Supplementary Materials for

Single-celled bioturbators: benthic foraminifera mediate oxygen penetration and prokaryotic diversity in intertidal sediment

Dewi Langlet, Florian Mermillod-Blondin, Noémie Deldicq, Arthur Bauville, Gwendoline Duong, Lara Konecny, Mylène Hugoni, Lionel Denis and Vincent M.P. Bouchet

*Corresponding author. Email: dewi.langlet@oist.jp

This PDF file includes:

Figs. S1 to S2
Tables S1 to S2
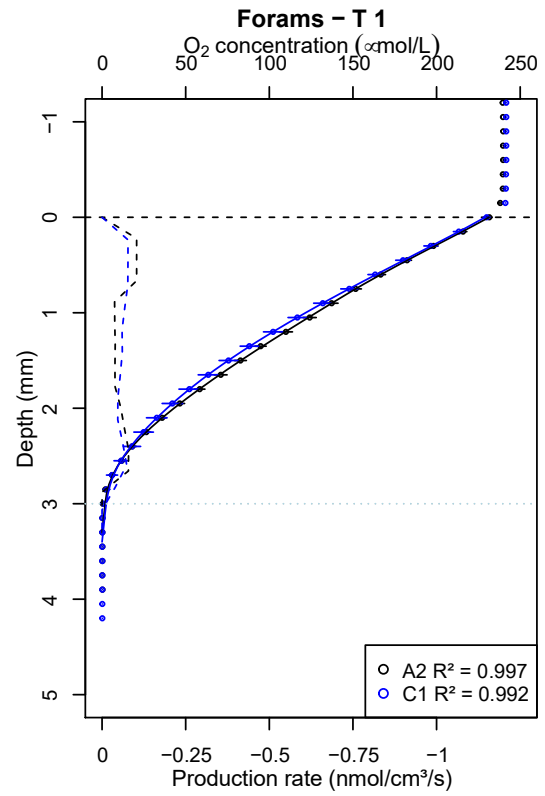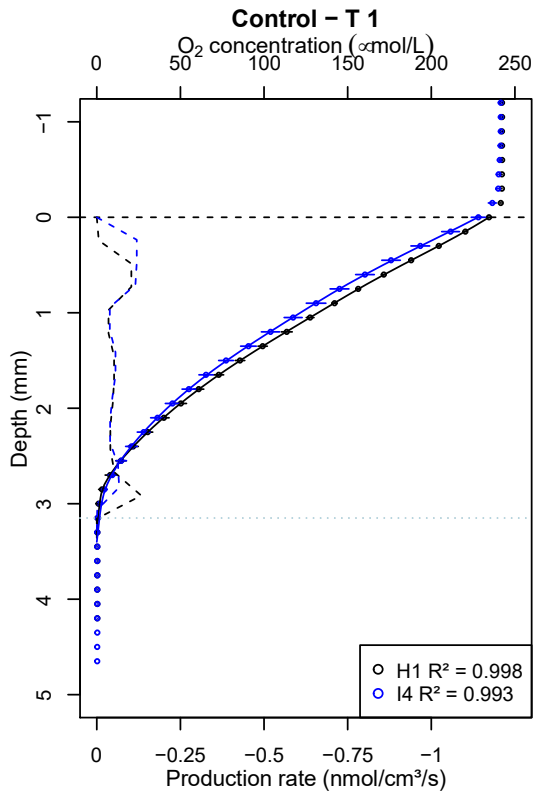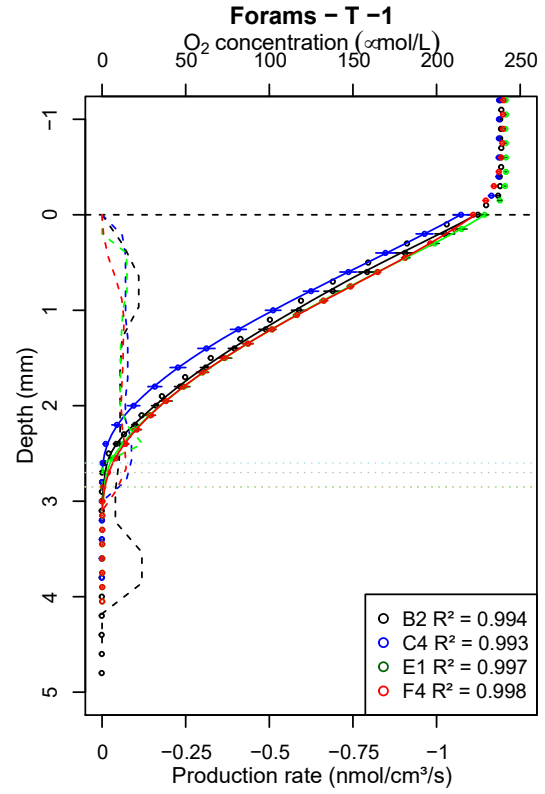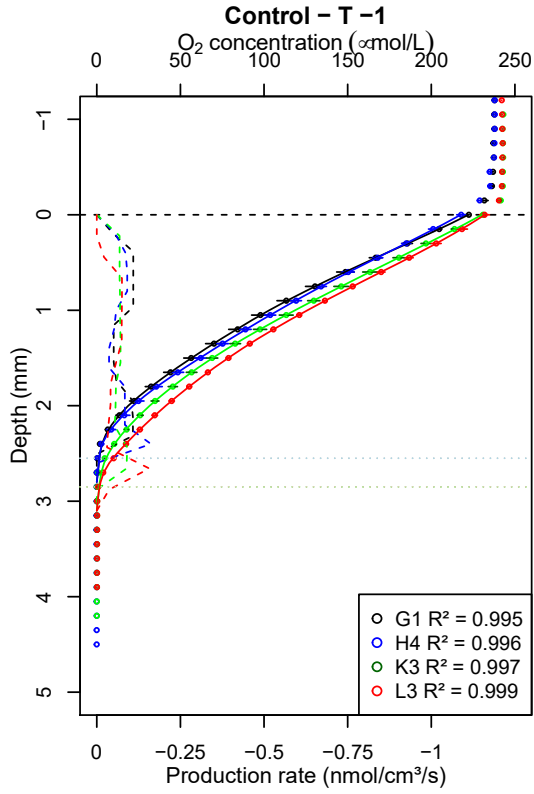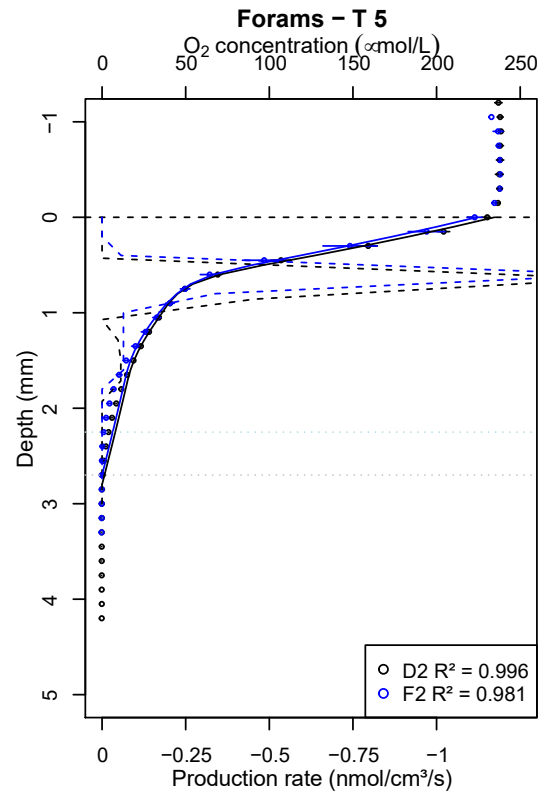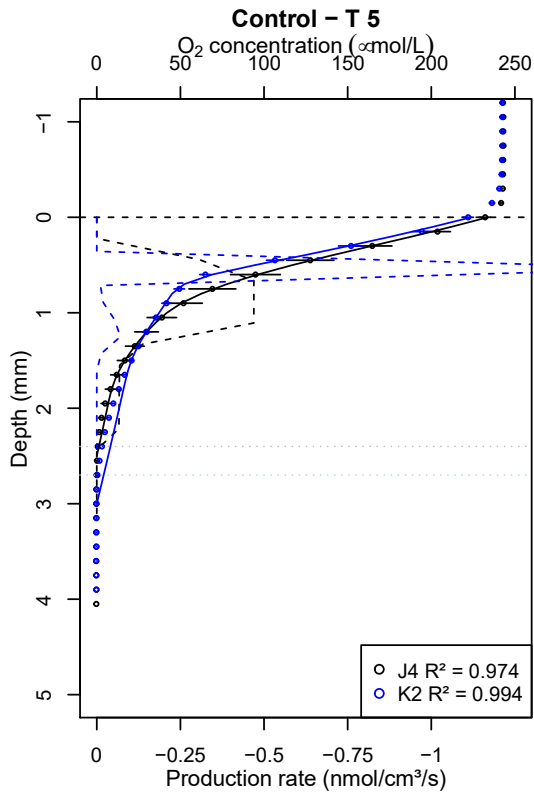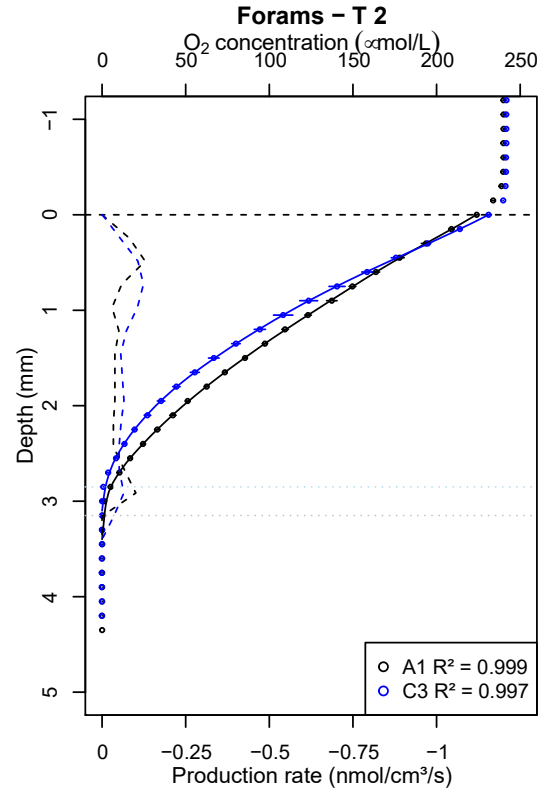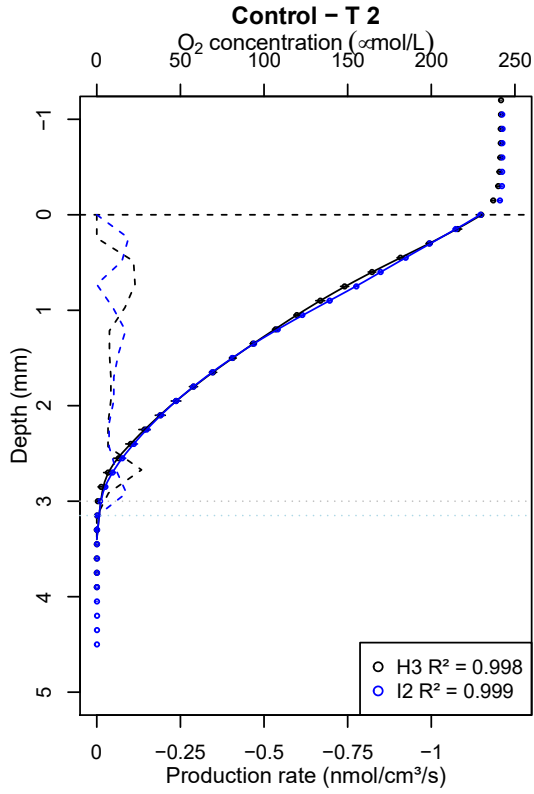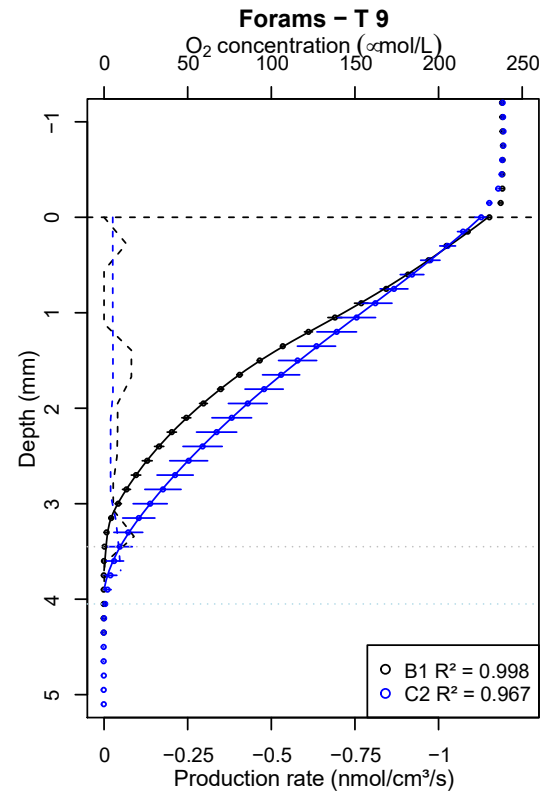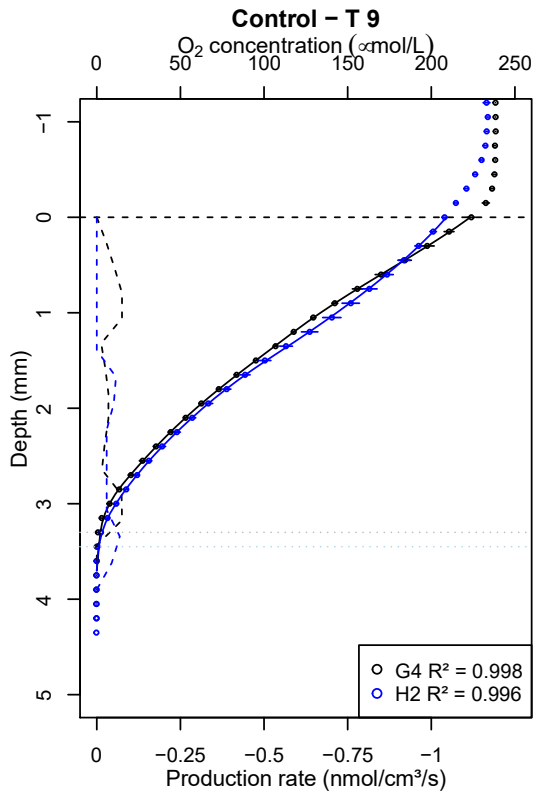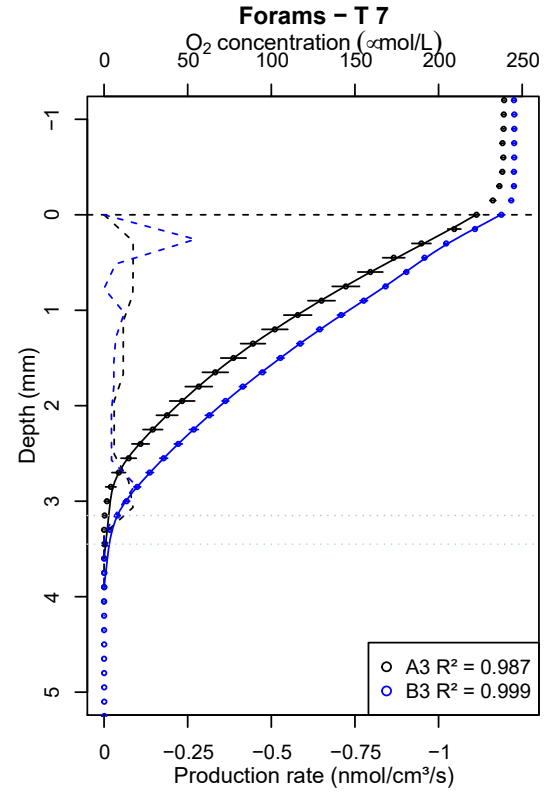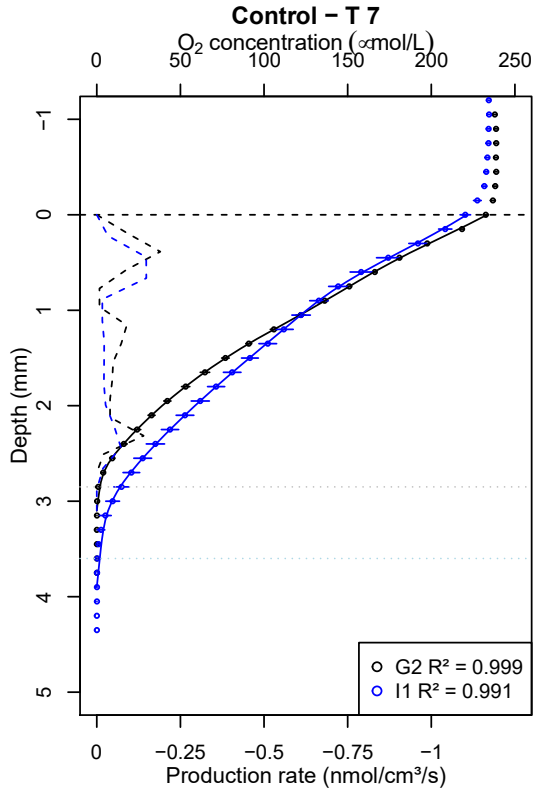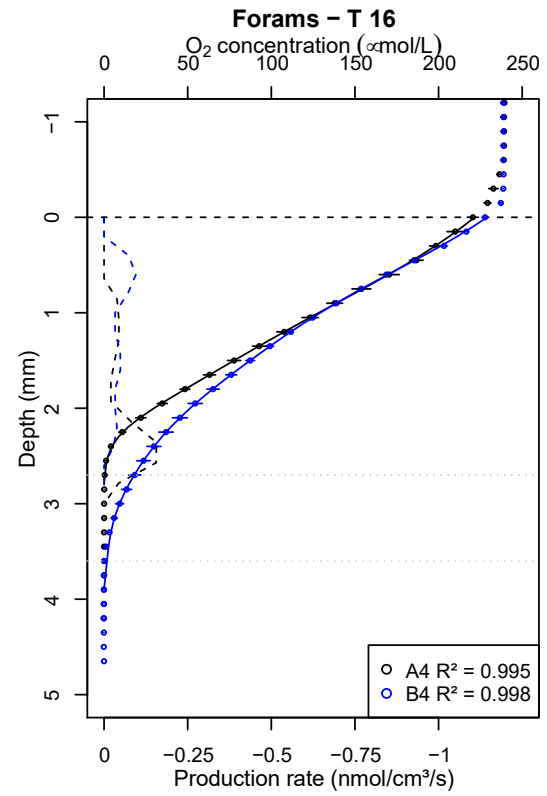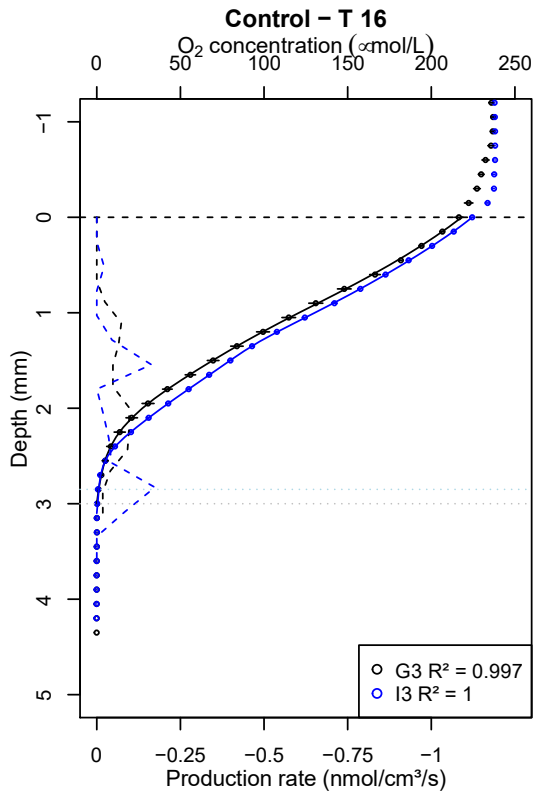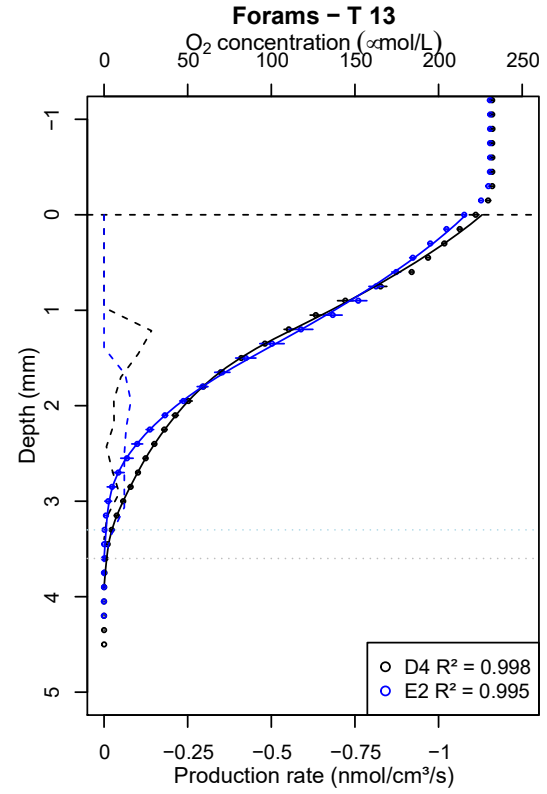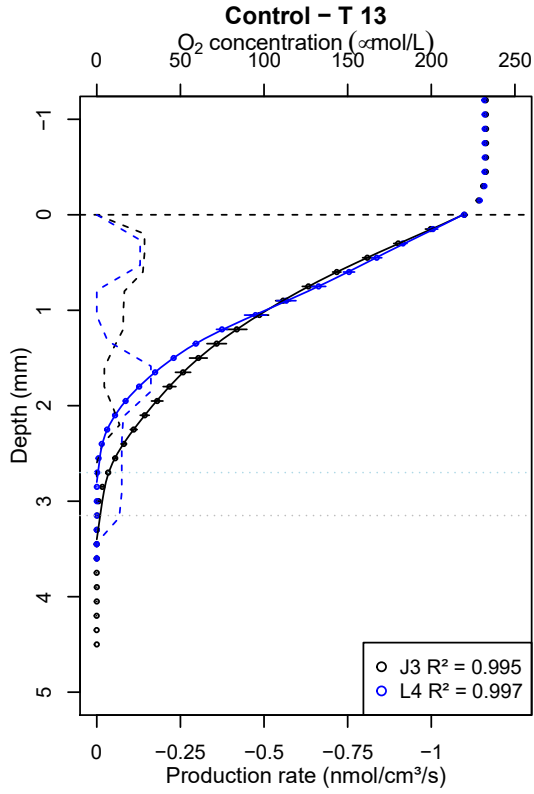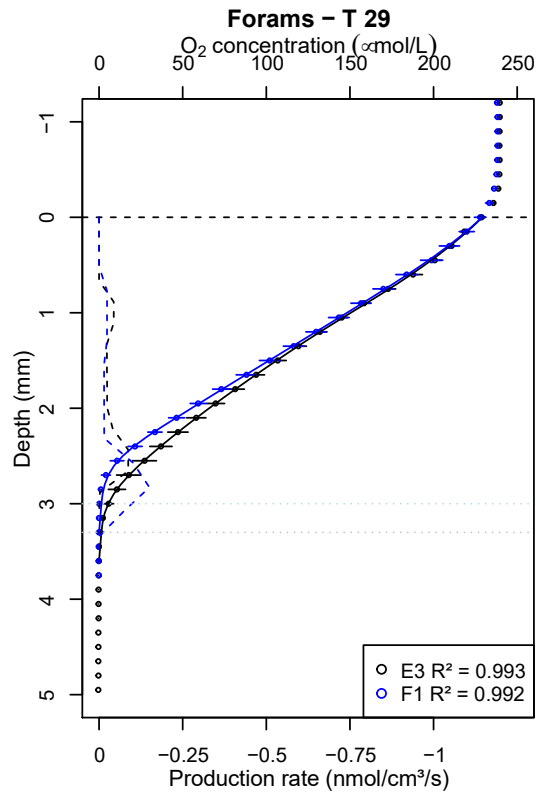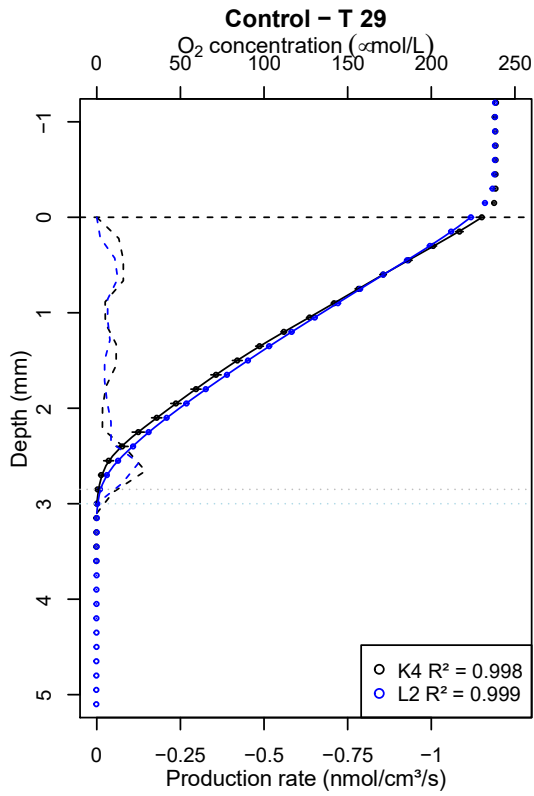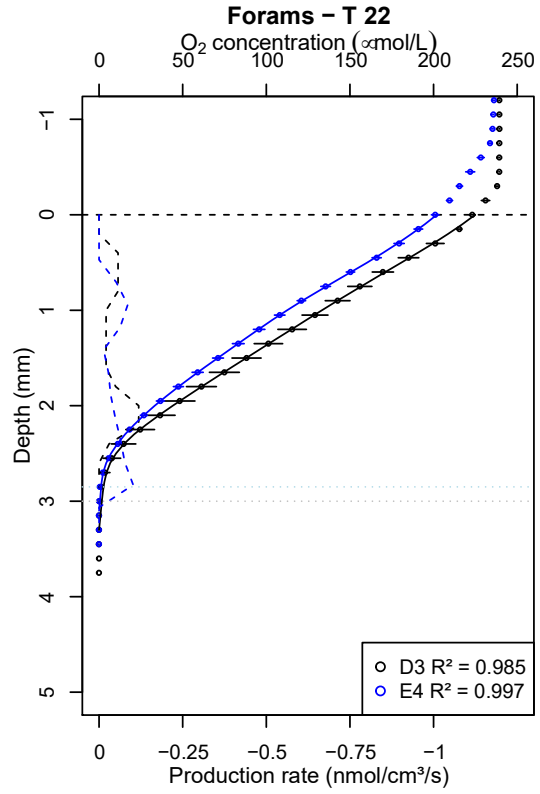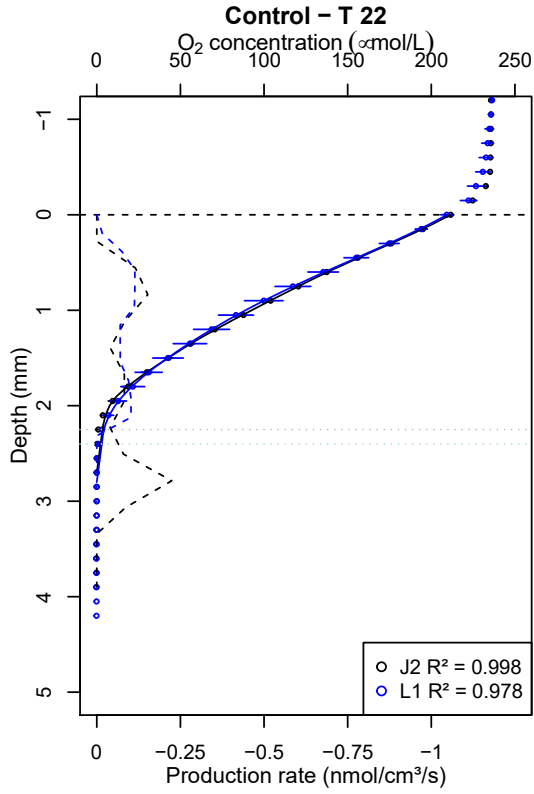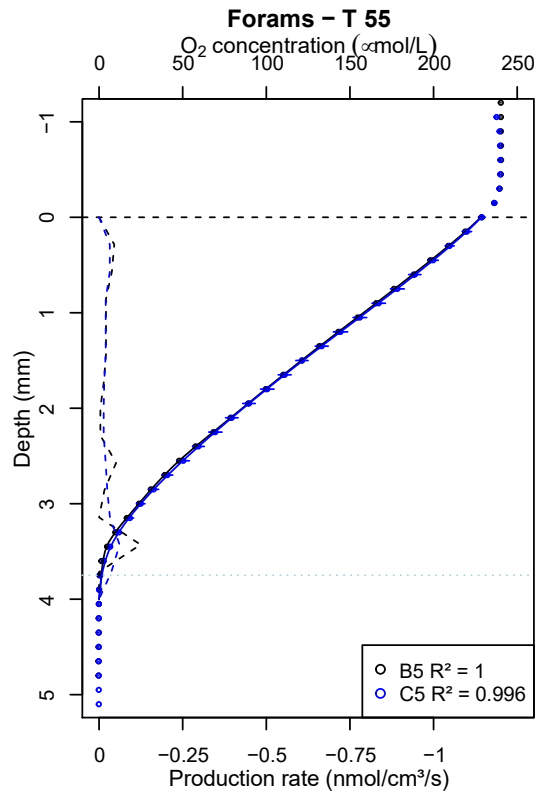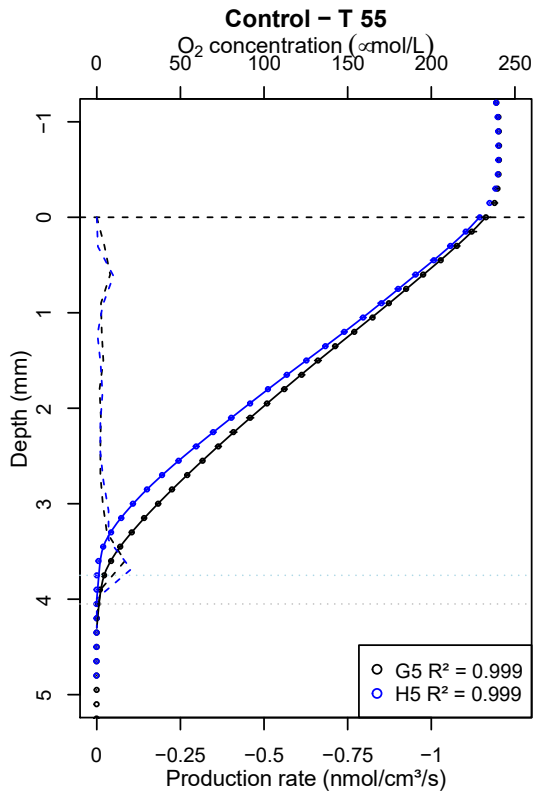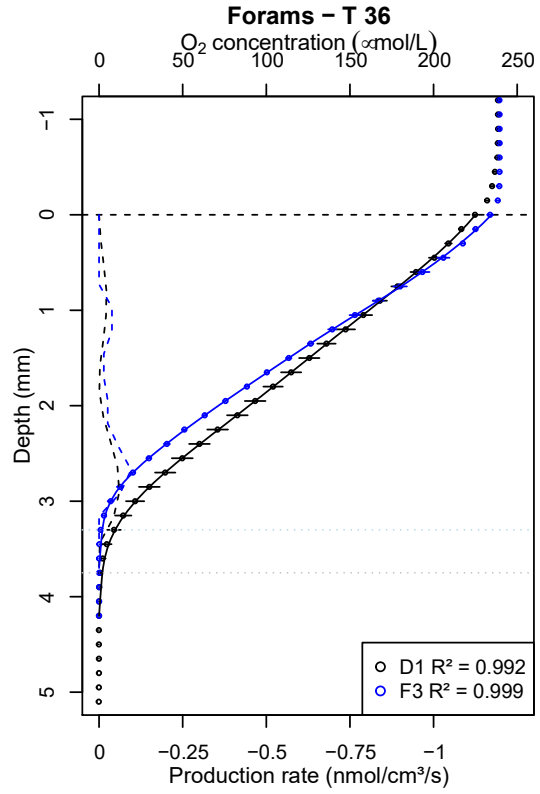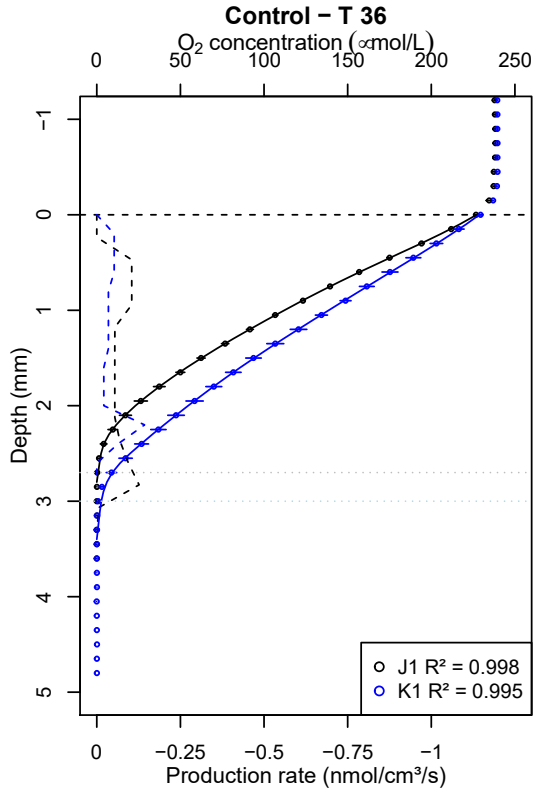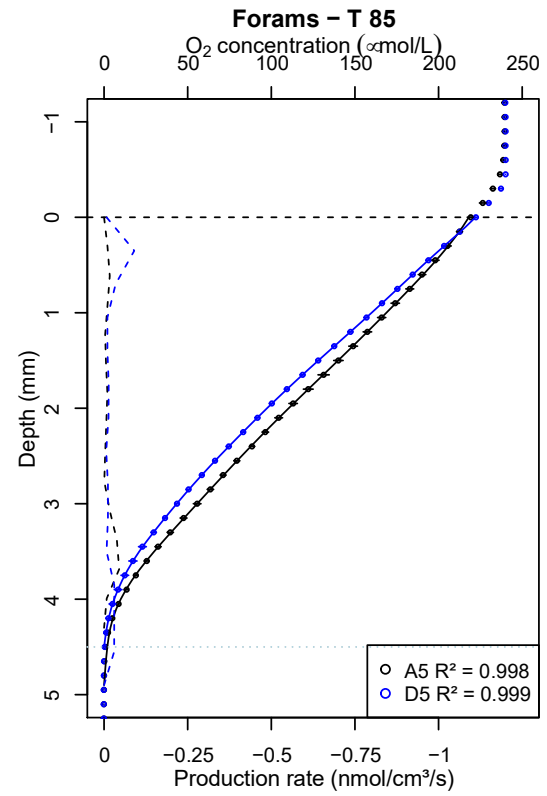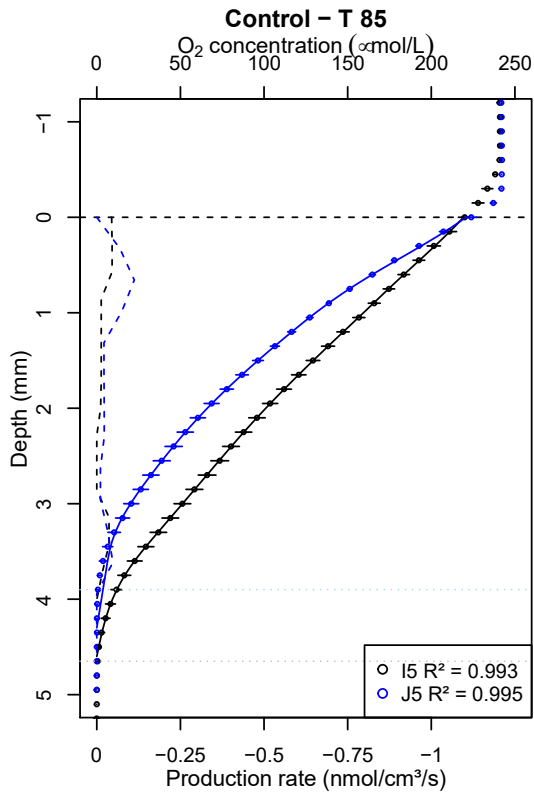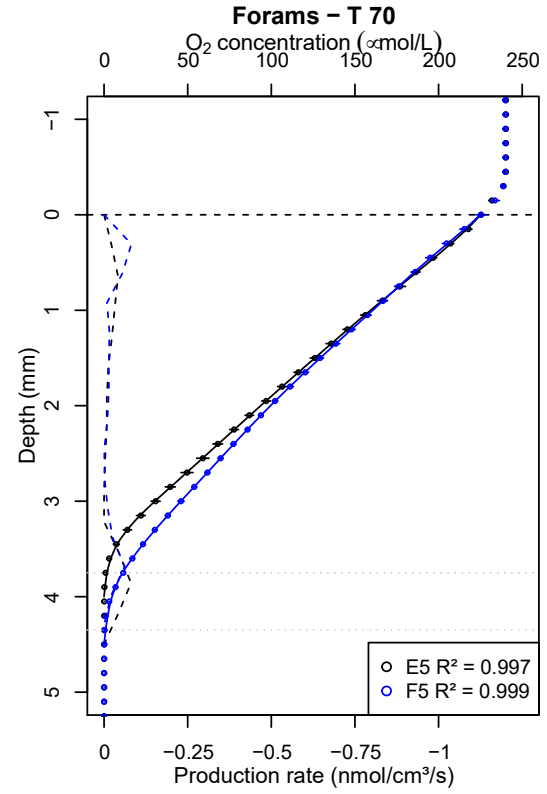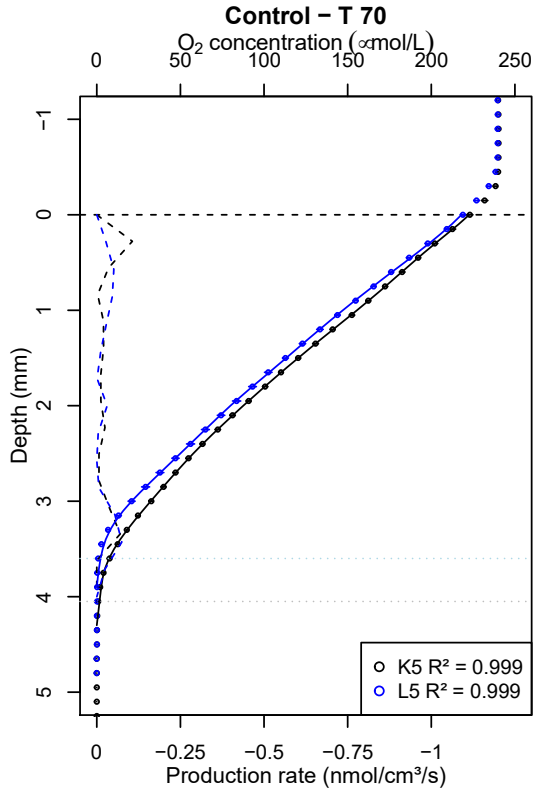
Fig. S1. Oxygen profiles interpretation. Average oxygen concentration distribution in the sediment +/- sem for all sampled zones in control (left panels) and in bioturbated cores (right panels) at all time. Full line shows the modeled vertical distribution of dissolved oxygen and dashed line represent the oxygen production rate at each depth interval. Profiles measured at T5 (J4, K2, D2 and F2) were not considered in the manuscript analysis due to the odd vertical distribution they exhibit.
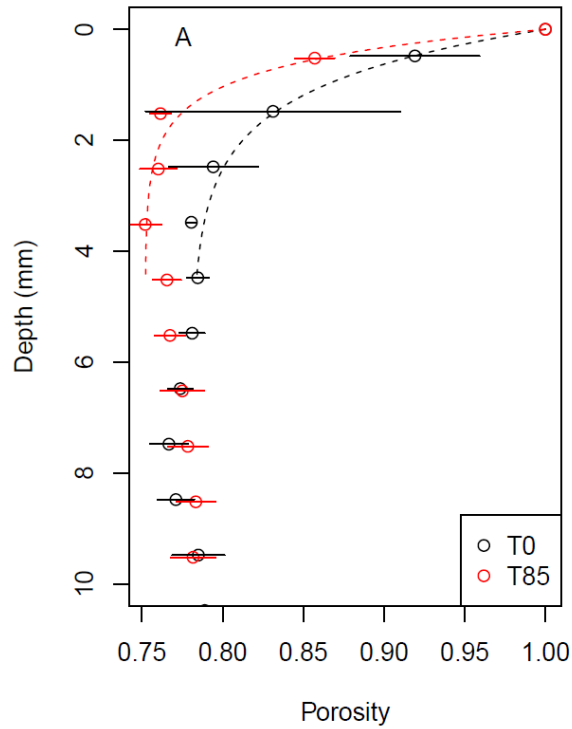
Fig. S2. Sediment microporosity vertical profiles. Porosity profiles in the sediment at the beginning (black) and the end of the experiment (red). For all profiles, open circles represent the average and the whiskers the standard deviation calculated on 4 replicates. Dashed lines are the modeled distribution per depth in the top 5 mm, such as porosity = 0.78 + 0.22 exp (-0.97 x depth) at the beginning of the experiment and porosity = 0.75 + 0.25 exp (-1.59 x depth) after 85 days of experiment.

Type or paste caption here. Create a page break and paste in the Figure above the caption.

Table S1. Linear models parameters. Linear mixed effects models parameters estimate in all dataset and for all response variables tested. Values significantly different from 0 (p<0.05) are shown as bold characters.

Dataset	Response variable	Fixed effect variable	Value	Std.Error	DF	t-value	p-value
0 - 35 days	Oxygen penetration depth	Intercept	**2887.6**	**83.4**	**118**	**34.6**	**<.0001**
		Time	-1.1	3.8	118	-0.3	0.76
		Treatment	68.1	117.9	10	0.6	0.58
		Time * Treatment	**12.5**	**5.4**	**118**	**2.3**	**0.02**
	Diffusive oxygen uptake	Intercept	**24.63 10-3**	**1.47 10-3**	**30**	**16.8**	**<.0001**
		Time	-0.04 10-3	0.09 10-3	30	-0.5	0.64
		Treatment	-0.37 10-3	2.07 10-3	10	-0.2	0.86
		Time * Treatment	**-0.35 10-3**	**0.12 10-3**	**30**	**-2.9**	**0.01**
55 - 85 days	Oxygen penetration depth	Intercept	**3291.7**	**83.4**	**24**	**5.0**	**<.0001**
		Time	10.0	3.8	8	1.1	0.31
		Treatment	-825.0	117.9	8	-0.9	0.40
		Time * Treatment	13.3	5.4	8	1.0	0.34
	Diffusive oxygen uptake	Intercept	6.31 10-3	4.02 10-3	8	1.6	0.16
		Time	0.07 10-3	0.06 10-3	8	1.2	0.27
		Treatment	11.62 10-3	5.68 10-3	8	2.0	0.08
		Time * Treatment	-0.18 10-3	0.08 10-3	8	-2.3	0.05

Table S2. Sampling plan. Detailed sampling plan with zones randomly selected for microprofiling at each sampling time, for each zone the letter corresponds to the identification of a core and the digit to the sampling zone (see Figure 6B).

Time (days)	Bioturbated zones	Control zones
-1	B2 C4 F4 E1	G1 H4 K3 L3
1	A2 C1	I4 H1
2	A1 C3	H3 I2
5	D2 F2	J4 K2
7	A3 B3	G2 I1
9	C2 B1	H2 G4
13	D4 E2	L4 J3
16	A4 B4	I3 G3
22	D3 E4	J2 L1
29	E3 F1	K4 L2
36	F3 D1	J1 K1
55	C5 B5	G5 H5
70	F5 E5	L5 K5
85	A5 D5	J5 I5