Moorings-of-Opportunity: A New Capability to Obtain Large Volumes of Groundtruthing Data for Color Satellites


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Acknowledgements:

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Problem
+ Limited amount of *in situ* data available for SeaWiFS match-ups
+ Dedicated optical moorings are expensive

Project Solution
+ Demonstrate that a mooring-of-opportunity (BTM) can be used to provide high frequency match-up data
BERMUDA TESTBED MOORING

Deployment #12
July 29, 1999 - Nov. 2, 1999

31° 42.54' N
64° 08.80' W

Temperature Measurements

TidBit 1m
TSKA 3m
TSKA 8m
TidBit & SeaBird 14m
TidBit & SeaBird 20m
MVMS 34m
TSKA 45m
TSKA 55m
MVMS 71m
TSKA 99m
TSKA 150m
ADCP 203m
TSKA 250m
TSKA 750m

NEW UCSB (7 Wavelength Lu Spectral Radiometer)
UCSB 3 Wavelength Radiance
NEW UCSB (7 Wavelength Lu Spectral Radiometer)
UCSB MORS (7 Wavelength Ed & Lu Spectral Radiometer)
UCSB MORS (7 Wavelength Ed & Lu Spectral Radiometer)

UMT CO2 System
UCSB BB-6

UCSB MVMS

MIT MITESS WATER SAMPLER
MIT MITESS WATER SAMPLER

UCSB MVMS

UCSB ADCP

GLASS BALLS

EG & G DUAL ACOUSTIC RELEASES

ANCHOR

Ocean Physics Laboratory
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Moored Optical Radiometer System (MORS)
Comparison of BBOP and BTM $E_d(0^+), L_w$, and subsurface $L_u$

$E_d(0^+;490\text{nm})$

$L_w(490\text{hm})$

$7\text{m Radiance } L_u(490\text{hm})$

$14\text{m Radiance } L_u(490\text{nm})$

$34\text{m Radiance } L_u(490\text{nm})$

Figure 2
Comparison between BTM and SeaWiFS $L_w$

- April 12
  - BTM – * –
  - SeaWiFS – o –
- April 17
- April 21
- April 26
- May 10
- July 17
- July 19
- July 20

Wavelength

$\mu W/cm^2/nm/sr$
Effects of Wind Speed on $L_w$ as Measured by BTM and SeaWiFS

Wind speed (m/s)

April 12

SeaWiFS o

BTM *

April 21

May 10

WS = 11.1 m/s

WS = 6.6 m/s

WS = 0.9 m/s
Summary

* BTM data and $L_w$ values are in good agreement with ship profile measurements

* BTM $L_w$ values compare favorably with SeaWiFS values

* Wind and sea-state are important factors causing discrepancies

* Moorings-of-opportunity can greatly improve matchup data base
Future Activities

* Evaluation of wind and sea-state, solar elevation, chl level, and undersampling effects

* Test and use new optical systems with moorings: BTM, OWS "P", MBARI, and LEO-15

* Publication of new results
Publications

Dickey et al., 1998, DSR, 45, 771-794.

Dickey et al., 1998, MWR, 126, 1195-1201.


Several OPL BTM and SIMBIOS Reports (see web site below)

Web site: www.opl.ucsb.edu/btm.html