

Lab #3 Seasonal Fluctuations

The purpose of this lab is to further enhance student's familiarity with the MOSAIC Graphical User Interface (GUI) provide by MIT Haystack. Students will continue to appreciate the underlying nature of the data collected by the various MOSAIC units installed at high school and college campuses.

Consult the MOSAIC User's Guide and lesson plans for more detail.

Material Needed

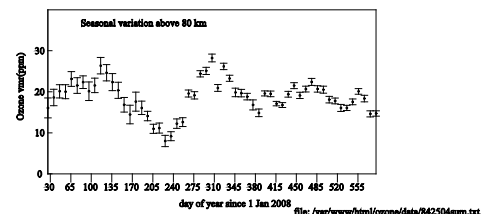
Computer connected to the internet.

Printer (optional)

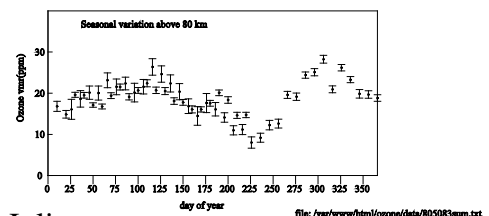
Set-up

Go to the MOSAIC GUI at <http://www.haystack.mit.edu/ozone/>

There is one more plot that students can make. Go back to the GUI and click RESET. Go to Step 2 and select "Show only data when the sun is" and enter Below -10 deg Elevation. You are now looking at only night-time data (refer to Lab #1). Now go to Step 4 and select "Ozone vs date". Click SUBMIT. You should see something like the plot at right.



Notice that the average night-time Ozone concentration does not remain constant. If you want to examine the fluctuations on a calendar-year basis, go back to the GUI as set-up above, and click Modulo 1 yr.



You now have a seasonal average for the Mesospheric Ozone levels. Day 1 would be January 1st, if you need a Julian Calendar converter, go to <http://www.fs.fed.us/raws/book/julian.shtml>

Notice there appears to be a seasonal fluctuation, with peaks in the spring and fall.

This is the sort of real-time data that students (and scientists) can analyze for trends. Allow your students to use their imaginations to see if they could come up with possible events which would affect Mesospheric Ozone levels. Here are a few possibilities:

Does the Full Moon affect the Ozone concentration? What about cloudy nights? (Remember, the clouds are in the troposphere, about 60 km below the Mesosphere. Still, could there be a connection? Since meteors burn-up in the Mesosphere, would days around the meteor shows show changes in Ozone? What about Space Shuttle launches. You get the idea...