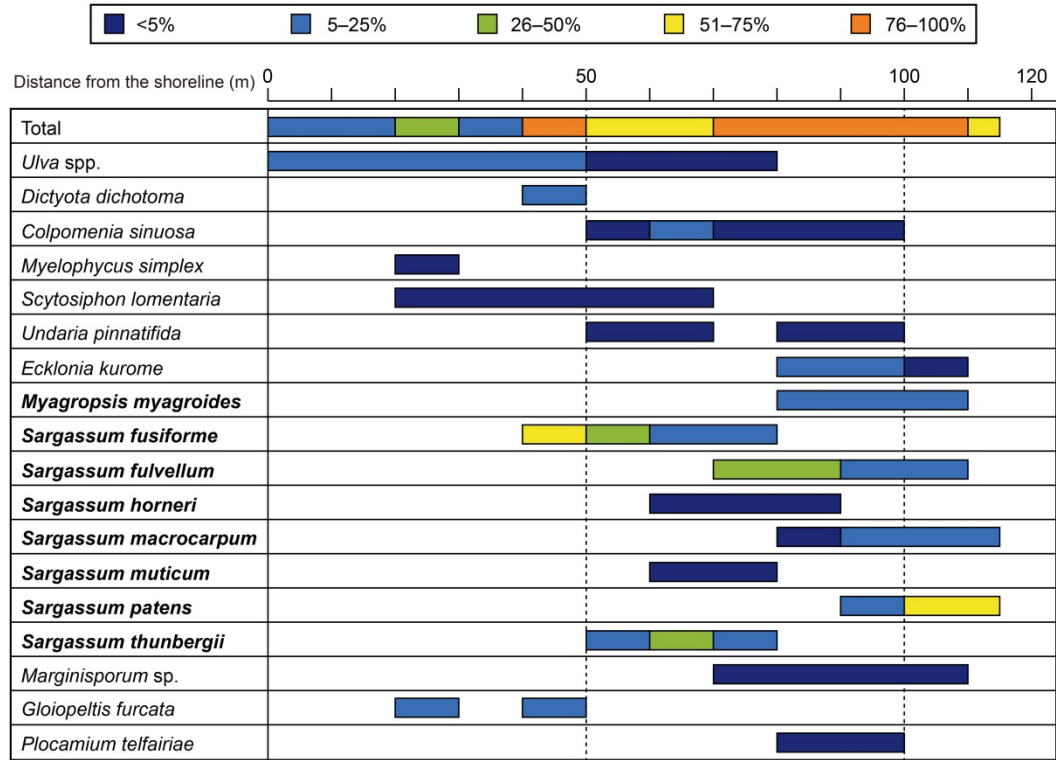


*Supplement to*

**Macroalgal metabolism and lateral carbon flows create extended atmospheric CO<sub>2</sub> sinks**

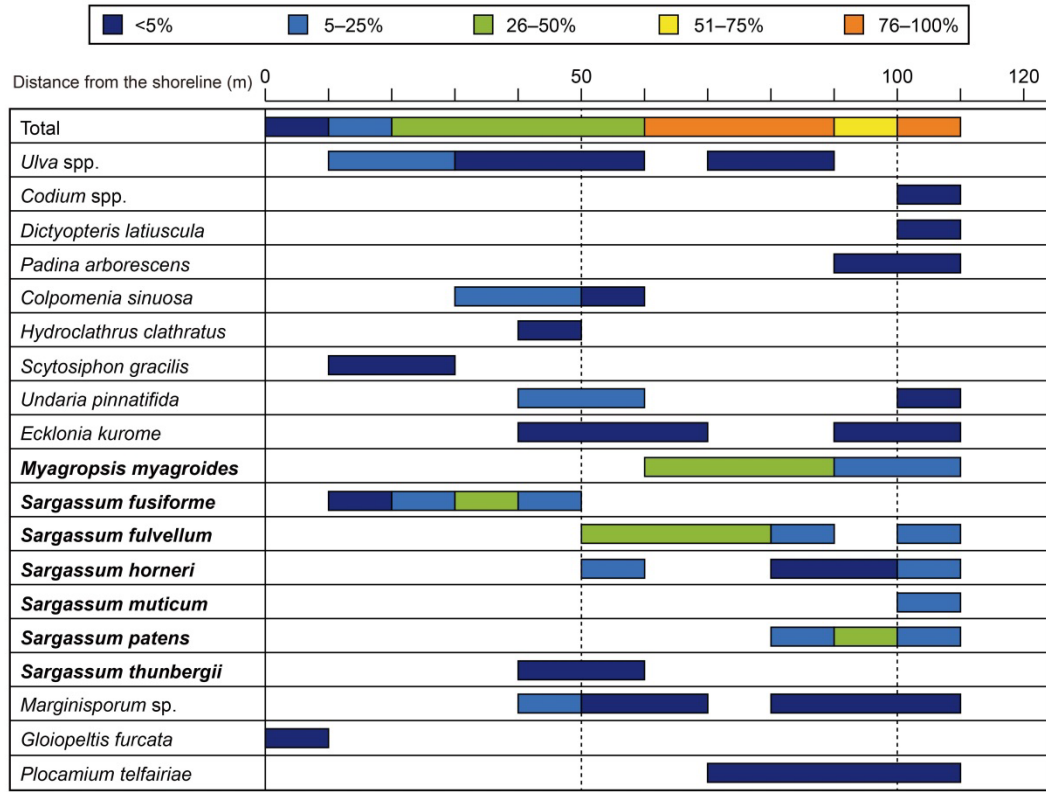
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Line 1

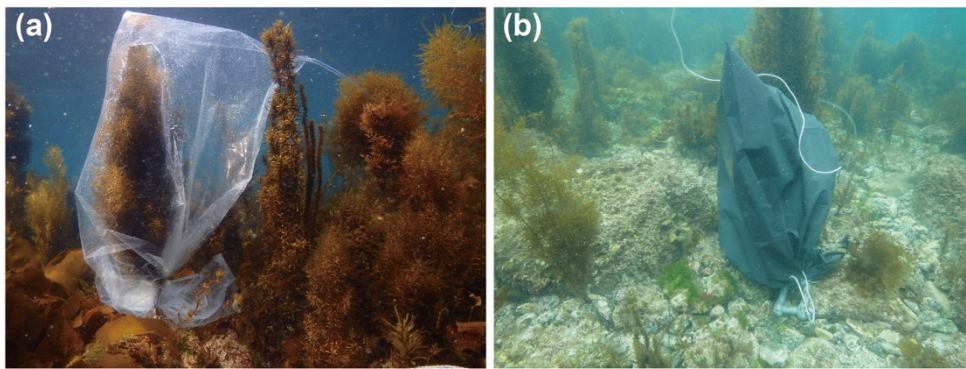


**Figure S1:** Species composition and percent bottom coverage by each macroalgal species along transect line 1. Species shown in bold italic font are sargassaceous algae.

Line 2



**Figure S2:** Species composition and percent bottom coverage by each macroalgal species along transect line 2. Species shown as bold italic are sargassaceous algae.



**Figure S3:** Photographs showing the field bag experiments conducted to estimate macroalgal metabolism via in situ incubations. (a) Transparent and (b) dark bags were installed.

**Table S1:** Carbon metabolism estimated from field bag experiments for macroalgae and phytoplankton. For macroalgae, mean  $\pm$  standard deviation are shown. Average water depth and biomass in the bed were used for calculating metabolic rates.

Variables	Units	February 2019	March 2019
<b>Macroalgae</b>			
Gross community production	$\mu\text{mol-C g-ww}^{-1} \text{h}^{-1}$	$11.3 \pm 2.5$	$28.2 \pm 10.8$
Community respiration	$\mu\text{mol-C g-ww}^{-1} \text{h}^{-1}$	$2.4 \pm 0.1$	$2.4 \pm 1.0$
Net community production	$\mu\text{mol-C g-ww}^{-1} \text{d}^{-1}$	$66.9 \pm 27.9$	$296.2 \pm 136.9$
DOC release (light)	$\mu\text{mol-C g-ww}^{-1} \text{h}^{-1}$	$1.31 \pm 0.65$	$0.87 \pm 0.28$
DOC release (dark)	$\mu\text{mol-C g-ww}^{-1} \text{h}^{-1}$	$0.64 \pm 0.23$	$0.68 \pm 0.61$
DOC release per day	$\mu\text{mol-C g-ww}^{-1} \text{d}^{-1}$	$22.8 \pm 7.7$	$18.7 \pm 7.8$
Calcification (light)	$\mu\text{mol-C g-ww}^{-1} \text{h}^{-1}$	$0.21 \pm 0.02$	$0.10 \pm 0.38$
Calcification (dark)	$\mu\text{mol-C g-ww}^{-1} \text{h}^{-1}$	$0.00 \pm 0.11$	$0.28 \pm 0.05$
Calcification per day	$\mu\text{mol-C g-ww}^{-1} \text{d}^{-1}$	$2.3 \pm 1.4$	$4.5 \pm 4.8$
<b>Control (phytoplankton)</b>			
Gross community production	$\mu\text{mol-C L}^{-1} \text{h}^{-1}$	1.04	0.89
Community respiration	$\mu\text{mol-C L}^{-1} \text{h}^{-1}$	0.29	0.20
Net community production	$\mu\text{mol-C g-ww}^{-1} \text{d}^{-1}$	4.43	6.22
DOC release (light)	$\mu\text{mol-C L}^{-1} \text{h}^{-1}$	0.66	0.32
DOC release (dark)	$\mu\text{mol-C L}^{-1} \text{h}^{-1}$	0.20	0.13
DOC release per day	$\mu\text{mol-C g-ww}^{-1} \text{d}^{-1}$	9.94	5.52
Calcification (light)	$\mu\text{mol-C L}^{-1} \text{h}^{-1}$	0.10	0.19
Calcification (dark)	$\mu\text{mol-C L}^{-1} \text{h}^{-1}$	0.02	-0.73
Calcification per day	$\mu\text{mol-C g-ww}^{-1} \text{d}^{-1}$	1.47	-6.08