

SeaDAS laboratory, UMaine Ocean Optics Summer Course, 22-23 Jul 2013

ADMINISTRATIVE STUFF

pre-lab activities:

- install SeaDAS 7 visualization tool (seadas.gsfc.nasa.gov/installers/)
- install SeaWiFS, MODIS-Aqua, and “source code” processing components
 - o install with GUI: Tools -> SeaDAS Processing -> Install Processors

timing: 3 hrs in morning (9-12); 3 hrs in afternoon (1-4)

files:

- viewing: A2013197175500.L2_LAC_OC (16 Jul 2013; download from browser)
- GUI proc'ing: A2010065173000.x.L1A_LAC
- command line proc'ing: A2010066181500.x.L1A_LAC
- ship track: cruise_track_example.txt

INTRODUCTION

Resources:

- SeaDAS Web site
- Ocean Color Forum
- SeaDAS help

SeaDAS environment (\$OCSSWROOT, \$SEADAS):

- bin
- run/bin/macosx_intel/
- run/scripts/
- build/src (requires use of Update Processors)

LOAD FILE

Import Raster Data show file types currently supported

Products View

- “Metadata”
- “Flag codings”
- “Bands”

Navigation View

- zoom, rotate – control in panel vs. control in imagery vs. right hand bar tools
- synchronize compatible products
- world map

Some buttons along top assist with toggling between right panel views

Save Session / Open Session

Output

- BEAM-DIMAP (~ flat binary file)
- export as raster (netCDF, geotiff, etc.)
- export as other (Google Earth, images, etc.)

VISUALIZATION

Global controls

- Preferences menu
- Property editor (button or right click in Products View)

Pixel Info View

- Geo-location
- Time Info
- Bands
- Flags

Useful band info

- information button
- geo-coding button
- copy pixel info to clip board (right click)

Colour Manipulation

- Basic
 - o chl_standard.cpd
 - o Log10
 - o Max, Min
- Sliders
 - o histogram of raster data
 - o distribute data evenly
- Table
 - o changing colors
- More options
 - o no-data colour
 - o discrete colors
- Export settings to text file
- Export to other loaded product

Graphics & geometries

- no data overlay
 - o button – control via preferences menu

- versus Colour Manipulation view
- graticule overlay
 - button – control via preferences menu
- coastlines & land masks
 - button – controls pop up, enable masks in all bands
- Layer Manager

(break; exercise 1)

MASK MANAGER

Viewing flags

- on/off
- transparency (0 = opaque, 1 = completely transparent)
- changing colors

New mask based on flags - f(x)

- glint example (HI and MOD)

New mask based on ranges – [x]

- example $0.01 < chl < 0.3$

Editing new masks

- example $0.01 < chl < 0.5$

Exporting the new mask (importing)

Union, difference, and intersection

- “estuary mask” – box (geometry) + water mask + intersection

DATA ANALYSIS & MANIPULATION

Histogram

- select product in Product View
- ROI – region of interest (new mask)
- edit properties
- output

(break: exercise 2)

Statistics button

Range finder tool

Spectrum view

- turn off mixed units
- shift button
- pins (e.g., north and south of Hyannis)

Pin Manager

Two-band scatter plot

- zoom in / out

Other geometries / shapes on right hand panel

Profile plot

- select vector (line drawing tool)
- box size
- zoom in/out
- edit properties
- table of data points
 - o copy data to clipboard

(break: exercise 3)

Band math

USING IN SITU DATA

Import vector data

- SeaBASS file
- select vector data by using ROI mask

Correlative plot

Profile plot with correlative data

(break: exercise 4)

DATA PROCESSING

command line environment:

- export OCSSWROOT={seadas install directory}/ocssw/

- source \$OCSSWROOT/OCSSW_bash.env
- printenv PATH should show

L1A to L2:

- GEO processing (modis_GEO.py)
 - o GUI
 - o command line
- L1B processing (modis_L1B.py)
 - o GUI – boxes to delete hkm and qkm
 - o command line – keywords to delete hkm and qkm
- L2 processing (l2gen)
 - o GUI - “get ancillary”, “export parfile”, asterisks
 - o define products, ancillary inputs, IOP options, miscellaneous
 - o processing can take 10-20 min
 - o command line – getanc.py, parfile, *.anc file

L2 to L3:

- L3 binning (l2bin)
 - o multiple files - _inputFiles.lst (or make your own)
 - o resolve – 1 km
 - o SeaDAS does not effectively load (unprojected)
 - L3 mapping (smigen)
 - o resolution, precision, projection
 - o select product (must know name)
 - o lat (40 to 47N), lon (-73 to -60W)
- “Level-3 Binning” menu option for ESA approach

Level-1 and -2 sub-setter / extractor

- SeaDAS Processing -> extractor
- right click in image window

(break: exercise 5)

ADVANCED TOPICS

Mosaic

- need to know where you are (“Display source products”)
- create virtual band on the fly
- apply conditions

Ground Control Points

Product Grabber

Pixel Extraction

Module manager

OpenDAP