

Geological Data Visualization

Week 6

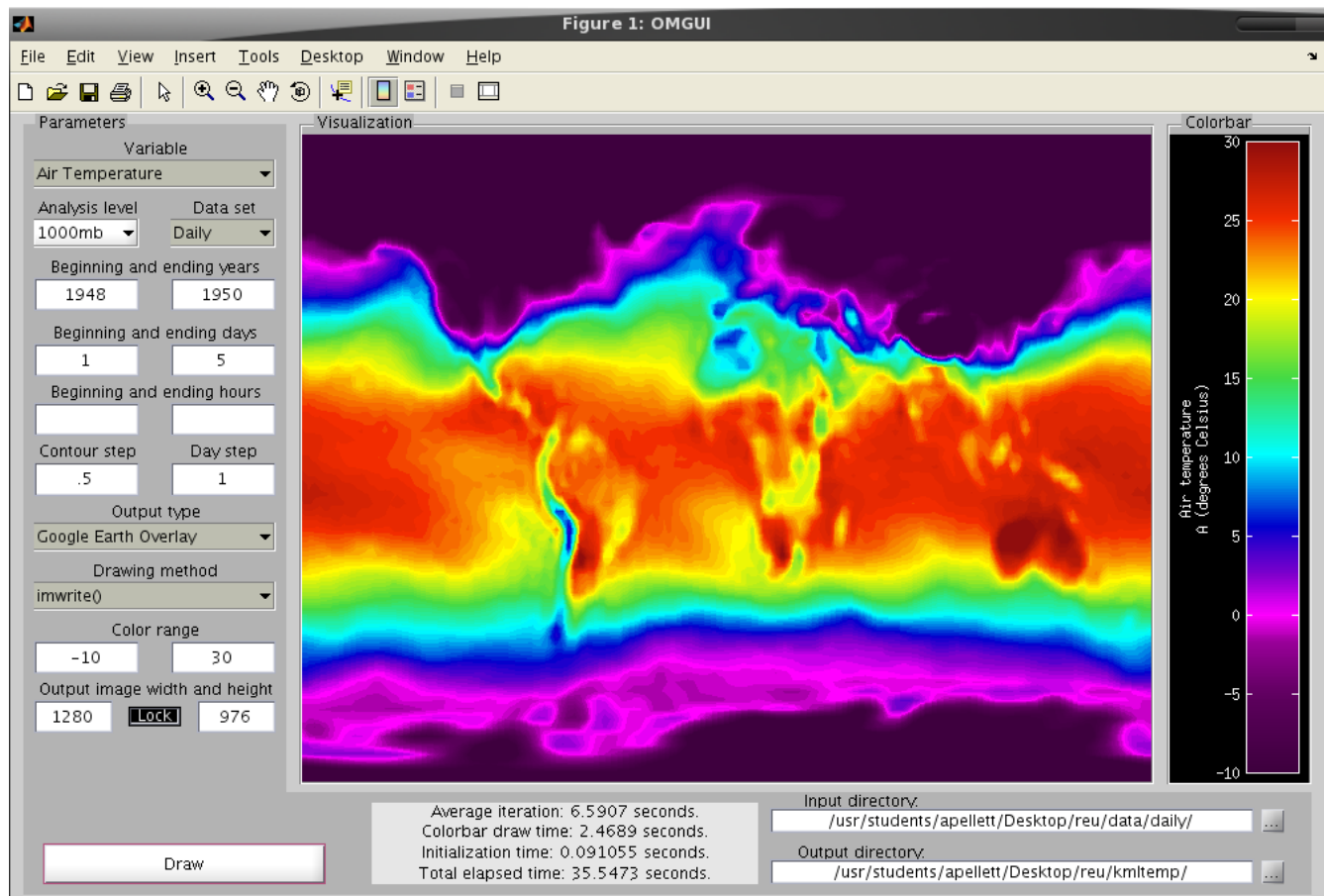
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Progress

The GUI was put through a bit of a redesign this week to improve usability. A separate frame was added for the color bar so that the GUI can be used to look at single frames or a series of frames without writing to any files, in a sort of preview mode. This is potentially useful in a classroom environment where each user wants to explore a specific day/hour.

There had been an issue where both the print() and AVI generation methods were, given an axes handle, trying to find the possessing figure. In the case of print(), this was failing because the axes was originally a child of a uipanel which was a child of the figure. The AVI methods were able to find the parent figure, but were capturing the entire figure window, including the UI control elements. This issue was taken care of by allowing a second figure window to be opened for the print() method. The AVI issue was resolved by capturing the axes specifically with getframe(), and the passing the truecolor mxn3 array to addframe().

The GUI in it's updated state is shown below in Figure 1.



Remaining Work

With basic functionality nailed down, there are a number of features that will be added. The GUI currently can plot only air temperature. Sea level pressure, precipitation rate, precipitable water, and vector wind will be added to this list, but in order to do that, color maps and color ranges for each of the data sets need to be found.

The GUI currently works on the NCEP daily reanalysis data, but will be made to work with the raw 6-hourly data as well.

The air temperature plots are all at the sigma .995 level, which is an elevation that is adjusted to be actual ground level. Data exists for each variable at a range of different pressure levels, so an option will be added to plot at different elevations, for instance, 1000 millibars.

The AVI videos still need to have the colorbar embedded. I have an idea of how to do this, but I haven't got around to implementing it yet.

Once the above changes are made, I will begin to explore the MATLAB mapping toolbox to find a way to show the data in different projections. This is another Google-earth-independent functionality.

I need to find a MATLAB compiler to make the GUI standalone.