

Lab #2 The effects of integration

The purpose of this lab is to continue student interaction with the MOSAIC Graphical User Interface (GUI) provide by MIT Haystack. Students will begin to appreciate the underlying nature of the data collected by the various MOSAIC units by manipulating the accessible data collected on a daily basis from units throughout the U.S.

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

Material Needed

Computer connected to the internet.

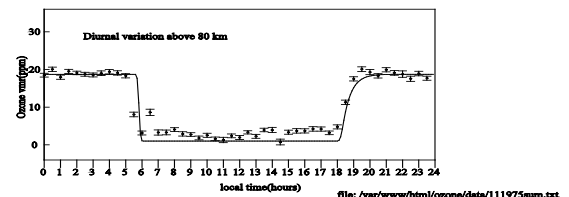
Printer (optional)

Set-up

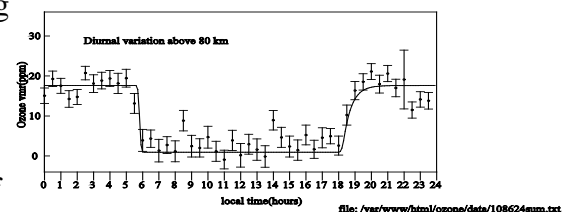
Go to the MOSAIC GUI at <http://www.haystack.mit.edu/ozone/>

The default plot is the spectral peak of the Mesospheric Ozone, centered at 11.0724545 GHz. Students should familiarize themselves with other plots during this lab. Click the RESET button and go to Step 4, and select "Ozone vs local time". Now click SUBMIT.

You should see a plot similar to the one at right. Students are now looking at the "diurnal" variation of Ozone in the Mesosphere, averaged over all instruments for as long as they have been installed.



Students may use the filters to narrow the viewing window. Go back to the GUI and click RESET. Now go to Step 1, and select Start Year 2009 day 1 and Stop Year 2009 day 31. Go to Step 4 and select "Ozone vs local time" again. Click SUBMIT. This will provide data for the month of January 2009.



The instructor may want to spend some time discussing the notion of data accumulation, or integration. Go back to the default settings, and plot some spectral lines using smaller and smaller time windows. You are detecting a very small signal in the presence of a significant amount of background noise. Over time, noise will average out, while the signal will grow. Observe the increased size of the error bars in the second plot, above.