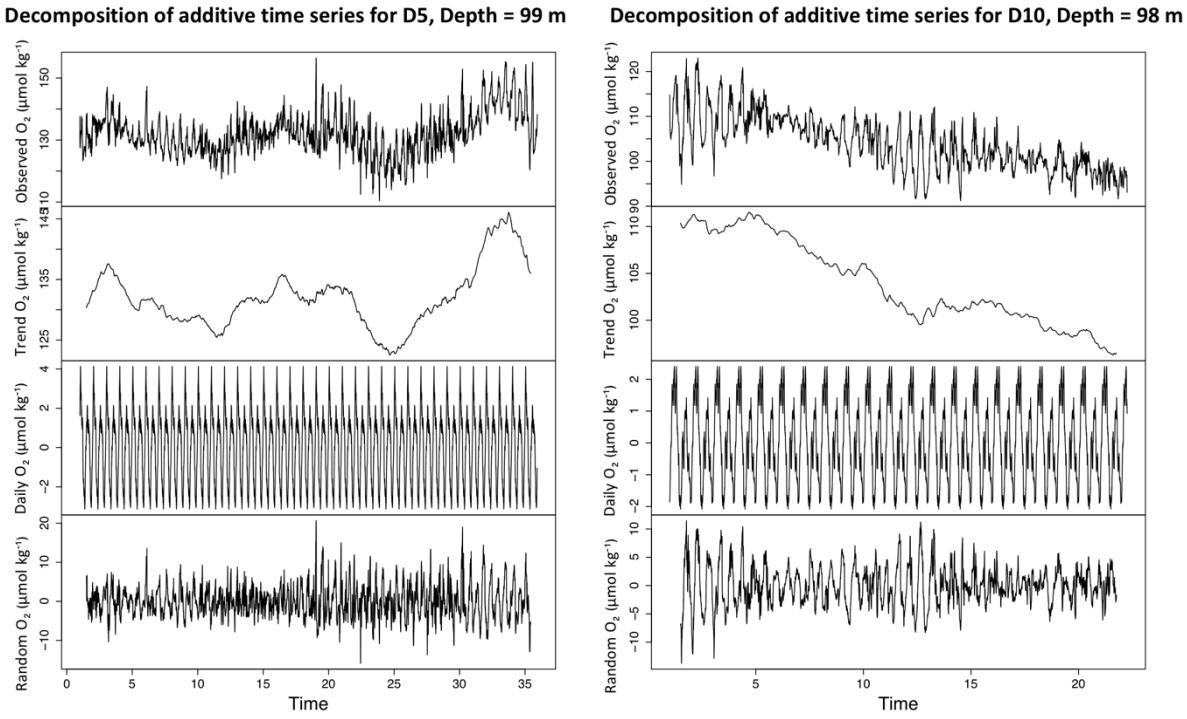


Supplement 1B

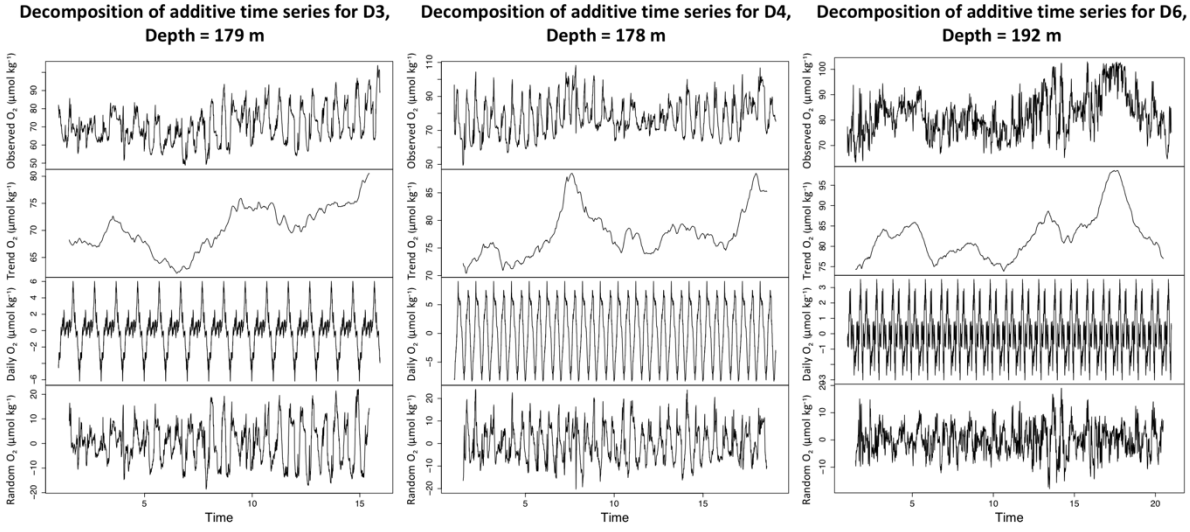
Figures showing oxygen time series for all seven deployments, as well as each time series decomposed into the deconstructed trend, daily variability, and random variance.



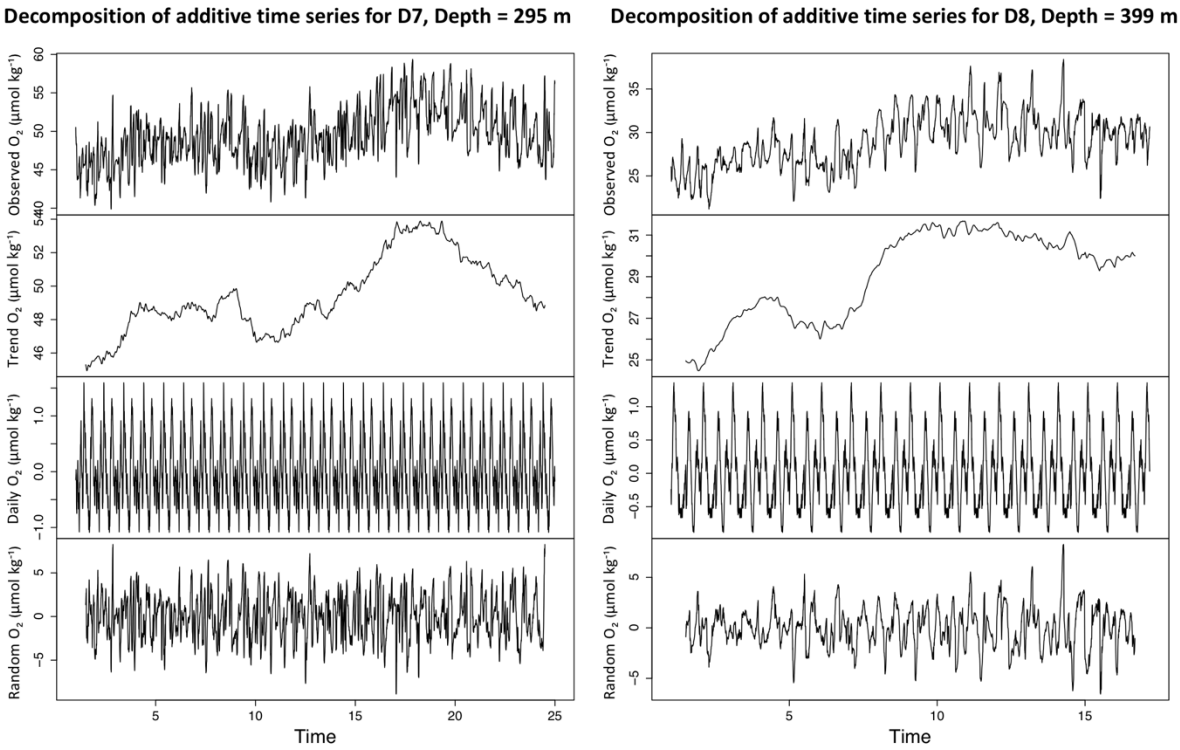
Time series of dissolved oxygen concentration with deployment time (in days) for all seven deployments. D5 = D100-DM-Fall, D10 = D100-DM-Spr, D3 = D200-LJ-1, D4 = D200-LJ-2, D6 = D200-DM, D7 = D300-DM, D8 = D400-DM.



Decomposed time series of dissolved oxygen concentration for the two shallowest deployments at ~100 m on Del Mar Steeples Reef (D5 = D100-DM-Fall and D10 = D100-DM-Spr) showing the actual observations, followed by the deconstructed trend, daily variability, and random variance. Dates for deployments were: September 29-November 3, 2017 (D5) and March 8-March 29, 2018 (D10).



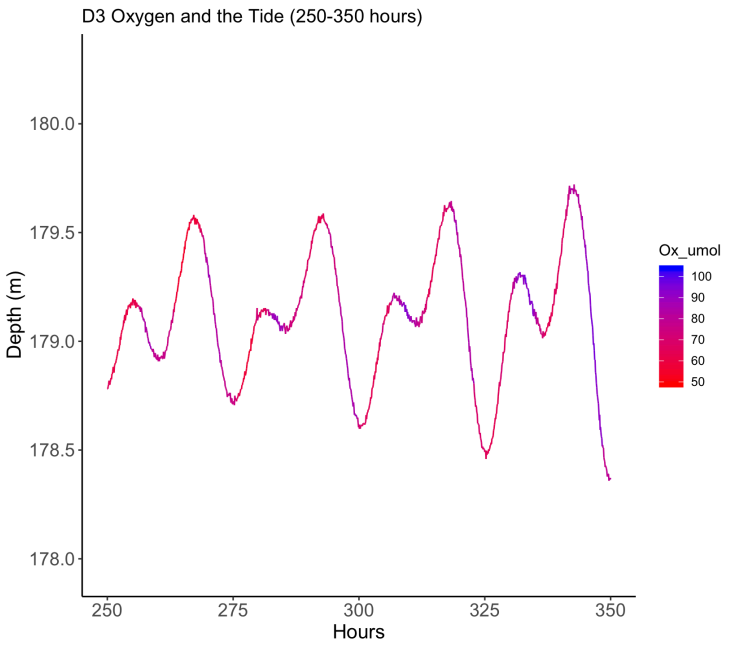
Decomposed time series of dissolved oxygen concentration for the three deployments at ~200 m (D3 = D200-LJ-1, D4 = D200-LJ-2, and D6 = D200-DM) showing the actual observations, followed by the deconstructed trend, daily variability, and random variance. Dates for deployments were: August 17-September 1, 2017 (D3), September 7-September 25, 2017 (D4), and November 9-November 29, 2017 (D6).



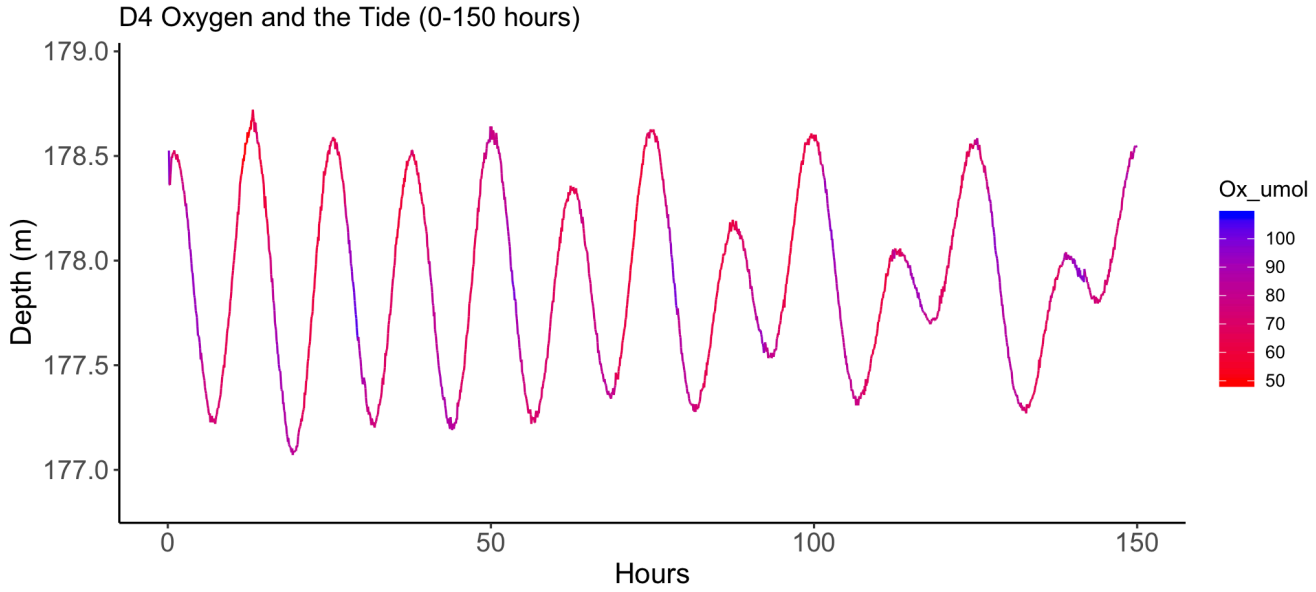
Decomposed time series of dissolved oxygen concentration for the two deepest deployments (D7 = D300-DM and D8 = D400-DM), showing the actual observations, followed by the deconstructed trend, daily variability, and random variance. Dates for deployments were: December 12, 2017-January 5, 2018 (D7) and January 23-February 8, 2018 (D8).

Supplement 1C

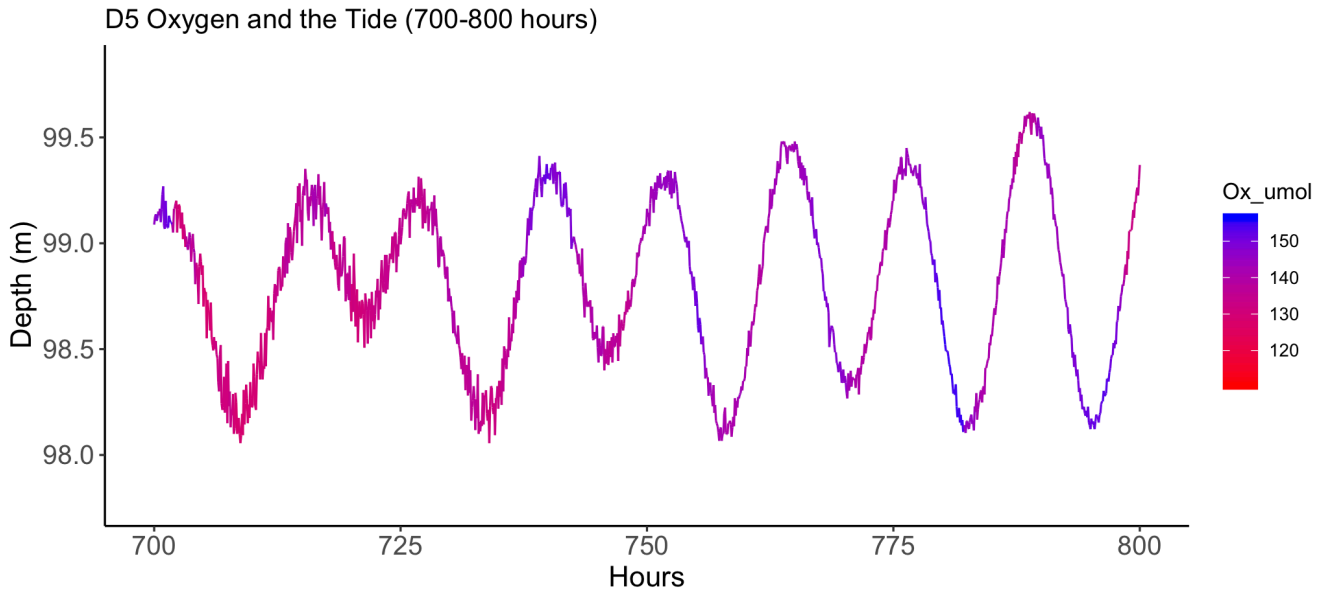
Figures showing relationship between tidal cycle and oxygen time series, showcasing periods from each deployment. The general pattern that emerges is that oxygen conditions tend to increase during ebb tide as the tide retreats, and decrease during flood tide as the tide rises. This is the case during all deployments, except during D300-DM.



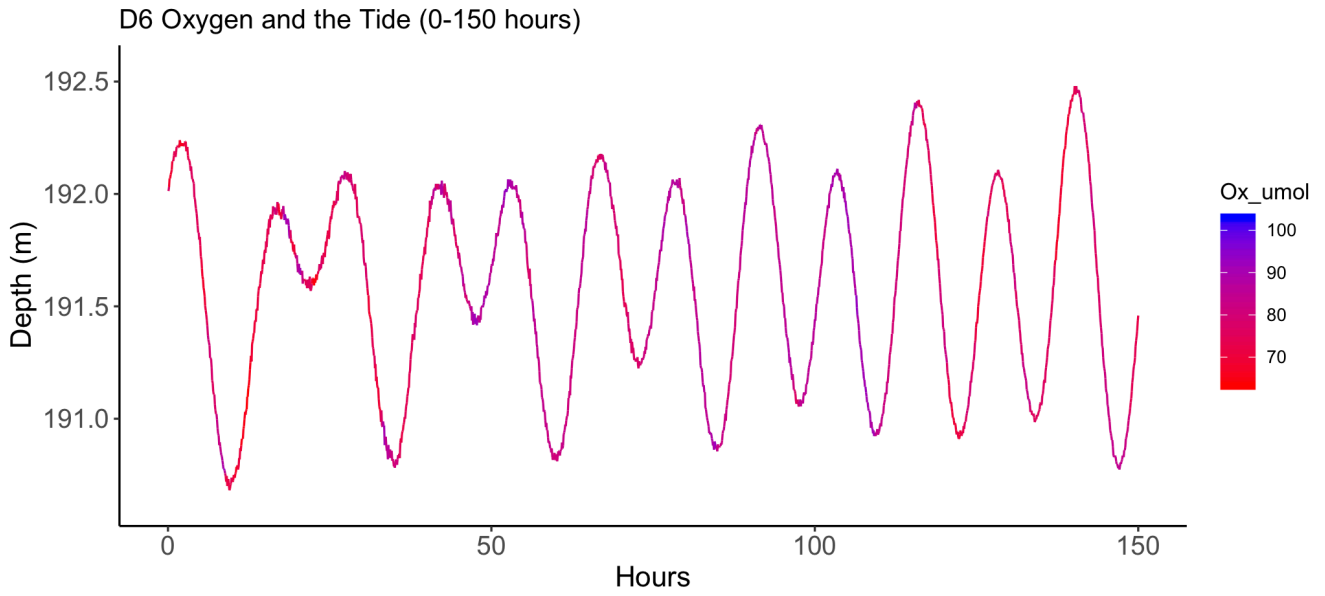
Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D3 = D200-LJ-1.



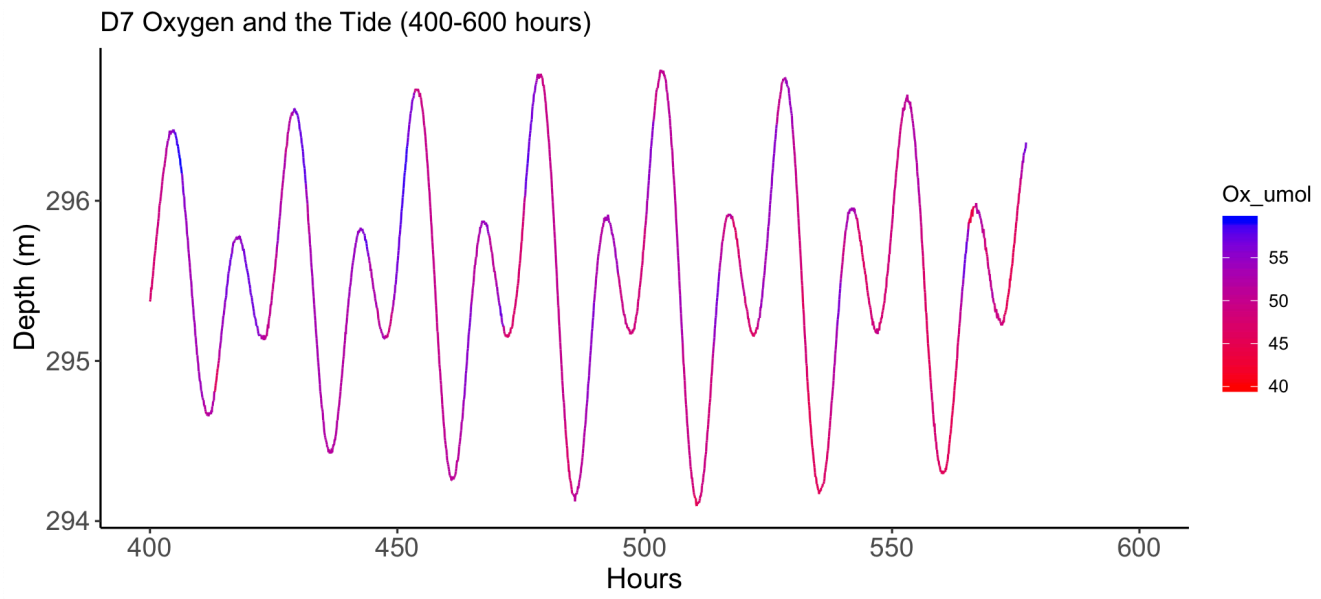
Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D4 = D200-LJ-2.



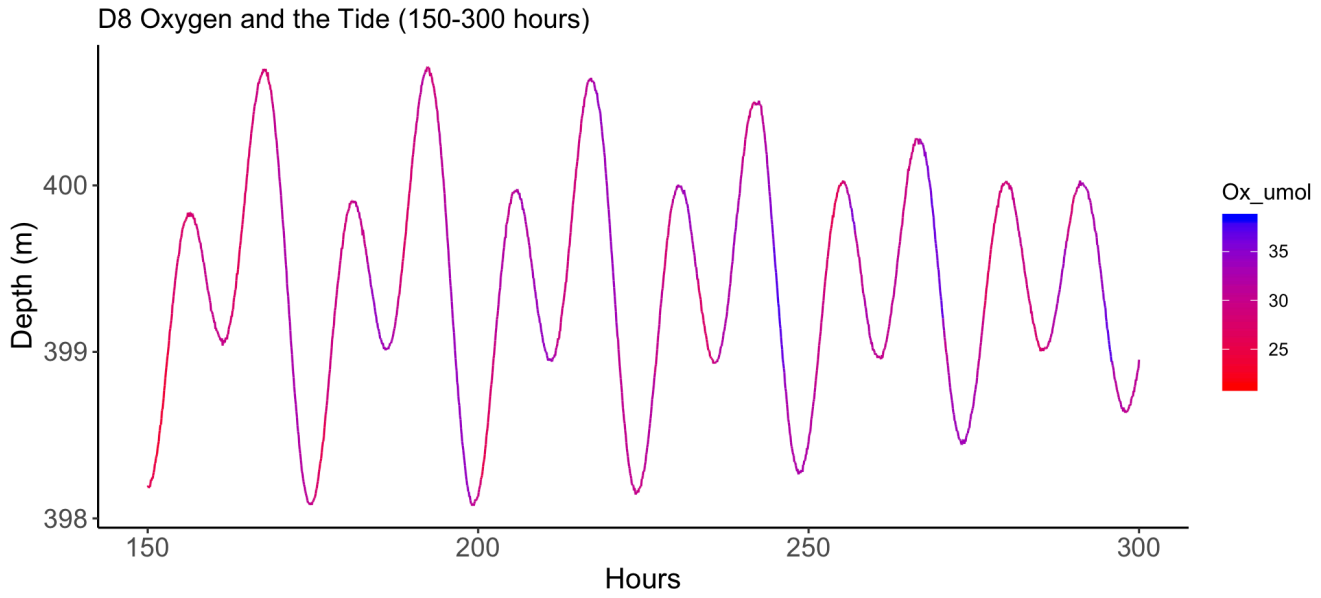
Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D5 = D100-DM-Fall.



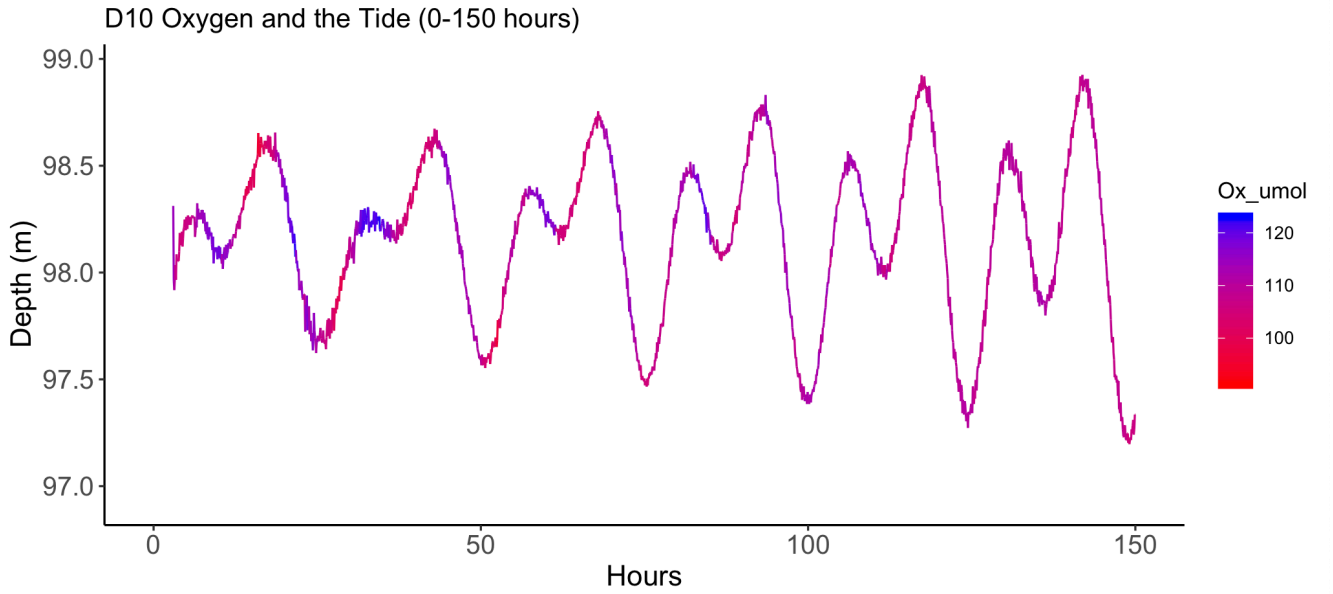
Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D6 = D200-DM.



Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D7 = D300-DM. Note that at this site, oxygen increases as the tide rises, and decreases as the tide falls (in contrast to the pattern observed at all other sites).



Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D8 = D400-DM.



Relationship between tidal activity (viewed as changes in depth) and dissolved oxygen concentration at D10 = D100-DM-Spr.

Supplement 1D

Table showing the mean and range of oxygen conditions for each deployment in oxygen saturation (%) and in oxygen partial pressure (kPa).

	D200-LJ-1	D200-LJ-2	D100-DM-Fall	D200-DM	D300-DM	D400-DM	D100-DM-Spr
Mean O_2 Sat (%)	25.60	27.97	48.67	29.35	17.25	9.91	37.36
O_2 Sat Range (%)	17.55-37.79	17.66-39.37	40.11-58.50	22.52-37.27	13.81-20.89	7.18-13.26	32.54-44.55
pO_2 (kPa)	5.50	6.01	10.33	6.32	3.77	2.20	7.94
pO_2 Range (kPa)	3.77-8.11	3.79-8.45	8.52-12.41	4.85-8.02	3.02-4.56	1.59-2.94	6.92-9.47