Introduction to software for satellite data analysis - with an emphasis on SeaDAS

Special Monitoring & Coastal Environmental Assessment Regional Activity Centre of NOWPAP
Genki Terauchi

Outline

- Software for satellite data analysis
- What’s SeaDAS?
- Requirements to run SeaDAS
- Remote sensing sensors supported on SeaDAS
- Basic function of SeaDAS
- Creating time-series graph with command mode

Software for satellite data analysis

<table>
<thead>
<tr>
<th>Software</th>
<th>Publisher</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>SeaDAS</td>
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What's SeaDAS?

SeaDAS - SeaWiFS Data Analysis System

- The SeaWiFS Data Analysis System (SeaDAS) is a comprehensive image analysis package for the processing, display, analysis, and quality control of ocean color data.

Requirements to run SeaDAS

- Platforms
  - Silicon Graphics workstations
  - SUN UltraSPARC
  - Macintosh G3, G4 and G5
  - PC workstation
- Operating Systems
  - IRIX 6.5
  - Solaris 2.7 - 2.8
  - Mac OS 10.3 and 10.4
  - Red Hat Linux 7.3, Fedora Core 2 and 4
  - CentOS
- Suggested Hardware
  - 192 MB memory
  - 9 GB hard drive

Remote sensing sensors supported on SeaDAS

- NIMBUS/CZCS
- ADEOS/OCTS
- Oviview2/SeaWiFS
- MODIS

1978 Sep to 1986 Jan
1996 Nov to 1997 Jun
1997 Sep to 2004 Dec (LAC around Asia)
2002 Jun to present (Aqua)
2007 Jan to present (Terra)
Basic function of SeaDAS

Objectives of the following excises

○ To visualize level 2 ocean color data
  * with nice color, coastline and map projection
○ To obtain Chl-a concentration value of 3 x 3 pixels, centered at 37.243N 137.472E

Selecting images

Terminal window
  Execute seadas

SeaDAS main menu

Select a file
Visualizing Level 2 data

Select geophysical value

Display image

Loading color

Visualizing Level 2 data

Choose the best color

Add coast line

Projecting on map

Projection Function

Chose projection method

GO

No distorted image!
Obtaining geophysical value

By Cursor Position

Obtaining geophysical value

By Read & Profile

But, these operations are really time consuming...
Especially when you have thousands of files needed to processed.
Creating time-series graph with SeaDAS command mode

Objectives of the following excises
- To visualize time series of level 2 ocean color data in an efficient manner with nice color, coastline and map projection
- To create monthly mean of Chl-a concentration images for 36.5N to 38.0N and 136.5E to 138.5E
- To obtain monthly mean Chl-a concentration value of 3 x 3 pixels, centered at several stations and create time-series graph of Chl-a concentration change in each station

Data used in the following excises
- Period - Nov 1976 to Nov 2006
- Number of obtained satellite images
  - CZCS 256, OCTS 154, SeaWiFS 4117, MODIS 2063
- Location
  - 36.5 to 38.0N, 136.5 to 138.5N
Flow of data processing

- Obtaining L2 data for entire mission
- Changing file name format
- Projecting L2 data with mercator projection
- Sorting mapped hdf file with png images

Flow of data processing

- Creating monthly mean Chl-a concentration data
- Extracting Chl-a concentration value at some stations
- Creating time-series graph

SeaDAS command mode

- Changing file name format
- Projecting L2 data with mercator projection
- Sorting mapped hdf file with png images

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Before sorting</th>
<th>After sorting</th>
</tr>
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<tbody>
<tr>
<td>CZCS</td>
<td>127</td>
<td>127</td>
</tr>
<tr>
<td>OCTS</td>
<td>119</td>
<td>119</td>
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<tr>
<td>SeaWiFS</td>
<td>203</td>
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<tr>
<td>MODIS</td>
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</table>
SeaDAS command mode

- SeaDAS command (mean.bat)
- band_avg - average any number of loaded bands
- UNIX shell script (meanGO.bat)
- Looking into created asc.files and find location that matches
- You can learn more at ocean color forum
  - http://oceancolor.gsfc.nasa.gov/forum/ocean_color/forum_show.pl