

# Loading and Saving Data

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It has been updated by Behnam Sadeghi, using the latest Muller et al. (2019) plate reconstructions and GPlates 2.2 interface!

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## **Loading and Saving Data**

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## **Aim**

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This tutorial is designed to teach the user how to:

- 1) Load data
- 2) Save data
- 3) Save and load projects

Screenshots have been included to illustrate how to complete new steps within each exercise.

## Included files

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[Click here](#) to download the temporary data bundle for this tutorial.

The tutorial dataset (1.1-Loading\_Saving\_Data.zip) includes the following files:

Coastlines: Muller\_etal\_2019\_Global\_Coastlines.gpmlz

and

Mid ocean ridges: Muller\_etal\_2019\_Ridges.gpmlz

See <https://www.earthbyte.org/category/resources/> for additional EarthByte data sets.

This tutorial dataset is compatible with GPlates 2.2.

## Background

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### Feature Collections

Data files loaded into GPlates are referred to as Feature Collections. This is because all data in GPlates are regarded as 'features' (e.g., MORs, volcanoes, etc) — whether geological or reconstructed data. For example, the EarthByte Global Coastline File contains the outlines of all the present day coastlines of the world, these coastlines can be thought of as features and therefore when we load the coastline file we are loading a 'feature collection'. Basins, Cratons, Faults, Hotspots, Isochrons, Mid-Ocean Ridges, Seamounts, Subduction Zones, Sutures and Volcanoes are just some of the other many feature types handled by GPlates. Alternatively a feature can

remain 'unclassified'. Rotation files are also loaded as a Feature Collection.

## **File Formats**

GPLates is able to load and save a number of data-file formats, including PLATES4 line (\*.dat \*.pla), GPLates Markup Language (\*.gpml) and ESRI shape files (\*.shp). Additionally data can be exported in the GMT xy (\*.xy) format.

See the GPLates online manual for further information:

[www.gplates.org/user-manual/LoadingAndSaving.html](http://www.gplates.org/user-manual/LoadingAndSaving.html)

## **Exercise 1 – Loading Data**

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In this exercise we will be loading into GPLates the Muller et al. (2019) global coastlines File and the Muller et al. (2019) Global Mid Ocean Ridge File.

To load the desired datasets:

1. Open GPLates
2. File → Open Feature Collection... (Figure 1) → locate and select

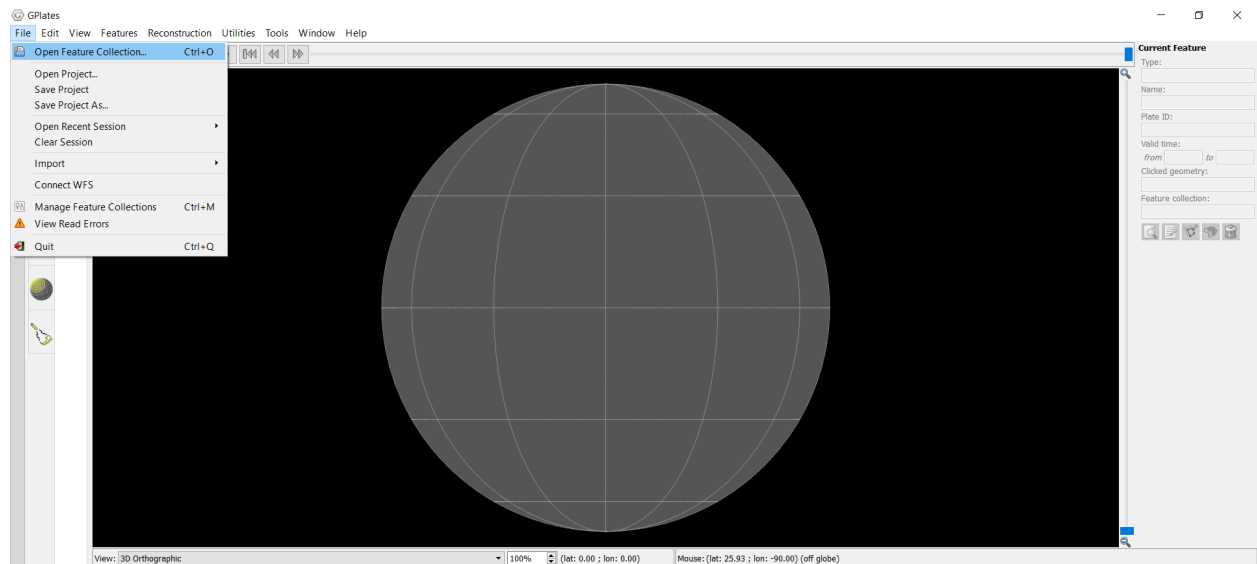
Coastlines: Muller\_etal\_2019\_Global\_Coastlines.gpmlz

and

Mid ocean ridges: Muller\_etal\_2019\_Ridges.gpmlz

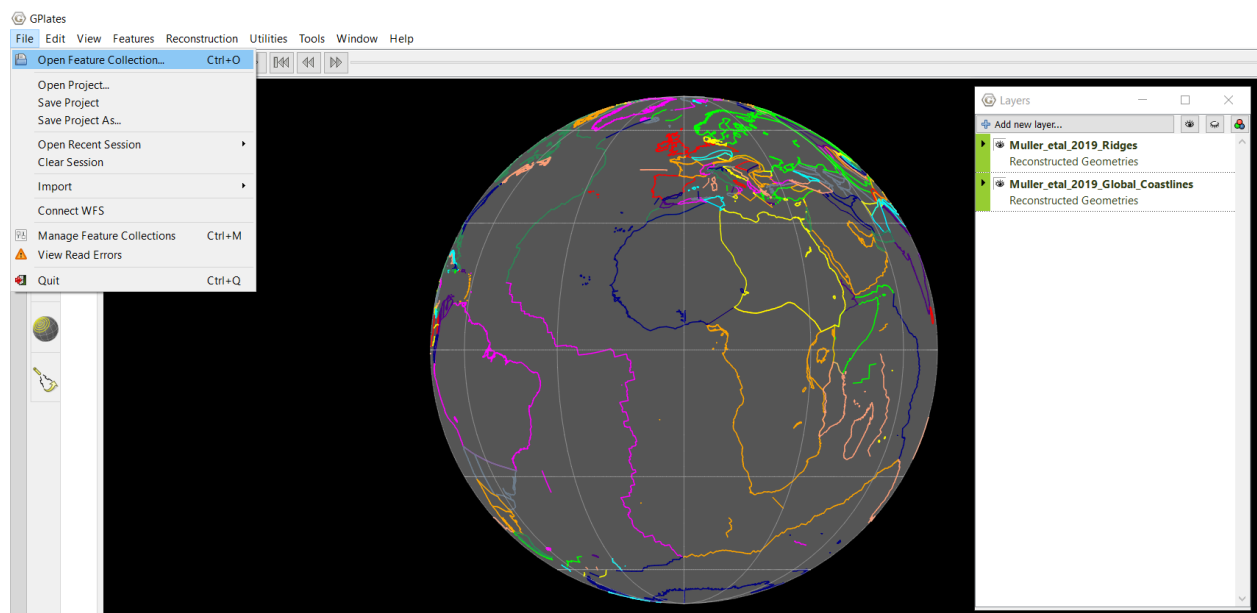
from the '1.1-Loading\_Saving\_Data' bundle\* → Open

\*Hold down the Control (PC) or Command (Mac) key to select multiple files.



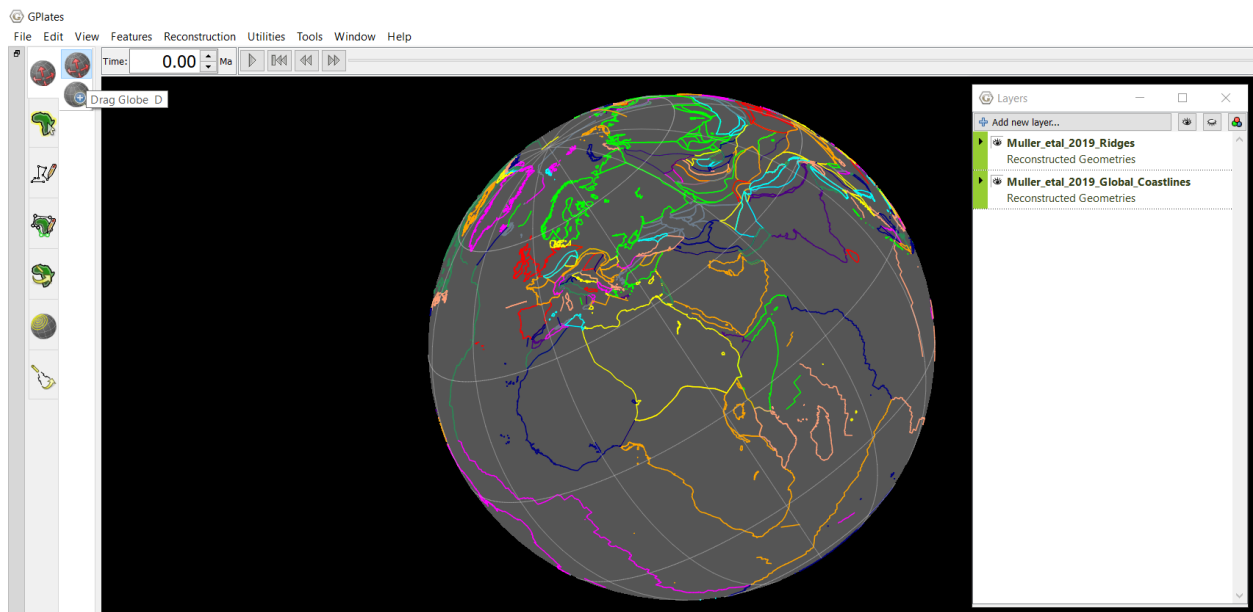
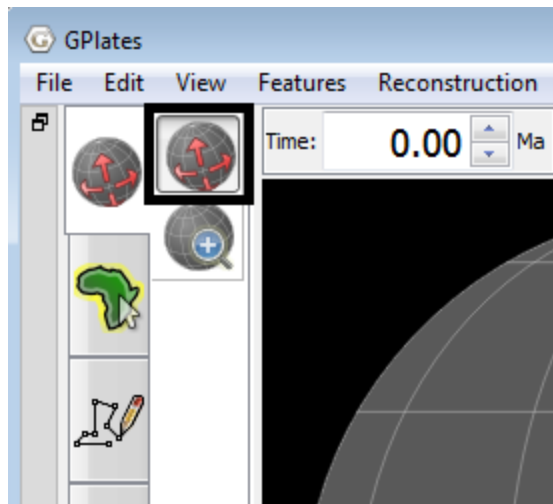
**Figure 1.** How to load a Feature Collection into GPlates from the menu bar.

The coastlines and spreading ridges of the world are now displayed on the globe (Figure 2).



**Figure 2.** GPlates with a coastlines file (Coastlines: Global\_coastlines\_2019\_v1\_low\_res.shp) and a mid ocean ridge file (Muller\_et\_al\_2019\_Ridges.gpmlz) loaded in.

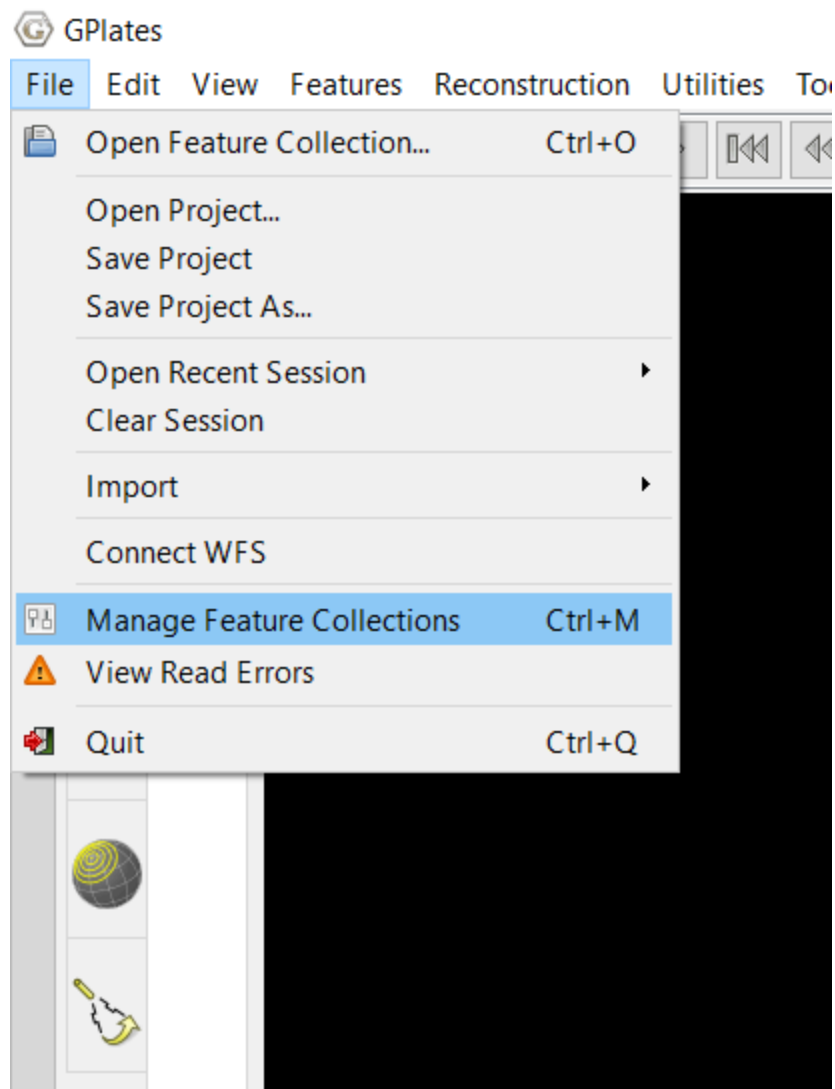
Using the Drag Globe tool (Figure 3) from the Tool Palette spends some time interacting with the globe; rotating it to see the different features. Once you have clicked this icon, click (and hold) anywhere on the globe and drag it (move the mouse around). While this tool is selected you can drag the globe as many times as you like and rotate it in any direction. You will learn more about controlling the view of the globe in the next tutorial.



**Figure 3.** Select the Drag Globe tool from the Tool Palette in the top left hand corner.

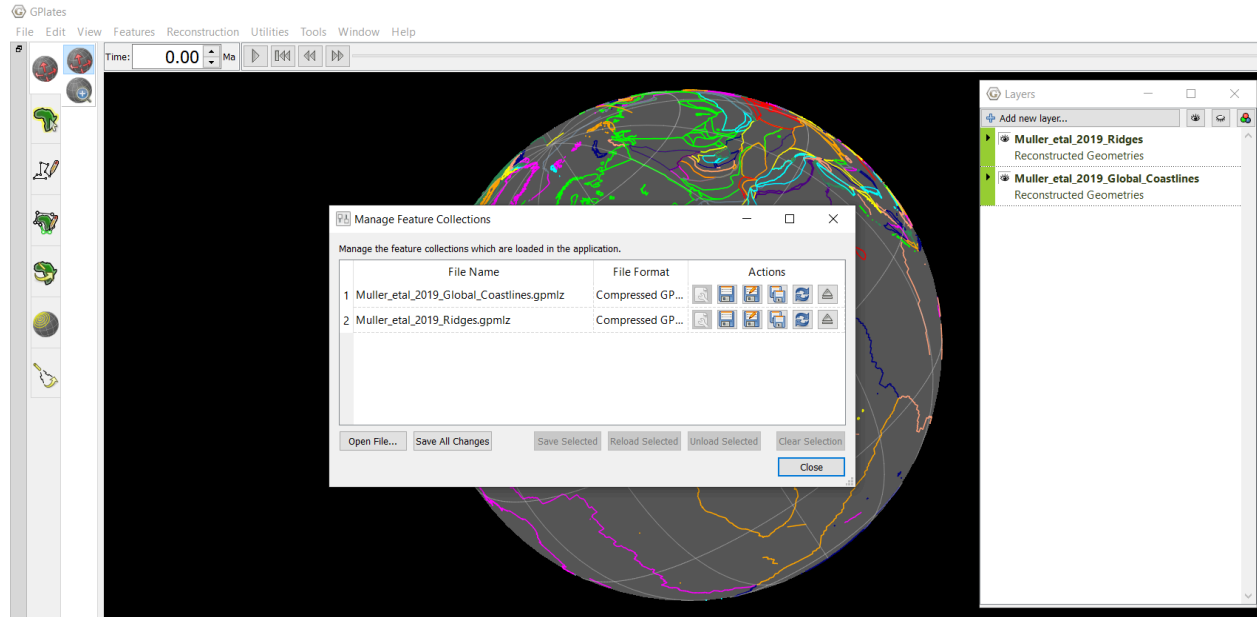
The Manage Feature Collections window is an alternative way to upload data sets. This useful option also enables you to save and unload data sets.

1. File → Manage Feature Collections (Figure 4)



**Figure 4.** How to load the Manage Feature Collections window in GPlates from the menu bar.

You should be able to see all the layers you have loaded thus far in the Manage Feature Collections window (Figure 5). You can also load more files from this window.

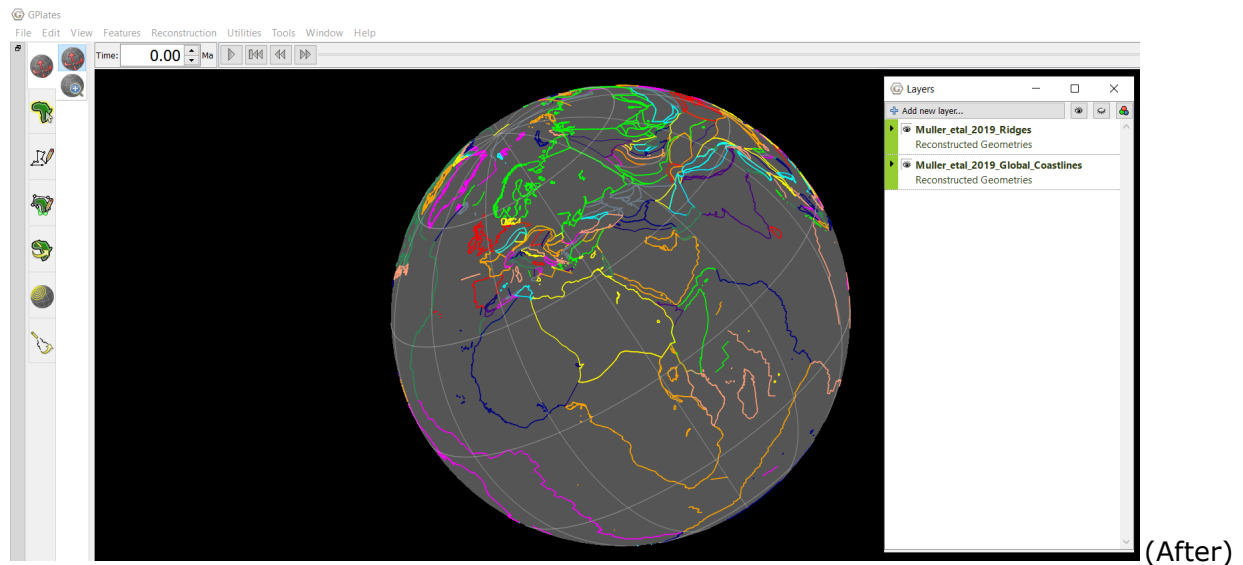
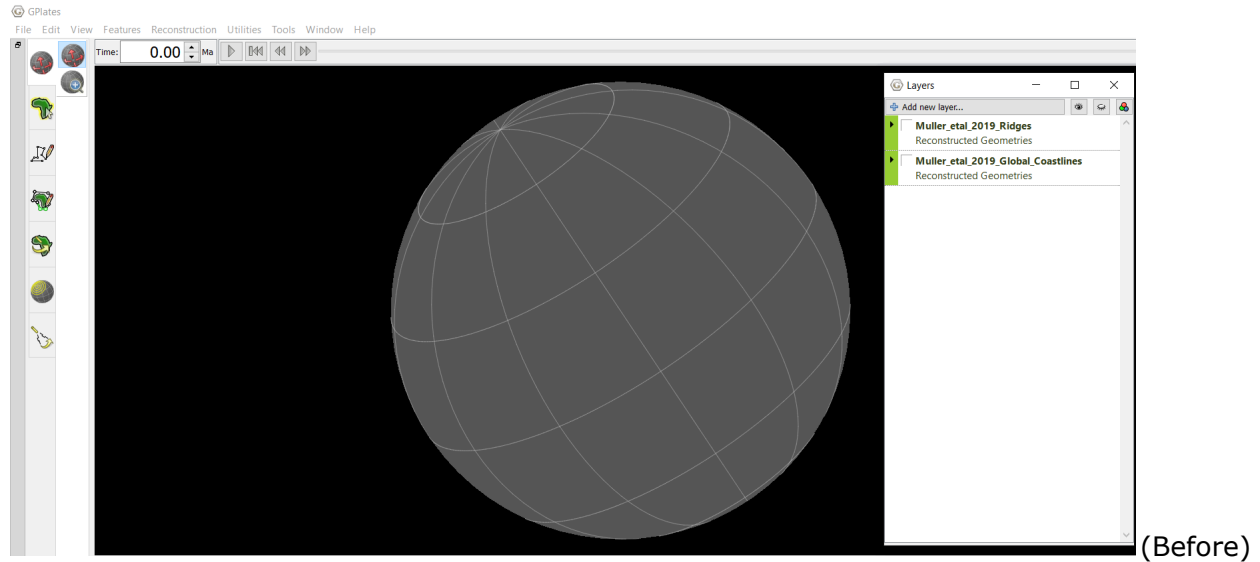


**Figure 5.** The 'Manage Feature Collections' window.

When data sets are loaded, a separate window, the Layers Window (Figures 5: in the right hand, and 6) should appear, where you can click on the 'Eye' symbol next to the layer name to switch it on/off, i.e., visible or invisible.

If the Layers Window is not visible, in the menu bar click Window → Show Layers.

This option is useful because layers can be made visible/invisible without being unloaded (ejected). This is a useful, time-saving feature that is especially handy when many different data sets are being viewed and analysed. It can reduce clutter on the globe and help the user to compare data sets without being overwhelmed with too many points, lines or polygons. We will make use of the Manage Feature Collections window and the Layers window in Exercise 2.



**Figure 6.** The 'Layers' window, where you can make layers invisible(the first image)/invisible (the second image) by clicking on the "Eye' icon next to the layer name.

## Exercise 2 – Saving Data

This exercise continues on from the previous exercise. We will now see the different options available for saving data.



Open the Manage Feature Collections window and have a look at the different available actions.

1. File → Manage Feature Collections (Figure 4)

As you can see, the Manage Feature Collections dialog contains a table of controls and status information about the feature collections that are loaded in GPLates; each row corresponds to a single feature collection, and lists file name, format and available actions (Figure 5).

There are three options ('Actions') available for saving data:



**Save** – This first option simply saves the data file using its current name.

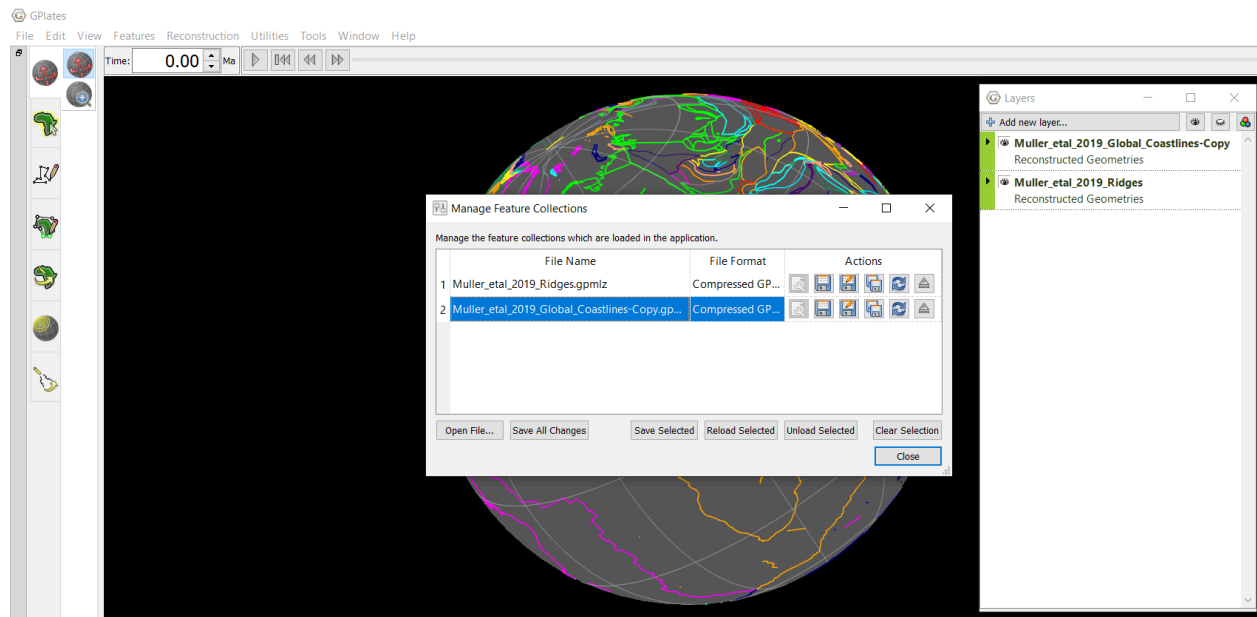
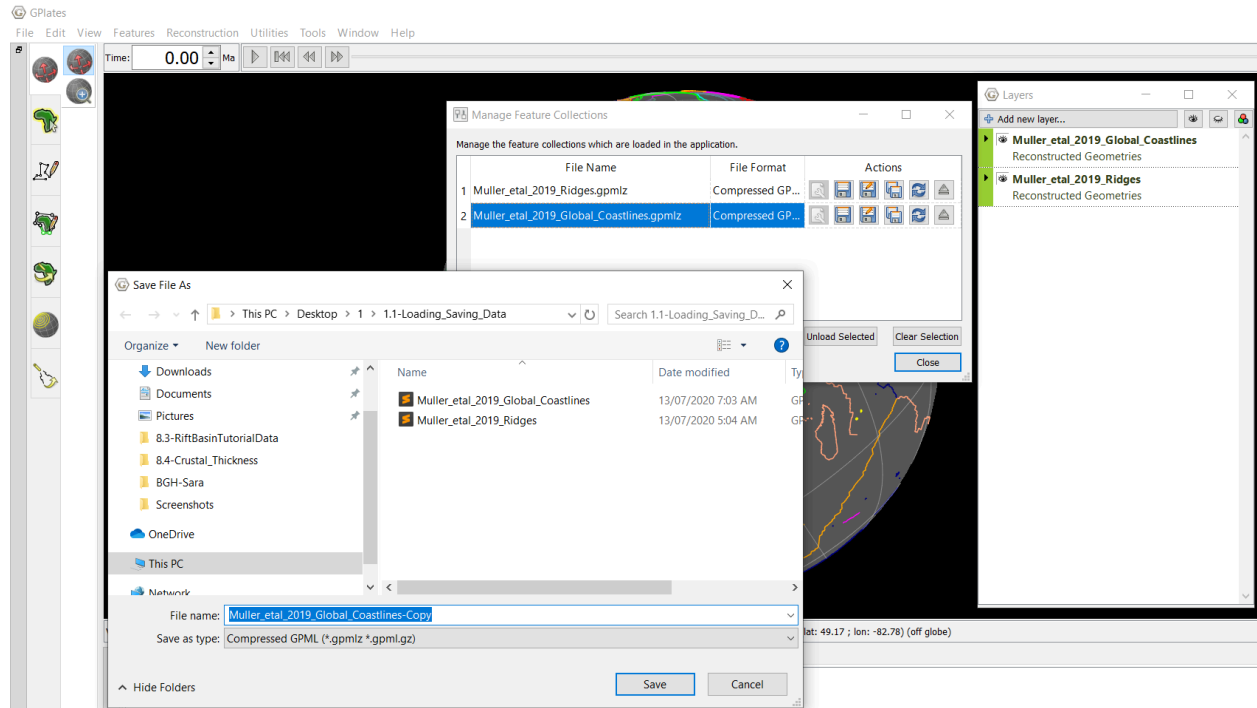


**Save As** – This second option saves the data file using a new name.



**Save a Copy** – This third option saves a copy of the file using a new name. If this option is selected then the original file will remain loaded in GPLates and the copy will be made in the selected destination.

In order to practice saving data we will save our coastline file with a new name – 'Muller\_etal\_2019\_Global\_Coastlines\_Copy' (for example). Click the 'Save As' icon and enter the new file details in the Save File As window that appears (Figure 7), leave the file format as Compressed GPLates Markup Language (GPML) (\*.gpmlz).

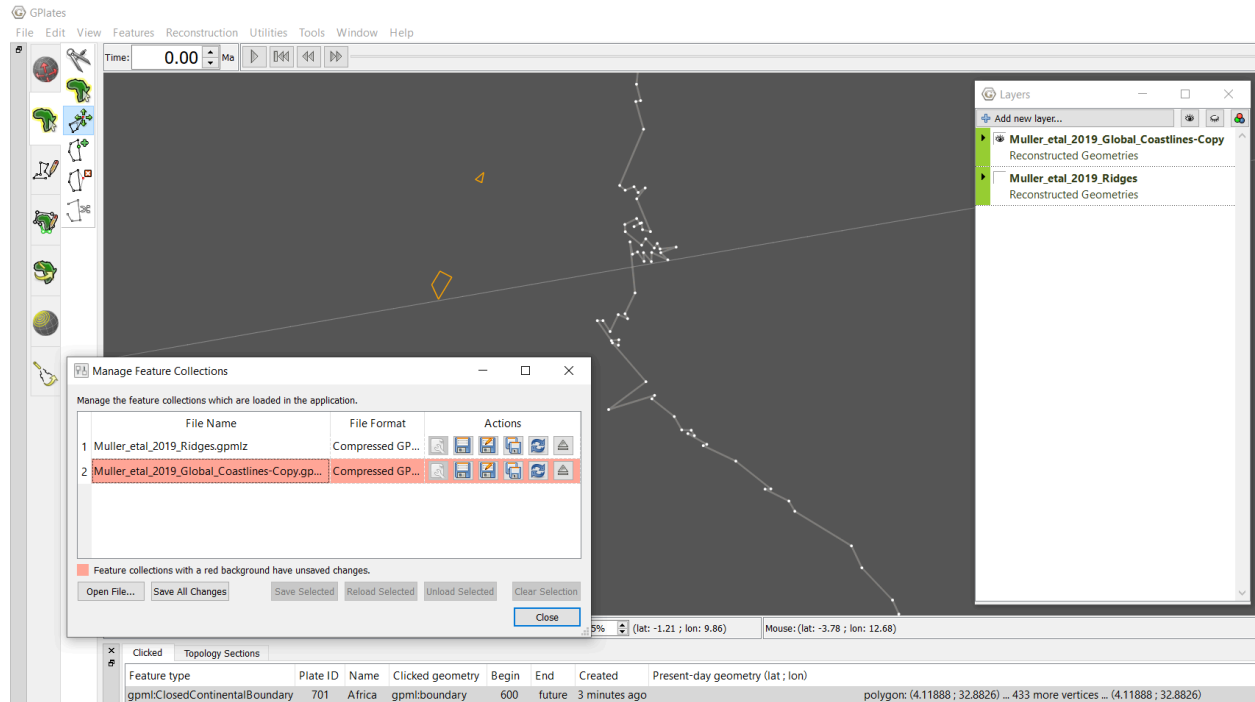


**Figure 7.** The 'Save As' window where a new file name, and optionally a new file format, are specified.

Notice that the File Name in the Manage Feature Collections window has updated itself. You could now work on this file, for example add features to it, and not have to worry about modifying the original contents of the file.

If you have unsaved changes, the feature collection entry in the 'Manage Feature Collections' window will turn red. For example, through one of the

tools in Feature Inspection 2 toolbox, change one of the coastline polygons, do not save it and then try to close the GPlates window (Figure 8). To save changes, click the Save button. Alternatively, you can Save As or Save a Copy.

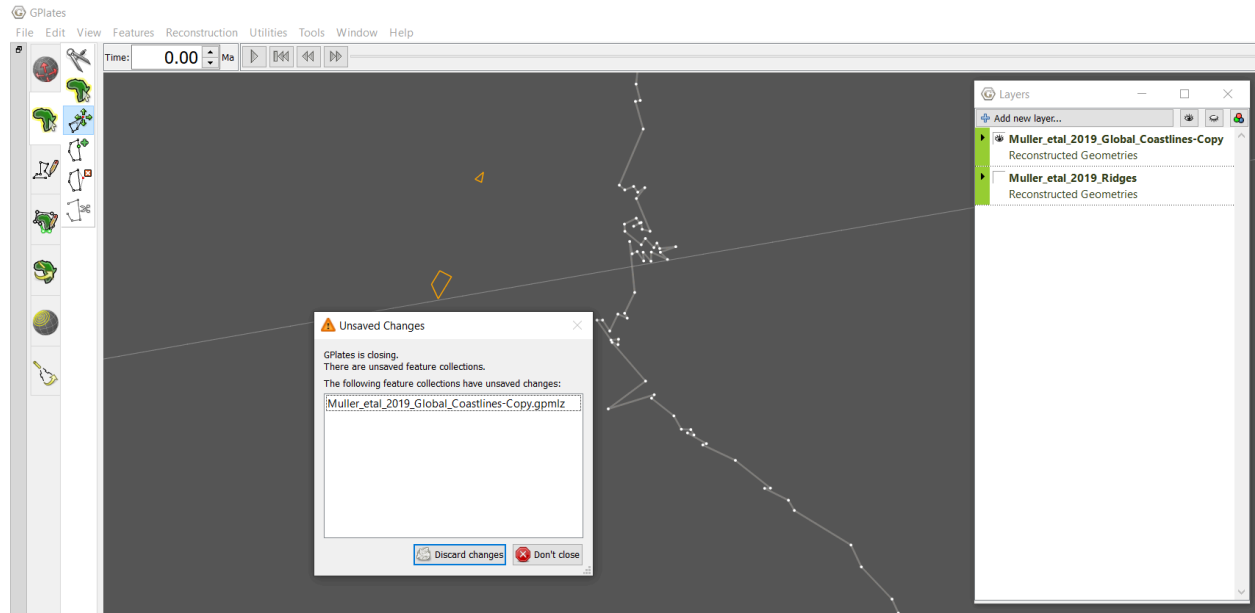


**Figure 8.** The 'Manage Feature Collections' window where you can save any unsaved changes (highlighted in red).

If you attempt to close the GPlates window with unsaved changes, GPlates will prompt you to save these changes before you exit (Figure 9).

If you would like to save these changes, click 'Don't Close' and save the feature collections manually through the Manage Feature Collections window (Figure 5).

If you do not choose to save by clicking 'Discard Changes', any changes since the last time you have saved will be lost.



**Figure 9.** The 'Unsaved Changes' window appears if you attempt to close GPlates with any unsaved changes to any feature collection you loaded.

For the purposes of the next exercise on saving and loading projects, ensure that any and all changes to feature collections have been saved. That is, none of them should have a red background when viewing them in the Manage Feature Collections window.

### Exercise 3 – Saving and Loading Projects

This exercise continues on from the previous exercise. We will now see the different options available for saving and loading projects.

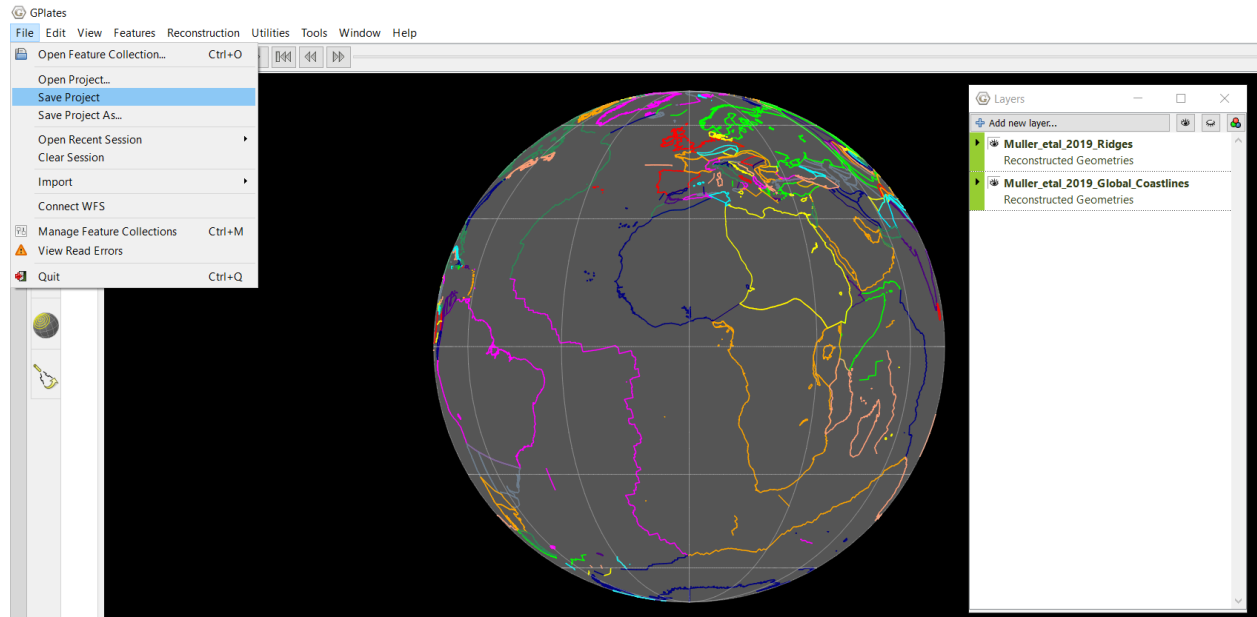
Project files (\*.gproj) allows the user to save an active session to a single file. This saves the group of files currently loaded in GPlates to a single project file which can be easily opened at a later time. The data displayed during your session is not saved with it - it is only the paths of these data sources that are saved.

Any additional data visualisation options chosen by you including the order of layers, the visibility of layers (turning layers on and off) or changes in colour (see Tutorial 1.3 Changing Colours) will not be preserved in the project file.

To save a Project, ensure you have the data from Exercise 2 - loaded and

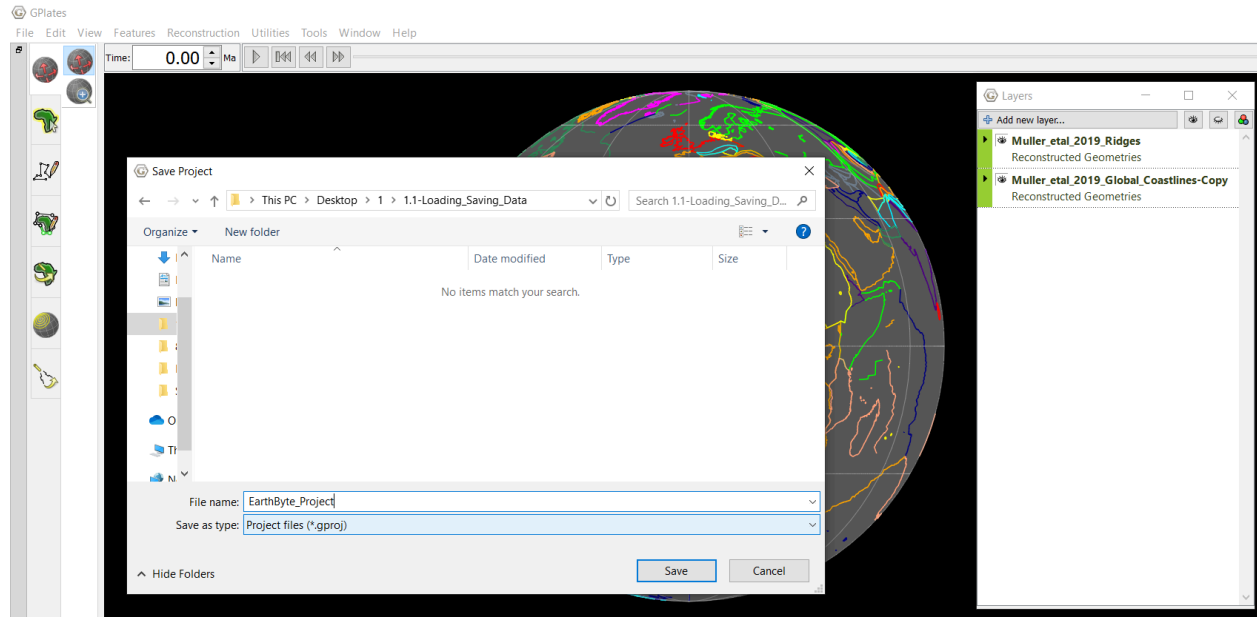
click:

# 1. File → Save Project... (Figure 10)



**Figure 10.** How to save a Project in GPlates using the menu bar.

In the 'Save Project' window that appears, navigate to the folder you would like to save our session in and enter a file name - 'EarthByte\_Project' (for example). Leave the file format as Project files (\*.gproj) and click Save (Figure 11).

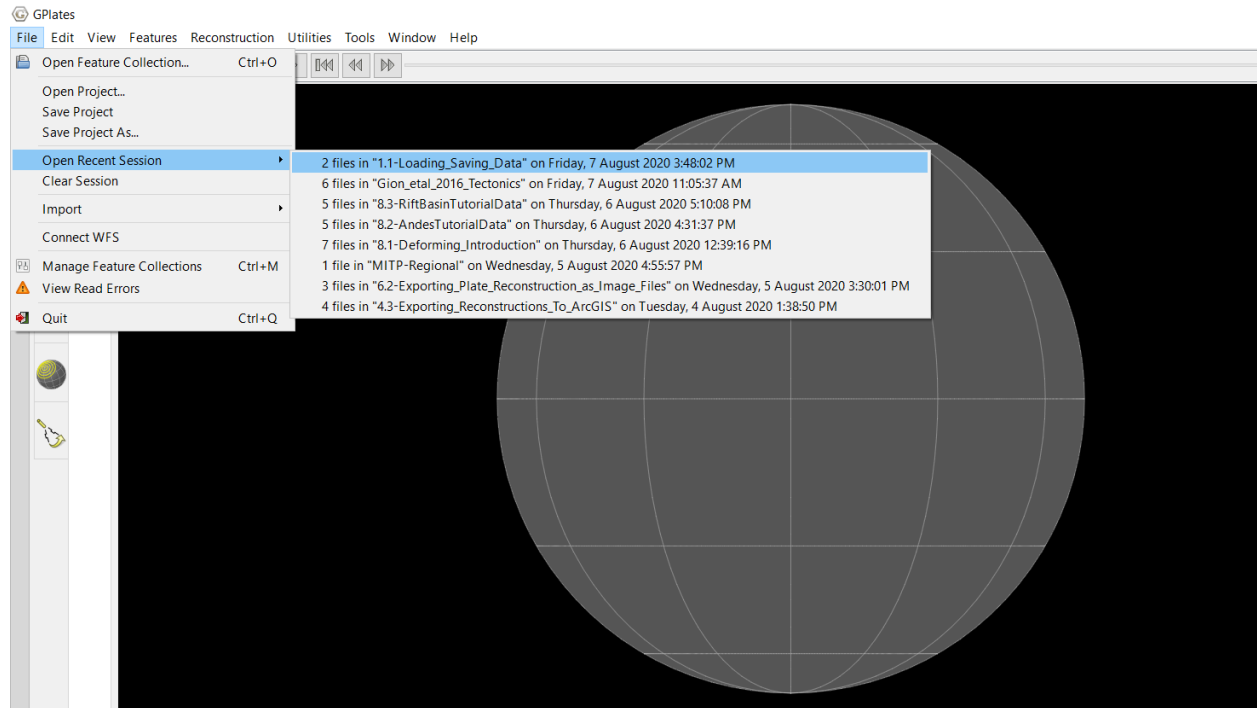


**Figure 11.** The 'Save Project' window where a new file name for the project is specified.

If you attempt to close the GPlates window without saving or re-saving a Project, GPlates will NOT prompt you to save these changes before you exit. If you accidentally close GPlates without saving a Project, you can re-open any recent sessions by clicking (Figure 12):

# 1. File → Open Recent Session

Note that the most recent session cannot be recovered if GPlates is not exited correctly, such as the situation in which GPlates crashes.

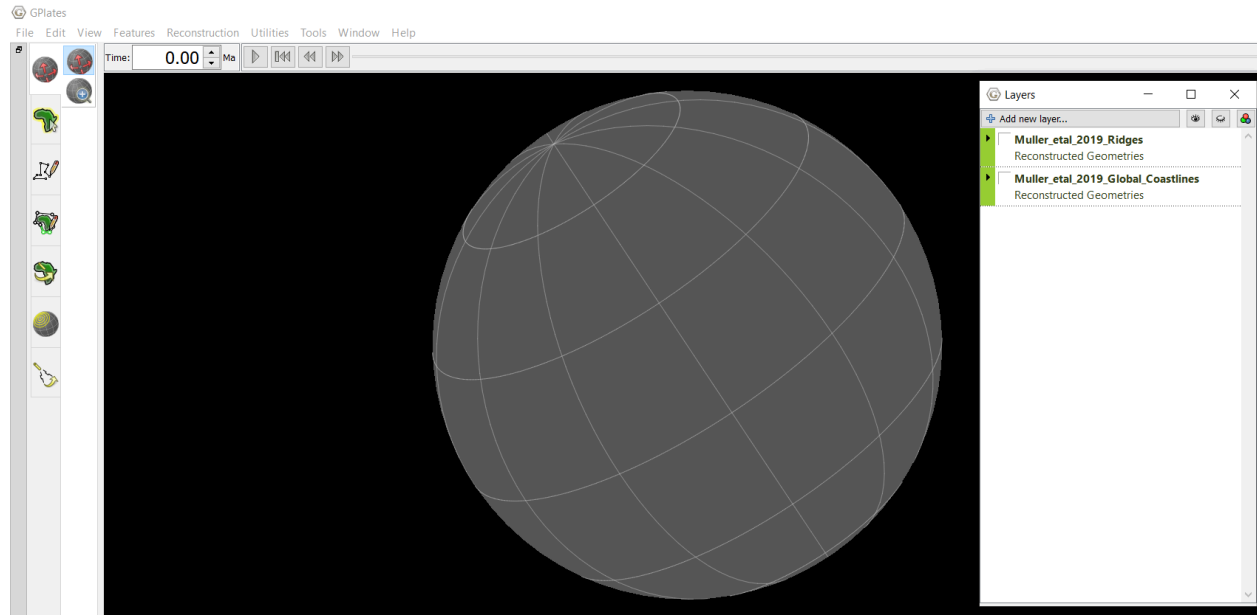


**Figure 12.** How to open recent sessions..

To load your saved Project ('EarthByte\_Project'), first exit GPlates. Then:

1. Open GPlates
2. File → Open Project... (Figure 13) → locate and select

**EarthByte\_Project.gproj** → Open



**Figure 13.** How to load a Project into GPlates from the menu bar. The coastlines and spreading ridges of the world, as saved in your project, should now be displayed on the globe (Figure 2).

**Note:** The project file stores absolute file names - including the full path of each data file. This means that files must not be moved, as they will not be found later and will not load. If one (or more) files cannot be found, those which can be located will still load.

**To create a portable project file,** files can be saved in a folder hierarchy, with constant relative paths. This would involve a base folder containing subfolders that are filled with the feature collection files and the project file. If the relative location of these files within the base file is maintained, the base file may be transported to other devices and the project file will still function. The base file may be compressed into a .zip for easy portability from device to device.

To end this exercise we will unload all our data leaving the globe empty. The Manage Feature Collections window (Figure 5) allows us to 'eject' the data file (Fig. 14).

3. File → Manage Feature Collections → Unload (click this icon for both data sets) → Close

Your globe now appears empty and no data files are loaded into GPlates.



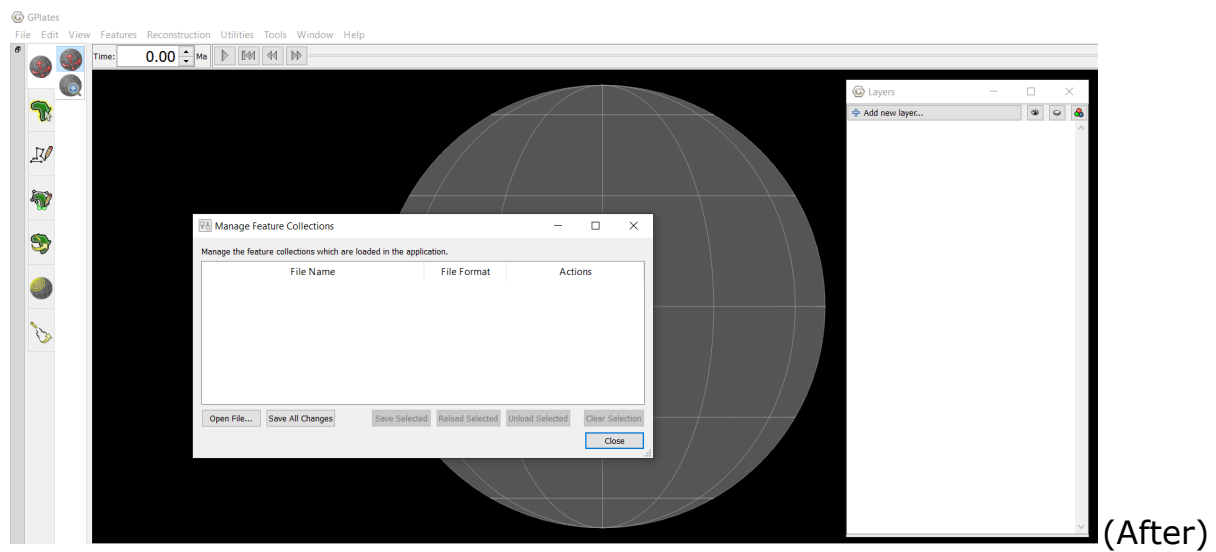
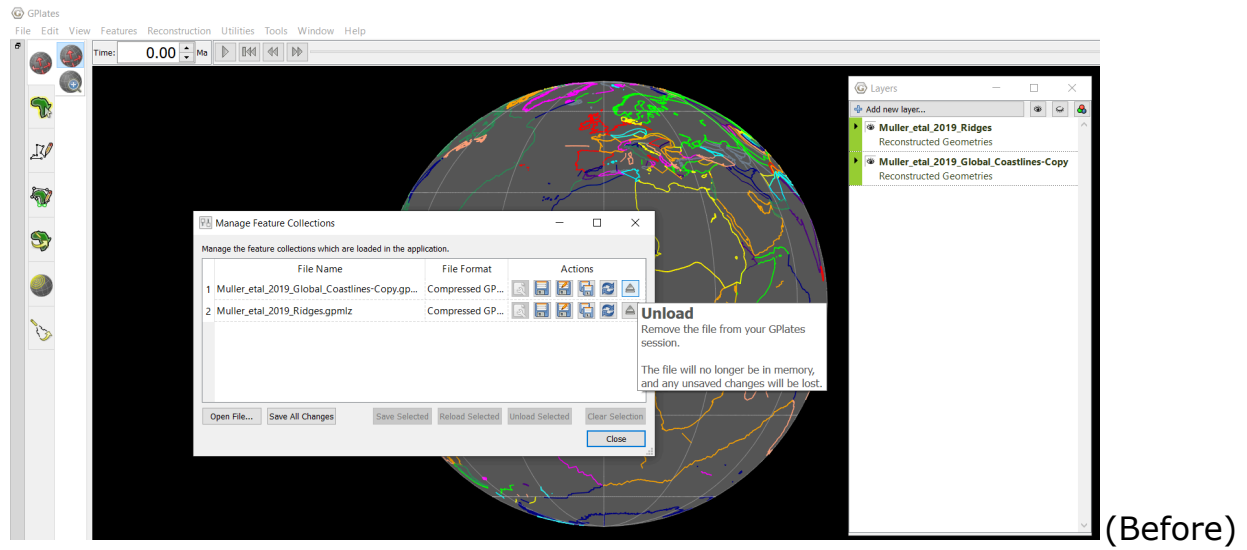


Fig. 14. How to unload the data files/layers loaded