AOSC 652: Analysis Methods in AOSC

Assignment #10: Plotting with IDL Due: Monday, 10 November 2014 (at start of class)

Name: _____

Animation path: _____

80 points total

Late penalty: 10 pts per day

This assignment involves writing an IDL routine that plots both the polar projection of OMI total ozone column and the monthly record of ozone, over a site of your choosing. This assignment is closely related to Assignment #3. You may consult Assignment #3, and all of your files and routines used for Assignment #3, for the completion of this assignment.

In week 3, you downloaded polar projections plots of OMI total column ozone. Here, we will make these plots using IDL and add to these plots the time series of ozone interpolated to a location of your choosing, for a particular month. You are welcome to use the same locations and month that was used for Assignment #3.

You may complete this exercise using MATLAB, GrADS, or any other plot routine capable of producing polar projection plots. If you do not know how to make polar projection plots, we suggest you either complete this exercise using IDL. If you are going to use software other than IDL to complete this exercise, *please let Ross know by Friday, 7 Nov*.

If you use IDL to complete this assignment, the code:

```
~rjs/aosc652/week_10/plot_omi_hw10.pro
```

will be useful.

In class, we created global images of OMI ozone using a program called plot_omi_vers02.pro. You will need the plotting portion of this code to complete this assignment. You will also need to access the L3_ozone_omi_*.txt files used for Assignment #3 (i.e., the raw data files brought over using ftp). You will use these files to create polar projections of total ozone. You will also use the data file containing ozone as a function of time, over the chosen location for a specific month, that was create for Assignment #3.

To create a northern polar plot, change the map_set commands to:

map_set, /orthographic,90,-90, /ISOTROPIC, /GRID, LATDEL=20, LONDEL=20, /CONTINENTS

Remember: the second time the map_set command is used, the /noerase option must be set.

As the first part of this assignment, if using IDL, please alter plot_omi_hw10.pro to read in OMI ozone data from both the L3_ozone_omi_*.txt files and the interpolated ozone data file you created for assignment #3.

Next, create an IDL program that plots the OMI total ozone onto a polar projection (either a northern or southern hemisphere plot, depending on your location). This figure should be placed at the top of your plotting window. Please indicate the date at the top of each figure.

In the same plotting window, plot the time series of total ozone column over the location you have chosen, stopping on the date of the upper plot (i.e., as was done in Assignment #3).

Create a separate figure for each day of the month, making sure the filename of each figure reflects the day of month. You should be able to do all of this using one IDL code.

Finally, using the figures you have created, re-produce the "animation" you made for Assignment #3. You are welcome to use OpenOffice Impress to complete this part of the assignment, or you can use PowerPoint on either a PC or Windows platform. If using IDL, your figures will likely be postscript (*.ps files). To interface with either OpenOffice or PowerPoint, it is best to convert these to GIF files. This can be done using the "convert" command, as was done for Assignment #3.

If done using IDL, please comment the code (*.pro file) where instructed.

For this assignment, please turn in:

a) the full pathname of your animation (likely either a *.odp or *.ppt file), which you can write on the first page of this assignment;

b) all code (*.pro file(s)), or other source code used to complete the work specific to this assignment (i.e., no need to turn in the FORTRAN used to obtain the time series of ozone over the specific location, since presumably you will use the same code as used for Assignment #3)

c) a hardcopy of the last image of the animation

Note: if your FORTRAN code used to complete Assignment #3 had a "bug", as noted in our grading of this assignment, then please <u>fix the "bug"</u>, <u>print out</u> a copy of the FORTRAN code and <u>include</u> with your package, and also use a pen to <u>highlight the new code that fixes the bug</u>.