

**Calibration and Validation of Ocean Color Products for Coastal Waters**  
**March 31-April 1, 2009**  
**CH2M Hill Alumni Center, Oregon State University, Corvallis, Oregon**

This workshop will address the issues of calibration and validation of ocean color products for coastal waters. It will build on the results of an earlier workshop on the cross calibration of OCM and MERIS data with MODIS and SeaWiFS to extend the useful data sets for coastal monitoring. This workshop will expand the discussion to include protocols for the use of above-water and in-situ instrumentation and approaches for validation of products for the coastal ocean and related issues such as validating atmospheric correction for coastal locations. The product of the workshop will be a set of recommendations for algorithms and approaches. These would include approaches for validation of SeaWiFS, MODIS and MERIS and in the future the Hyperspectral Imager for the Coastal Ocean (HICO) and VIIRS coastal products, validating and evaluating atmospheric corrections relevant to coastal areas, recommendations for coastal validation site selection and use, and requirements for new instrumentation for coastal validation. The goal is to develop a set of automated procedures for coastal product validation that can be used to make a consistent data set from SeaWiFS through HICO, VIIRS and future sensors for coastal products and climate data records.

Discussions to include the role of:

- 1) In situ data collection e.g. MOBY, SeaPRISM, moorings, ship cruises
- 2) Time series analyses / monitoring tools
- 3) Defining the uncertainty of satellite products, algorithms and insitu data.
- 4) Vicarious calibration issues, methods etc.
- 5) Coastal Atmospheric correction issues
- 6) Continuity of ocean color data by combining data from various sensors
- 7) How to achieve a climate quality data time series?

Two Day meeting March 31-April 1, 2009

**Calibration and Validation of Ocean Color Products for Coastal Waters**  
**March 31-April 1, 2009**  
**CH2M Hill Alumni Center, Oregon State University, Corvallis, Oregon**

**AGENDA**

**Day 1:** Coffee and continental breakfast 8:00 AM, meeting begins at 8:30AM

Introductions and meeting overview (Davis, Arnone, Stumpf)

Summary report of the first meeting (Davis)

MERIS, SeaWiFS and MODIS comparisons: ~3 hours

Description of the combined MERIS, MODIS and SeaWiFS data set (Bailey)

Presentations on comparison results and on current MERIS processing issues:

Navy: (Arnone et al.)

NOAA: (Foley, Stumpf, Wang)

NASA: (Bailey)

Universities?

Topics to be discussed by each group:

MERIS data used: source, processing methods and products

Existing data products generated, data access and data flow

Problems and issues

Comparisons with SeaWiFS and MODIS: techniques and results

Upgrade to MERIS L1 and L2 processing and MERIS data availability...

General Discussion of MERIS data and the approach for comparing/merging data from different ocean color sensors. (Stumpf) ~ 1 Hour

(Develop plan to share meeting results with ESA)

Lunch

Coastal validation data sets (how they fit into coastal validation strategy): ~ 3.0 hours

Presentations on cruise and mooring data and SeaPRISM sites

NASA: SeaBASS/NOMADS other cal/val data (Bailey)

Navy: Lyon et al. (MVCO, and Gulf of Mexico, other)

NOAA: Ondrusek (MOBY and Chesapeake Bay),

Universities: summary of activities, measurements:

OSU (Letelier), HOTS, and Coasts of Oregon and Chile

USC (Jones) selecting a SeaPRISM site for the west coast,

CUNY (Ahmed), SeaPRISM site and other measurements

Topics to be discussed by each group:

Instruments, calibration, protocols

Water quality and coastal atmospheric conditions at their site

Data storage and distribution

In situ vs. satellite data matchups and statistics

Automation of match ups

Future Cruise programs: ?

Discussion of validation of coastal products (Davis): ~1 hour

Minimum data for validation of satellite nLw/Rrs

Minimum for bio-optical

Issues, such as spatial/temporal variability

Adjourn 5 PM

Dinner: List of Corvallis restaurants provided

**Day 2:** Coffee and continental breakfast 8:00 AM, meeting begins at 8:30AM

Brief presentations on the status of:

- GOCI (Davis)
- COIS (Davis)
- OCM 2 (Wang for DiGiacomo)
- Sentinel 2 (Wang for DiGiacomo)

Presentation on HICO (Corson)

Presentation on VIIRS coastal product validation plans (Arnone)

Discussions on satellite cross-validation and product validation: (~3.5 hours)

- Identify Cross satellite calibration issues (Stumpf)
  - Strategies (based on first day inter-satellite comparisons)
  - Atmospheric correction differences
  - Bio-optical differences
- Identify satellite validation issues in coastal waters (Arnone):
  - Coastal validation Sites (Martha's Vineyard, coastal observatories, etc)
  - Data flow (Arnone, et al.)
  - Spatial and temporal issues (Letelier, Davis)
  - Vicarious calibration methods (Lyon, Bailey, Wang)
  - Coastal Atmospheric Correction issues (Wang, Gao)
- Updates to QAA (Ping)

Lunch

Organize into breakout groups

Breakout groups with suggested leaders:

- MERIS data, processing strategies (Stumpf)
- MERIS as model for cross-validation strategy (Arnone)
- Organization of Validation using cruise and mooring data (Letelier)
- Validation using SeaPRISM sites (Lyon)
- Coastal Atmospheric Correction (Wang)
- General cal/val or other topics?
- HICO data (Davis)
- Creating a Climate Data set (Bailey)

Return to one group

- Review findings and organize into a report
- Consider Presentation to the NASA OCRT meeting May 2009
- Consider special session at February 2010 Ocean Sciences meeting in Portland, OR.
- Future plans and directions

Adjourn 5 PM

## WORKSHOP PARTICIPANTS:

<b>Name</b>	<b>Affiliation</b>	<b>E-mail address</b>
Samir Ahmed	CUNY	ahmed@ees1s0.engr.ccny.cuny.edu
Bob Arnone	NRLSSC	arnone@nrlssc.navy.mil
Chip Bachmann	NRL	bachmann@nrl.navy.mil
Sean Bailey	NASA	Sean.W.Bailey@nasa.gov
Mike Corson	NRLDC	corson@nrl.navy.mil
Curt Davis	OSU	cdavis@coas.oregonstate.edu
Dave Foley	CoastWatch	Dave.Foley@noaa.gov
Bo-Cai Gao	NRL	bgao@ccs.nrl.navy.mil
Alex Gilerson	CUNY	gilerson@ccny.cuny.edu
Rick Gould	NRLSSC	gould@nrlssc.navy.mil
Bruce Guenther	NOAA	Bruce.Guenther@noaa.gov
Burton Jones	USC	bjones@usc.edu
Sherwin Ladner	NRLSSC	ladner@nrlssc.navy.mil
Zhongping Lee	NGI Miss St.	zplee@NGI.MsState.Edu
Ricardo Letelier	OSU	letelier@coas.oregonstate.edu
Paul Lyon	NRLSSC	paul.lyon@nrlssc.navy.mil
Patrick McEnaney	OSU	psmiley70@gmail.com
Bob Murphy	IPO	Robert.Murphy@noaa.gov
Jasmine Nahorniak	OSU	jasmine@coas.oregonstate.edu
Mike Ondrusek	NOAA	Michael.Ondrusek@noaa.gov
Karen Patterson	NRL	karen.patterson@nrl.navy.mil
Bill Snyder	NRLDC	william.snyder@nrl.navy.mil
Rick Stumpf	NOAA	Richard.Stumpf@noaa.gov
Nick Tufillaro	OSU Engr	nbt.osu@gmail.com
Amy Vandehey	OSU	avandehe@coas.oregonstate.edu
Curt Vandetta	OSU	curt@coas.oregonstate.edu
Roberto Venegas	OSU	rvenegas@coas.oregonstate.edu
Menghua Wang	NOAA	menghua.wang@noaa.gov