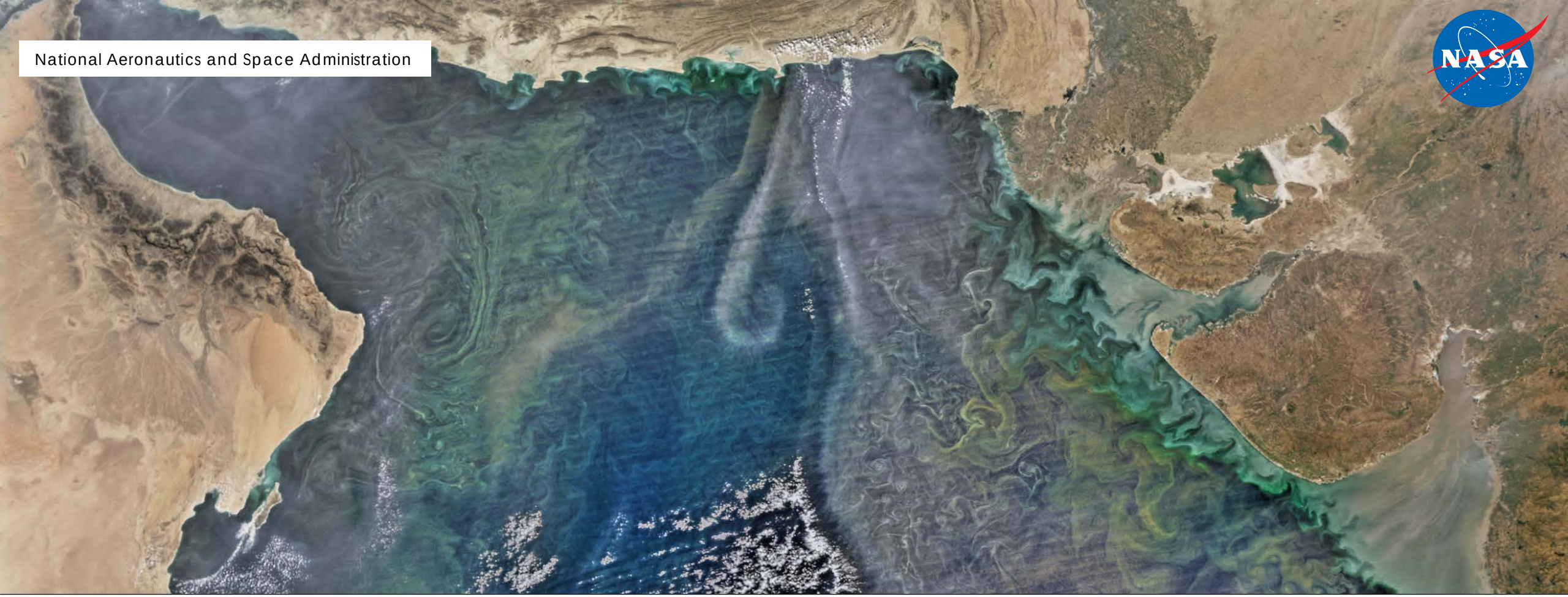
National Aeronautics and Space Administration



Mapping and Monitoring MODIS Level-3 Chlorophyll Concentration in Lake Victoria, Africa

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Objective

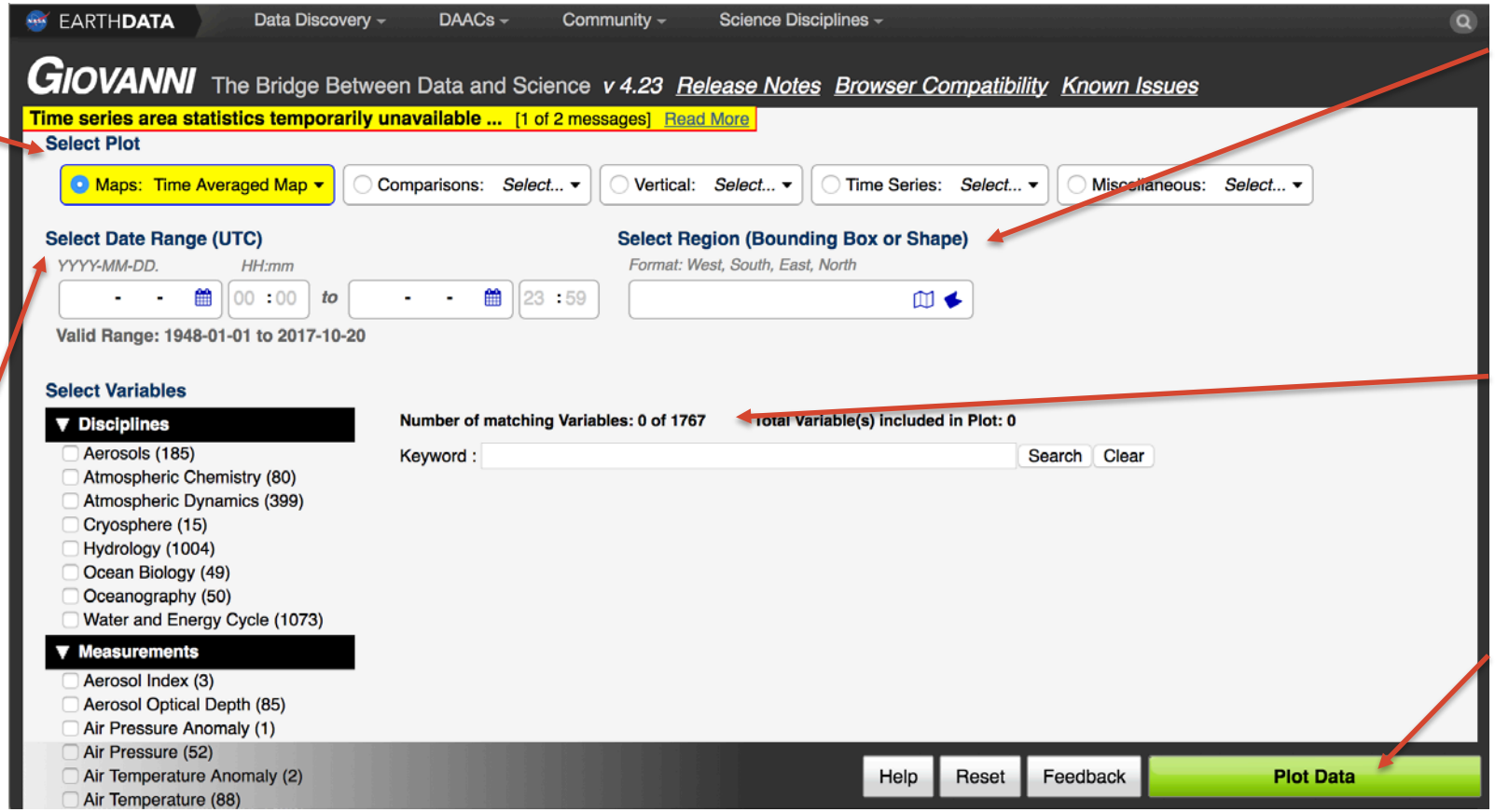
- Search, access, analyze, visualize, and download MODIS Chlorophyll Level-3 data using the Giovanni web tool

Create Annual Average Chlorophyll Concentration Map in Lake Victoria

1. Go to Giovanni: http://giovanni.gsfc.nasa.gov/giovanni
2. On the Giovanni page you will see the following options:

Select Plot: selection of analysis options

Select Date Range: select time period



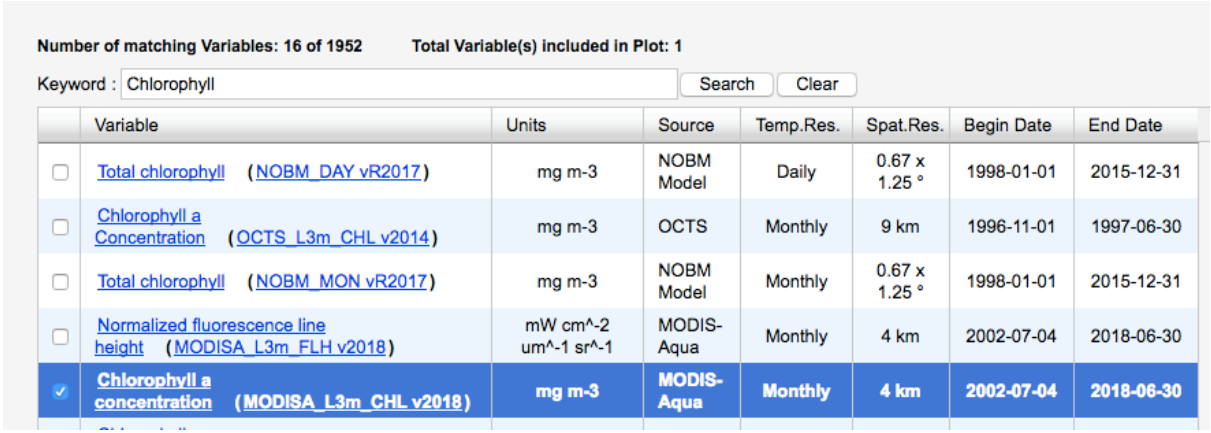
Select Region: select geographic region by lat/lon, map, or shapefile

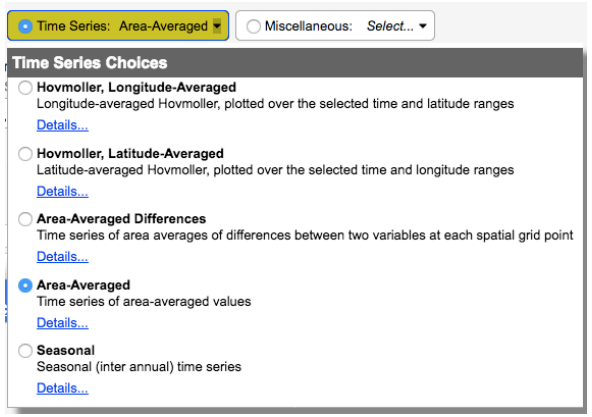
Keyword: search by data parameter or keyword

Plot Data: starts action to make your desired plot

Subset Data and Make Monthly Chlorophyll Time Series

3. Enter the following options:
   - **Keyword**: Enter **Chlorophyll** and click **Search**
     - You will get the following list, select **Chlorophyll a Concentration: (MODISA_L3m_CHL_v2018)**
   - Under **Select Plot** Select **Time Series**, and then select **Area Averaged** from the drop-down menu

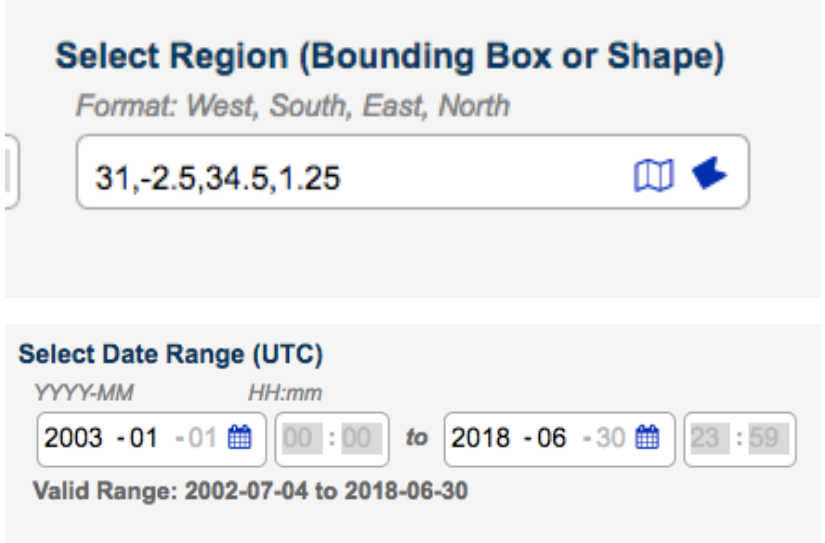




Subset Data and Make Monthly Chlorophyll Time Series

- Under **Select Region (Bounding Box or Shape)**, enter the longitude-latitude around Lake Victoria:
  - 31.0, -2.5, 34.5, 1.25
- Under **Select Data Range**, set the range to **2003-01** to **2018-06** for January 2003 to June 2018)

4. Click on **Plot Data** (on the bottom right part of the screen)
   - You will get a time series plot
5. Go to **Download** on the left and click to open and save a .csv file to see the data table



Subset Data and Make Monthly Chlorophyll Time Series

- Examine the time series, then go to the Google Form on the website to answer the following questions:
  1. Which year and month had the maximum chlorophyll concentration? What was the amount?
  2. How many months had a chlorophyll concentration of more than 40 mg/m^3?
  3. What was the average range of chlorophyll concentration?

Create a Chlorophyll Concentration Map for Lake Victoria

6. Click **Back to Data Selection** at the bottom right
7. Under **Select Date Range (UTC)**, choose the year and month that matches when the time series showed maximum chlorophyll concentration
8. Under **Select Plot**, change the setting to **Maps: Time Averaged Map**
9. Click on **Plot Data** to get the map
10. (Optional) Go to **Download** and click on the kmz file that you can view with Google Earth
    - Note: you will have to download and install Google Earth from https://www.google.com/earth/ on your computer if you do not already have it

- Examine the map and answer the following question on the Google Form on the training page:

1. What is the maximum chlorophyll concentration range in the map?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