SeaWiFS Bio-Optical Archive and Storage System (SeaBASS) Updates, OBB Field Support Group Activities, and HPLC Updates

Chris Proctor\(^1,2\)

\(^1\)NASA Goddard Space Flight Center
\(^2\)Science Systems & Applications, Inc.

NASA OCRT Meeting 2017

https://seabass.gsfc.nasa.gov
Presentation Outline

• OBB Field Support Group
  – Protocol activities
  – Phytoplankton Taxonomy Working Group

• HPLC pigment analysis updates

• SeaBASS Updates
  – Recently archived data
  – Website changes
  – Earth Venture project support (NAAMES, CORAL)
    – new data types & metadata fields
  – Tips for searching for data
  – Software tools (including new match-up tools)

http://seabass.gsfc.nasa.gov
OBB Field Support Group Activities

Protocol Activities (IOCCG - NASA)

Online for public comment, June 2017

The Particle Absorption & Beam-c Protocol

Lead by Aimee Neeley

The CDOM Protocol

Lead by Mike Novak and Antonio Mannino
OBB Field Support Group Activities

Protocol Activities (IOCCG - NASA)

Online for public comment, Fall 2017

The Inline IOP Protocol

Lead by Emmanuel Boss
OBB Field Support Group Activities

Protocol Activities (IOCCG - NASA)

Ongoing and In Development

The Particulate Organic Carbon Protocol

Lead by Joaquin Chaves and Mike Novak

Ongoing Activity: AOP Protocol Updates

Leads Ken Voss and Giuseppe Zibordi

The Particle Backscatter and VSF Protocol

Lead by Jim Sullivan and Wayne Slade

**Future considerations (particle size, productivity, …)**

Contact: Antonio Mannino – antonio.mannino@nasa.gov
Phytoplankton Taxonomy Working Group

Working group to establish data standards and practices for taxon-resolved phytoplankton observations - PIs: Heidi Sosik (WHOI), Christopher Proctor (NASA GSFC/SSAI), Aimee Neeley (NASA GSFC/SSAI), Ivona Cetinić (NASA GSFC/USRA)

Objective: In an effort to facilitate community-wide access to phytoplankton data products that support critical satellite algorithm development and validation, this working group will convene relevant expertise (e.g., phytoplankton ecology and taxonomy, data systems, informatics, etc.) to develop a set of standards and best practices for phytoplankton taxonomy data.
HPLC Pigment Analysis Services

Analyze ~3,000 pigment samples/year for NASA Terra-Aqua and Suomi NPP Programs
• Planned funding will extend activity into FY2019

Updated documentation
• Sample analysis request form and metadata form (required)
  • submit BEFORE samples are shipped
• Data report-removed extraneous information and organized data so it’s more compatible with SeaBASS submission

Present/Future activities
• Updates to QA/QC Plan document (completed)
• Ocean Optics Protocols: HPLC and fluorometric chapters (updating)
• Methodology: HPLC pigments, bacteriochlorophyll, phycobiliproteins (researching)

Paula Bontempi: “you have to budget and account for your desired HPLC samples in your ROSES proposals” - Current cost is $100/sample
  – GSFC does not receive these funds (held at NASA HQ)
Over 10,000 new and updated files from 34 PIs archived since May 2016

Map (minus recent submissions):

Recent FSG field deployments (protocols, validation, hyperspectral data)
Data coming later this year:
  • Sea2Space Jan-Feb 2017 (tropical/temperate N. Pacific – Falkor)
  • CLIVAR Aug-Sept 2017 (eastern tropical South Pacific)
Recent website changes

- Reorganized Main Menu
- New Home Page (Shortcuts, Recent Submissions & News)
A new File Search option allows you to search for co-located measurements:

- name specific products; only files from cruises where all were measured are found
SeaBASS Earth Venture support

Support and data archiving for NASA EVS-2 missions:
- NAAMES (North Atlantic Aerosols and Marine Ecosystems Study)
- CORAL (Coral Reef Airborne Laboratory)

New SeaBASS data types include:
- Benthic imagery, photo mosaics
- Current profiler/velocity measurements
- DNA concentrations and FASTA sequencing files
- VOC concentrations

New metadata headers:
- CMECS (Coastal and Marine Ecological Classification Standard) metadata (headers and fields)
  - Classifiers for biotic, geoform, substrate, water column
- /optical_depth_warning=true
Tips for finding data from a specific project

- Best method to **view summary info**: Experiment or Cruise pages (under “Lists”)
  
  https://seabass.gsfc.nasa.gov/experiment/CORAL
  https://seabass.gsfc.nasa.gov/experiment/NAAMES

- Best method to **conveniently download files**: File Search (under “Get Data”)
  
  1) Go to Get Data → File Search
  2) Under “Keyword Search Filters”, type the experiment or cruise name

**Keyword Search Filters:**
Search for affiliation, PI (principal investigator), experiment, or cruise name. Use the plus button to add multiple queries.
Special tips for getting CORAL data

Make sure to set the following **File Search** options:

1) Change the “Include Optically Shallow Measurements” option to “yes”

   ![Include Optically Shallow Measurements?](image)

2) To download Benthic Images, check the box to “Include All Associated Files” next to the download button on the search results page

   ![Download All](image)
New Tools Include

- Python SeaBASS file reader
- SeaBASS to netCDF converter
- Match-up tools (discussed next)

Periodically check back (or watch for news on the home page) to get updated versions.
New satellite match-up tools

New **command line tools** are available (installed via NASA SeaDAS software) to make it easier to:

1) **locate satellite granules** matching lat, lon, & time (e.g., using a SeaBASS file containing columns of those metadata)

2) **match-up satellite data** from a Level-2 OB.DAAC satellite file (such as SeaWiFS, MODIS, or VIIRS)
   - apply match-up exclusion quality criteria
   - output match-up data appended to a SeaBASS file
You will need to install:

1) NASA’s SeaDAS analysis software (https://seadas.gsfc.nasa.gov/)
2) An extra software package (see full instructions linked above). Mac or Linux is required.

- `fd_matchup.py` locates satellite granules matching in situ points
- `mk_matchup.py` extracts match-up data from Level-2 OB.DAAC satellite files (e.g., OC, IOP, SST) & applies exclusion criteria from Bailey and Werdell, 2006.

Full instructions (installation, use examples, caveats) are here: https://seabass.gsfc.nasa.gov/wiki/validation_matchup_tools
Thank you

For SeaBASS related questions, please contact:

The entire SeaBASS team (seabass@seabass.gsfc.nasa.gov) or Chris Proctor (christopher.proctor@nasa.gov)
Joel Scott (joel.scott@nasa.gov)
Jason Lefler (jason.lefler@nasa.gov)