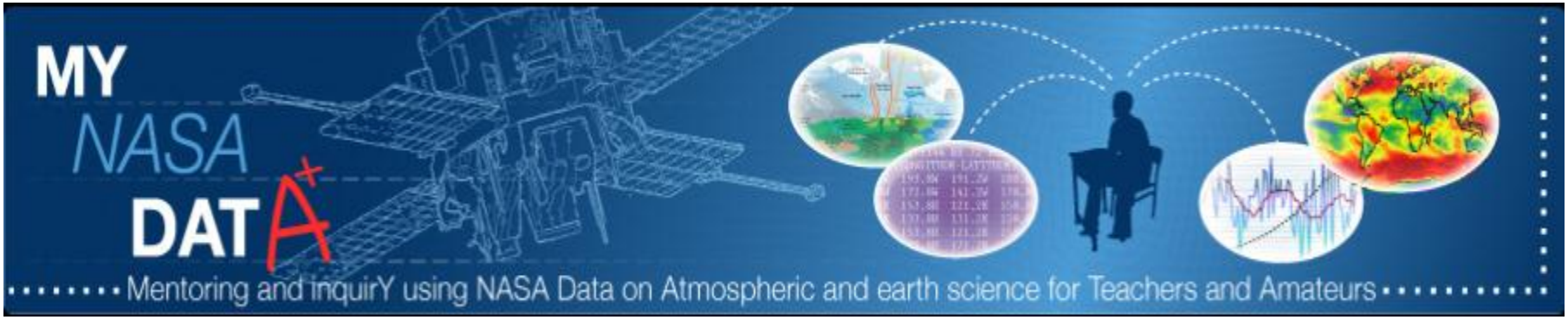
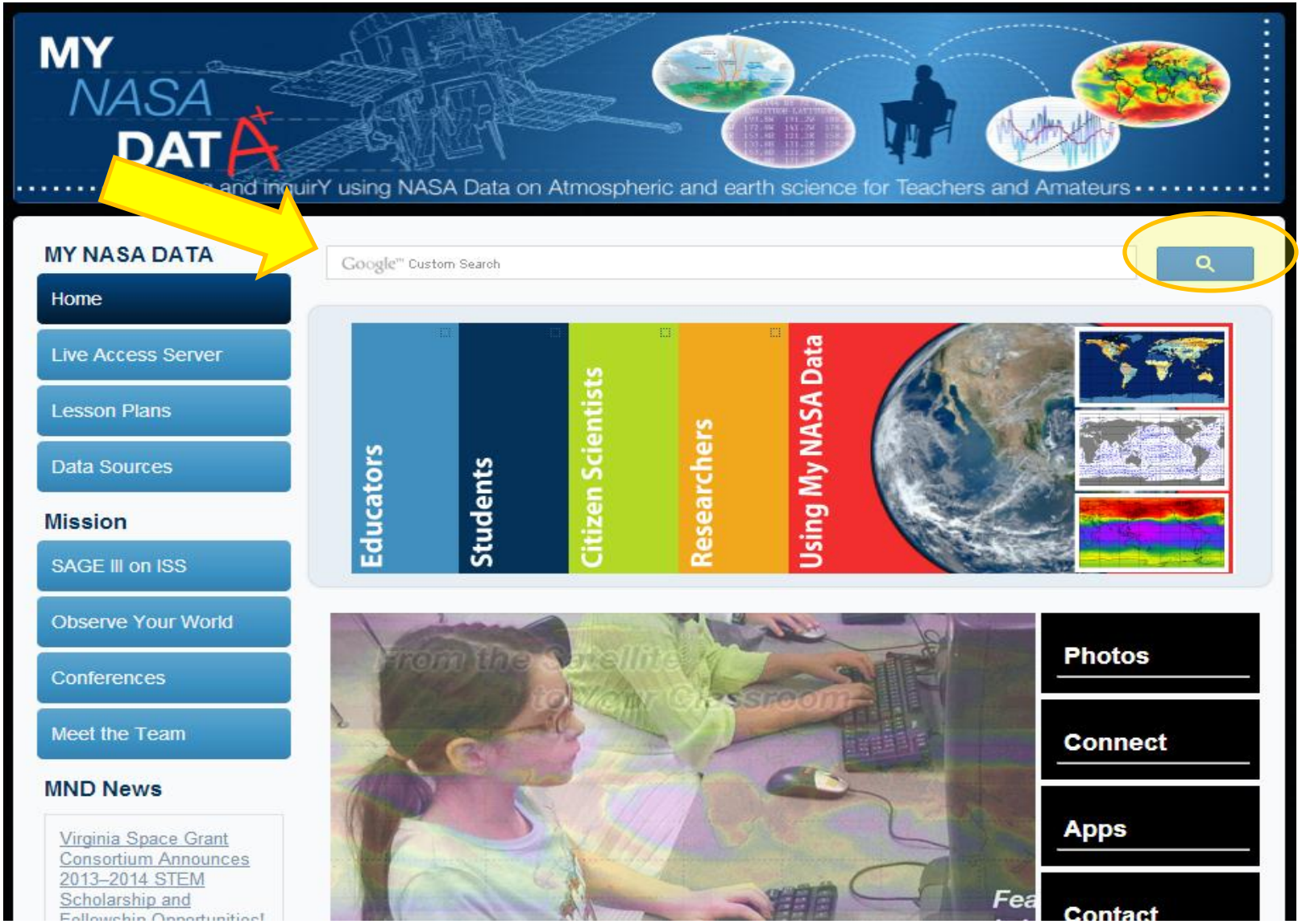


Accessing Air Quality Lessons on MY NASA DATA

mynasadata@lists.nasa.gov

Search “Air Quality”



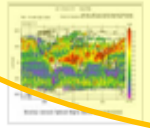
Select Top Link

Google custom search air quality

About 244 results (0.55 seconds)

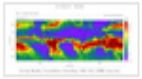
powered by Google™ Custom Search

Air Quality and Composition | MY NASA DATA
mynasadata.larc.nasa.gov/**air-quality**-and-composition/



Welcome to the **Air Quality** and Composition page on MY NASA DATA. This page links you to a powerful data viewer that will allow you to examine all of the air ...

MY NASA DATA Featured Page: New **Air Quality** and Atmospheric ...
https://mynasadata.larc.nasa.gov/.../my-nasa-data-featured-page-new-**air**- **quality**-and-atmospheric-composition-theme-page/



Jun 21, 2012 ... Monthly Average Precipitation for March, See **Air Quality** MND Lesson "How Much Water is Available in the Atmosphere for Precipitation?" ...

New Online: Cruising the Chesapeake for Water and **Air Quality**
mynasadata.larc.nasa.gov/.../new-online-cruising-the-chesapeake-for-water- and-**air-quality**/

New Online: Cruising the Chesapeake for Water and **Air Quality**. September 8, 2011. A

http://mynasadata.larc.nasa.gov/air-quality-and-composition/

Air Quality and Atmospheric Composition

Welcome to the Air Quality and Composition page on MY NASA DATA. This page links you to a powerful data viewer that will allow you to examine all of the air quality and composition parameters that are available on the MY NASA DATA website. You will be able to view sample images here and create data visualizations on the Live Access Server (LAS) that we've configured for you to view global and local data pertaining to these key areas of interest.

Lesson Plans & Activities

Lessons

Aerosol Lesson Plans:

- Tropical Atlantic Aerosols (Middle School)
- Using MND to Determine Volcanic Activity (High School)

Air Quality Lesson Plan:

- Carbon Monoxide and Population Density (High School)
- Investigating Seasonal Variability in NO2 Concentrations (High School)

Atmospheric Water Vapor Lesson Plan:

- How much Water is Available for Precipitation (High School)
- Seasons (Elementary)

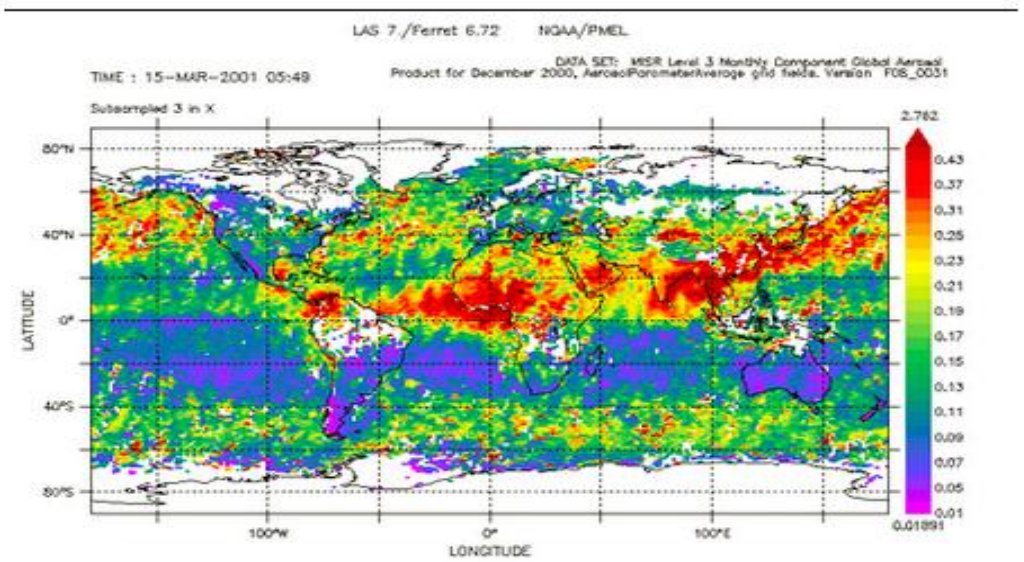
Activities

- Sky Color for Kids (Elementary)

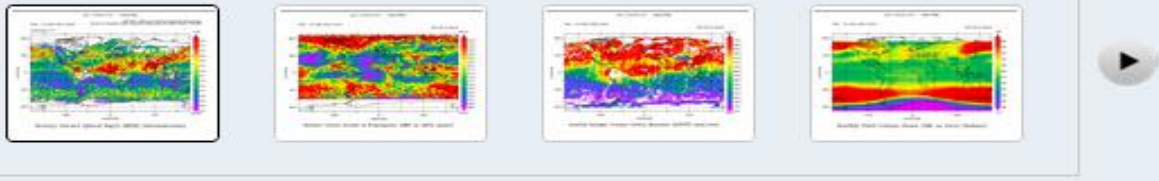
Sample Plots from MY NASA DATA's Live Access Server

Data Plots & Access

Sample Plots from MY NASA DATA's Live Access Server



Monthly Aerosol Optical Depth (MISR) (dimensionless)



Click on the thumbnails above or the right arrow to navigate to line and Hovmoller plots.

Explore data in the Live Access Server

For all of the parameters below, after clicking on their respective links, please click on "Choose Dataset" button on the upper left hand side of the LAS page and then click on the cross directly to the left of the indicator that you'd like to view. For some browsers, the Choose Dataset dialogue box will automatically appear. We've provided a description of each parameter that is currently available. If you have any questions or issues with the LAS please email the MY NASA DATA support team.

- Monthly Average Cloud-free Aerosol Optical Depth 2007-2011 (CALIPSO)
- Monthly Average All-Sky Aerosol Optical Depth 2007-2011 (CALIPSO)
- Monthly Average All-sky Dust 2007-2011 (CALIPSO)
- Monthly Cloud Coverage (CALIPSO)

Looking at *Seasonal Variability in NO2*

Air Quality and Atmospheric Composition

Welcome to the Air Quality and Composition page on MY NASA DATA. This page links you to a powerful data viewer that will allow you to examine all of the air quality and composition parameters that are available on the MY NASA DATA website. You will be able to view sample images here and create data visualizations on the Live Access Server (LAS) that we've configured for you to view global and local data pertaining to these key areas of interest.

Lesson Plans & Activities

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- Seasons (Elementary)

Activities

- Sky Color for Kids (Elementary)

Sample Plots from MY NASA DATA's Live Access Server

http://mynasadata.larc.nasa.gov/?page_id=474?&passid=59

Investigating Seasonal Variability in NO2 Concentrations

Purpose: Students will examine data in several formats in order to determine the presence or absence of seasonal variability in tropospheric nitrogen dioxide (NO2) concentrations

Grade Level: 8 – 10

Estimated Time for Completing Activity: 50 minutes

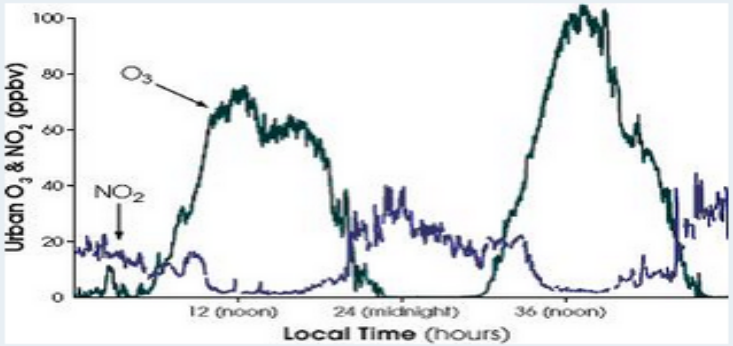


Image courtesy William Brune, Penn State Earth Systems Science Center

National Standards:

- **Math:** Representation
- **Science Content:** A Science as Inquiry
- **Science Content:** D Earth and Space Science
- **Science Content:** F Science in Personal and Social Perspectives

AP Environmental Science Topics

- Atmospheric circulation
- Atmospheric structure
- Formation of ozone
- Measurement units
- Seasons

Virginia Standards of Learning:

- **ES.1c:** The student will plan and conduct investigations in which scales, diagrams, maps, charts, graphs, tables, and profiles are constructed and interpreted.
- **ES.12:** The student will investigate and understand the origin and evolution of the atmosphere and the interrelationship of geologic processes, biologic processes, and human activities on its composition and dynamics.

Vocabulary:

- air quality
- atmospheric column

Lesson Background

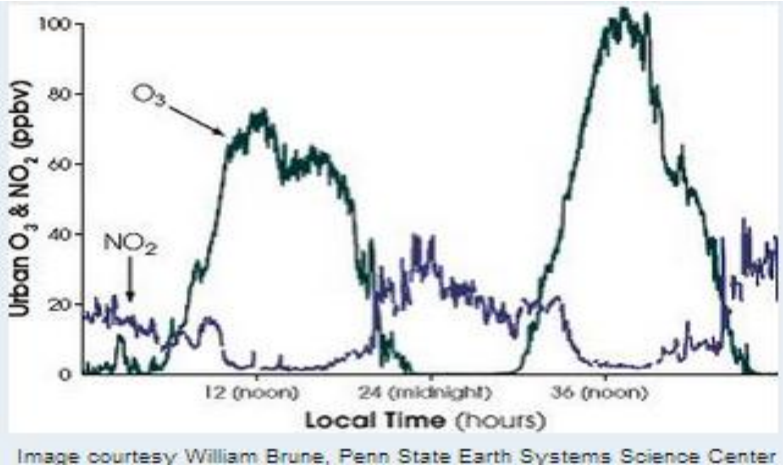


Image courtesy William Brune, Penn State Earth Systems Science Center

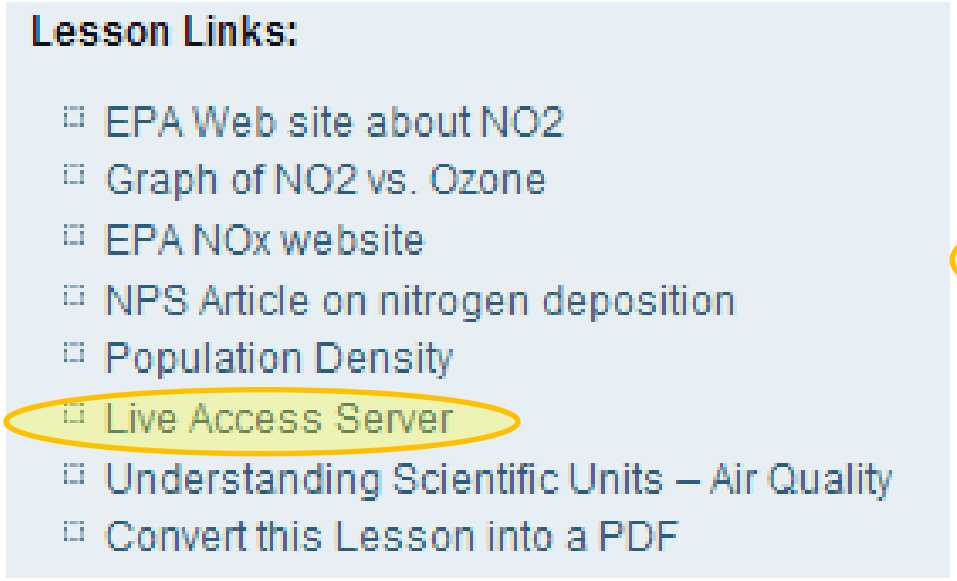
Background:

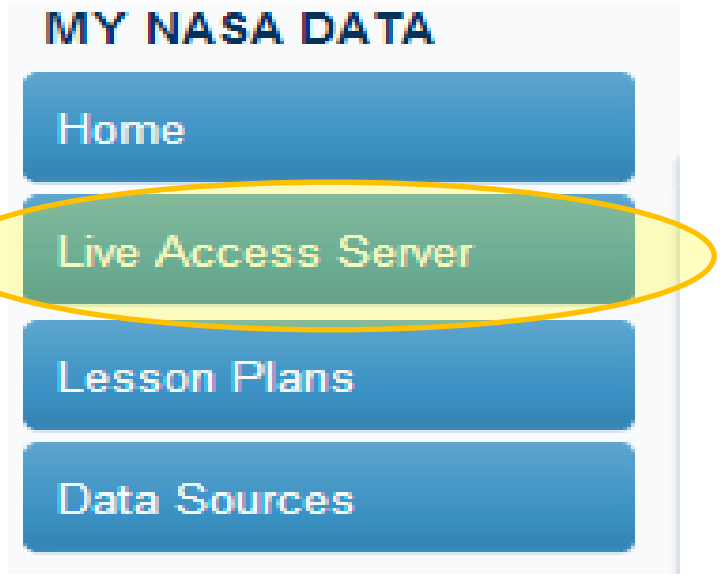
The dataset used in this lesson is monthly averages of NO2 as measured from NASA's EOS Aura spacecraft. NO2 is measured using the Ozone Monitoring Instrument (OMI). OMI is a nadir-pointing instrument that measures trace gases in a column of air directly below the spacecraft. NO2 concentrations are measured in number densities, or the amount of NO2 molecules found in a cubic centimeter of air. Alternately, units of parts per billion can be used, as in the graph at the top of the page. This tells how many NO2 molecules would be found in a sample containing a billion molecules of air. The OMI instrument measures the amount of NO2 in the entire vertical column of air below it, thus the units for OMI measurements are molecules per square centimeter (of the surface). See the units page for more explanation of this.

Measurements of nitrogen dioxide (NO2) [in blue on graph] and ozone (O3) [in green] indicate rise and fall over a 48-hour period. Nitrogen dioxide participates in ozone formation, so after its concentrations peak, so do concentrations of ozone. Ozone concentrations peak during hours of maximum sunlight, around the middle of the day. (Graph courtesy William Brune, Penn State Earth Systems Science Center)

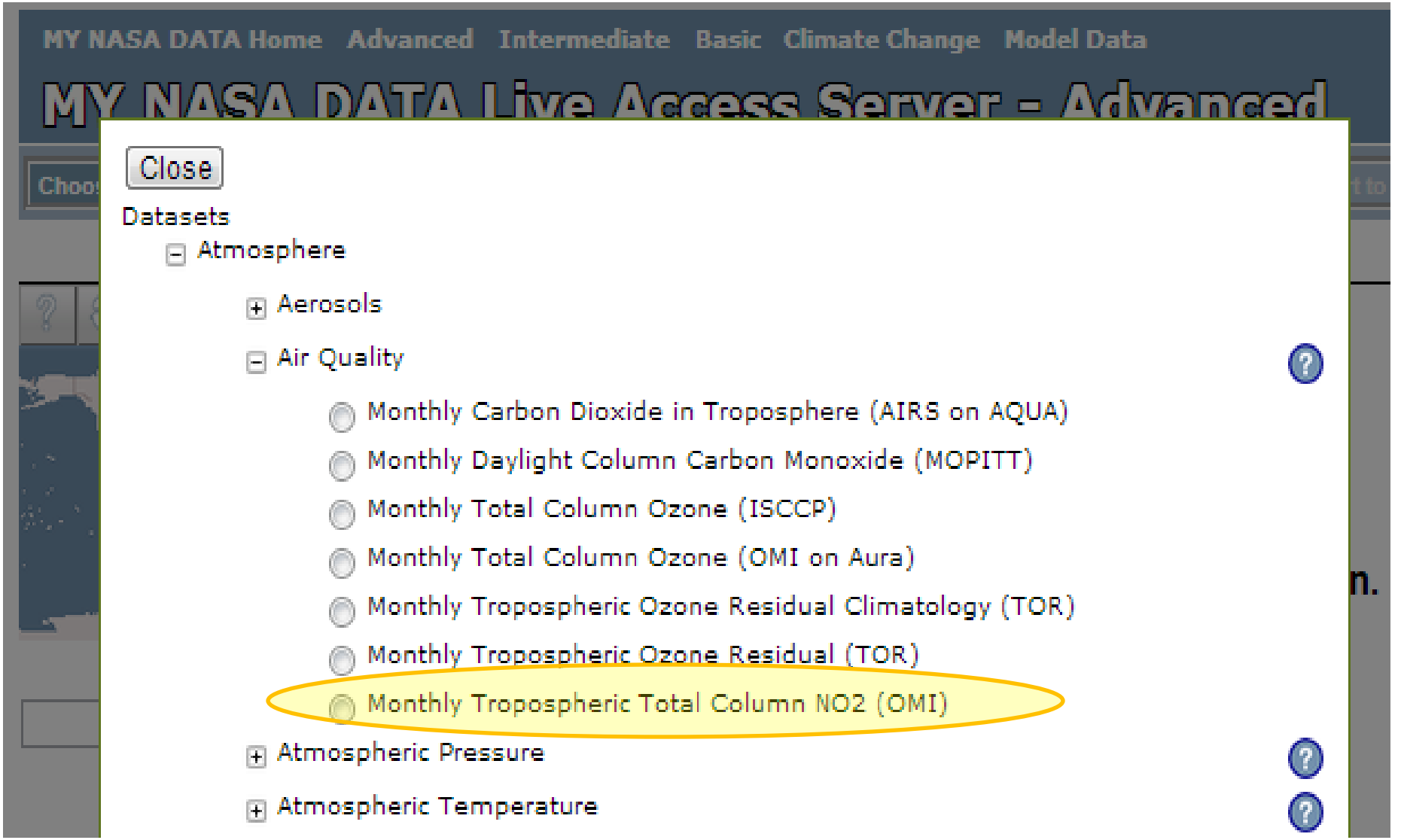
Part 1: Examine NO2 for a Region

- *Step 1* – Access "Live Access Server" from Lesson Links or left toolbar
- *Step 2*- Select "Advanced Edition"

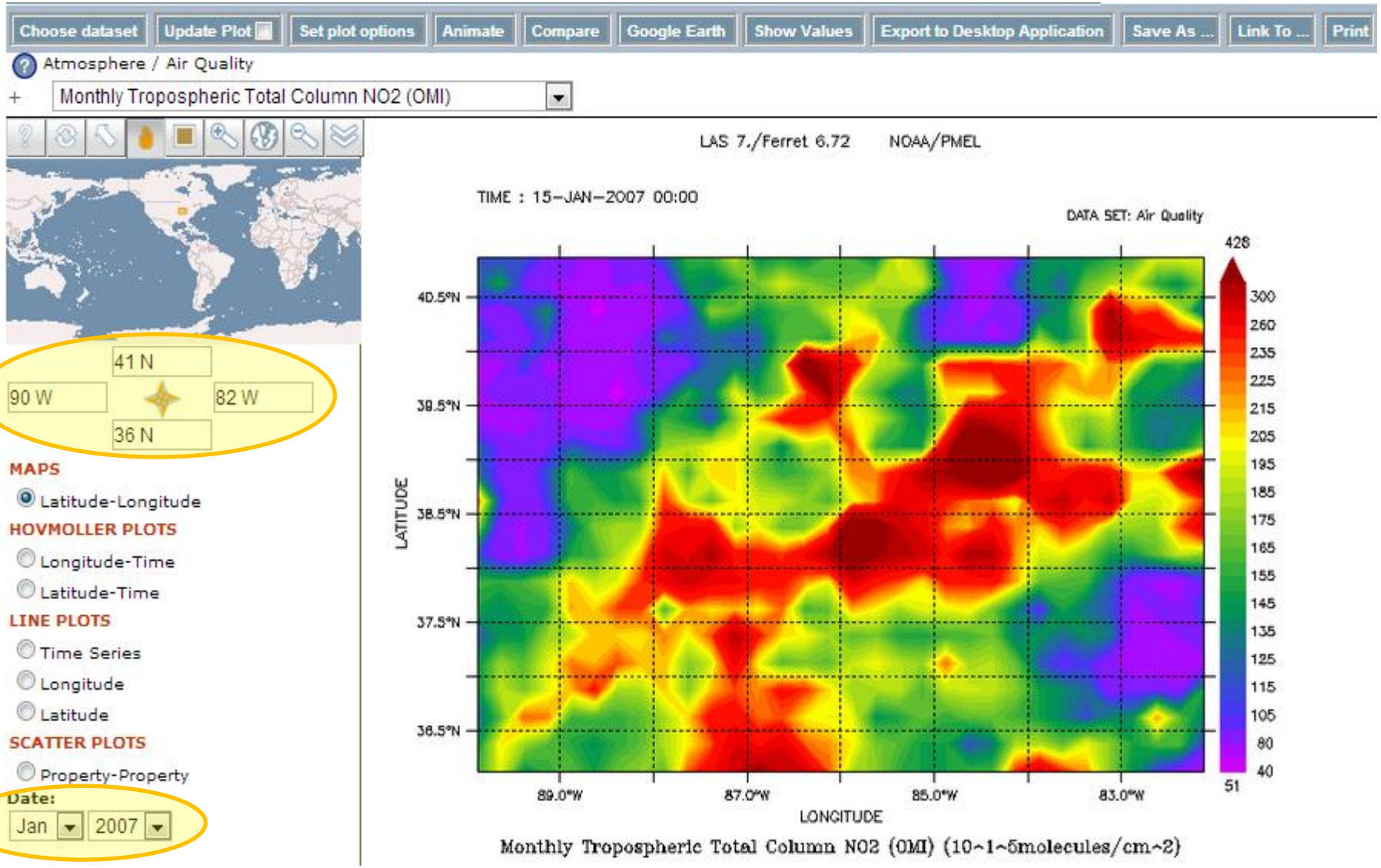




Select NO2 DataSet

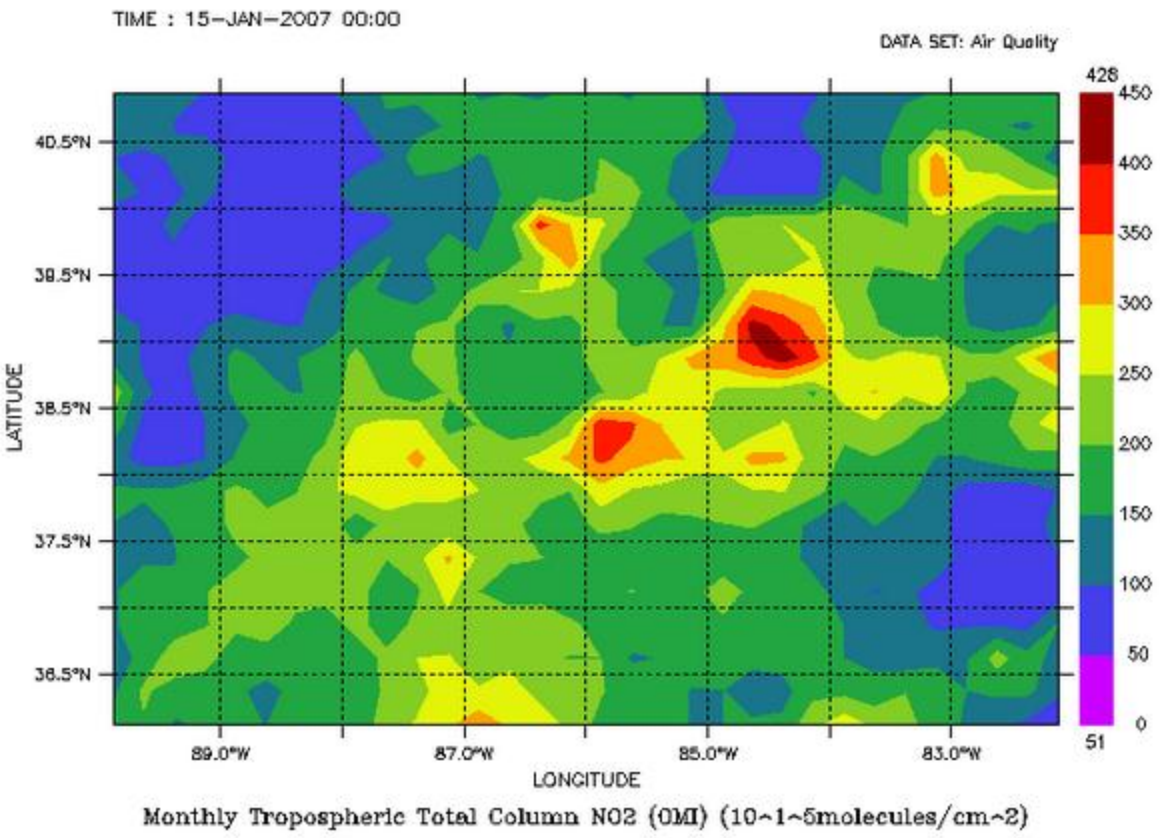


Enter Region & Select Date

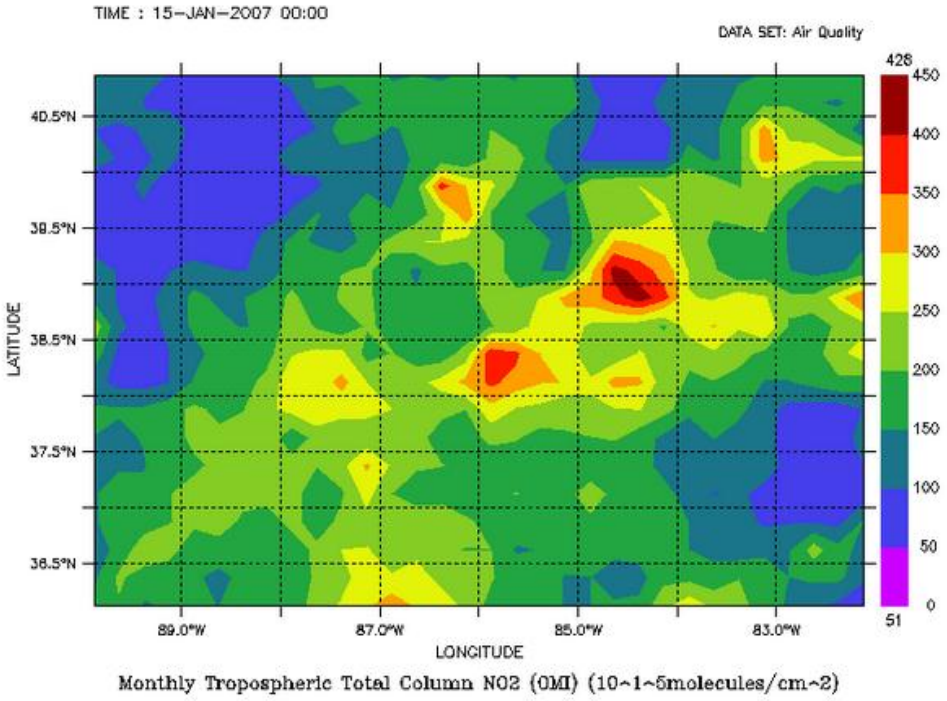


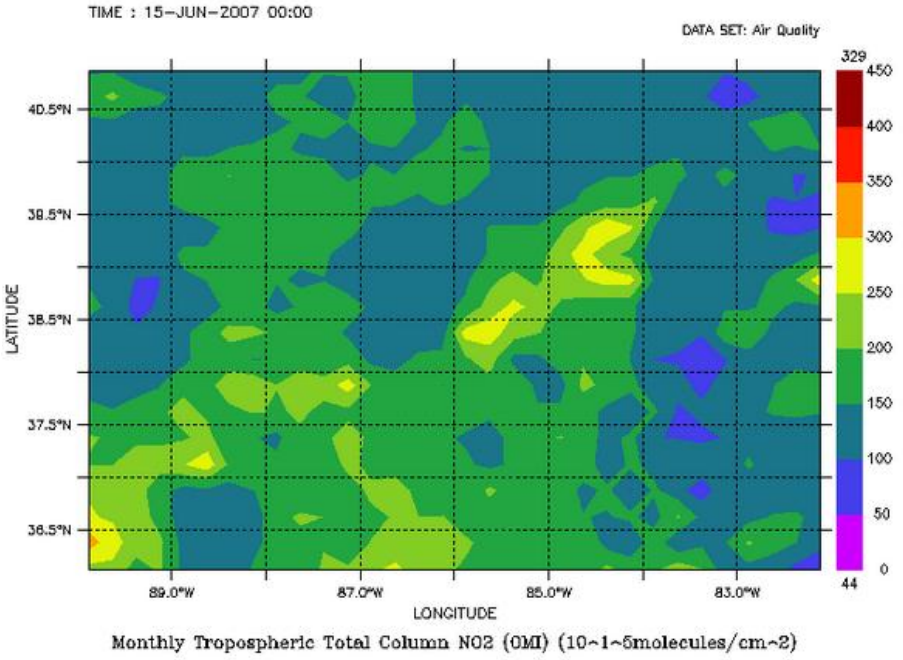
Set Scale for Comparison

1. Click “Set Plot Options” Button
2. In “Contour Fill” type: ***(0,450,50)***
3. Click “Ok”
4. Click “Update Plot” Button



Now, select June 2007 and Compare Plots



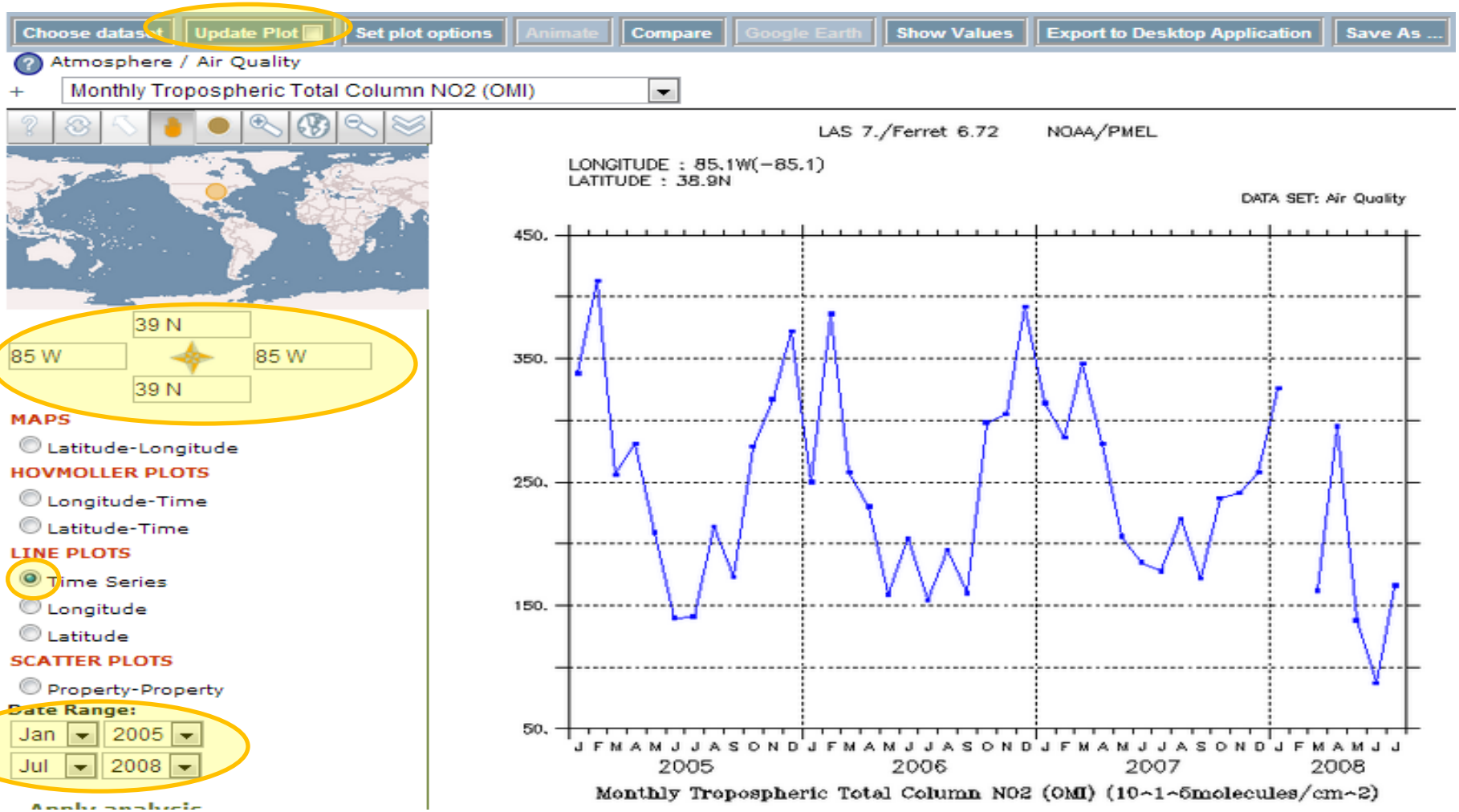


Questions

- What seasonal differences do you observe?
  - Are NO2 values in January higher or lower then June?
  - Why?
- If you graphed the data for a given location, what sort of graph would you expect?

Part 2: Create TimeSeries of a Location

1. Select “TimeSeries”
2. Select Date Range
3. Enter Location Lat/Lon
4. Click “Update Plot”



Answer Key & Teacher Feedback

Lesson plan contributed by Brooke Carter, Greenbelt, Maryland

Click here for Teachers Notes

View lesson without Standards

Teacher's Notes

Teachers Notes:
Investigating Seasonal Variability in NO2 Concentrations

1) To create a free PDF of this lesson, see the Convert this Lesson into a PDF link and choose from a list of online hosts.

Click here for this lesson's Answer Key