SeaBatch 2.0 User Manual

System Requirements

- SeaDAS 6.2 installed (http://oceancolor.gsfc.nasa.gov/seadas/).
- *bash* as your UNIX shell environment.

Installation

To install SeaBatch follow these steps:

- Open a terminal window.
- Construct the directory where you want SeaBatch to be installed: `mkdir ~/seabatch2.0`
  - **Note:** The above command will construct the SeaBatch installation directory in a standard location (your home directory: ~), with a standard name (*seabatch2.0*). However, this directory can be located anywhere on your system as long as it is separate from any previous SeaBatch installations. It can be named whatever you would like.
- Download the file *seabatch2.0.tar.gz* and place it in the SeaBatch installation directory.
- Change directories to the SeaBatch installation directory:
  - Standard installation directory: `cd ~/seabatch2.0`
  - Otherwise: `cd seabatch_installation_directory`
- Unzip the file *seabatch2.0.tar.gz*: `tar -xzpf seabatch2.0.tar.gz`
- Run the installation script *install_seabatch.sh*: `./install_seabatch.sh`
- Close the terminal window.

General Instructions

When running SeaBatch follow these steps:

- Obtain your data files. SeaBatch is capable of working with the following file types:
  - MODIS (Aqua/Terra) and SeaWiFS Level-1A
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  - **Note:** It is suggested that you use data files obtained from NASA's Ocean Biology Processing Group (http://oceancolor.gsfc.nasa.gov/), or data files originally obtained from that site and then processed with SeaBatch. although other sources are possible. SeaBatch is capable of working with the following file types:
- Open a terminal window.
- Change directories to your data directory: `cd data_directory`
- Ensure that your working directory is correct:
  - View your working directory: `pwd`
  - View the files in your working directory: `ls`
- Ensure that your data files are unzipped:
  - For data files with a *.bz2* suffix: `bunzip2 *.bz2`
  - For data files with a *.gz* suffix: `gunzip *.gz`

- Use your favorite text editor (e.g. TextEdit, gedit, vi) to open the file *seabatch_parameter_file.txt*. This is the file that you modify in order to specify your processing parameters.
- Modify the file *seabatch_parameter_file.txt* to specify your processing parameters.
    - **Note:** Some processing parameters must always be specified, while others are only specified depending on the type of processing you wish to do. Refer to the appropriate sections of *Processing Parameters* below, which detail the processing parameters that must be specified given the type of processing.
- Save the file *seabatch_parameter_file.txt*.
- Ensure again that your working directory is correct:
    - View your working directory: pwd
    - View the files in your working directory: ls
    - **Note:** SeaBatch must be run from your data directory.
- Run SeaBatch: seabatch
- Processing has started! Monitor the terminal window to determine when processing has completed (either due to finishing successfully, or stopping because of an error).
- **Note:** When SeaBatch is run a log directory is constructed within your data directory, with a name corresponding to the date and time when processing began. Examine this log directory upon the completion of processing, as it contains:
    - A log file, which is a copy of everything that was output to the terminal window. Examination of this file is the only way to ensure that SeaBatch did what you want.
    - Lists of files that caused specific scripts to error (see the *error* subdirectory).
    - Lists of files that were input to specific scripts (see the *file_list* subdirectory).

Processing Parameters

Some processing parameters must always be specified, while others are only specified depending on the type of processing you wish to do. Refer to the appropriate sections below, which detail the processing parameters that must be specified given the type of processing.

All Processing

The following processing parameters must be specified for all processing:

- **SENSOR**
    - **Use:** Indicate the sensor from which your data files have been derived.
    - **Valid entries:** 'AQUA', 'TERRA', or 'SEAWIFS'
    - **Example:** Indicate that your data files are derived from the MODIS-Terra sensor:
        SENSOR='TERRA'
    - **Note:** Entry must be capitalized and surrounded by single quotes.

- **PROCESS**
    - **Use:** Indicate if your data will be processed. In this context process specifically refers to processing your data files to successive data levels.
    - **Valid entries:** 'YES' or 'NO'
    - **Example:** Indicate that your data will be processed to successive data levels:
        PROCESS='YES'

    - **Note:** If PROCESS and LOAD_OUPUT (see below) are both set to 'YES', then your data files will first be processed, and then loaded and output.
    - **Note:** Entry must be capitalized and surrounded by single quotes.

- **LOAD_OUTPUT**
    - **Use:** Indicate if your data will be loaded into the SeaDAS memory, and then output as various file types.
    - **Valid entries:** 'YES' or 'NO'
    - **Example:** Indicate that your data will be loaded into SeaDAS, and then output as various file types:
        LOAD='YES'
    - **Note:** If PROCESS (see above) and LOAD_OUPUT are both set to 'YES', then your data files will first be processed, and then loaded and output.
    - **Note:** Entry must be capitalized and surrounded by single quotes.

If PROCESS is set to 'YES'

The following processing parameters must be specified if you are processing your data files to successive data levels:

- **START_LEVEL**
    - **Use:** Indicate the data level of the data files you will process.
    - **Valid entries:** '1' or '2'
    - **Example:** Indicate that the data files you will process are Level-1A:
        START_LEVEL='1'
    - **Note:** START_LEVEL and END_LEVEL (see below) cannot be set to the same value.
    - **Note:** Entry must be capitalized and surrounded by single quotes.

- **END_LEVEL**
    - **Use:** Indicate the data level to which your data files will be processed.
    - **Valid entries:** '2' or '3'
    - **Example:** Indicate that your data files will be processed to Level-3:
        END_LEVEL='3'
    - **Note:** START_LEVEL (see above) and END_LEVEL cannot be set to the same value.
    - **Note:** Entry must be capitalized and surrounded by single quotes.

If PROCESS is set to 'YES', and processing involves processing from Level-1 to Level-2

The following processing parameters must be specified if your data files will be processed from Level-1A to Level-2 when they are processed to successive data levels:

If PROCESS is set to 'YES', and processing involves processing from Level-2 to Level-3

The following processing parameters must be specified if your data files will be processed from Level-2 to Level-3 when they are processed to successive data levels:

- **MODIS_SST**
  - **Use:** Indicate if your data files are MODIS Level-2 SST files, and if so, the type. It is only necessary to specify this processing parameter if your data files are MODIS (SENSOR is set to 'AQUA' or 'TERRA'.
  - **Valid entries:**
    - **'NO':** MODIS Level-2 Ocean Color files.
    - **'SST':** MODIS Level-2 daytime SST (11 micron) files.
    - **'NSST':** MODIS Level-2 nighttime SST (11 micron) files.
    - **'SST4':** MODIS Level-2 SST4 (4 micron) files.
  - **Example:** Indicate that your data files are MODIS Level-2 nighttime SST (11 micron) files:
    MODIS_SST='NSST'
  - **Note:** Entry must be capitalized and surrounded by single quotes.

- **YEAR**
  - **Use:** Indicate the year of your data files.
  - **Valid entries:**
    - **1998-2011:** SeaWiFS files (SENSOR is set to 'SEAWIFS').
    - **2002-present:** MODIS-Aqua files (SENSOR is set to 'AQUA').
    - **2002-present:** MODIS-Terra files (SENSOR is set to 'TERRA').
  - **Example:** Indicate that your data files are from 2005:
    YEAR='2005'
  - **Note:** Entry must be capitalized and surrounded by single quotes.

- **SPATIAL_BINS**
  - **Use:** Indicate the spatial resolutions (km) to which your data files will be binned.
  - **Valid entries:**
    - **'H':** .5 km
    - **'1':** 1 km
    - **'2':** 2 km
    - **'4':** 4 km
    - **'9':** 9 km
    - **'36':** 36 km
  - **Example:** Indicate that your data files will be spatially binned to 1 km:
    SPATIAL_BINS=('1')
  - **Example:** Indicate that your data files will be spatially binned to .5, 1, 2, and 4 km:
    SPATIAL_BINS=('H' '1' '2' '4')
  - **Note:** Each entry must be surrounded by single quotes. Multiple entries must be separated by a space. The entire term must be surrounded by soft brackets.

- **TEMPORAL_BINS**
  - **Use:** Indicate the temporal resolutions to which your data files will be binned.

- **Valid entries:**
  - **'*D':** Where * ranges from 1 to 365 (366 if YEAR is a leap year) and indicates the number of days of which the temporal bin consists.
  - **'MONTH':** Construct monthly temporal bins.
  - **'NS':** Construct a "non-standard" temporal bin by binning together all of the data files.
- **Example:** Indicate that your data files will be temporally binned to 8-day bins:
  TEMPORAL_BINS=('8D')
- **Example:** Indicate that your data files will be temporally binned to 1-day, 7-day, monthly, and non-standard bins:
  SPATIAL_BINS=('1D' '7D' 'MONTH' 'NS')
- **Note:** Each entry must be surrounded by single quotes. Multiple entries must be separated by a space. The entire term must be surrounded by soft brackets.

- **L2BIN_PARAMETER_FILE**
  - **Use:** Indicate the parameter file that will be input to the SeaDAS script l2bin, which spatially bins the data files.
  - **Valid entries:**
    - **'DEFAULT'**: The default l2bin parameter file will be input (see $SEABATCH/sub/par/l2bin)
    - **'*':** A user-constructed l2bin parameter file named * will be input.
  - **Example:** Indicate that the default l2bin parameter file will be input:
    L2BIN_PARAMETER_FILE=('DEFAULT')
  - **Example:** Indicate that the user-constructed l2bin parameter file *user_constructed_l2bin.par* will be input:
    L2BIN_PARAMETER_FILE='user_constructed_l2bin.par'
  - **Note:** Entry must surrounded by single quotes.

- **L2BIN_PARAMETER_FILE**
  - **Use:** Indicate the parameter file that will be input to the SeaDAS script l3bin, which temporally bins the data files.
  - **Valid entries:**
    - **'DEFAULT'**: The default l3bin parameter file will be input (see $SEABATCH/sub/par/l3bin)
    - **'*':** A user-constructed l3bin parameter file named * will be input.
  - **Example:** Indicate that the default l3bin parameter file will be input:
    L3BIN_PARAMETER_FILE=('DEFAULT')
  - **Example:** Indicate that the user-constructed l3bin parameter file *user_constructed_l3bin.par* will be input:
    L3BIN_PARAMETER_FILE='user_constructed_l3bin.par'
  - **Note:** Entry must surrounded by single quotes.