Copernicus FICE 2024

Training on In situ Ocean Colour Above-Water Radiometry towards Satellite Validation

SeaBASS Format and Submission









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SeaBASS (SeaWiFS Bio-optical Archive and Storage System)

https://seabass.gsfc.nasa.gov

SeaBASS is NASA's publicly shared archive of in situ oceanographic (and some atmospheric) data maintained at the NASA Goddard Space Flight Center.

Submissions are mandatory for NASA-funded PIs but voluntary submissions are most welcome!

Submissions are reviewed by Subject Matter Experts (SMEs) prior to acceptance and/or use in mission validation.

> Contacts: Chris Proctor (christopher.w.proctor@nasa.gov) and Inia Soto Ramos (inia.m.sotoramos@nasa.gov)



Most slide materials provided Chris Proctor

GODDARD

SeaBASS Data Types

Data archived in SeaBASS are collected from ships, moorings, autonomous buoys and other platforms. Measurements come from a variety of instruments, such as profilers, hand-held sensors, and laboratory analyzers.





Diverse data types include:

- **Apparent and Inherent Optical Properties**
- Phytoplankton pigments
- Carbon stocks
- Hydrography
- Other biogeochemical & atmospheric measurements

https://seabass.gsfc.nasa.gov







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Images provided by Javier Concha^{1,2,3} and Chris Proctor⁴

How to Submit

The short version

Each PI's lab needs to:

1. Gather and organize data

4. 4. 5

• Convert files to .sb format

2. Gather documentation (methods/reports, checklists, cal files, etc.)

3. Register data submitter accounts

- Verify data format with FCHECK file scanner
- Upload data using SFTP accounts



SeaBASS

About SeaBASS Home

Get I

Welcome to the SeaWiFS Bio-optical Arch maintained by the NASA Ocean Biology I options. For information about preparing



Data	Contribute Data	Wiki	Lists	Login	
hive and Processin files for si	Submitting Overview Metadata Headers Fields (Measurement I	Labels)	blicly shared archive of how to search for data		
	FCHECK File Checker Documentation Guidelines		ntribute Data."		

https://seabass.gsfc.nasa.gov/wiki/Data Submission

Reach out via email first

1.Contact SeaBASS staff via email to plan out your submission before you begin formatting data. SeaBASS staff will respond to your inquiry, typically within 1-2 business days. For routine submissions, you will then be able to proceed with the steps below. For more complex scenarios and data types that are new to SeaBASS, our data managers will require more information and discussion of how to best organize and accommodate your data and documentation. When you email the <u>SeaBASS Staff</u> to introduce yourself, include:

2. Your first and last name, and what institution you are affiliated with.

3.Please indicate if your project was NASA-funded, or if your submission is voluntary.

4. If you are not the PI or person who secured funding for the project within your laboratory or organization, please indicate that person's name and how you are connected.

5. Indicate the project name and deployment or cruise names. In SeaBASS data are categorized under a new or existing experiment and cruise name (see Lists in the main menu), which should be coordinated if there were co-investigators.

6.Briefly explain the measurement types of the data you wish to submit.

Contacts: Chris Proctor (christopher.w.proctor@nasa.gov) and Inia Soto Ramos (inia.m.sotoramos@nasa.gov)





SeaBASS file format (.sb files)

1) Metadata headers 2) Data matrix





If you are getting started learning about SeaBASS file format, scroll down below the table of contents to see an example header.

Table of Contents

Later 4. A. A. M.

1. Example Header

2. Required Headers





- SeaBASS file format is a NASA Earth Science Data and Information Systems (ESDIS)-approved standard
- Files are ASCII text organized into two sections:

Metadata Headers

- /begin_header /keyword=value
- /keyword=value,value,etc
- ! This is a comment
- /end_header

Data Matrix

Columns of values separated by delimiters

SeaBASS architecture: fields and units

/fields and /units headers identify every column in the data block

Field names are standardized, and paired with specific units: https://seabass.gsfc.nasa.gov/wiki/stdfields

Field name	Units	Description
Chl	mg/m^3	Chlorophyll a derived fluorometrically/spectrophotometrically
Chl_a	mg/m^3	HPLC Chlorophyll a (MV_Chl_a plus allomers and epimers)
POC	mg/m^3	Particulate organic carbon
Rrs	1/sr	Remote sensing reflectance (Lw / Ed)
Wt	degreesC	Water temperature
date	yyyymmdd	Sample date

Multi/Hyperspectral data can have suffixes to identify band when data are written in rows (e.g., Rrs_412) and to identify uncertainties (e.g., Rrs_412_unc). New fields are routinely added to SeaBASS when needed, and new metadata headers are also periodically added.





SeaBASS software tools

EARTH DATA Oth	er DAACs 🗸		A O
SeaBASS			FCHECK
Home About SeaBASS Get Da	ta Contribute Data Wiki	Lists Login	Search articles
	Submitting Overview		
	Metadata Headers		
FCHECK	Fields (Measurement Labels)		
To assist with the standardization of SeaBA	SS dat	ed feedback software, nam	ed FCHECK, to evaluate
the format of submitted data files. Since the	n, it ha Documentation Guidelines	the SeaBASS developmer	nt team to make it
available to the end-users. There are multip	e ways to access this software, as explain	ned further below. Using FCH	HECK, contributors may

FCHECK scans files for common syntax problems, missing header information, data values outside of typical ranges, nonstandard field names or units, and also detects various other issues. It will report a summary of the types of problems detected (if any) among all the files it scanned, as well as a more detailed breakdown of issues found in each individual file. Problems are classified as either errors or warnings, depending on their severity. Errors are critical problems that must be addressed before files can be archived. Warnings should https://seabass.gsfc.nasa.gov/wiki/FCHECK ubjective or optional and may be disregarded. **FCHECK* File Checker** Automated FCHECK file checking software scans data submissions

Errors and warning messages alert you when required metadata are missing, keywords are misspelled, or files are otherwise malformed

SeaBASS File Readers (e.g., for Python, MATLAB, Perl)

File Converters ICARTT format)

Standalone Satellite Match-up Tools can be downloaded for locating coincident ocean color satellite sensor files and then extracting information from those files (available via SeaDAS software)

*FCHECK can be used via email, SFTP, or a downloaded Perl script (my personal favorite). Perl is available by default on Linux and macOS systems but not Windows.





File Converters (e.g., convert SeaBASS files to netCDF or



Questions?



