

ELECTRONIC SUPPLEMENTARY MATERIAL

Benthic primary production and respiration of shallow rocky habitats: a case study from South Bay (Doumer Island, Western Antarctic Peninsula)

Lorenzo Rovelli^{1,5*}, Karl M. Attard^{1,2}, César A. Cárdenas³, Ronnie N. Glud^{1,4}

¹Nordcee, Department of Biology, University of Southern Denmark, 5230 Odense M, Denmark.

²Tvärminne Zoological Station, University of Helsinki, 10900 Hanko, Finland.

³Departamento Científico, Instituto Antártico Chileno, Punta Arenas 6200965, Chile.

⁴Department of Ocean and Environmental Sciences, Tokyo University of Marine Science and Technology, 108-8477 Tokyo, Japan.

⁵now at Institute for Environmental Sciences, University of Koblenz-Landau, Landau, Germany.

*Corresponding author: lorenzo@biology.sdu.dk

Table 1 Physicochemical characteristics at each deployment site. Values for the respective parameters are reported as mean $\pm$ standard deviation (SD) with minimum–maximum values presented within brackets.

Zone Depth (m)	AEC Depl.	Coordinates Date (time)	Temperature (°C)	O ₂ (% sat)	O ₂ ($\mu\text{mol L}^{-1}$)	PAR ($\mu\text{mol quanta m}^{-2} \text{s}^{-1}$)
I – 15	15	64° 52' 13.84'' S, 63° 34' 25.61'' W 14 Feb 2017 (19:00)	2.0 $\pm$ 0.2 [1.7–2.4]	88.6 $\pm$ 2.6 [83.4–93.7]	306.7 $\pm$ 7.7 [290.3–321.6]	- [0–133.3]
I – 15	17	64° 52' 28.09'' S, 63° 34' 36.01'' W 17 Feb 2017 (20:00)	2.3 $\pm$ 0.1 [2.2–2.6]	100.0 $\pm$ 2.2 [93.5–108]	343.5 $\pm$ 6.3 [328.4–368.8]	- [0–52.9]
I – 15	18	64° 52' 13.84'' S, 63° 34' 25.57'' W 17 Feb 2017 (20:00)	2.3 $\pm$ 0.01 [2.1–2.4]	92.7 $\pm$ 0.9 [89.9–94.3]	356.7 $\pm$ 3.1 [346.9–361.5]	- [0–133.3]
I – 20	16	64° 52' 15.28'' S, 63° 34' 4.91'' W 15 Feb 2017 (21:00)	1.9 $\pm$ 0.1 [1.6–2.1]	94.4 $\pm$ 2.5 [88.6–100.2]	328.5 $\pm$ 7.9 [310.0–347.2]	- [0–133.3]
II – 31	10	64° 52' 20.93'' S, 63° 34' 24.89'' W 4 Feb 2017 (21:00)	2.0 $\pm$ 0.2 [1.7–2.4]	84.8 $\pm$ 2.6 [79.8–92.2]	293.2 $\pm$ 7.9 [277.8–316.6]	- [0–1.4]
II – 31	12	64° 52' 21.58'' S, 63° 34' 26.69'' W 7 Feb 2017 (10:00)	1.9 $\pm$ 0.2 [1.6–2.5]	83.5 $\pm$ 3.7 [77.3–94.8]	361.1 $\pm$ 14.4 [337.5–405.9]	- [0–3.5]
II – 33	8	64° 52' 20.50'' S, 63° 34' 27.91'' W 1 Feb 2017 (20:00)	2.0 $\pm$ 0.3 [1.6–2.7]	85.0 $\pm$ 4.2 [78.3–94.4]	294.2 $\pm$ 12.5 [273.8–321.9]	- [0–8.1]
II – 35	6	64° 52' 19.49'' S, 63° 34' 24.38'' W 29 Jan 2017 (21:00)	2.1 $\pm$ 0.3 [1.5–2.5]	86.8 $\pm$ 3.2 [78.8–91.9]	299.1 $\pm$ 9.5 [275.9–315]	- [0–5.0]
II – 36	1	64° 52' 18.26'' S, 63° 34' 25.82'' W 19 Jan 2017 (19:00)	0.6 $\pm$ 0.08 [0.5–0.86]	74.6 $\pm$ 3.2 [67.8–82.2]	265.4 $\pm$ 10.6 [242.8–290.9]	- [0–13.3]
II – 36	5	64° 52' 18.55'' S, 63° 34' 25.79'' W 24 Jan 2017 (19:00)	1.8 $\pm$ 0.3 [1.0–2.2]	85.8 $\pm$ 3.2 [77.5–92.2]	297.5 $\pm$ 9.3 [273.8–318.4]	- [0–2.9]
III – 53	11	64° 52' 18.05'' S, 63° 34' 37.56'' W 6 Feb 2017 (19:00)	1.5 $\pm$ 0.1 [1.3–1.8]	82.5 $\pm$ 2.1 [78.2–87.4]	323.5 $\pm$ 7.5 [308.1–340.3]	- [0]
III – 58	13	64° 52' 18.05'' S, 63° 34' 38.68'' W 8 Feb 2017 (10:00)	1.3 $\pm$ 0.1 [1.1–1.7]	77.8 $\pm$ 2.2 [72.5–82.5]	306.9 $\pm$ 8.1 [287.8–323.4]	- [0]
III – 58	14	64° 52' 18.34'' S, 63° 34' 38.93'' W 11 Feb 2017 (08:00)	1.3 $\pm$ 0.1 [1.0–1.5]	79.4 $\pm$ 2.6 [72.6–87.0]	280.5 $\pm$ 8.5 [258.4–305.9]	- [0]

Table 2 Descriptive statistics on the benthic habitat coverage by algae, benthic sessile fauna and substrate for each depth zone.

Parameter	Depth Zone	Benthic habitat coverage (%)						
		Mean	SD	SE	Min	Max	Range	n
Algae	I	65.8	18.0	4.0	37	94	57	20
	II	22.4	24.3	4.6	0	100	100	28
	II	13.4	6.4	1.1	6	31	25	32
Fauna	I	3.9	5.9	1.3	0	19	19	20
	II	12.9	16.3	3.1	0	55	55	28
	II	16.0	10.5	1.9	0	47	47	32
Substrate	I	30.2	18.5	4.1	5	63	58	20
	II	64.7	29.5	5.6	0	100	100	28
	II	70.6	11.1	2.0	38	87	49	32