

A photograph of a coastal landscape at sunset or sunrise. In the foreground, dark silhouettes of palm fronds frame the scene. Below them, a rocky shoreline extends into the ocean. The water is a deep blue, with small white-capped waves breaking against the rocks. In the background, a low-lying island or peninsula is visible, covered in dense green vegetation. The sky is filled with soft, warm clouds, transitioning from a pale yellow near the horizon to a darker blue-grey higher up.

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“Bright Water” Targets

Whitecaps & Foam

Sea Ice

Floating Vegetation

Floating Plastics

Bubbles

Dense blooms

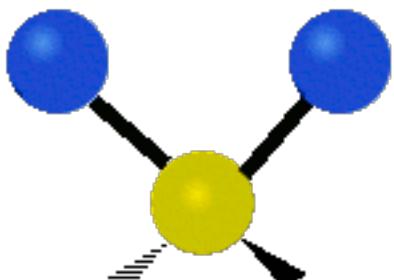
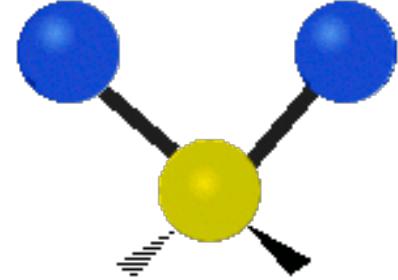
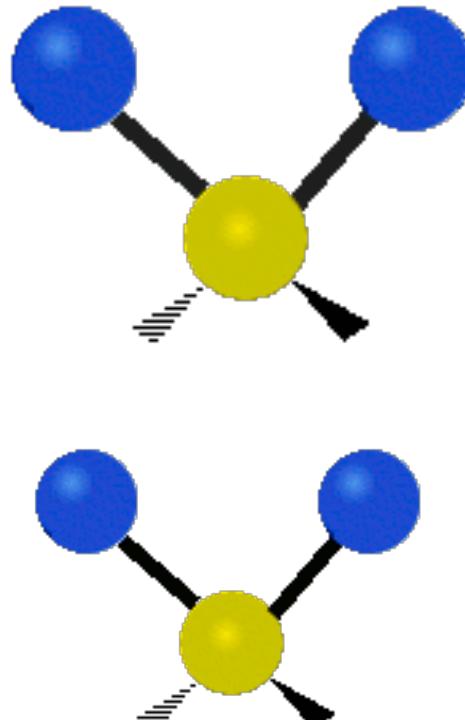
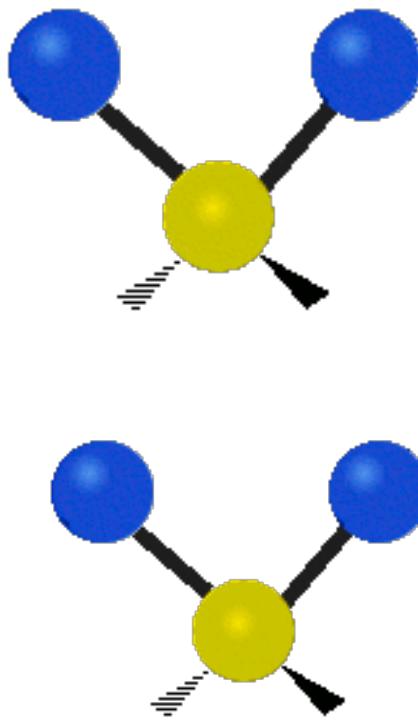
Calcite

Sediment
(turbid water)

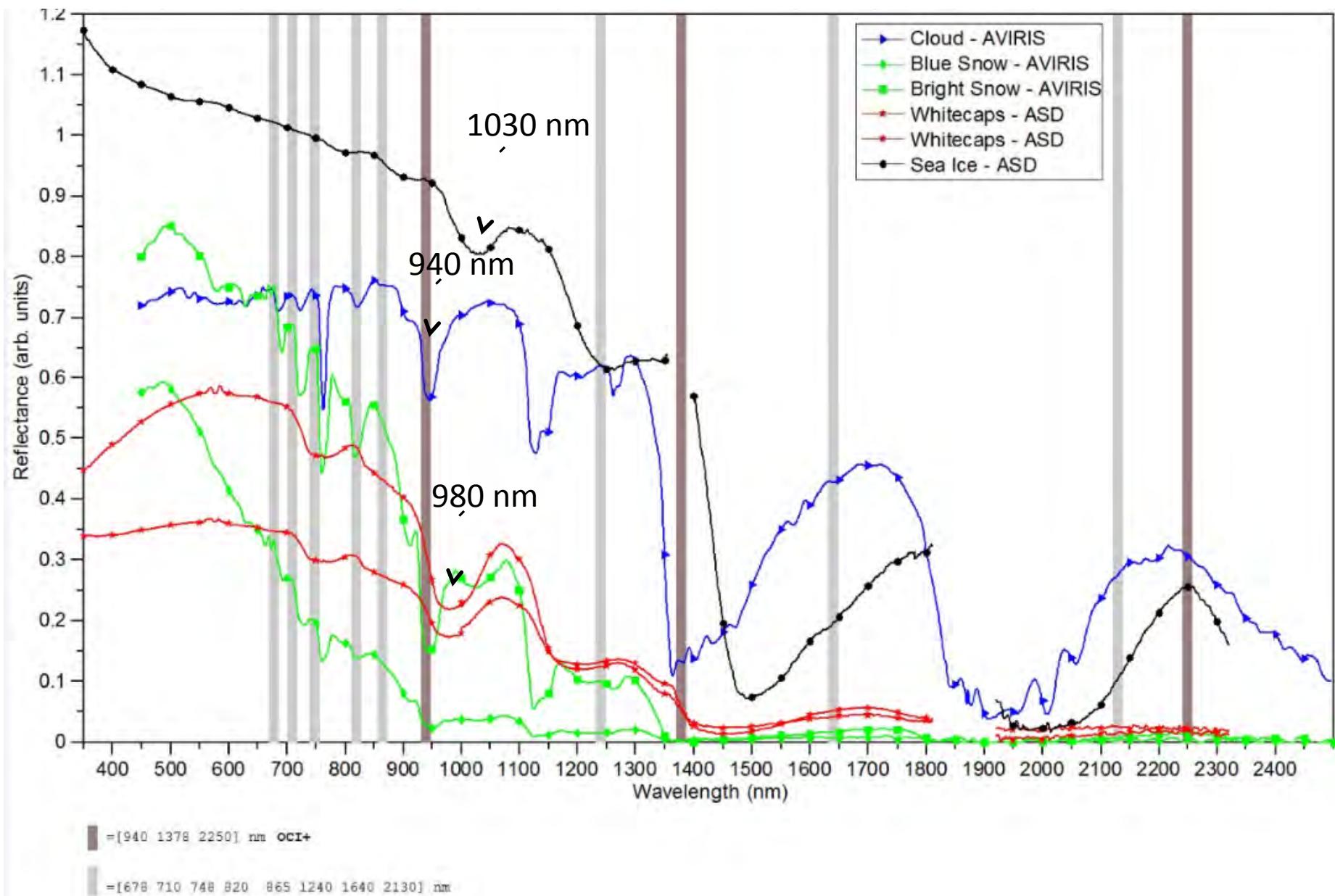
Seafloor
(Optically Shallow)



Absorption bands in the IR

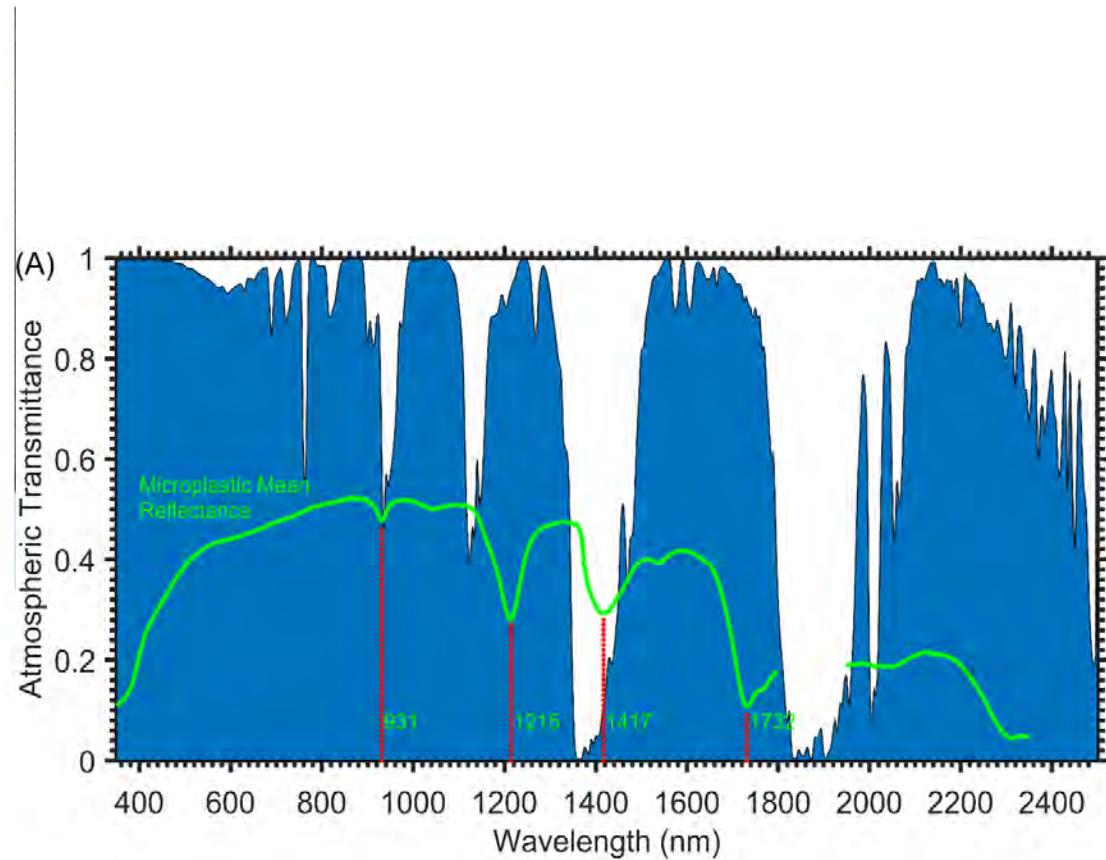


Given atmospheric absorption, would this whitecap feature at 980 nm be observable at Top of Atmosphere (TOA)?

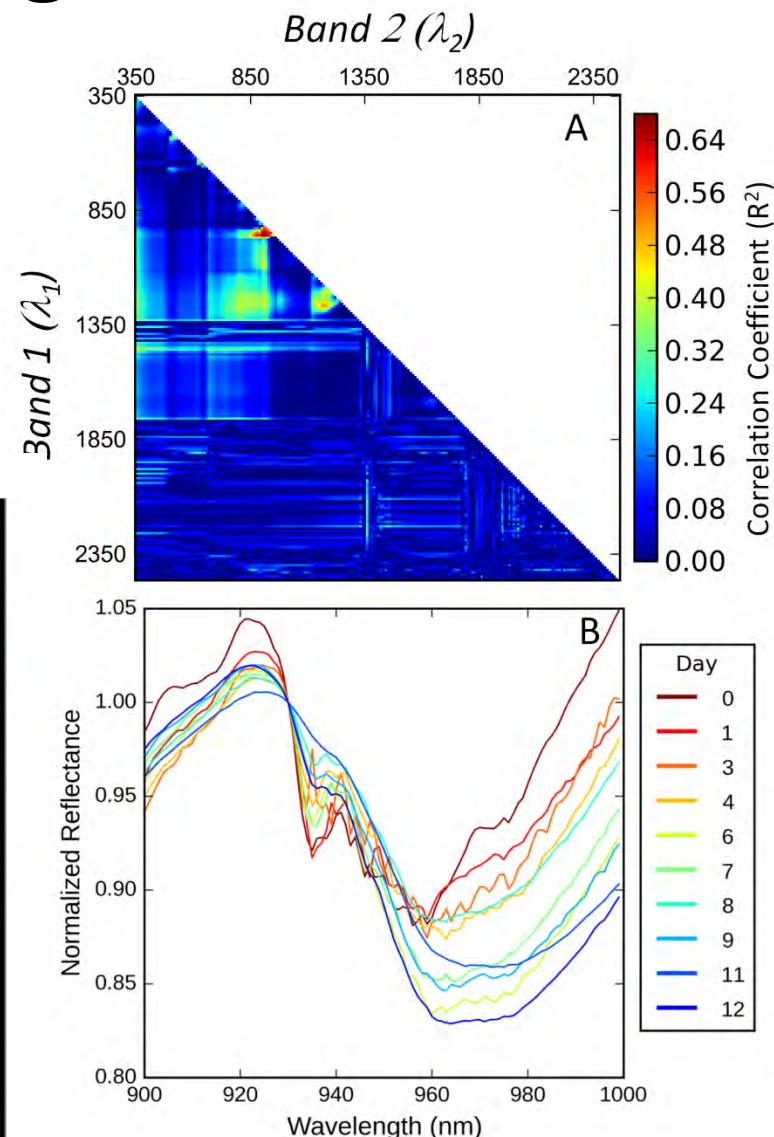
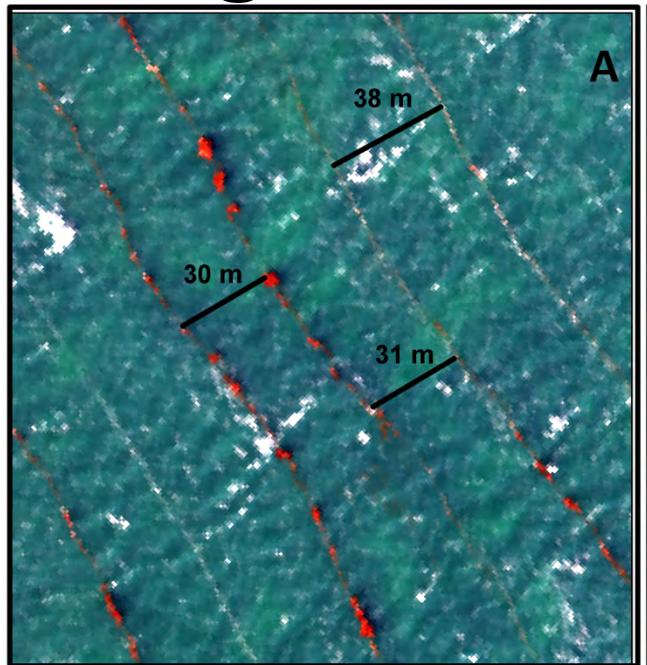


Unique absorption peaks related to floating plastics

1.68 mm – 2.00 mm

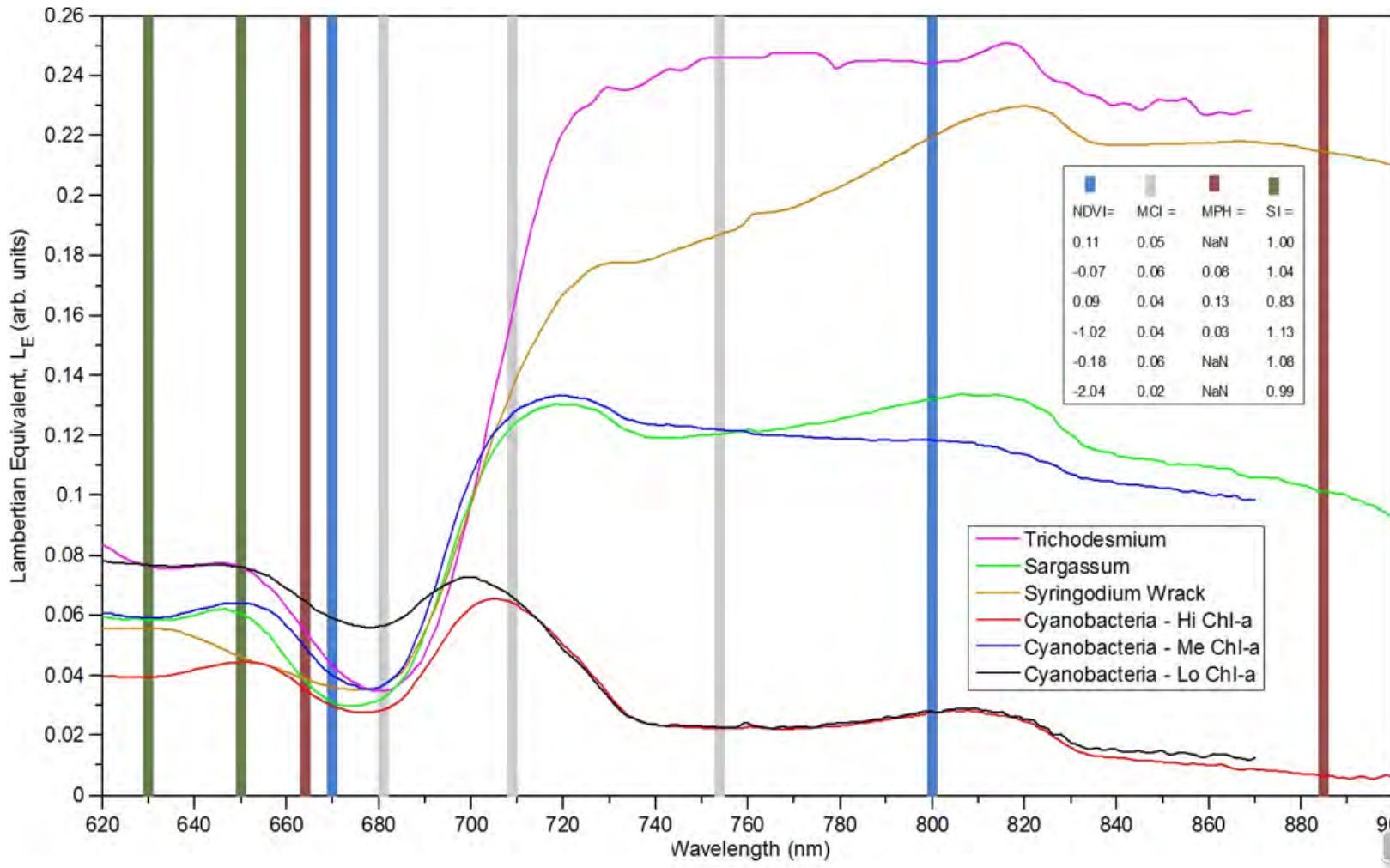


Age of Floating Seagrass Wrack



Dierssen et al. 2015 RSE

Red Edge Algorithms for Algal Blooms



Amount of coral bleaching dependent on type of symbionts

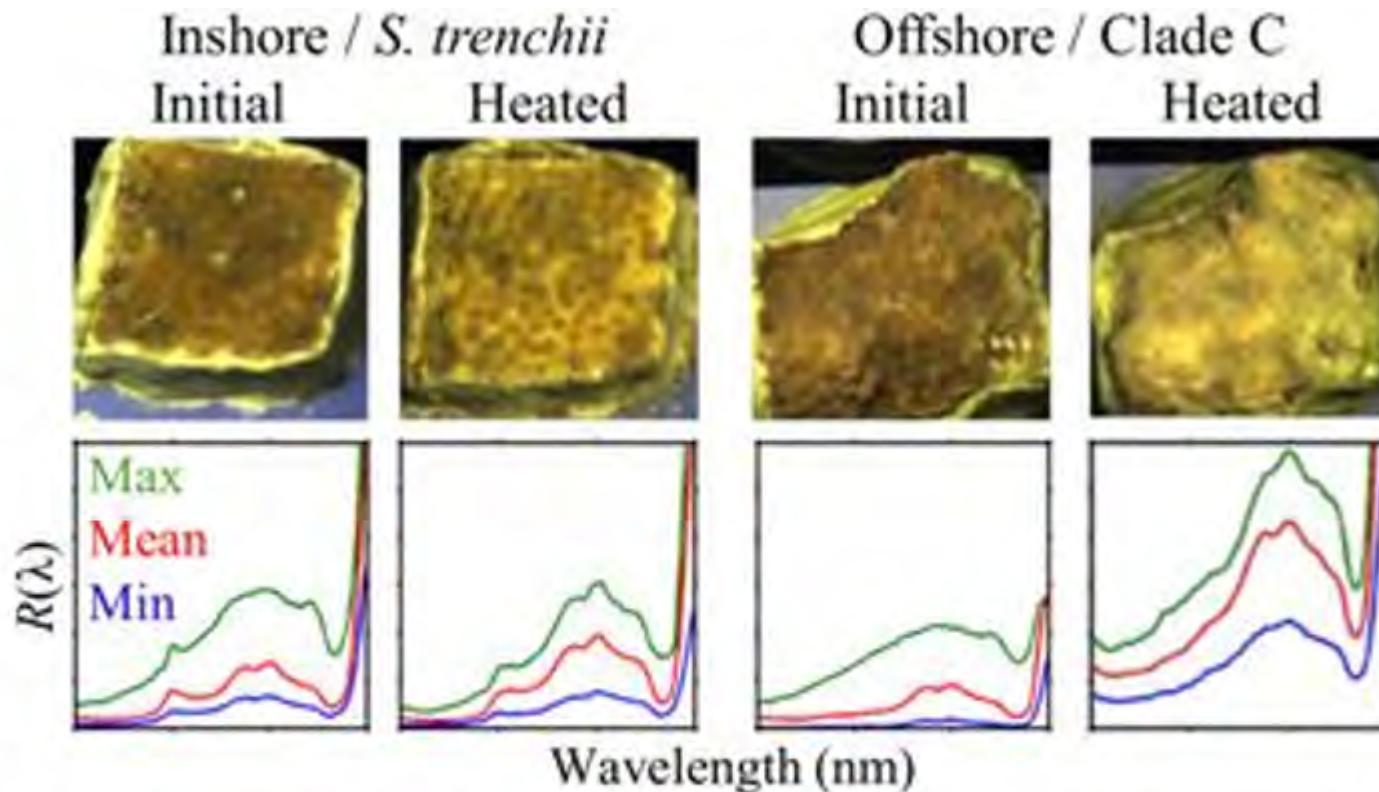


Fig. 1. Hyperspectral imagery revealed that thermally tolerant *Symbiodinium trenchii* and Clade C *Symbiodinium* produce similar reflectance but differential response to heating.

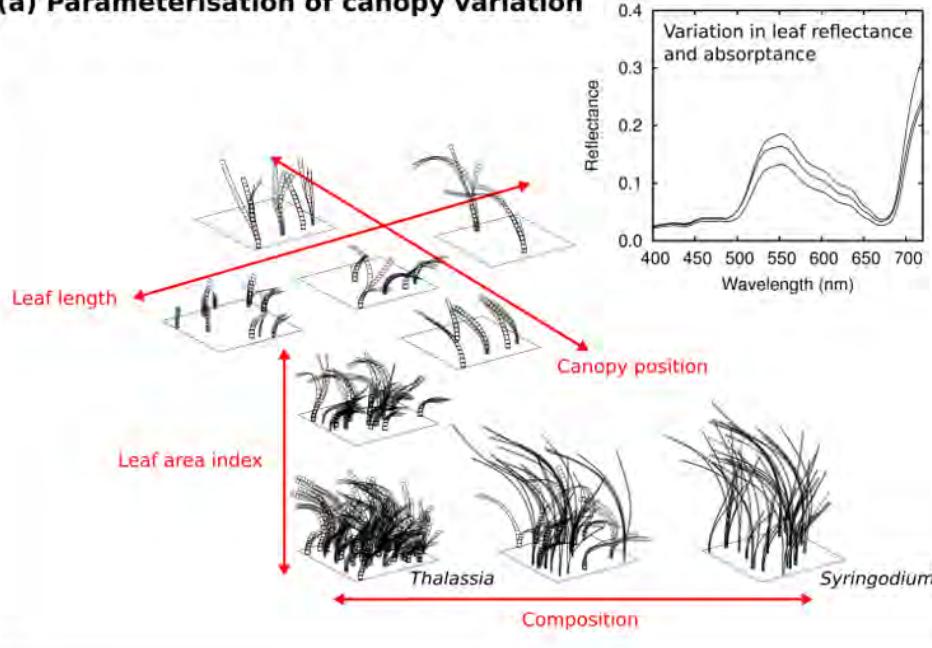
Russell et al. RS 2016

	1 m depth		2 m depth		5 m depth	
	Lu (subsurface)	Lu (air)	Lu (subsurface)	Lu (air)	Lu (subsurface)	Lu (air)
cover 40%						
cover 65%						
cover 40% <u>blchd</u>						
cover 65% <u>blchd</u>						

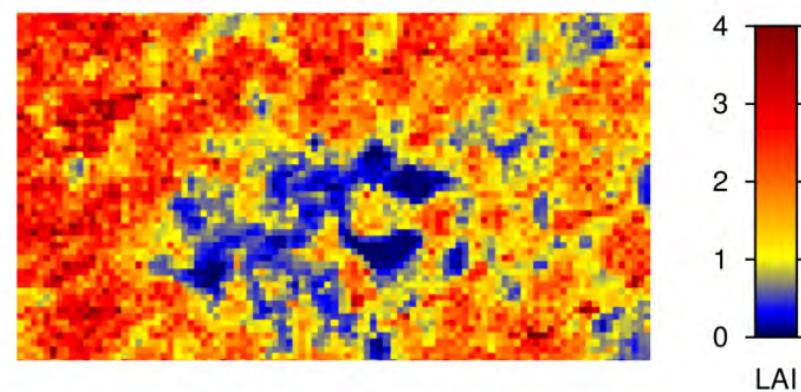
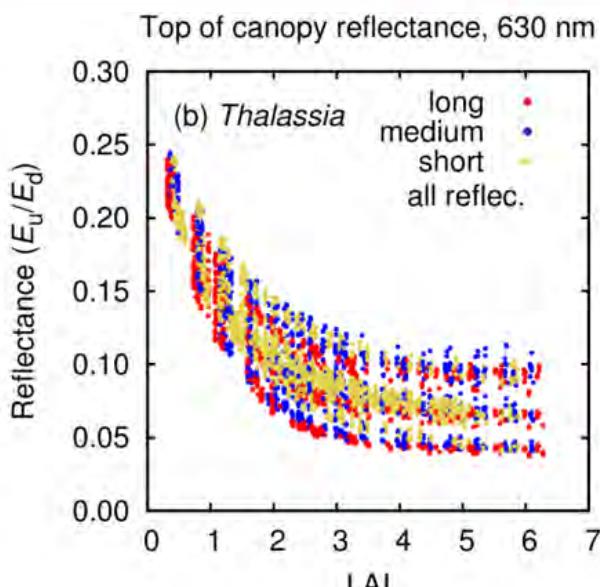


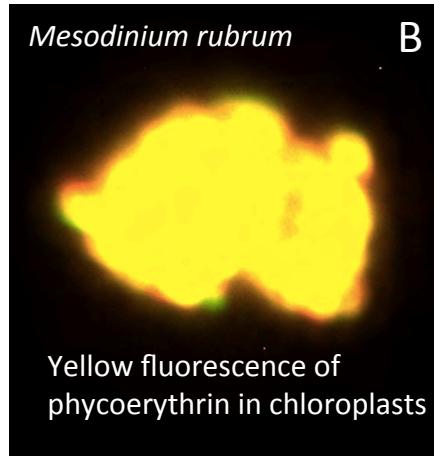
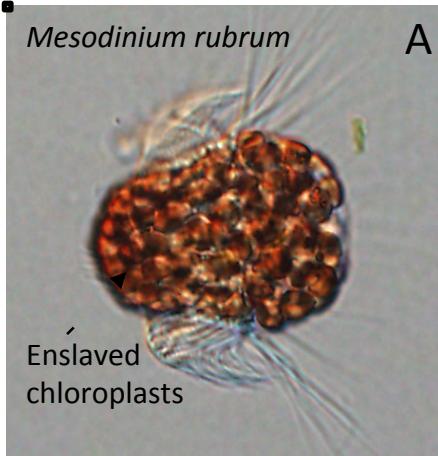
Hyperspectral mapping of seagrass leaf area index --- Hedley et al. 2016 & in prep

(a) Parameterisation of canopy variation



Syringodium dominated





Yellow fluorescence

