NASA OBPG Support for In Situ Data

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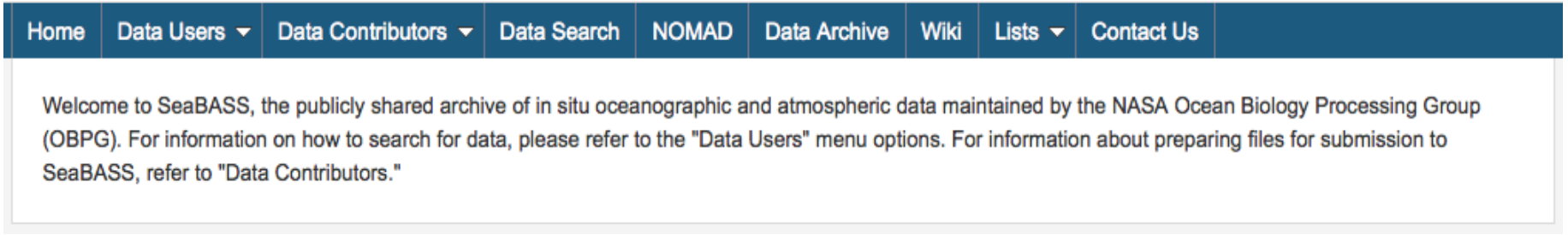
NASA OCRT Meeting
April 2014

SeaBASS

SeaWiFS Bio-optical Archive and Storage System



Presentation outline

- HPLC updates
- SeaBASS / in situ status report
  - Recently archived data
  - NOMAD v3 underway
  - DOIs
- Validation updates
  - Capabilities, website upgrades
  - New Data Sources (AERONET-OC, MOBY)
  - MERIS

HPLC updates

Contract Year	Samples Processed
Year 2 (ended 8/31/2013)	3004
Year 3 (in progress)	1800 (750 in queue at NASA)

http://oceancolor.gsfc.nasa.gov/HPLC/

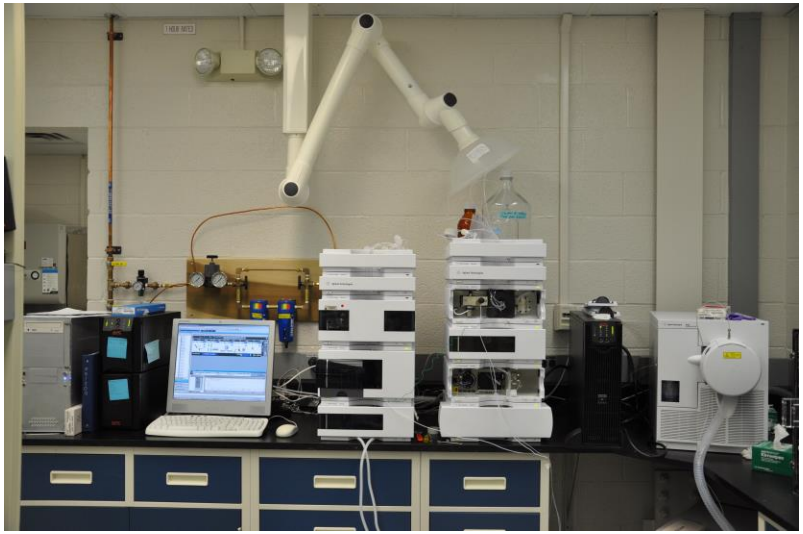
- Visit for shipping and contact info

Updated reporting policy for “zeros”: -111 is the new replacement value for not-found pigments

- New SeaBASS header: /below_detection_limit=-111

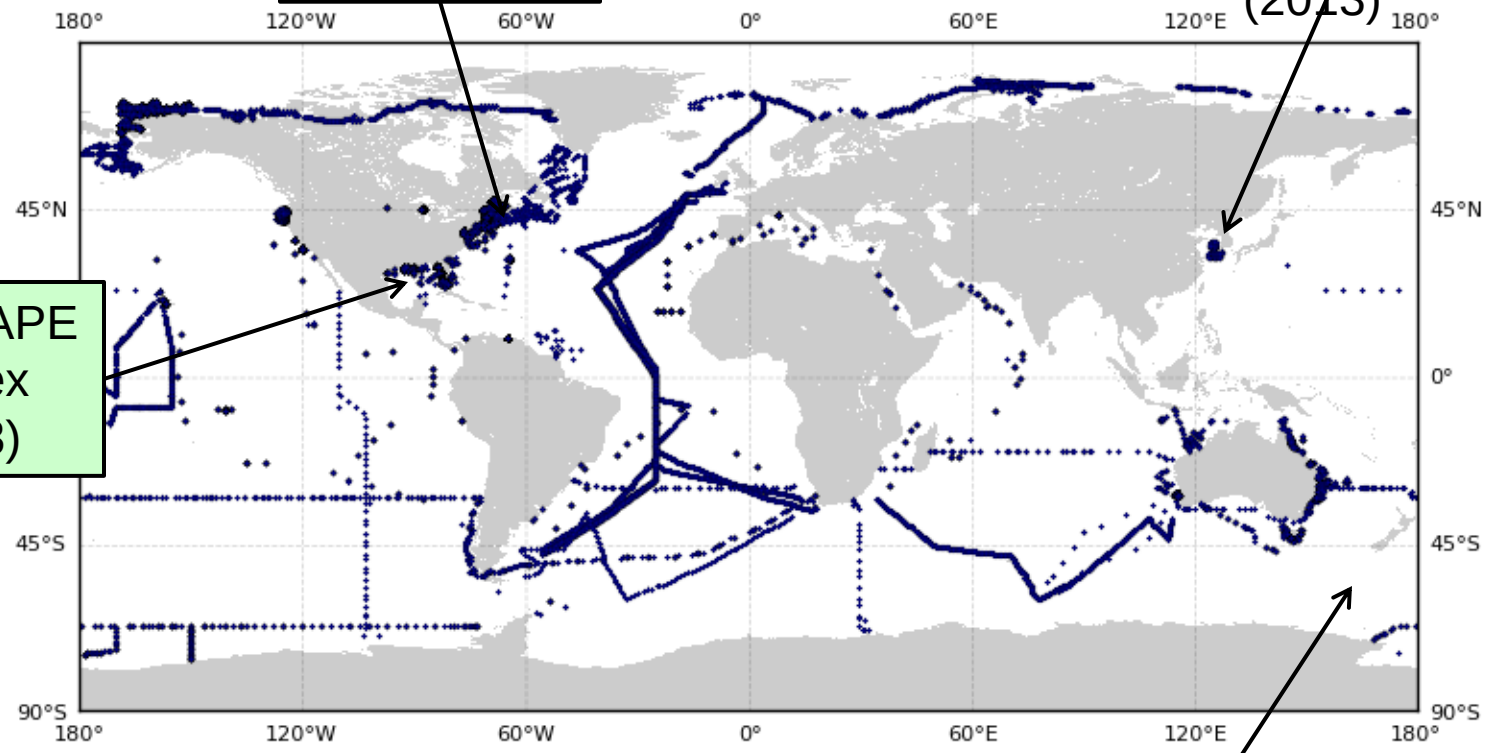
Data quality actively monitored and reassessed

- Newest activities include:
  - Recalibration and reassessment of lower limits of quantitation (LLOQs)
  - Updated quality assurance plan
  - Method development (goal of improving detectibility)



Recently archived data in SeaBASS

Over 7500 files from 39 PIs archived since 2013



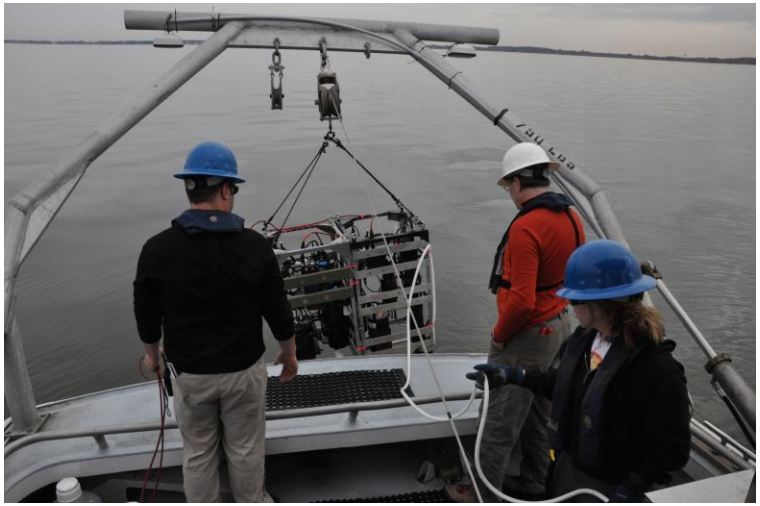
NOMAD

NASA bio-Optical Marine Algorithm Dataset

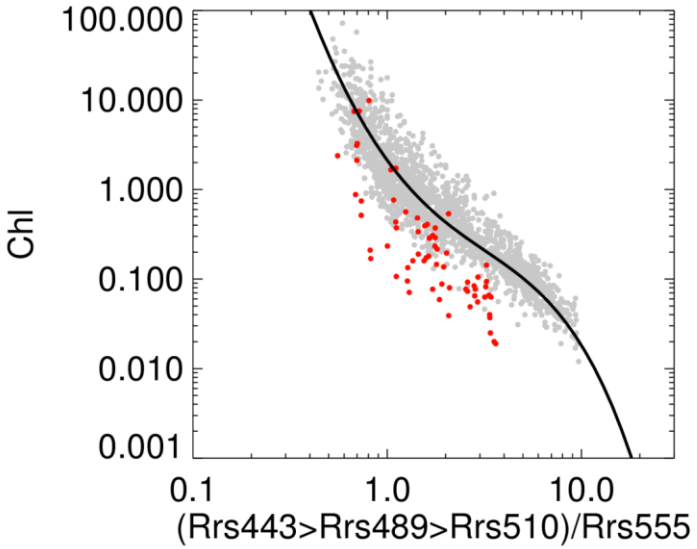
Version 3 is being developed – will be released later this year

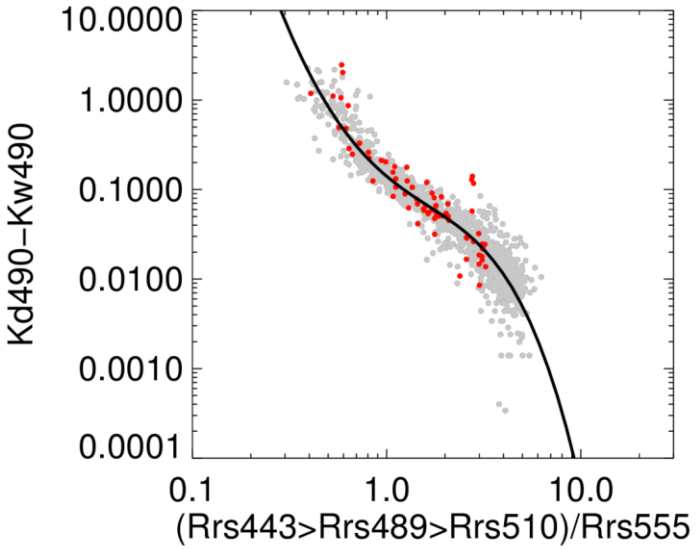
Includes some “exotic” new data – Polar regions, HABs, turbid coastal waters, etc

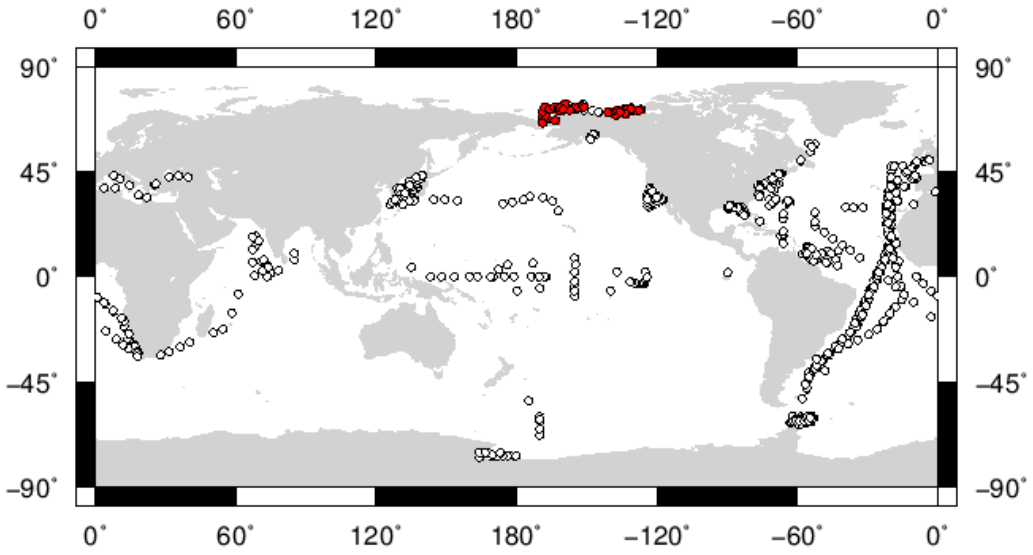
Some data are sufficiently unusual to not be included in the global OC Kd and Chl algorithms



New Arctic Data for OC* and KD2* Algorithms



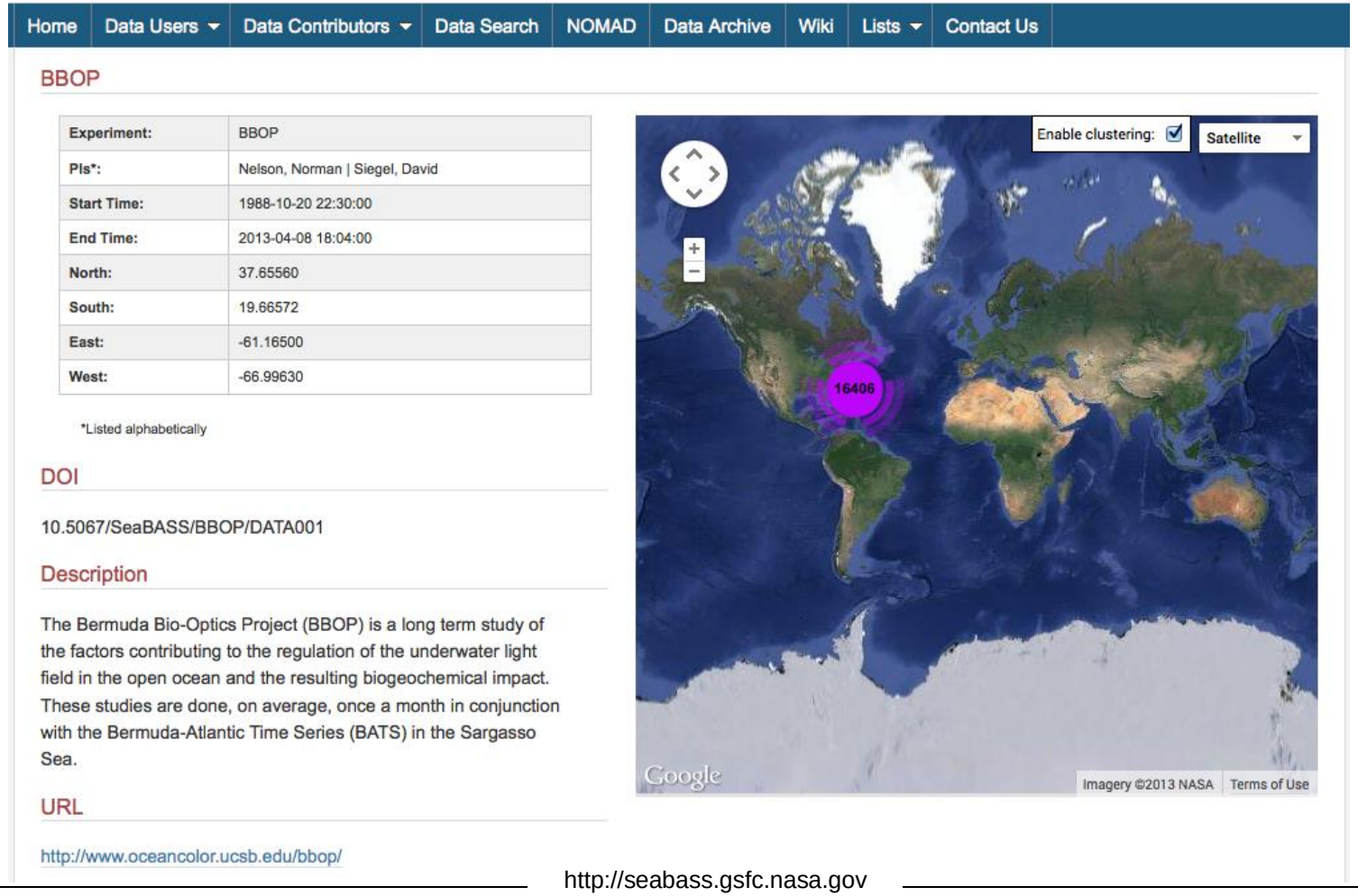




Digital Object Identifiers (DOIs)

- A new service provided to the community
- Numbers and landing pages are persistent

For example: 10.5067/SeaBASS/BBOP/DATA001
http://seabass.gsfc.nasa.gov/seabasscgi/data.cgi?experiment=BBOP



SeaBASS Data Search: Validation

Search Type:

Bio-optical | Pigment | Validation

Compare:

VIIRS vs. In situ

MODIS Aqua vs. SeaWiFS

Products:

a adg aot aph bbp Chl *a*

Kd par pic poc Rrs

Zeu

Validation search features:

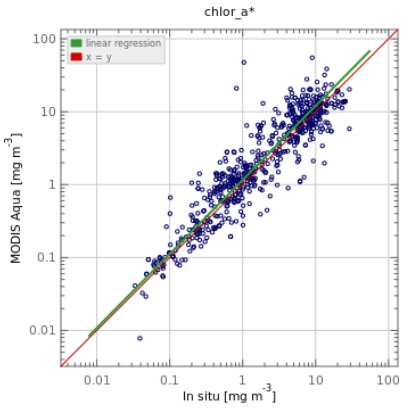
- search standard ocean color products
- map and plot search results
- download data and statistics

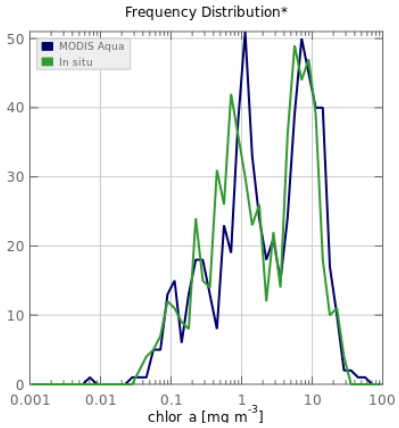
Statistics | Data

Product Name	MODIS Aqua Range	In situ Range	#	Best Fit Slope*	Best Fit Intercept*	R^2*	Median Ratio	Abs % Difference	RMSE*
chlor_a	0.00781, 55.23780	0.03340, 29.04500	631	1.01529	0.06471	0.86487	0.86773	32.88839	0.27831

* statistical calculations based on log10

The linear regression algorithm has been changed to reduced major axis.

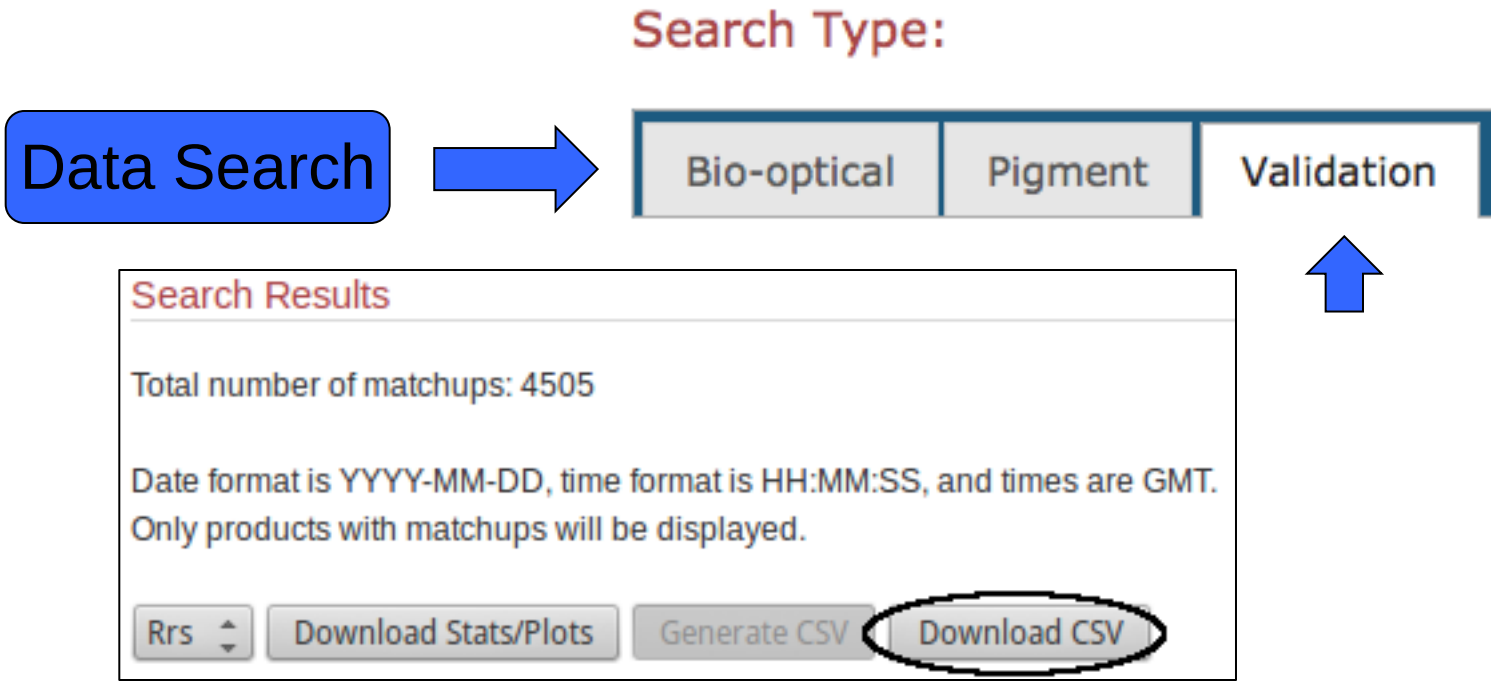




Download Validation Data from SeaBASS

- Text files containing side-by-side satellite and in situ values
- The files also contain the satellite file names corresponding to the match-ups

http://seabass.gsfc.nasa.gov/seabasscgi/search.cgi



Additional Validation Data Sources

Aerosol Robotic Network - Ocean Color (AERONET-OC)
Zibordi et al. (2009)

Aqua Rrs(443) Match-ups	Number
SeaBASS holdings	~470
AERONET-OC	~940

Data Sources:

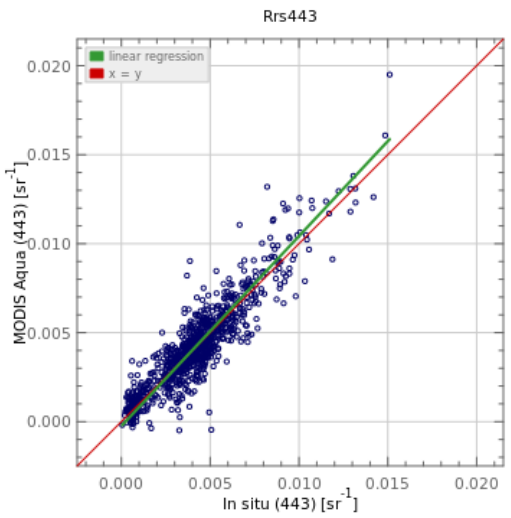
SeaBASS Only All* AERONET-OC Only* MOBY Only*

- Only level 2.0 AERONET-OC data used (cloud cleared, fully calibrated, and manually inspected)
- Exception: VIIRS match-ups currently use level 1.5

MODIS Aqua: AERONET-OC Rrs match-ups

Product Name	MODIS Aqua Range	In situ Range	#	Best Fit Slope	Best Fit Intercept	R^2	Median Ratio	Abs % Difference	RMSE
Rrs412	-0.00411, 0.01471	0.00000, 0.01331	1275	1.08572	-0.00070	0.73824	0.84305	31.39010	0.00134
Rrs443	-0.00049, 0.01950	0.00005, 0.01510	941	1.06756	-0.00025	0.85732	1.01731	15.81557	0.00103
Rrs488	0.00036, 0.02513	0.00039, 0.02171	1275	0.93578	-0.00029	0.91855	0.87405	14.88161	0.00117
Rrs531	0.00141, 0.01602	0.00242, 0.01812	176	0.95389	-0.00069	0.86171	0.82037	18.99484	0.00155
Rrs547	0.00187, 0.01265	0.00194, 0.01480	52	0.96871	-0.00031	0.77730	0.88500	15.56732	0.00153

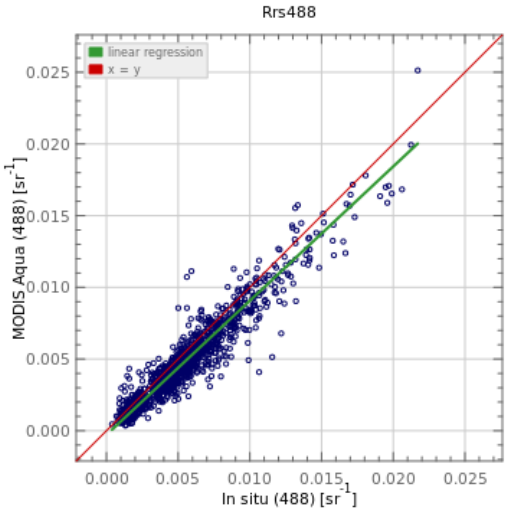
Rrs(443)



satellite

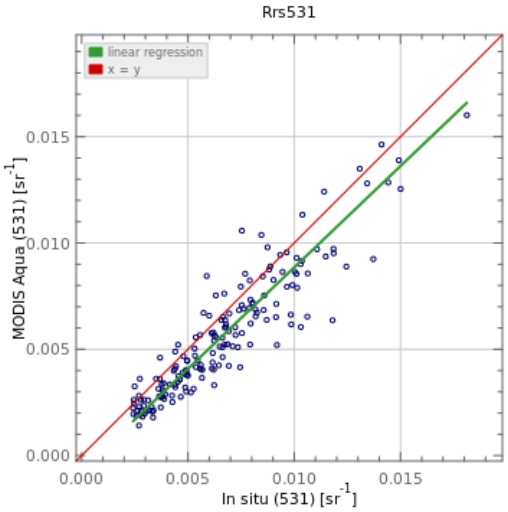
In situ

Rrs(488)



In situ

Rrs(531)



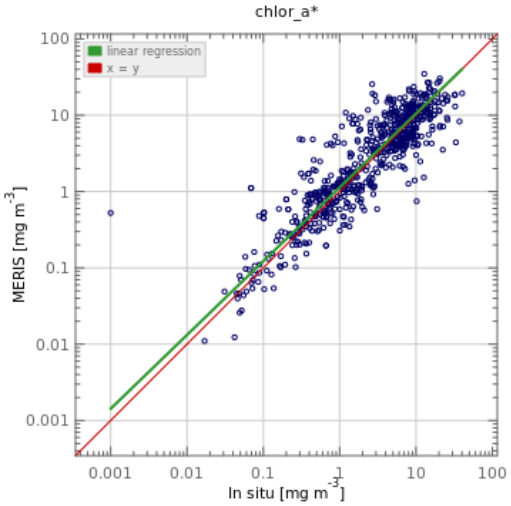
In situ

MERIS Validation

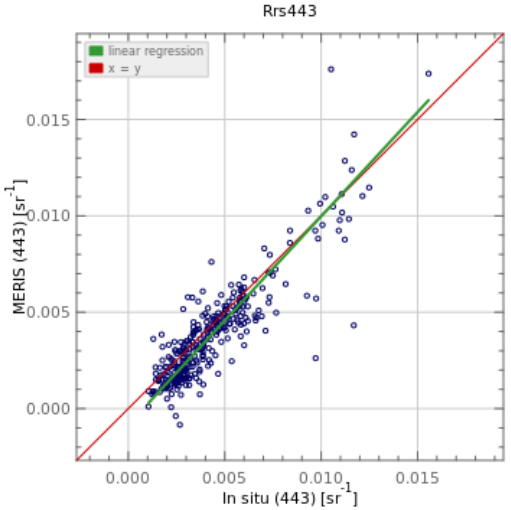
Now available in SeaBASS

Product Name	MERIS Range	In situ Range	#	Best Fit Slope	Best Fit Intercept	R^2	Median Ratio	Abs % Difference	RMSE
Rrs413	-0.00183, 0.01561	0.00088, 0.01514	211	1.11536	-0.00116	0.80285	0.78653	32.97705	0.00173
Rrs443	-0.00084, 0.01761	0.00104, 0.01557	319	1.08166	-0.00084	0.81298	0.88944	17.85008	0.00133
Rrs490	0.00080, 0.02499	0.00142, 0.02442	323	1.05154	-0.00072	0.79331	0.87483	15.22883	0.00135
Rrs510	0.00106, 0.02567	0.00131, 0.02538	306	1.09065	-0.00067	0.85113	0.88907	14.41068	0.00108
Rrs560	0.00087, 0.02889	0.00085, 0.02862	205	1.05739	-0.00042	0.91184	0.86058	16.22139	0.00114
Rrs665	-0.00071, 0.01217	0.00003, 0.01078	234	1.09174	-0.00011	0.92440	0.74628	44.40696	0.00042
Rrs681	-0.00001, 0.00235	0.00020, 0.00199	6	1.13244	-0.00027	0.80140	0.82672	28.14454	0.00042

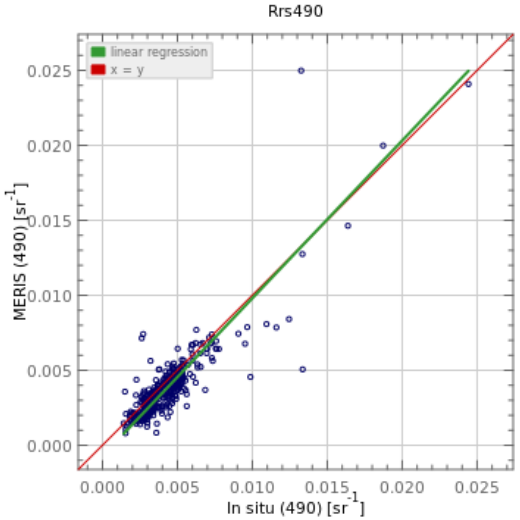
Chl a



Rrs(443)



Rrs(490)



Thank you