



SeaDAS Homework Exercise

Prerequisites

- Installation of SeaDAS on your computer



Exercise Outline

- Open OLCI Level-2 data in SeaDAS
- View chlorophyll-a data for the Chesapeake Bay
- View Level-2 flags for the data
- Calculate statistics for the Level-2 chlorophyll-a data for a small area of Chesapeake Bay – A predefined Region of Interest (**ROI**)



Download Required Data for this Exercise

- Download the OLCI Level-2 data file and a vector shapefile on your computer from the [training webpage](#):

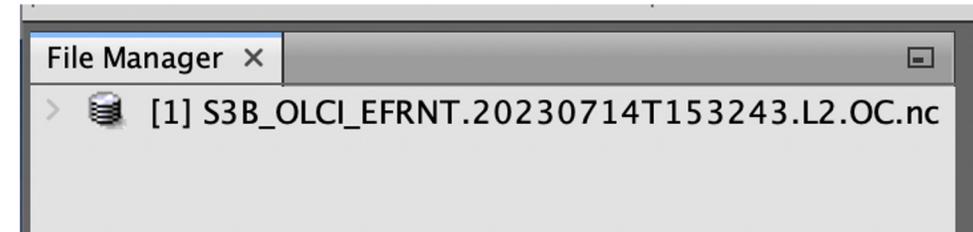
Data File: S3B_OLCI-EFRNT.20230714T153243.L2.OC.nc

ROI Shapefile Folder: CB_SmallArea



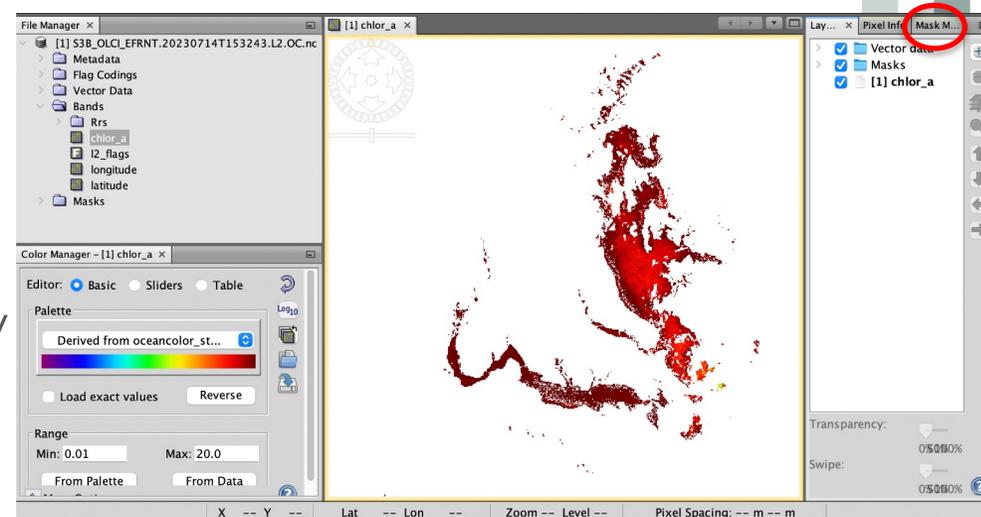
Open the OLCI Level-2 Data File

1. In the SeaDAS window:
 - On the top ribbon go to **File > Open Product** and select **S3B_OLCI_EFRNT.20230714T153243.L2.OC.nc** from your computer.
 - You will see the OLCI file name in the **File Manager**.



View and Select the OLCI Band

- Click on the down arrow next to the file name > **Bands** > **chlor-a**.
- Double-click on **chlor-a** to see the image.
- You can zoom in and out on the **chlor-a** image by moving your cursor in the image window.
- Click on the **Mask Manager** tab on the right side of the main SeaDAS window.
- You will see the list of flags that can be masked in the **Mask Manager** window.
- By changing the size of the window, you can read the description of each flag.
- You can change the color of each flag mask by clicking on the color bar.

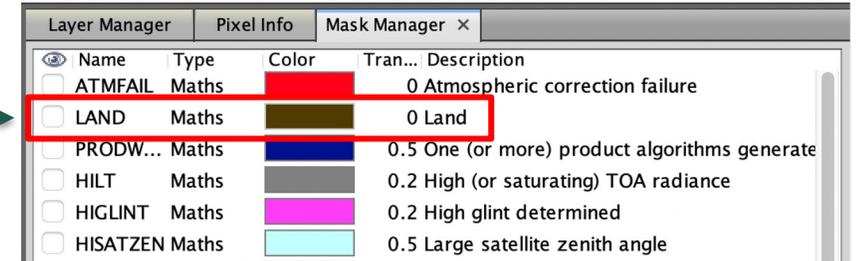


Name	Type	Color	Tran...	Description
<input type="checkbox"/> ATMFAIL	Maths	Red	0	Atmospheric correction failure
<input type="checkbox"/> LAND	Maths	Brown	0	Land
<input type="checkbox"/> PRODW...	Maths	Dark Blue	0.5	One (or more) product algorithms generate
<input type="checkbox"/> HILT	Maths	Grey	0.2	High (or saturating) TOA radiance
<input type="checkbox"/> HIGLINT	Maths	Pink	0.2	High glint determined
<input type="checkbox"/> HISATZEN	Maths	Cyan	0.5	Large satellite zenith angle
<input type="checkbox"/> COASTZ	Maths	Dark Red	0.5	Shallow water (<30m)
<input type="checkbox"/> STRAYL...	Maths	Yellow	0.2	Straylight determined
<input type="checkbox"/> CLDICE	Maths	White	0	Cloud/Ice determined
<input type="checkbox"/> COCCO...	Maths	Cyan	0.5	Coccolithophores detected
<input type="checkbox"/> TURBIDW	Maths	Brown	0.5	Turbid water determined
<input type="checkbox"/> HISOLZEN	Maths	Purple	0.5	High solar zenith angle
<input type="checkbox"/> LOWLW	Maths	Blue	0.5	Low Lw @ 555nm (possible cloud shadow)
<input type="checkbox"/> CHLFAIL	Maths	Red	0	Chlorophyll algorithm failure
<input type="checkbox"/> NAVWA...	Maths	Pink	0.5	Navigation suspect
<input type="checkbox"/> ABSAER	Maths	Yellow	0.5	Absorbing Aerosols determined
<input type="checkbox"/> MAXAE...	Maths	Grey	0.5	Maximum iterations reached for NIR correc
<input type="checkbox"/> MODGL...	Maths	Light Grey	0.5	Moderate glint determined
<input type="checkbox"/> CHLWA...	Maths	Light Grey	0.5	Chlorophyll out-of-bounds (<0.01 or >10
<input type="checkbox"/> ATMWA...	Maths	Pink	0.5	Atmospheric correction warning; Epsilon ou
<input type="checkbox"/> SEAICE	Maths	Dark Grey	0.5	Sea ice determined
<input type="checkbox"/> NAVFAIL	Maths	Red	0	Navigation failure
<input type="checkbox"/> FILTER	Maths	Grey	0.5	Insufficient data for smoothing filter
<input type="checkbox"/> BOWTIE...	Maths	Red	0.1	Bowtie deleted pixel
<input type="checkbox"/> HIPQI	Maths	Light Red	0.5	High degree of polarization determined



Add Land Mask and Color

- Click the **LAND** mask to turn it on.
- In the **Color Manager** window to the left of the Chlor-a window change **Range** change **Min: 0.5** and **Max: 70**
- Click on **Show/hide color bar for the selected image**



- You will get a color bar to the right of the Chlor-a image.

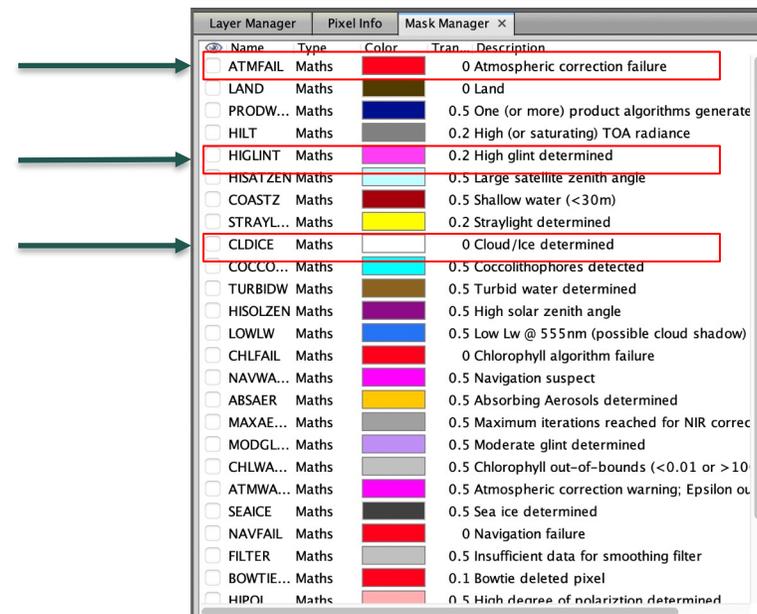
Now take a screenshot of the Chlor-a window with the color bar and save on your computer as an image named **chlor.png**. You will be submitting this image in your homework.



Check Level-2 Flags

Click the following flag masks and toggle them on and off. You may have to change the mask color if it is white to be able to view it.

- ATMFAIL
- CLDICE
- HIGLINT



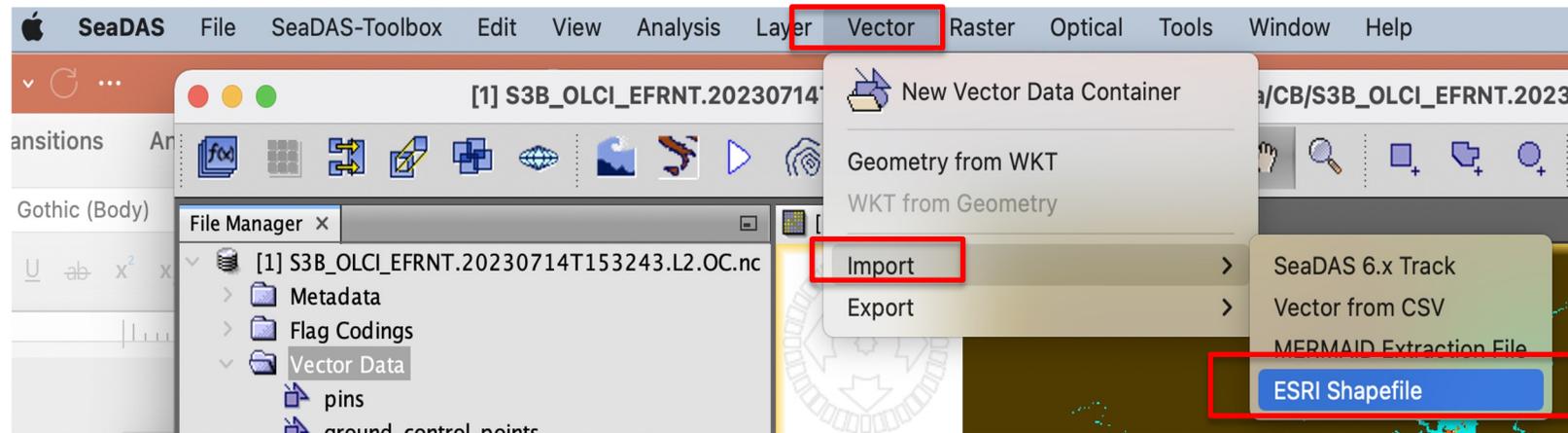
With only the Land and CLDICE masks on, take a screenshot of the chlor-a image and save as CLDICE.png. You will be submitting this image in your homework.



Import ROI to the Image

In the SeaDAS window:

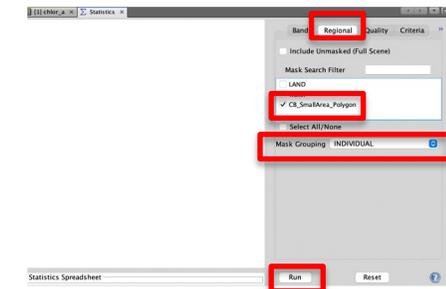
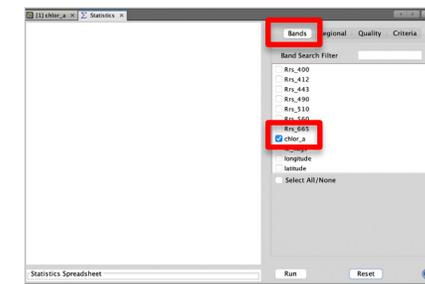
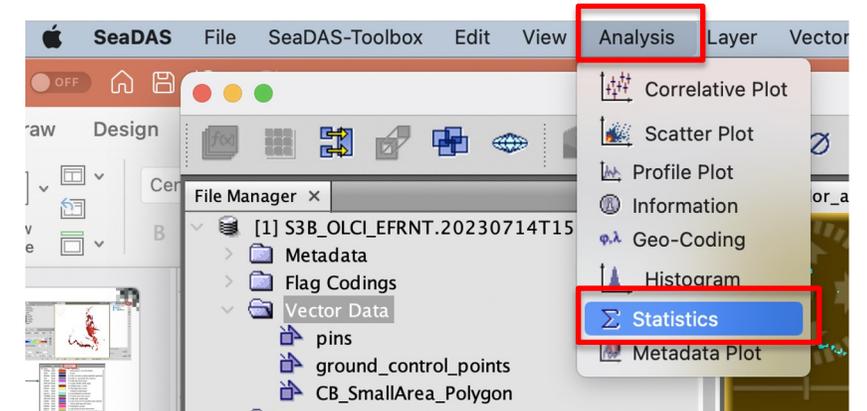
- On the top ribbon go to **Vector > Import ESRI Shapefile.**
- Select ROI folder **CB_SmallArea > CB_SmallArea_polygon.shp** previously saved on your computer.
- You will see the ROI on the **cholr-a** image in the Chesapeake Bay. Zoom in to view the ROI.



Calculate Statistics for Chlorophyll-a

From the top ribbon click on **Analysis > Statistics**.

- In the Statistics window, ensure that **Band > chlor-a** is selected.
- In the Statistics window, select **Regional > CB_SmallArea_Polygon** and select **Mask Grouping > INDIVIDUAL**.
- Now select **Run**.
- You will see a window with statistics for chlor_a for the ROI: **CB_SmallArea_Polygon**.



Save the results by taking a screenshot.
You will be answering homework questions
based on the results.

