



Preliminary assessment of the performance of Hyperion in coastal waters.

Cal/Val activities in Moreton Bay, Queensland, Australia

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Moreton Bay:

shows spatial gradients in

- optical depth**
- bathymetry (0.3 to 15 m)**
- substrate composition**
 - seagrass, benthic micro-algae, sand, mud, coral reefs**

Water Quality determined by:

- Turbid and humic river inputs**
- Open ocean flushing**
- Recently lyngbya toxic algae blooms have become a serious environmental and health concern.**

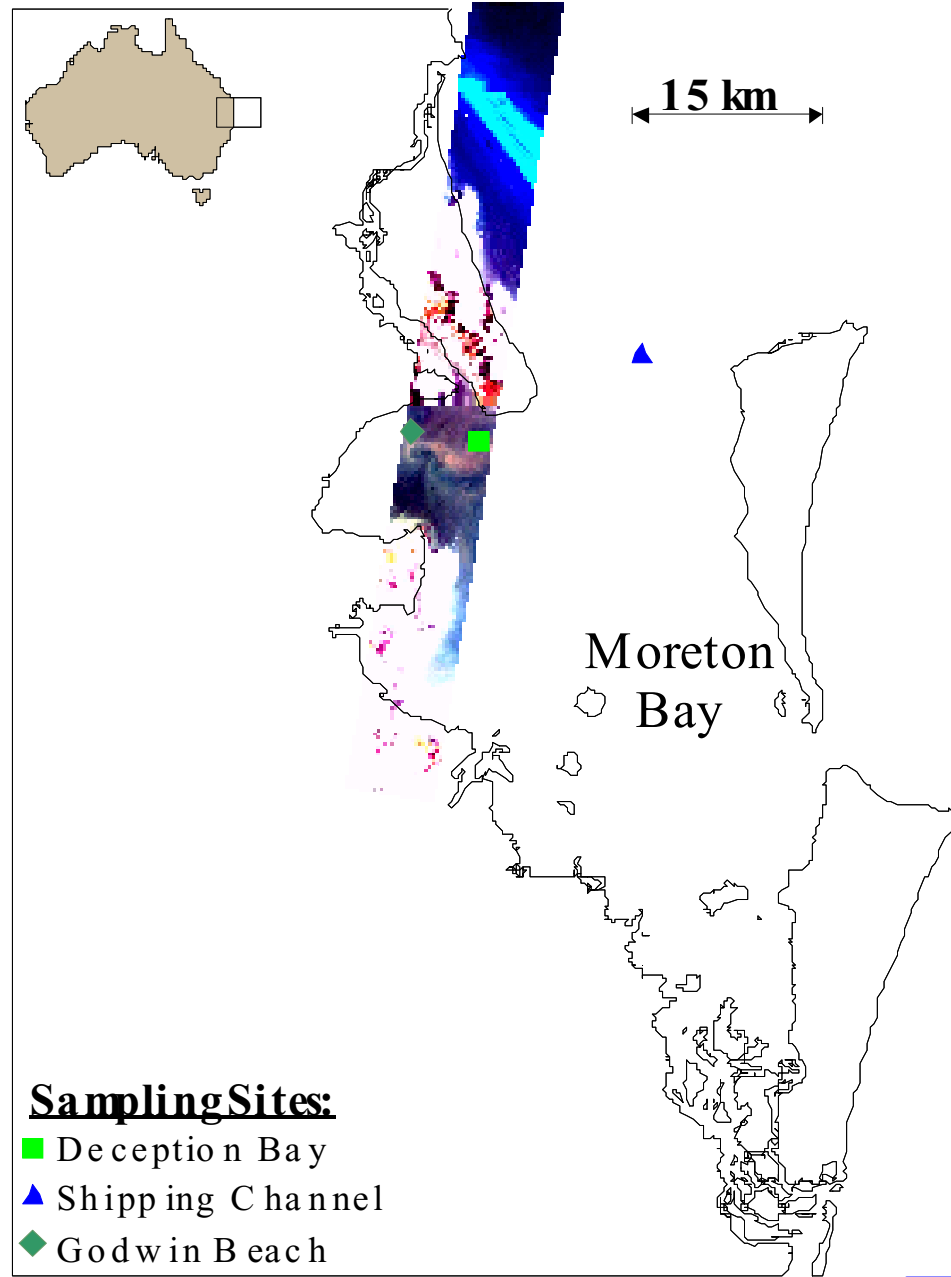




TABLE I
FIELD CAMPAIGN – MEASURED AND ESTIMATED PARAMETERS

Instrument	Measured parameters	Estimated Parameters	
ASD	E_d/L_u	$R(0^-)$, $R(z)$, K_d , K_u	UQ- BRG
RAMSES MCC	E_d air		UQ- BRG
RAMSES MCC & MRC	E_d/L_u	$R(0^-)$, $R(z)$, K_d , K_u	CLW
Unispec	L_u	$R(0^-)$, $R(z)$, K_u	CLW
Licor	E_d	$R(0^-)$, $R(z)$, K_d	CLW
HydroScat 6	b_b 145°	b_b	CLW/ EOC
PSICAM	$A_{tot}(\lambda)$, $a_{detr}(\lambda)$, $a_{CDOM}(\lambda)$	$a_{phy}(\lambda)$	CLW
Turbidity-meter	b_b 90°	NTU	QLD EPA
Secchi Depth			CLW/UQ/EPA
CTD	Temp, Salinity		QLD EPA
Water samples	Chl a, TSS		UQ-MB
HPLC			UW

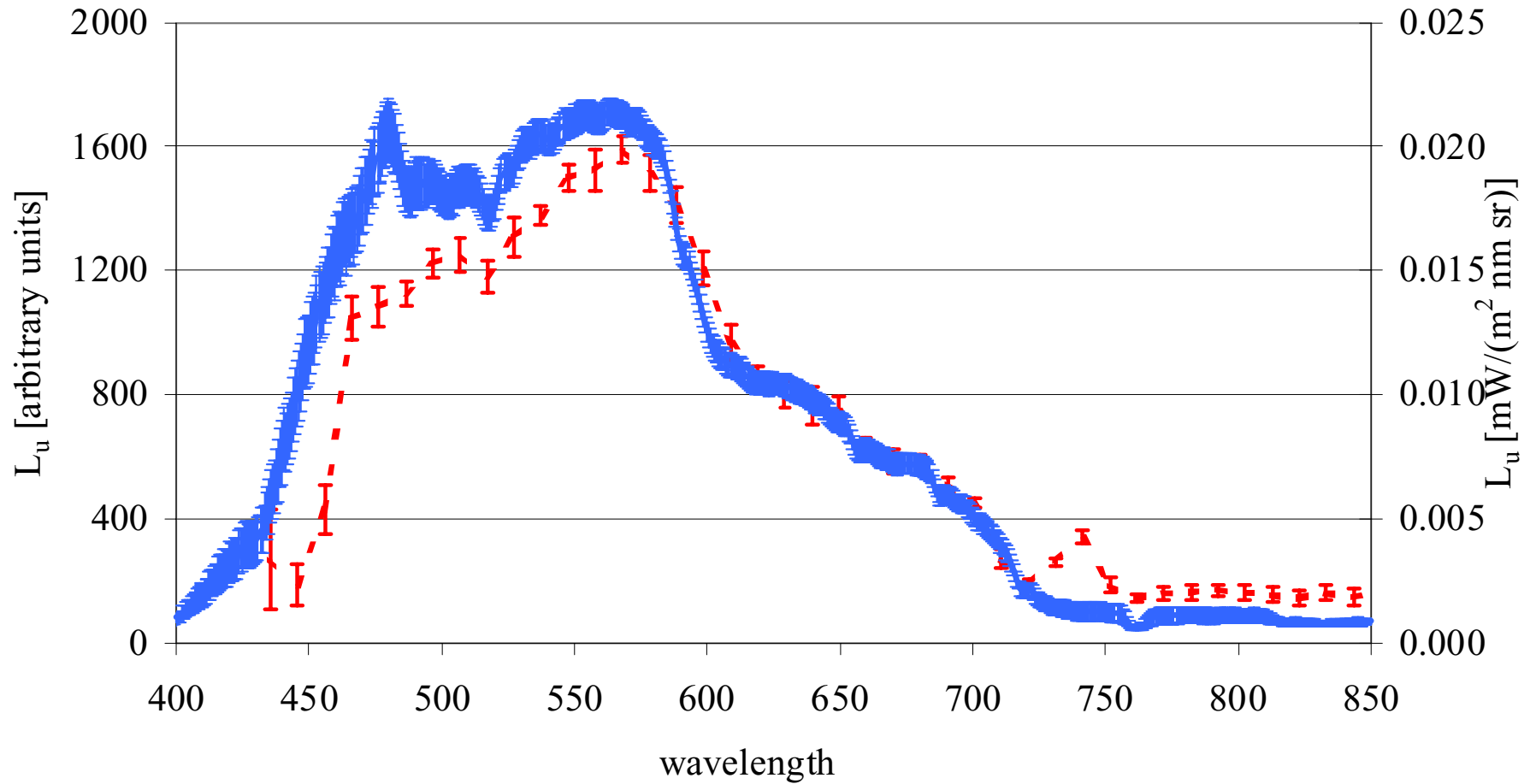
CLW: CSIRO Land & Water; UQ- BRG: University of Queensland Biophysical Remote Sensing Group; UQ- MB: University of Queensland, Marine Botany; QLD EPA: Queensland Environmental Protection Agency; EOC: CSIRO Earth Observation Center; UW: University of Wollongong



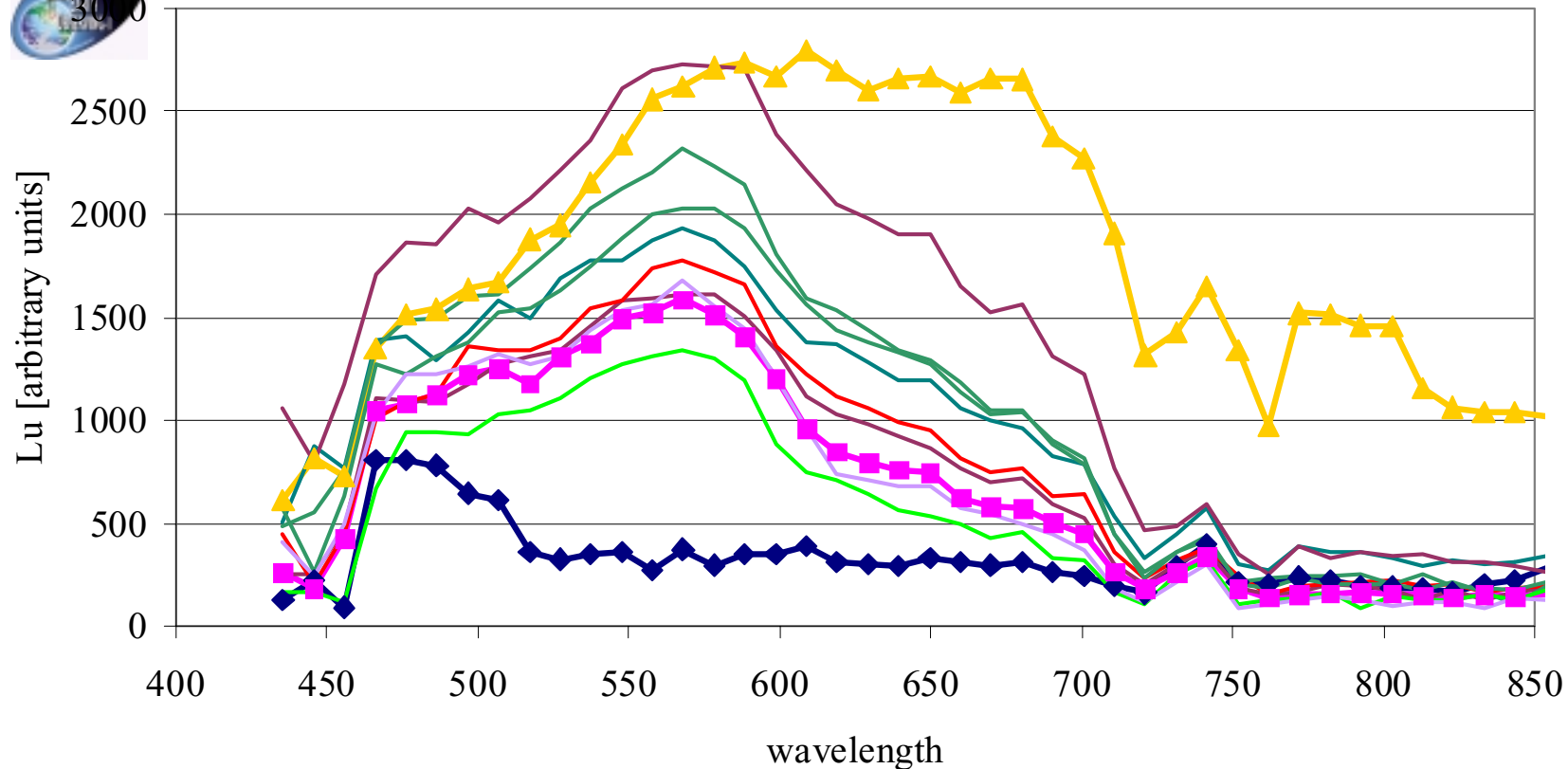
FIELD CAMPAIGN



<u>Instrument</u>	<u>Measured parameters</u>	<u>Estimated Parameters</u>
ASD	E_d/L_u	$R(0-), R(z), K_d, K_u$
RAMSES	E_d/L_u	$R(0-), R(z), K_d, K_u$
Unispec	L_u	$R(0-), R(z), K_u$
Licor	E_d	$R(0-), R(z), K_d,$
HydroScat 6	$b_b 145^\circ$	b_b
PSICAM	$a_{tot}(\lambda), a_{detr}(\lambda), a_{CDOM}(\lambda)$	$a_{phy}(\lambda)$
Turbidity	$b_b 90^\circ$	NTU
Secchi Depth	Transparency	
CTD	Temp, Salinity	
Water samples	Chl a, TSS	
HPLC	absorption	pigments



■ ■ Hyperion Lu(0+) left axis — in situ ASD Lu(0+) right axis



Hyperion upwelling radiance spectra extracted from the imagery of Deception Bay at an ocean site, Brisbane River site and the exact in situ measurement site.



Hyperion
imagery of
Deception Bay,
12 Jan 2001.

Ch.30 (649.6 nm),
Ch.19 (537.5 nm)
Ch.12 (466.1 nm)
displayed as RGB



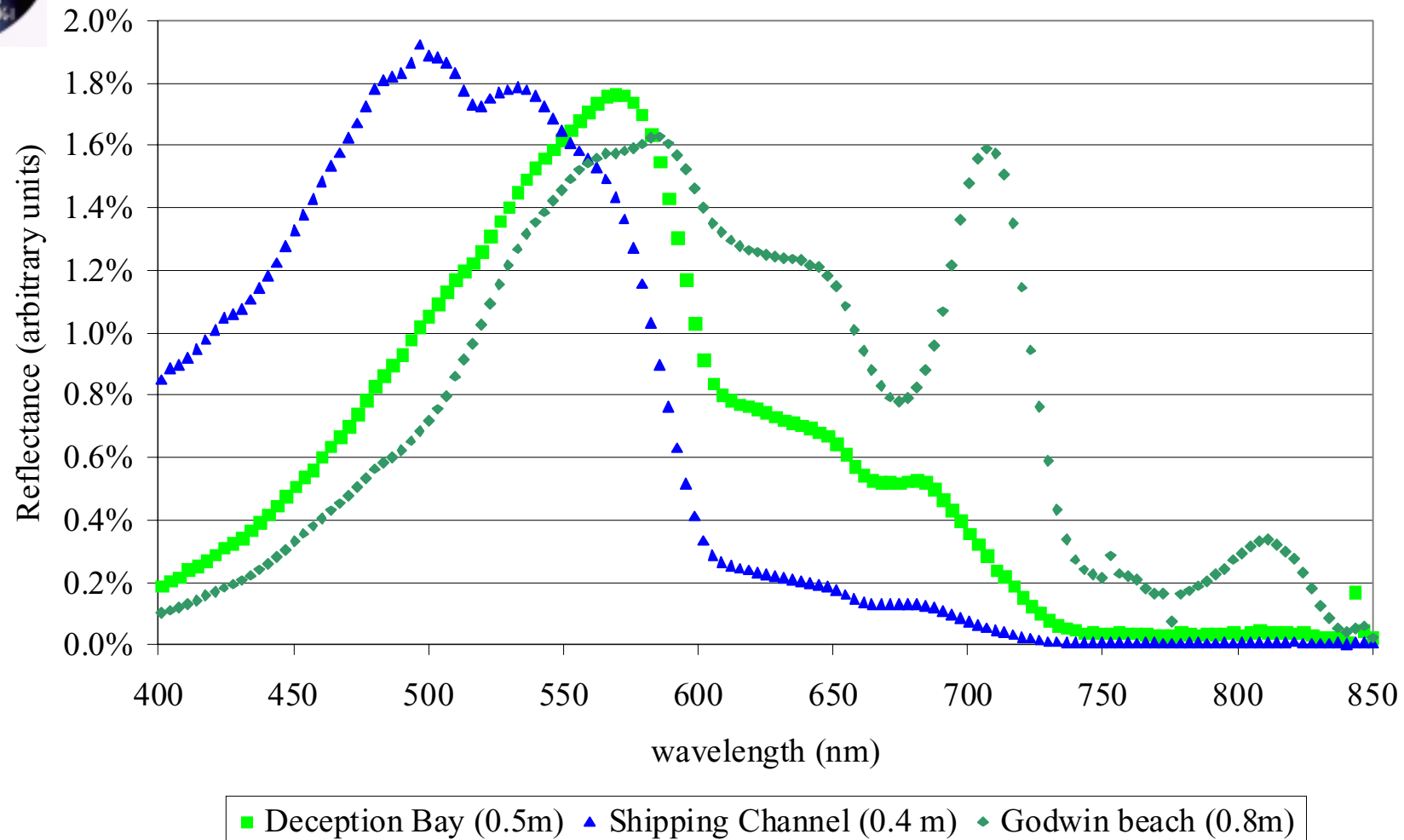


Fig. 5. Reflectance spectra (RAMSES MRC & MCC) at the three sites. 14 Feb 2001

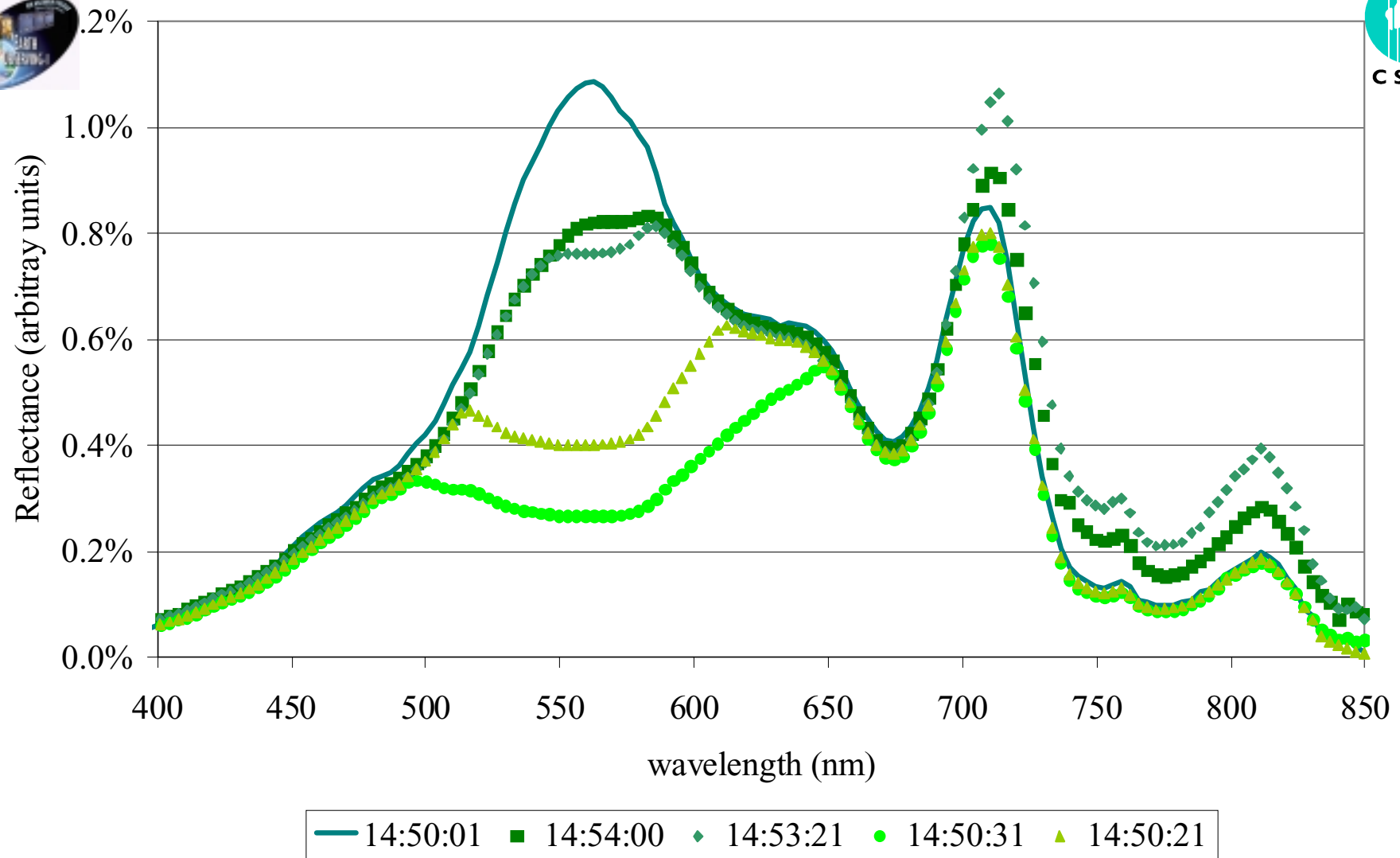


Fig. 8. Reflectance spectra (RAMSES MRC & MCC) at a depth of 80 cm, 40 cm above the substrate at Godwin Beach on 14 Feb 2001. Note the effects of pigment absorption between 500 and 650 nm.



Preliminary conclusions:

Good agreement *in situ* upwelling radiance and Hyperion radiance after a darkest pixel correction

Sufficient S:N to identify waters and to discriminate features within waters

Accurate targeting of requested path

Hyperspectral from space works for a Moreton Bay type environment!