NASA Giovanni Tutorial

by

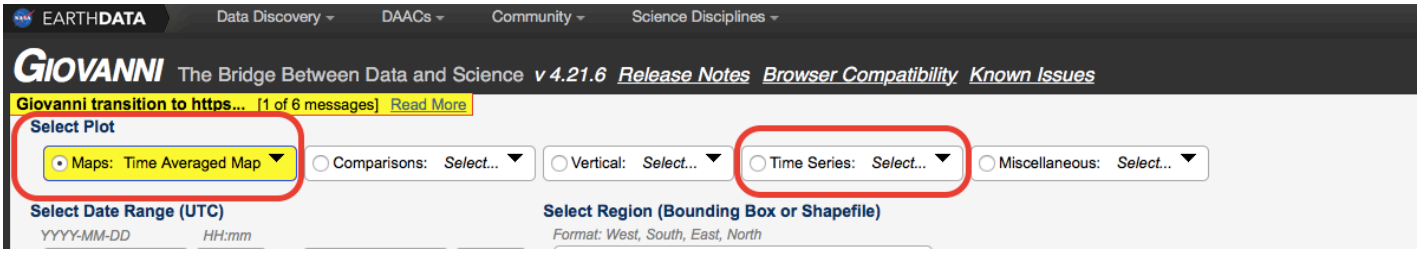
NASA Health and Air Quality Applied Sciences Team (HAQAST)

NASA Giovanni is a flexible, though somewhat complicated platform that allows a user to average remote-sensing data over time, create a range of plot types and formats, compare variables, and graphically display information. You can also download plot source files in netCDF format.

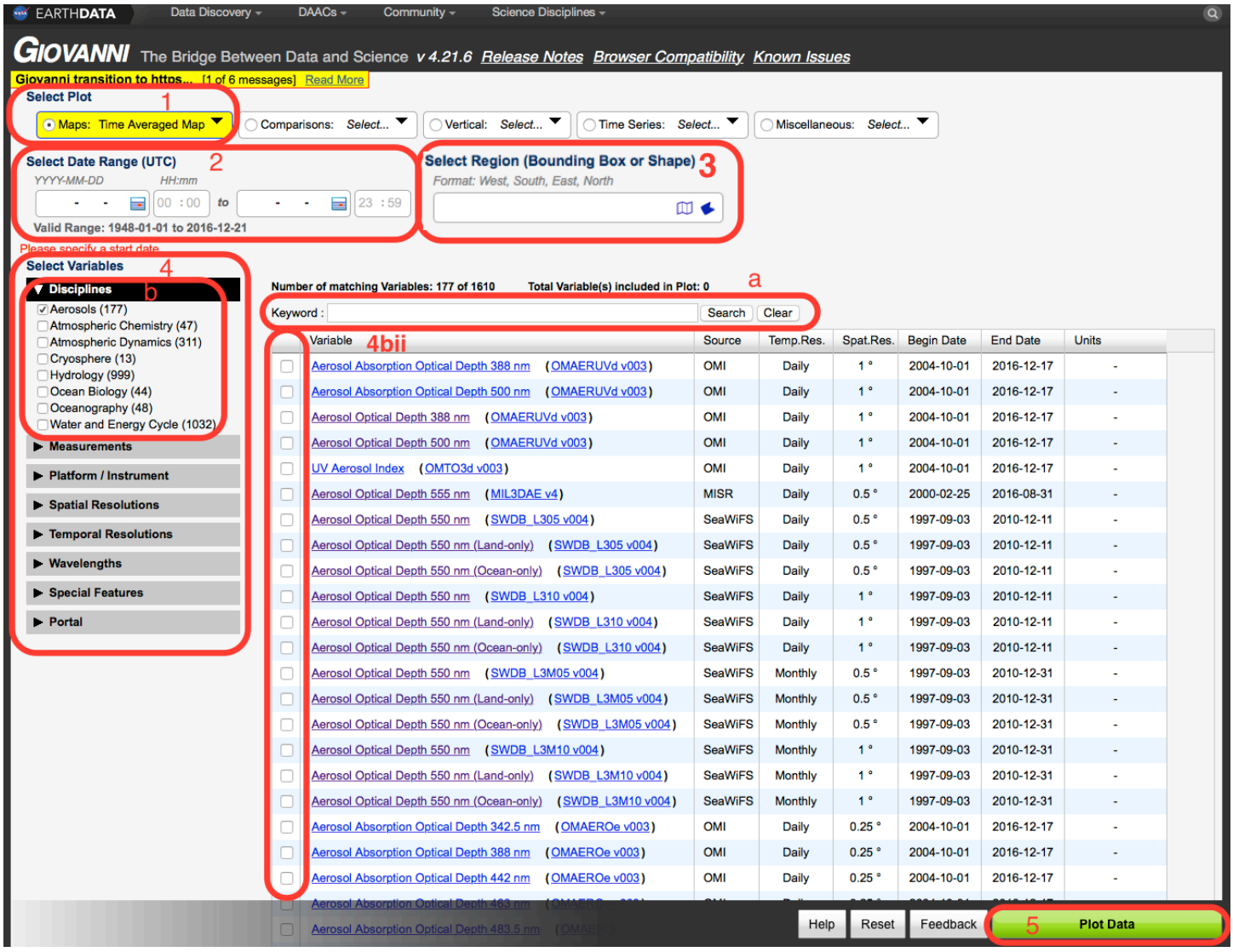
For a far more detailed overview of Giovanni and everything that it can do, here's the User Manual.

Getting Started with NASA Giovanni

First, open NASA Giovanni. (**Tip**: bookmark the page)

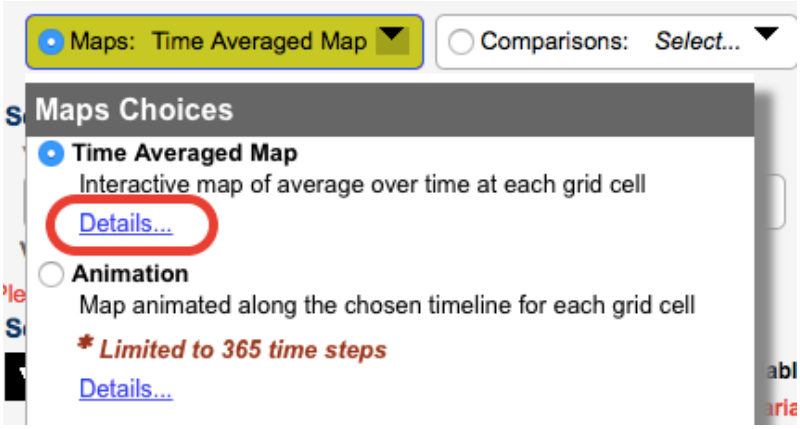


1. Select your **Plot**. Members of the Air Quality (AQ) community are likely to find that a **Time Averaged Map** is the most useful plot to choose. **Time Series** (described below), which displays as a set of line graphs, may also be useful for your purposes.



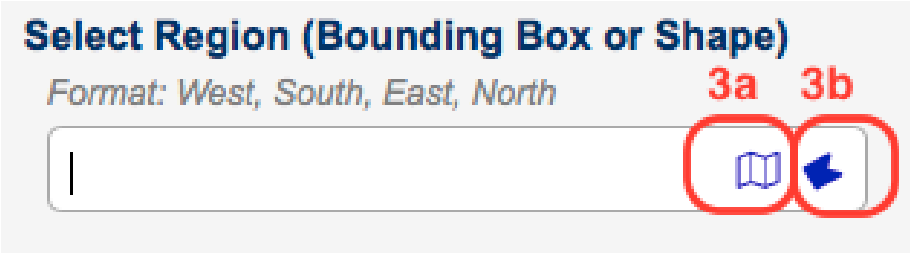
Working with Time Averaged Maps

1. There are a few different Time Averaged Maps from which you can choose. Click the **Details** link beneath each to see which one is best suited for your purposes.

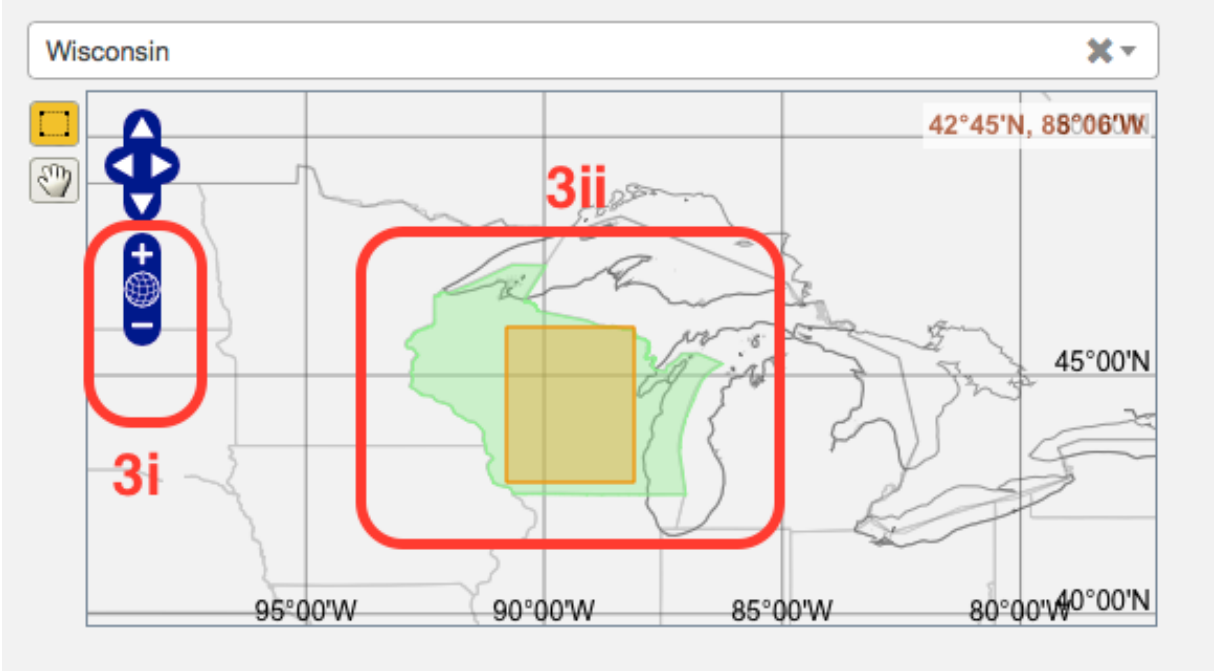


2. Next, select a **Date Range** for which you would like to see data. (You will not be able to specify start hours for either Time Averaged Maps or Time Series Plots.)
    a. **Note:** Time Averaged Maps take a long time to run. The larger the date range, the more time it will take Giovanni to complete your map. Expect to be waiting *at least* a few minutes.

3. **Select Region** (the default region is the whole earth).
    a. Click **Bounding Box** to select a square section of the earth.
        i. Zoom in and to a specific part of the globe using the + and -.
        ii. Use your mouse to select a square region of the map.
        iii. To undo the selected region, click twice anywhere in the map.



b. Click **Select a Shape** to choose specific countries, U.S. States, watersheds, landmasses only, or oceans only.
    i. Zoom in and out on a specific part of the globe using the + and -.
    ii. You can also click and drag to highlight a rectangular region within a selected shape.

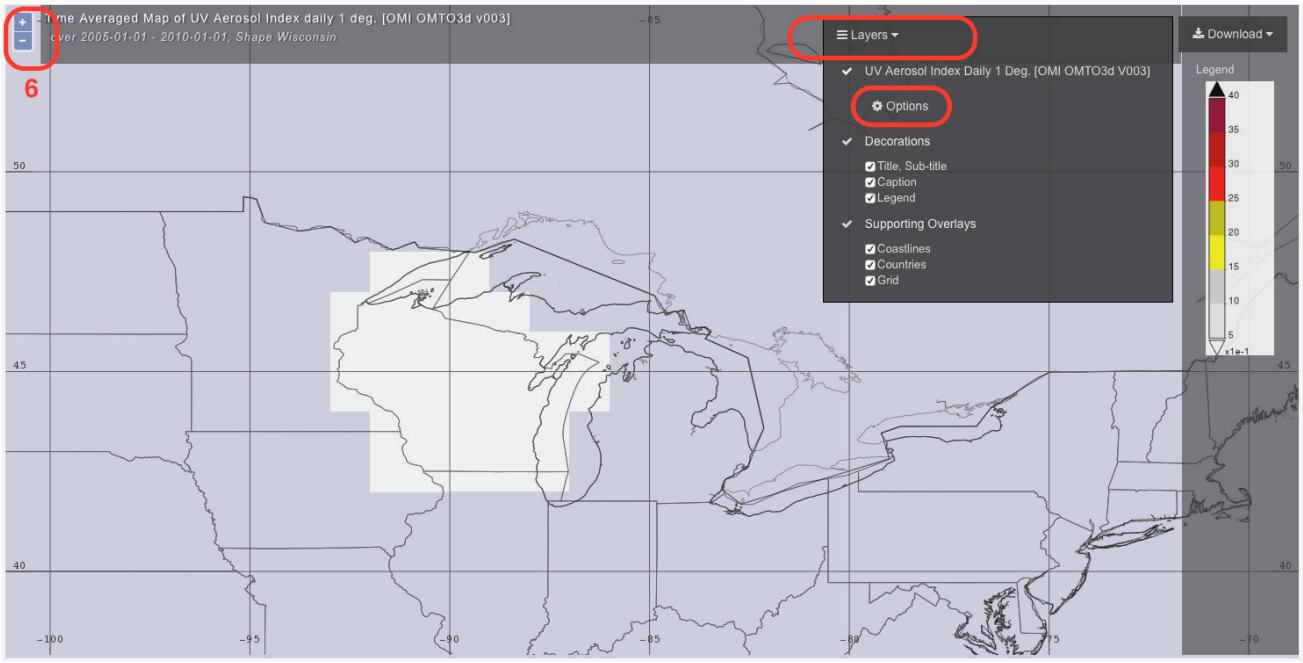


4. Finally, select the variables you would like to map.
    a. There are nearly two thousand variables from which you can choose. You can search by keyword in the search field.
    b. AQ users will also find it useful to filter variables by discipline. To do so, click **Disciplines**.
        i. Check the box for either **Aerosols** or **Atmospheric Chemistry**, for example.
        ii. A list of variables will appear. Check the box(es) of the ones you want to map.

5. Once you've chosen your variables, click **Plot Data**.
    a. **Note:** Different variables are available for different temporal resolutions and durations. If you select a variable that is unavailable for the parameters you select, you'll be alerted with an error message and will need to change your parameters.

6. If you selected a relatively small geographical region (a state, for instance) you may find that your map is entirely gray and seemingly without data. Giovanni initially displays your results on a world map. Zoom in to your selected region.

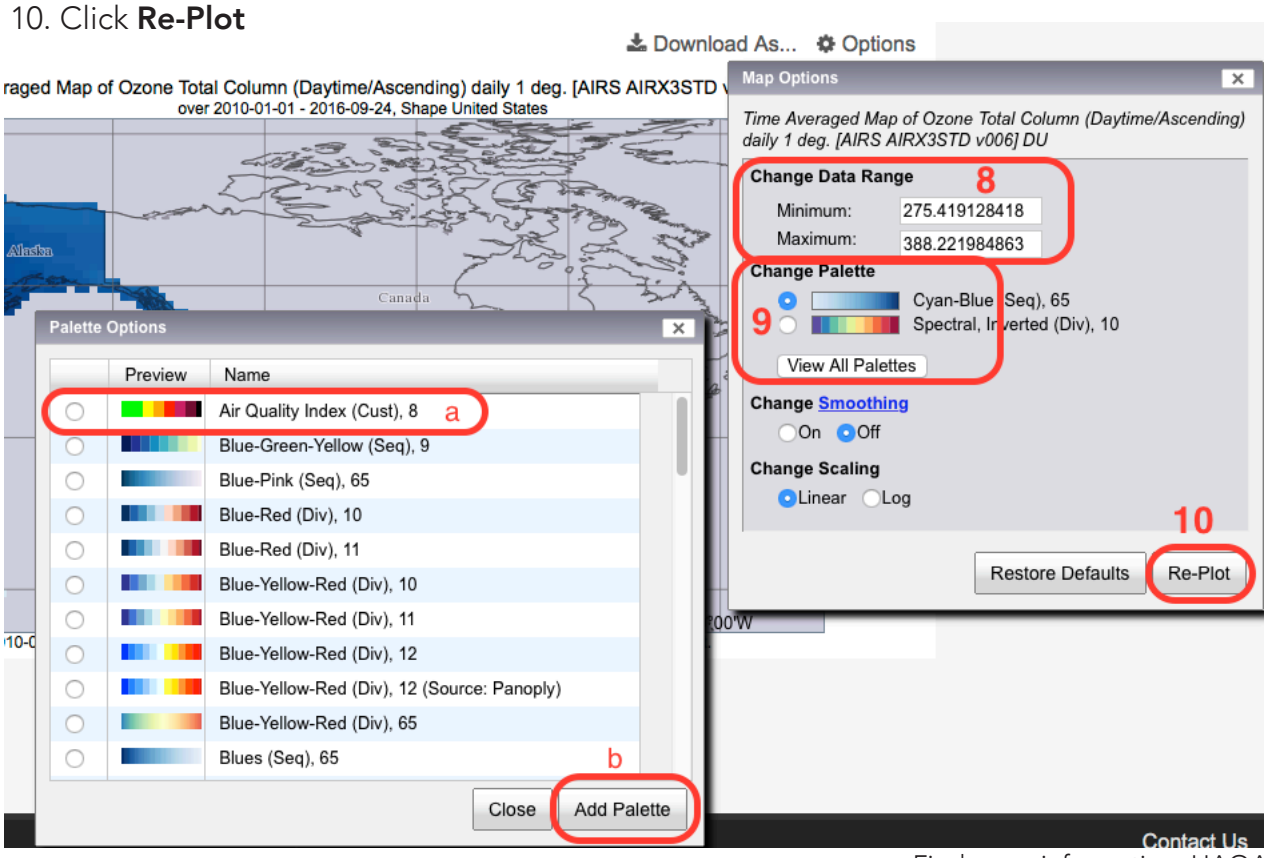
7. You may find that the map would be easier to read if the colors were rescaled. To do so, click **Layers** and then select **Options**.



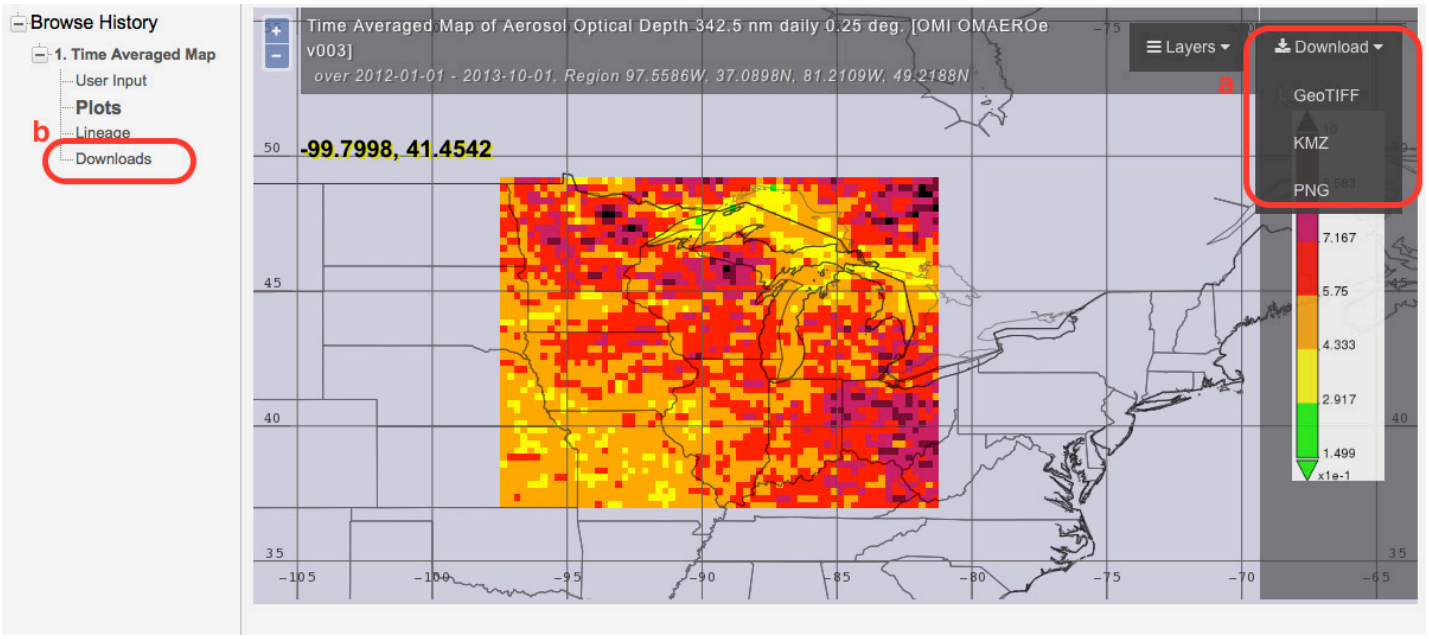
8. Change the **Minimum** and **Maximum** for a wider or narrower scale.

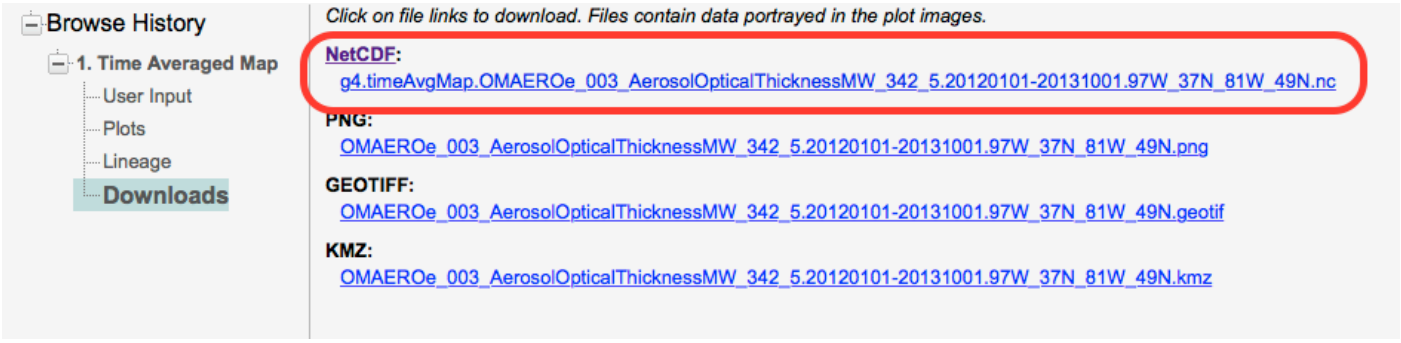
9. Select a higher-contrast color palette by clicking **View All Palettes**.
   a. Choose the palette that fits your needs.
   b. Click **Add Palette**.

10. Click **Re-Plot**

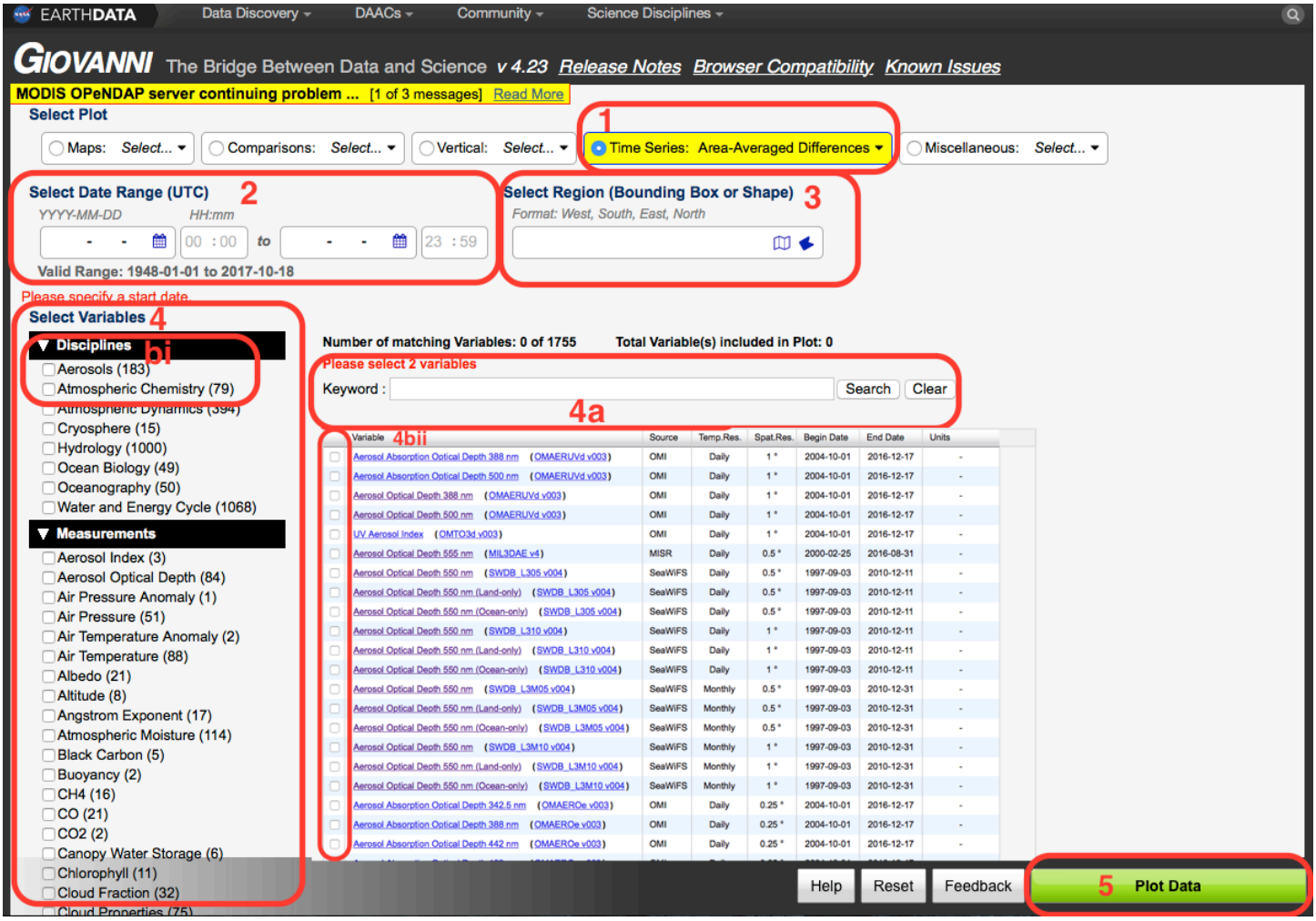


11. Download your data.
    a. Click **Download** (a) and when prompted, choose the file format that works best for your needs.
    b. If you'd like to download your data in NetCDF format (to plot in Panoply, for instance), click **Downloads** (b) and select NetCDF.

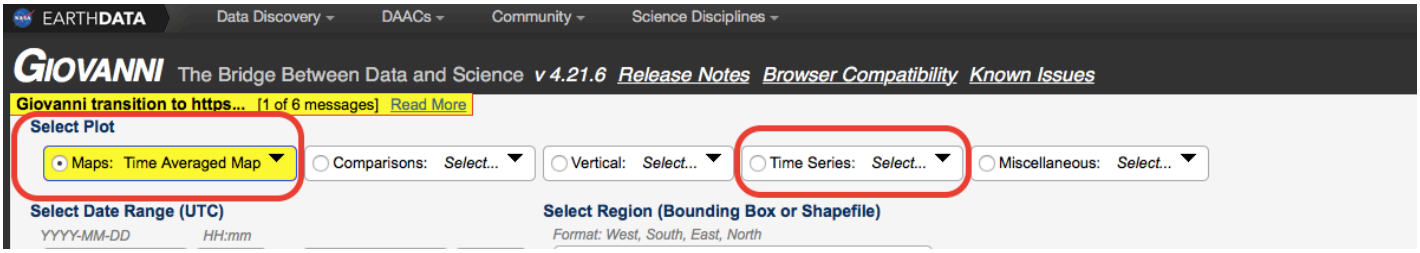




Working with Time Series



1. If you'd like to see your data displayed in a line graph, choose **Time Series**. The process is fairly similar to working with Time Averaged Maps.
    a. For the AQ community, you'll want to select an **Area-Averaged** graph.



2. Next, select a **Date Range** for which you would like to see data.
    a. **Note:** Time Series graphs take a long time to run. The larger the date range, the more time it will take Giovanni to complete your graph. Expect to be waiting *at least* a few minutes.

3. **Select Region** (the default region is the whole earth).
    a. Click **Bounding Box** to select a square section of the earth.
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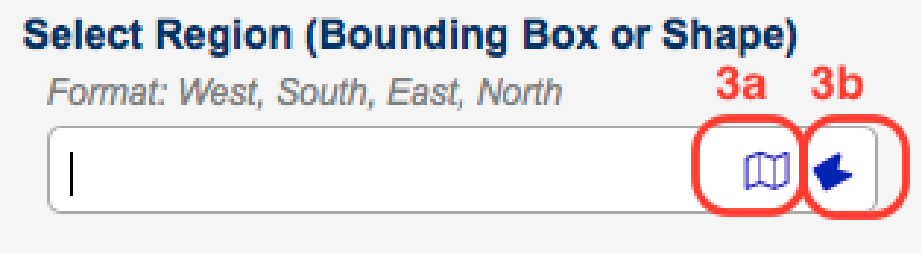

    b. Click **Select a Shape** to choose specific countries, U.S. States, watersheds, landmasses only, or oceans only.
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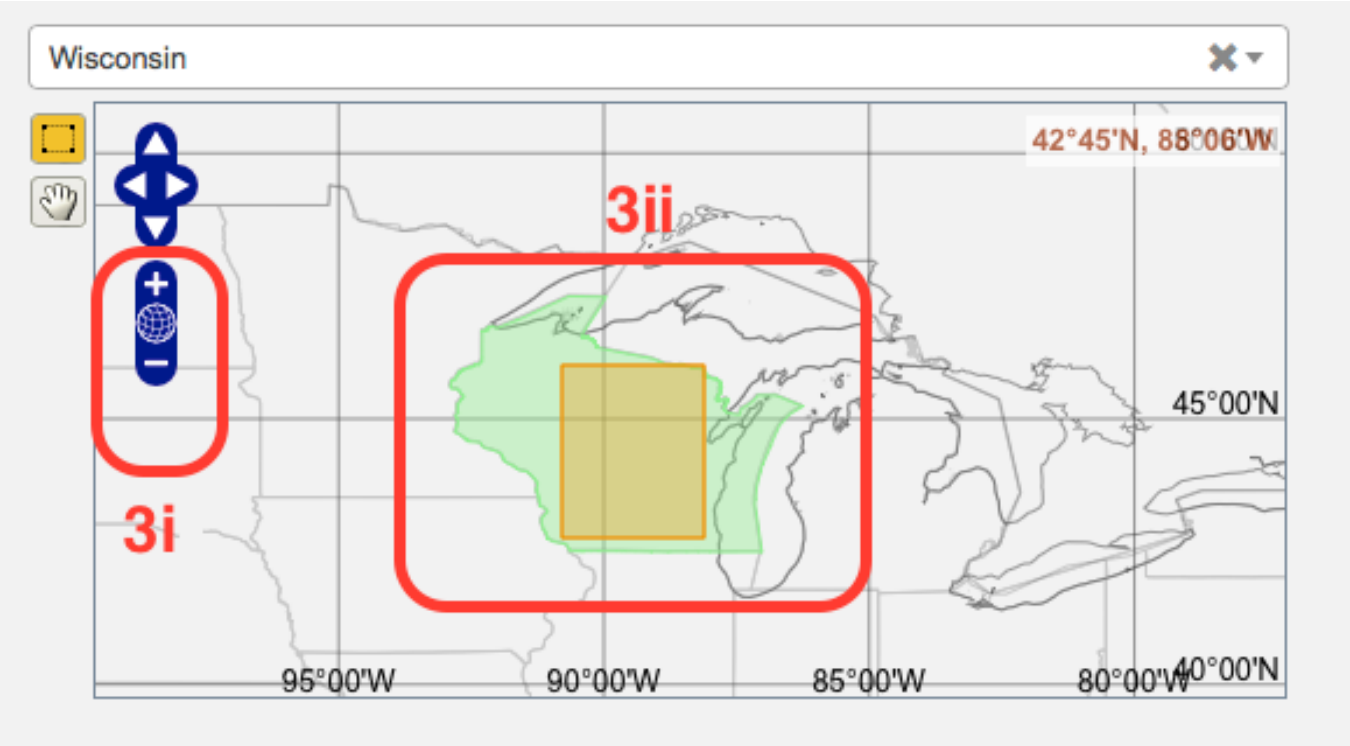

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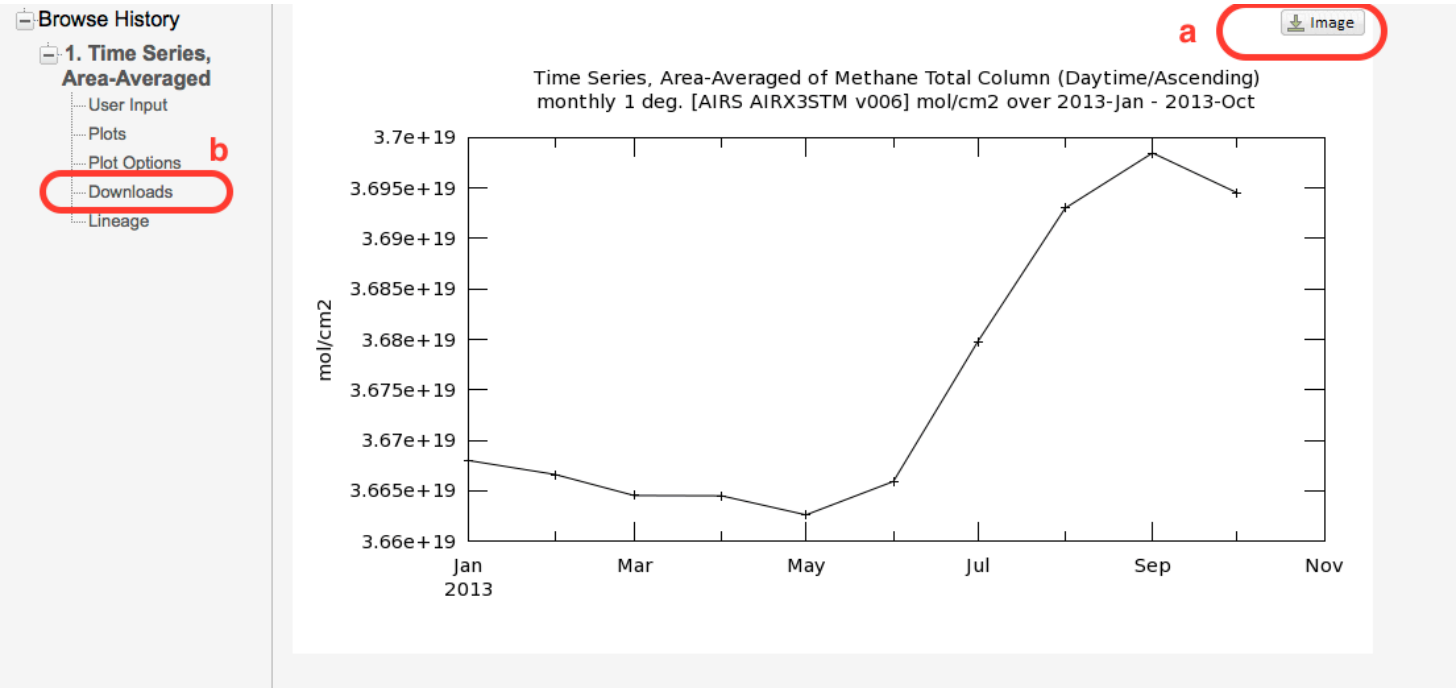
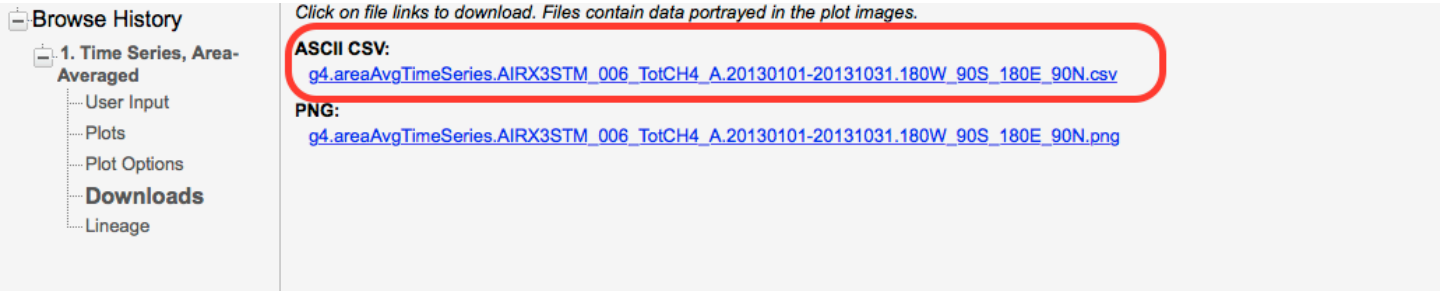
        ii. A list of variables will appear. Check the box(es) of the ones you want to map.

5. Once you've chosen your variables, click **Plot Data**.

6. Download your data.
    a. Click **Download** (a) and when prompted, choose the file format that works best for your needs.
    b. If you'd like to download your data in csv format, click **Downloads** (b) and select csv.





FAQ

Q: Why can't I select a start hour for either Time Averaged Maps or Time Series Plots?
A: Temporal resolution varies between plot type and variable type. For Time Averaged Maps and Time Series Plots, hourly resolution is not available. Giovanni will use a daily or monthly data average to create maps and plots.

Q: What should I do if my Time Averaged Map does not appear correctly?
A: Check known issues link and browser compatibility. Also try switching web browsers.

Q: I'd like to graph/map formaldehyde. Can I do that with Giovanni?
A: Not as of yet.

Q: Can I plot two variables simultaneously when using Time-Averaged Map or Times Series Plot?
A: Two variables will not be expressed either on Time-Averaged Map or Times Series Plot. Time Series Plot will show you two different graphs, which express each variable in order.

Q: I'd like to make a difference of time-averaged maps for the same variable. In other words, I'm trying to compare levels of AOD from 2004 to levels of AOD from 2014. Will Giovanni let me do this?
A: No, Giovanni won't. That operation takes too much computing power. However, you can make difference maps using NASA's Panoply tool. For more information, go to the Panoply page.

Q: I'm having trouble with my browser/compatibility issues/etc.
A: Visit this link for a list of Giovanni's known issues.