Controlling the View

Aim

This tutorial is designed to teach the user how to manipulate the view of the globe. Screen shots have been included to illustrate how to complete new steps within each exercise.

Included Files

Click here to download the data bundle for this tutorial.

The tutorial dataset (1.2-Controlling_The_View.zip) includes the following files:

Coastlines: Seton_etal_ESR2012_Coastlines_2012.1_Polyline.gpmlz

See www.earthbyte.org/Resources/earthbyte_gplates.html for additional EarthByte data sets.

This tutorial dataset is compatible with GPlates 1.5.

Background

Manipulating the view of the globe enhances the user's ability to visualise and spatially analyse data sets. GPlates enables the user to rotate the globe in any direction through a fully 360°. Additionally, GPlates supports the Rectangular, Mercator, Mollweide and Robinson map projections.

See the GPlates online manual for further information: www.gplates.org/user-manual/Controlling_View.html

Exercise 1 – Manipulating the Globe

In this exercise we will be rotating the globe using the mouse and keyboard.

1. Open GPlates

When GPlates is first opened a grey empty globe appears in the main window with the 0° Meridian running vertically through the centre of the globe (Figure 1). Even before any data sets are loaded the globe can be rotated.

2. Click the 'Drag Globe' icon (below) → Click and drag the globe – i.e. click anywhere on the globe and while holding the mouse button down move the cursor about.

You will notice that the globe moves around with the mouse, in any direction. Whilst the Drag Globe icon is selected you can rotate the globe as many times as you like. Alternatively, while the Drag Globe tool is selected you can move the globe around using the up-, down-, left- and right-keys instead of the mouse.
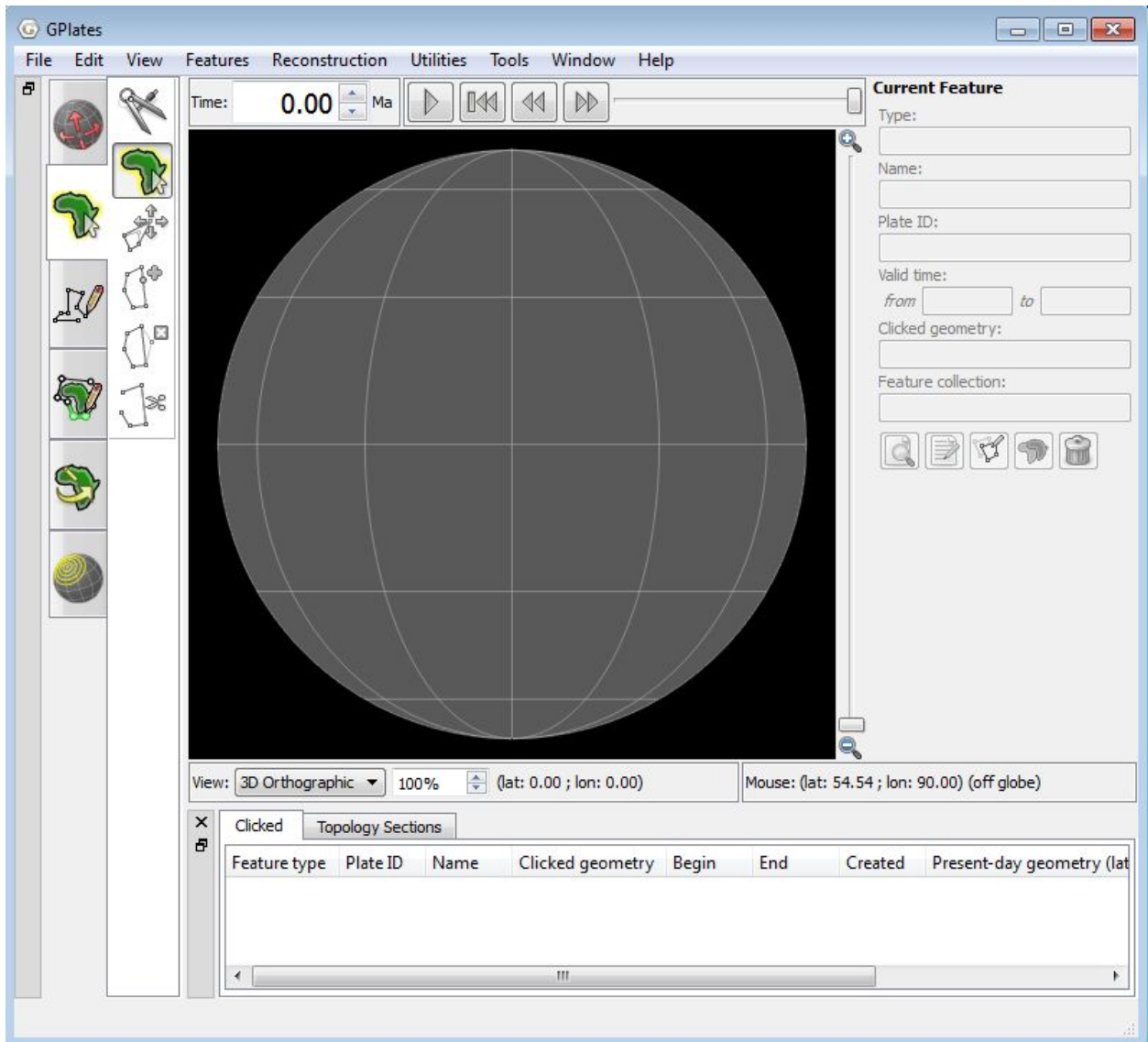
Figure 1. The Main Window – this is how the main window appears when GPlates is first opened. The Tool Palette borders the left side of the globe – it is a collection of tools used to interact with the globe.

Let's load some feature data and rotate the globe again.

3. File → Open Feature Collection… (Figure 2) → locate and select **Seton_etal_ESR2012_Coastlines_2012.1_Polyline.gpmlz** from the '1.2-Controlling_The_View' bundle → Open
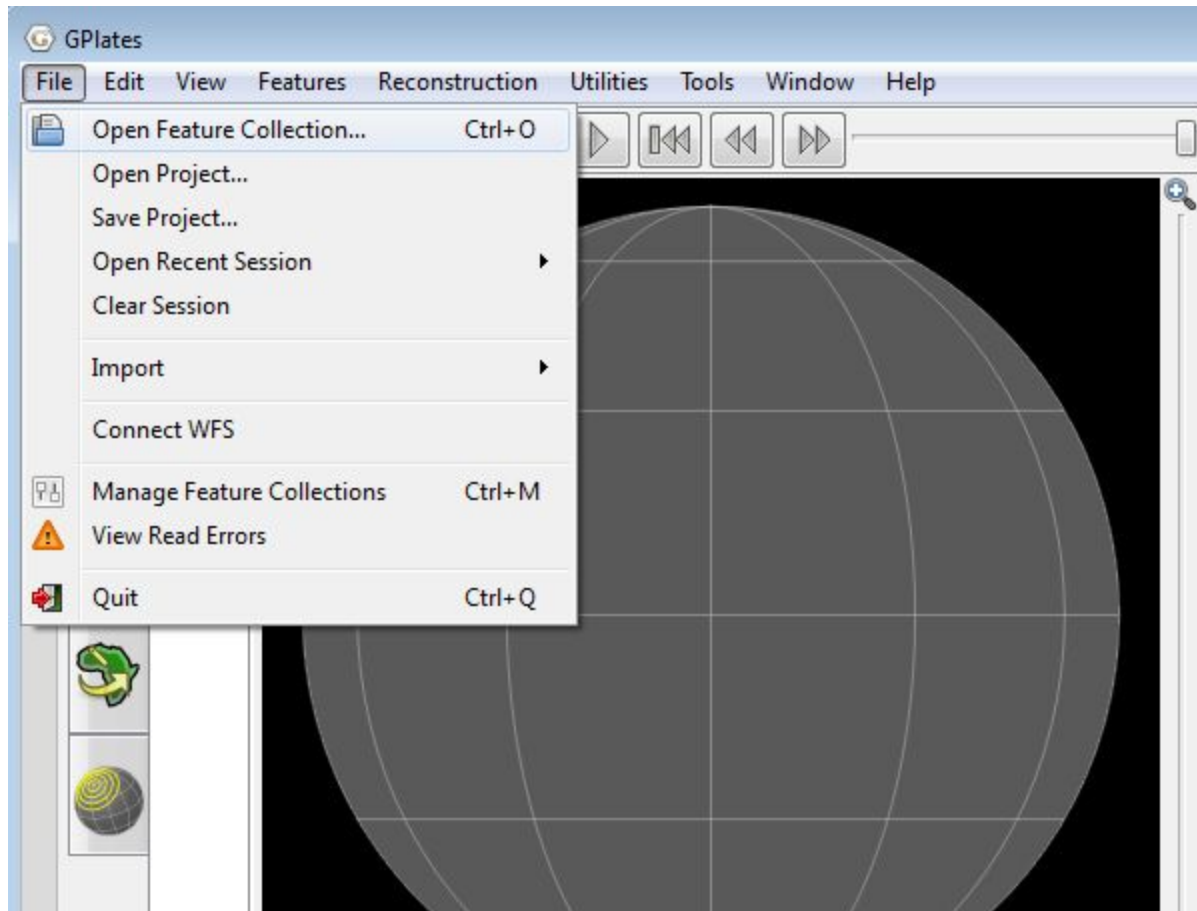
Figure 2. How to load a Feature Collection into GPlates from the Menu Bar.

To practice using the Drag Globe option, rotate the globe so that the Antarctica is centre screen (Figure 3), and see if you can use the mouse or the keyboard to position the globe so that Australia is upside down – i.e. at the top of the world (Figure 4).
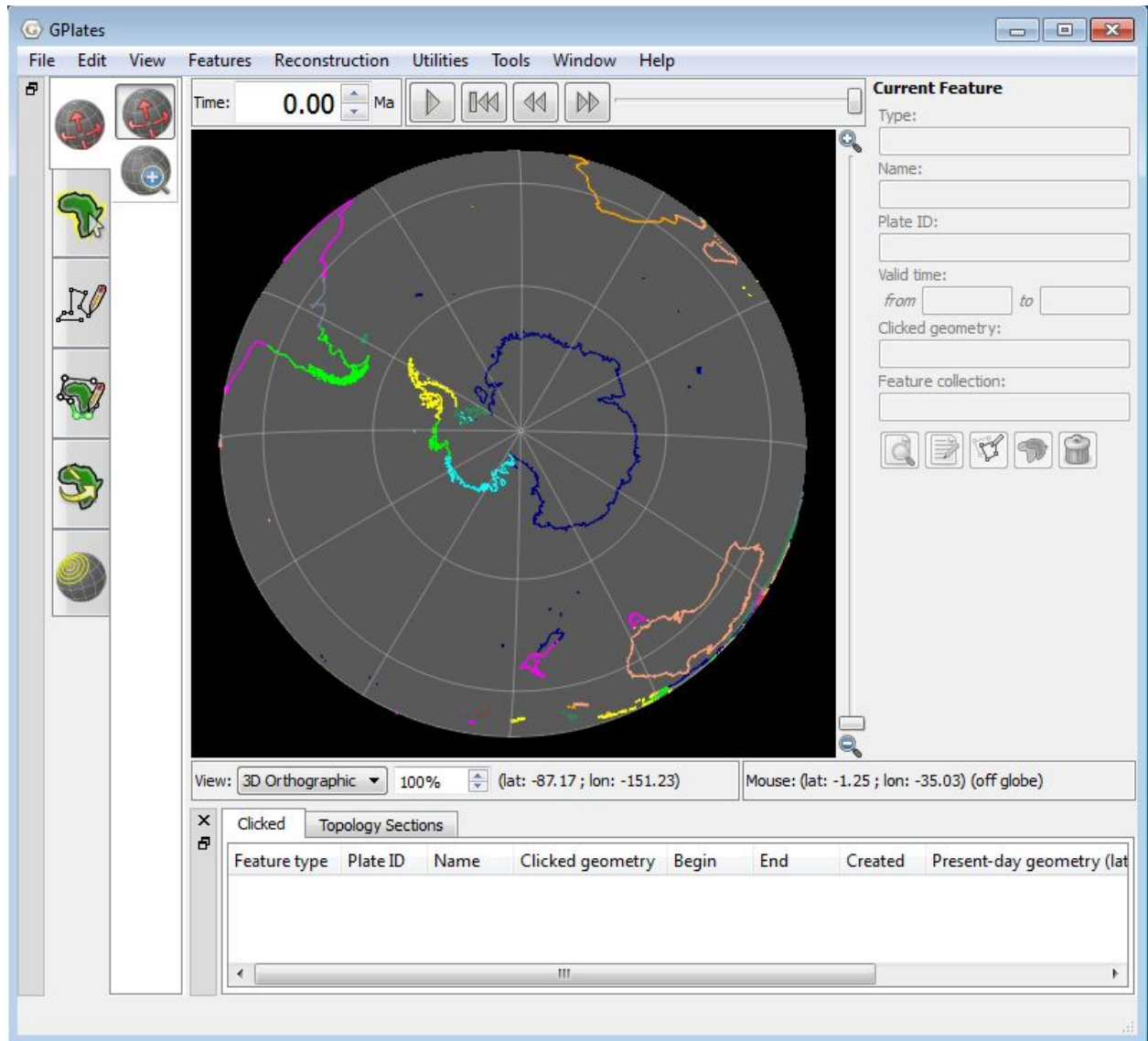
Figure 3. Polar view of the globe centred on Antarctica, achieved using the 'Drag Globe' option from the Tool Palette.
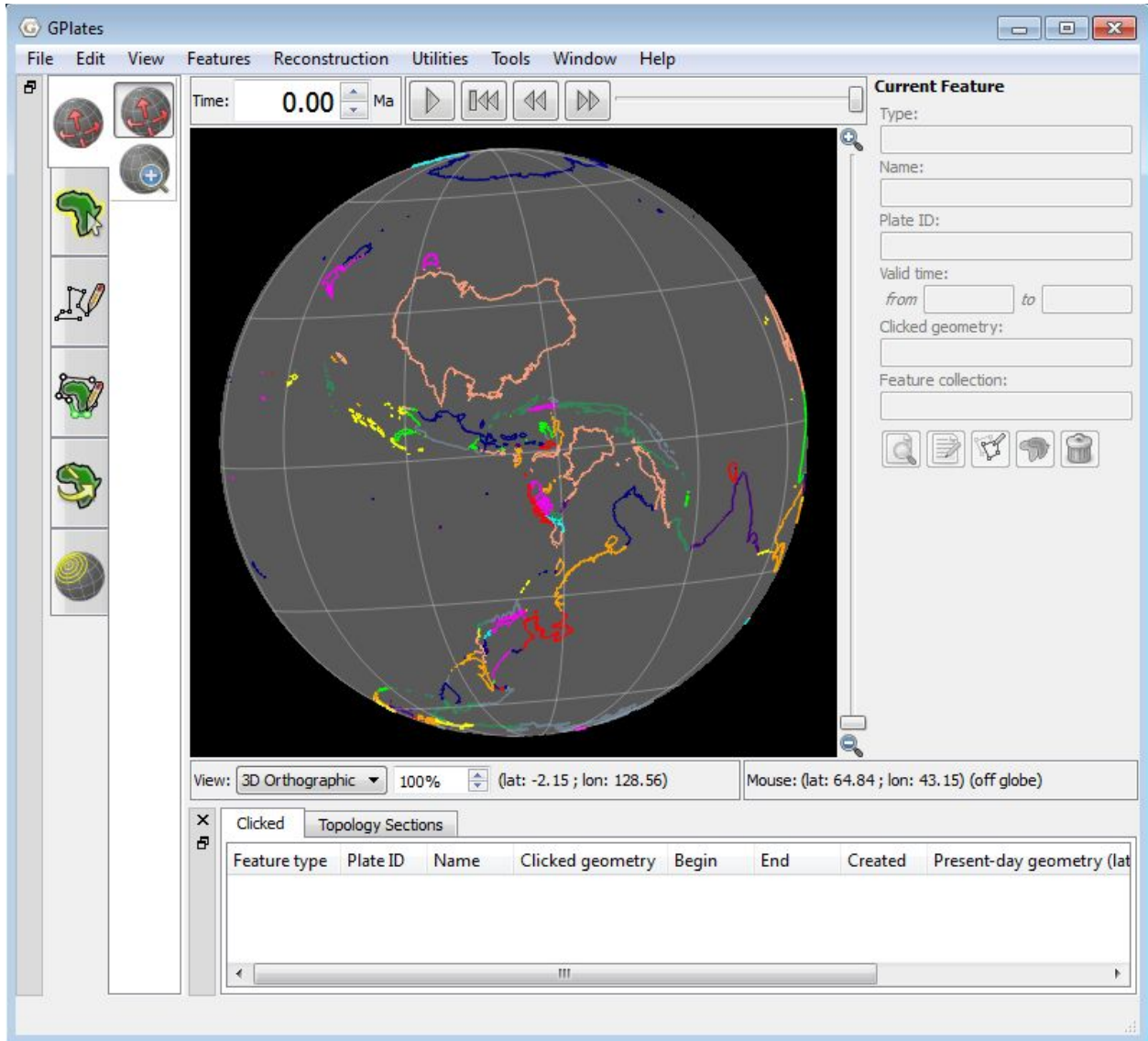
Figure 4. 'Upside down' view of Australia, achieved using the 'Drag Globe' option from the Tool Palette.

Even if another tool is activated in the Tool Palette the globe can still be re-oriented by holding down the Command (Mac) or Ctrl (PC) key while you click and drag the globe. Let's practice this by selecting another tool from the Tool Palette and rotating the globe so that Africa appears centred.

Exercise 2 – Camera Control

The camera position (that defines our view of the globe) can also be

specified using exact coordinates. In this exercise we will learn how to specify the position of the globe.

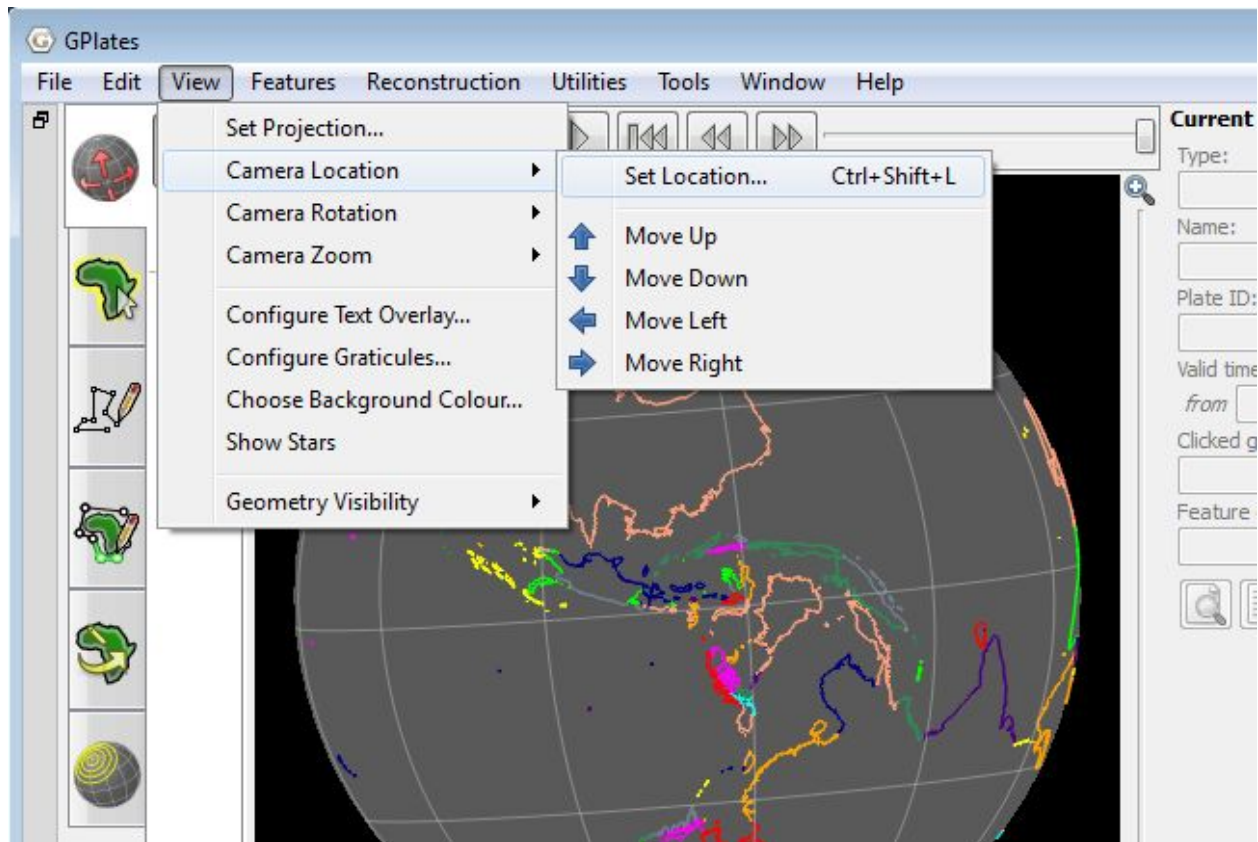1. View → Camera Location → Set Location… (Figure 5)

Figure 5. Navigating the Menu Bar to set the camera location.

In the 'Set Camera Viewpoint' window you can specify coordinates where you would like the camera to aim (Figure 6). Let's aim at Mexico City (Latitude 19.433°; Longitude -99.117°).
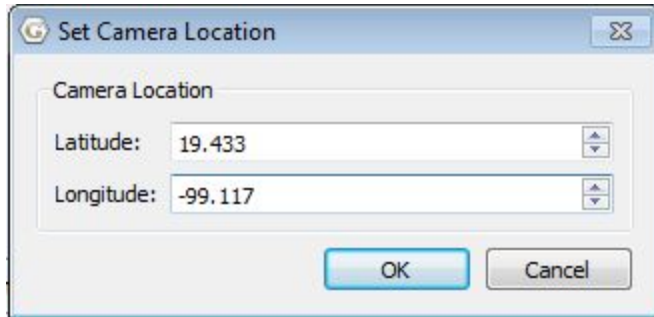
Figure 6. Specifying coordinates to define the camera viewpoint and hence our view of the globe.

*Now set the camera viewpoint to 48.133° (latitude) and 11.583° (longitude). What continent are we focusing on?

The globe can also be pivoted around the centre viewpoint by holding down the Shift key, and then using the mouse to rotate the globe (have a go at this). You will notice that the globe is turning (pivoting) around this central point in Europe (Munich to be precise).

This feature is also nicely illustrated by first setting the camera projection to 0.00° (latitude), 0.00° (longitude). The rotating globe will look a bit like a pinwheel.

Exercise 3 – Zooming

GPlates enables the user to zoom into regions of interest, or view data at the global scale. There are multiple ways to zoom in and out using:

- The scroll wheel on the mouse
- The zoom-slider (located directly beside the globe on the right hand side)
- The 'Zoom In' tool from the Tool Palette (Figure 7)
- Manually entering the zoom level as a percentage using the Zoom Control Field on the main window.

The quickest way to zoom in and out is by using the mouse scroll-wheel, this can be performed regardless of which tool is selected from the Tool Palette.
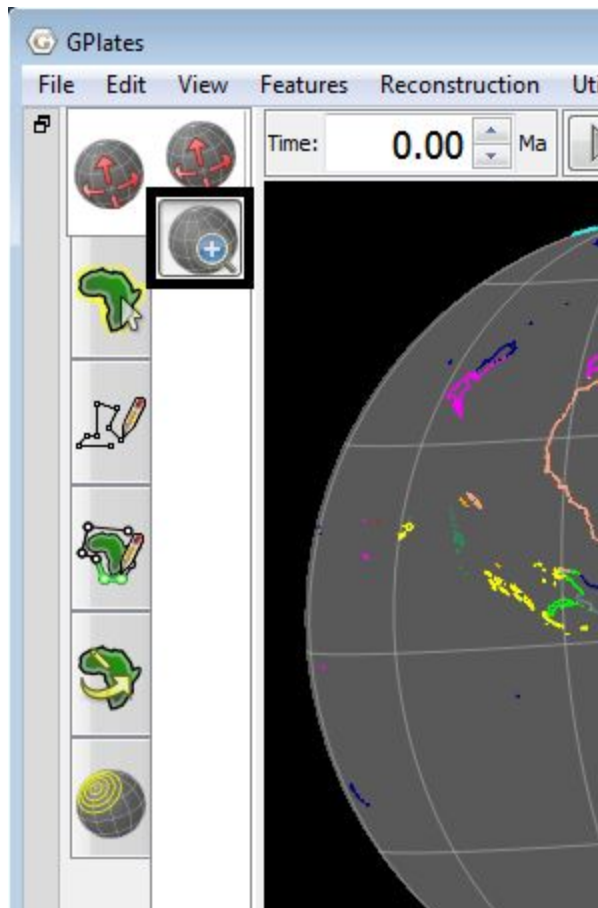

Figure 7. The 'Zoom In' tool selected from the Tool Palette

We will now have a go at zooming into the Hawaiian Islands using the mouse scroll-wheel. But first let's re-orient the camera viewpoint so that we are focusing on our region of interest.

View → Camera Location → Set Location… (Figure 5) → enter the latitude and longitude of Honolulu, Oahu: 21.3°, -157.833° → OK

Now move the scroll-wheel on your mouse backwards and forwards to zoom in and out, respectively. Using a combination of zooming and rotating the globe, zoom into the Big Island (the biggest of the Hawaiian islands) so that it just fits into the screen (Figure 8).

Remember, you can move the globe, even if the 'Drag Globe' icon is not selected from the Tool Palette by holding down the control/command key.
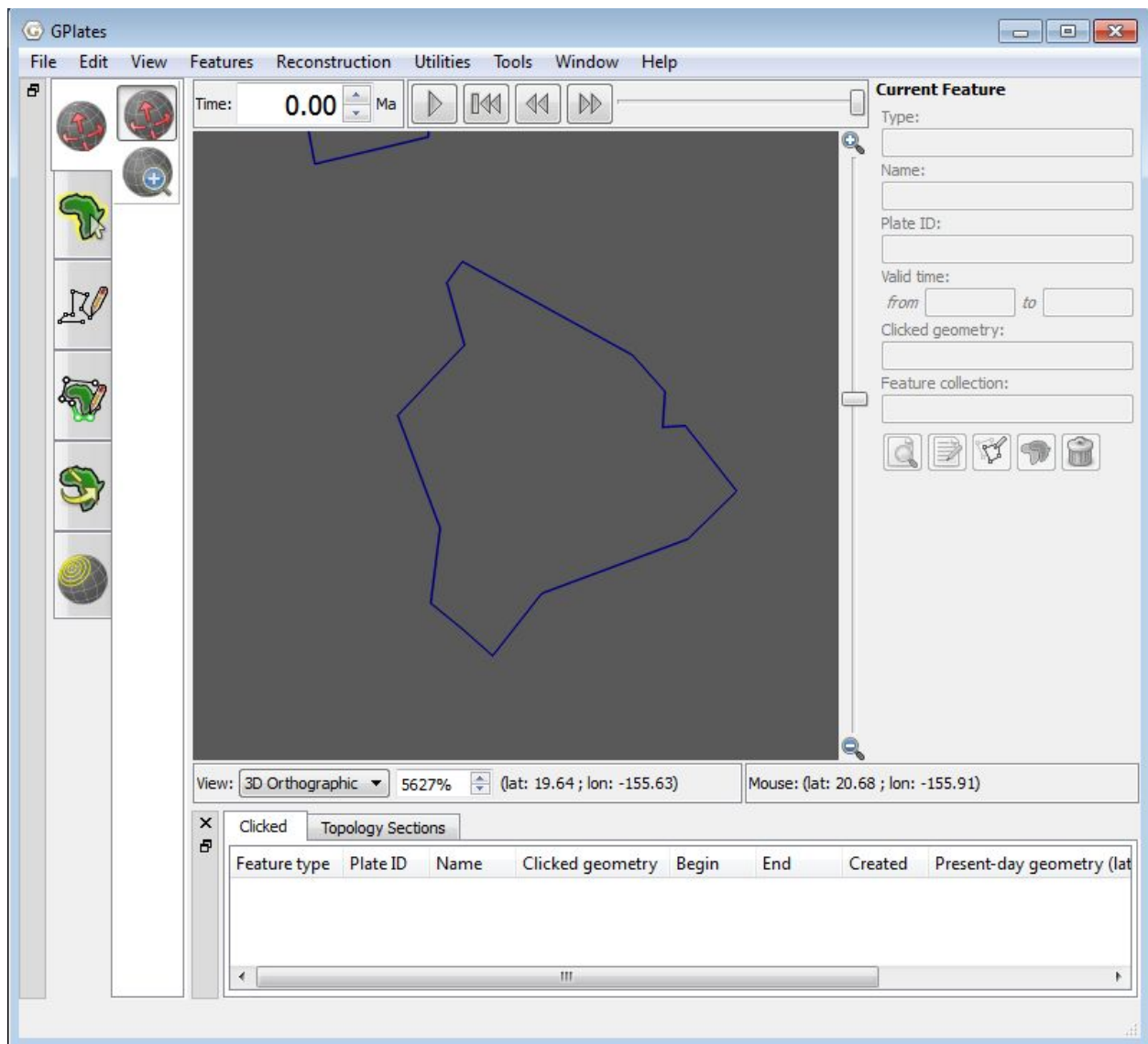

Figure 8. The Big Island, Hawaii.

Now let's use the Zoom Slider to zoom out again. The Zoom Slider is located on the right side of the main window; it has a magnifying glass with a little '+' symbol at the top of the slider, and a '-' at the bottom (Figure 9). Moving the slider up zooms in and moving it down zooms out. Grab the slider and drag it to the bottom.

Figure 9. View of the Zoom Slider showing that no zoom has been applied.

By using the Zoom Control Field, located beneath the globe (Figure 10) a percentage of zoom can specified. GPlates allows between 100 – 10000% zoom (100% displays the whole globe in the main window). The Zoom Control Field can be accessed in two ways. Firstly, by directly clicking the text field and typing a number (between 100 and 10000), or alternatively from the View option in the Menu Bar.

Figure 10. The Zoom Control Field, located beneath the globe allows the user to specify a percentage of zoom.

Let's experiment with this second zoom option.

View → Camera Zoom → Set Zoom… (Figure 11) → the value in the Zoom Control Field (see Figure 9) will be highlighted, ready for you to replace with a new value, so type a percentage (try 150% so you can see the effect on the globe – Figure 12).
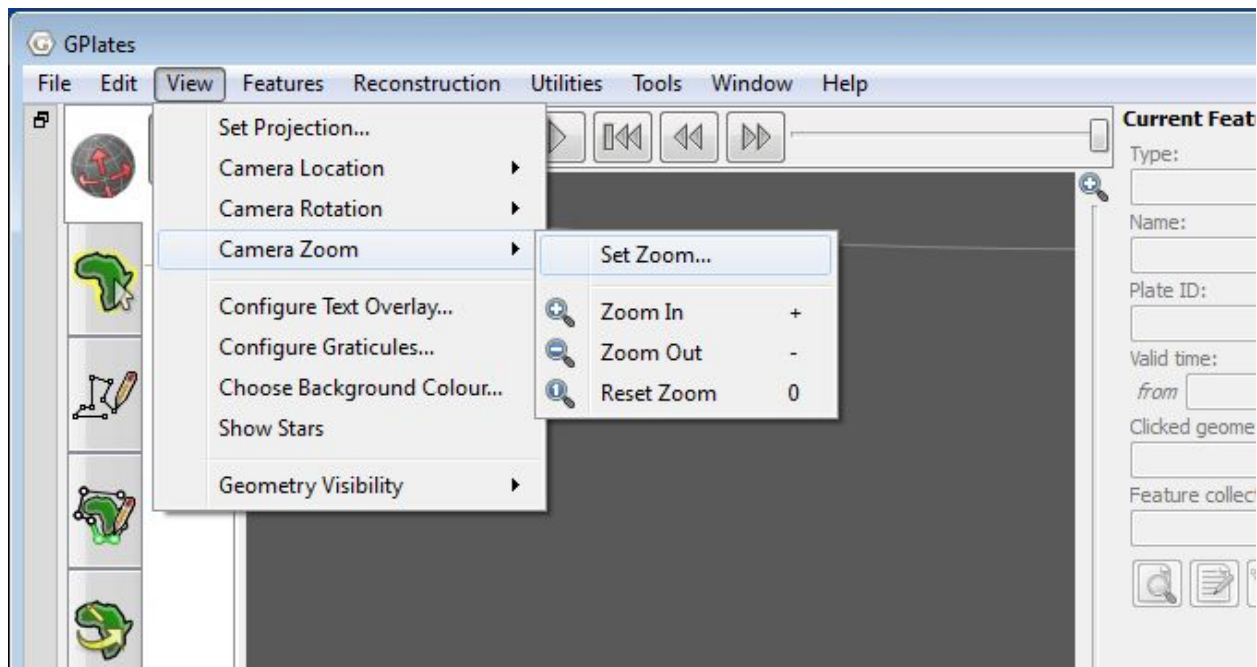

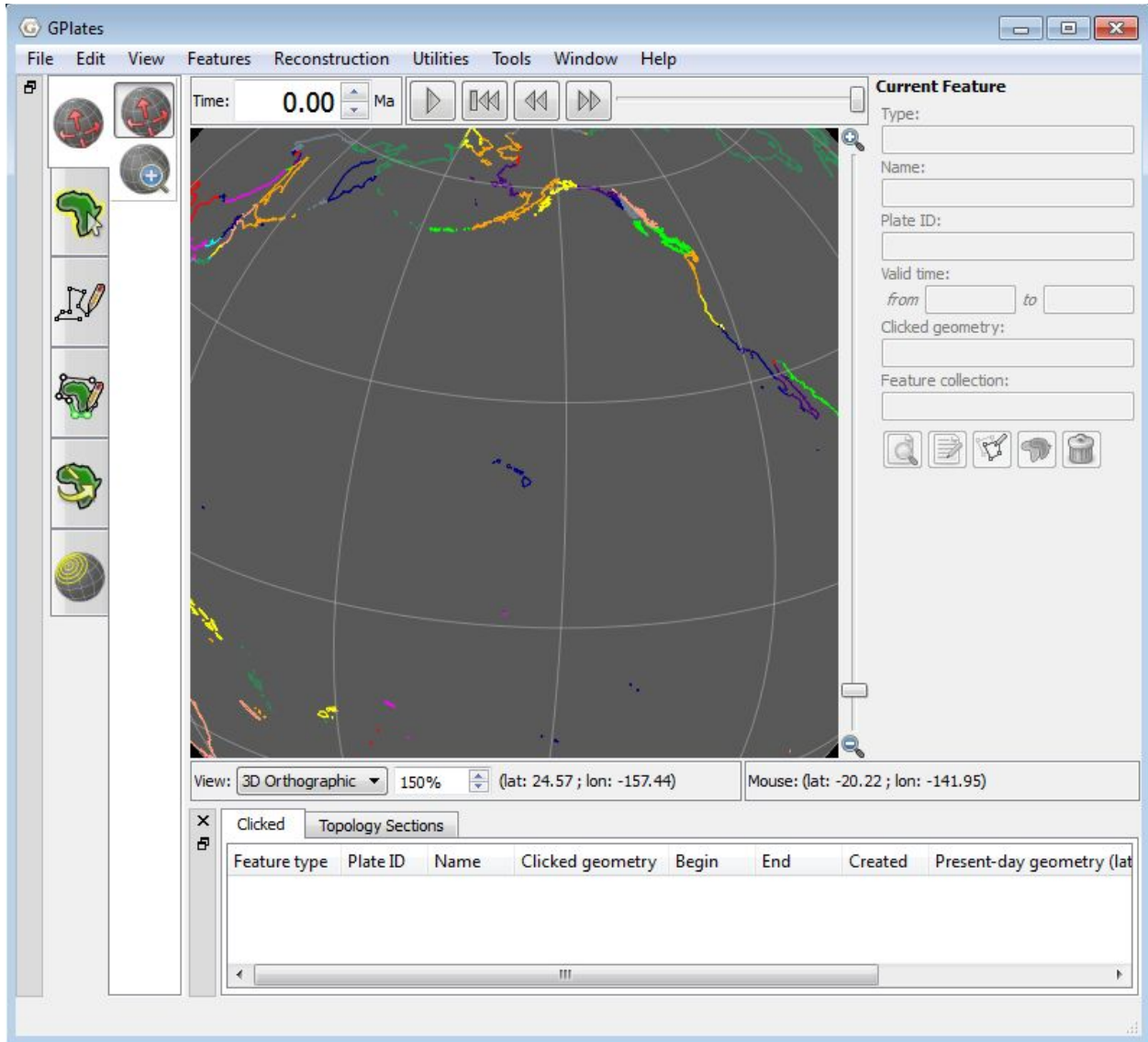
Figure 11. Navigating the Menu Bar to set the camera zoom.

Figure 12. The Hawaiian Islands at 150% zoom (notice that the Zoom Control Field beneath the globe reads '150%').

Exercise 4 – Applying Different Map Projections

GPlates can display data using different map projections (Rectangular, Mercater, Mollweide and Robinson). This allows the user to choose how to best visualise and analyse their data. In this exercise we will practice changing the map projection from the Menu Bar and directly from the main window.

1. View → Set Projection… (Figure 13) → Projection – Mollweide (Figure 14A), Central Meridian 180.00 (Figure 14B) → OK
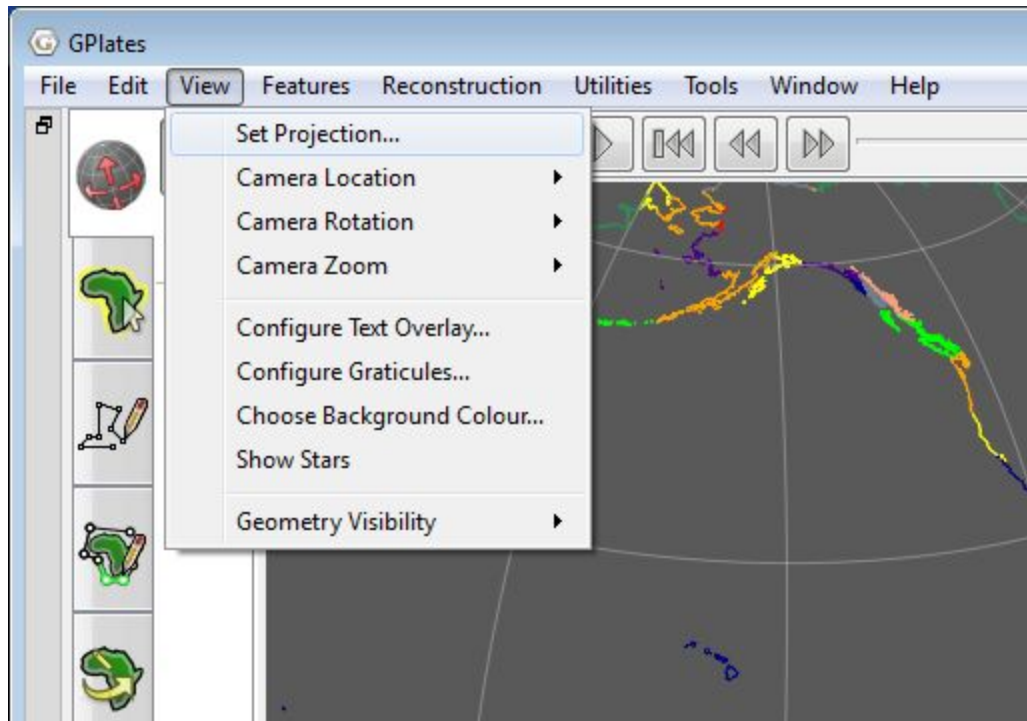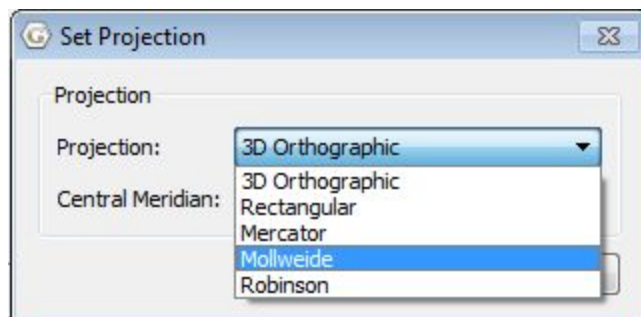

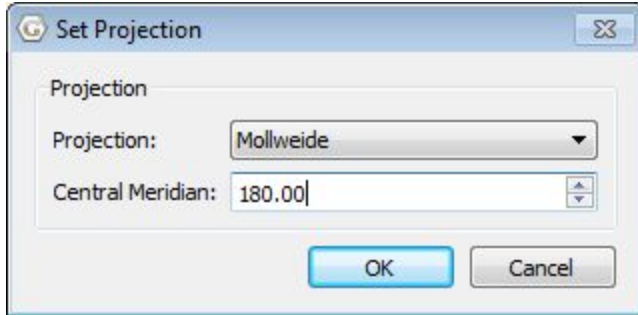**Figure 13.** Navigating the Menu Bar to set the map projection.

Figure 14. Selecting projection type (top) and central meridian (bottom) from the 'Set Projection' window.

Now drag the globe (using the 'Drag Globe' tool) so that the globe is positioned in the middle of the main window (Figure 15).
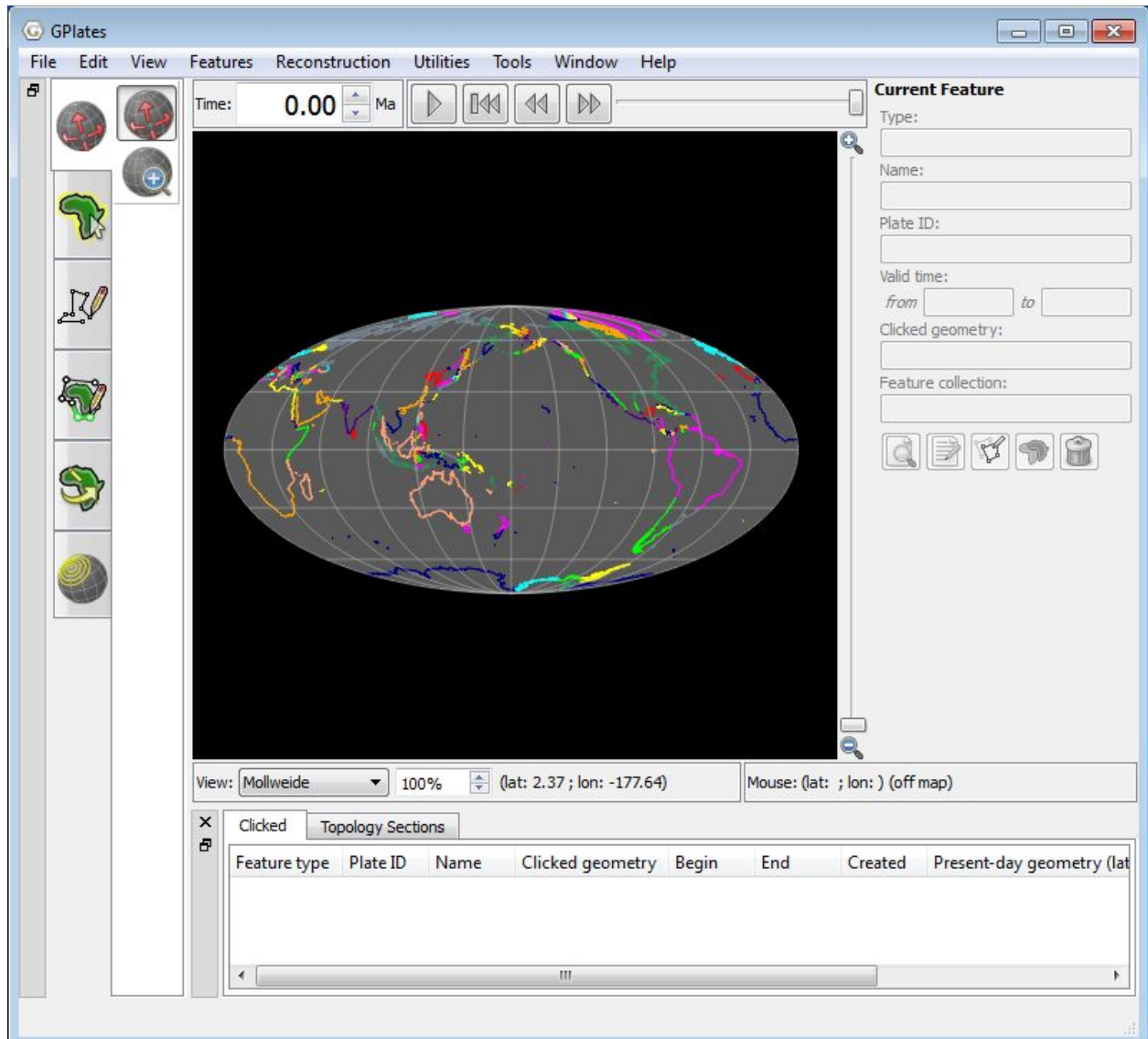
Figure 15. The Mollweide projection centred on the 180° meridian.

Now let's change the projection again, but this time from the main window. Beneath the globe there is a drop down box entitled 'View', this contains all the different map projections (Figure 16). Spend some time experimenting with the different options.
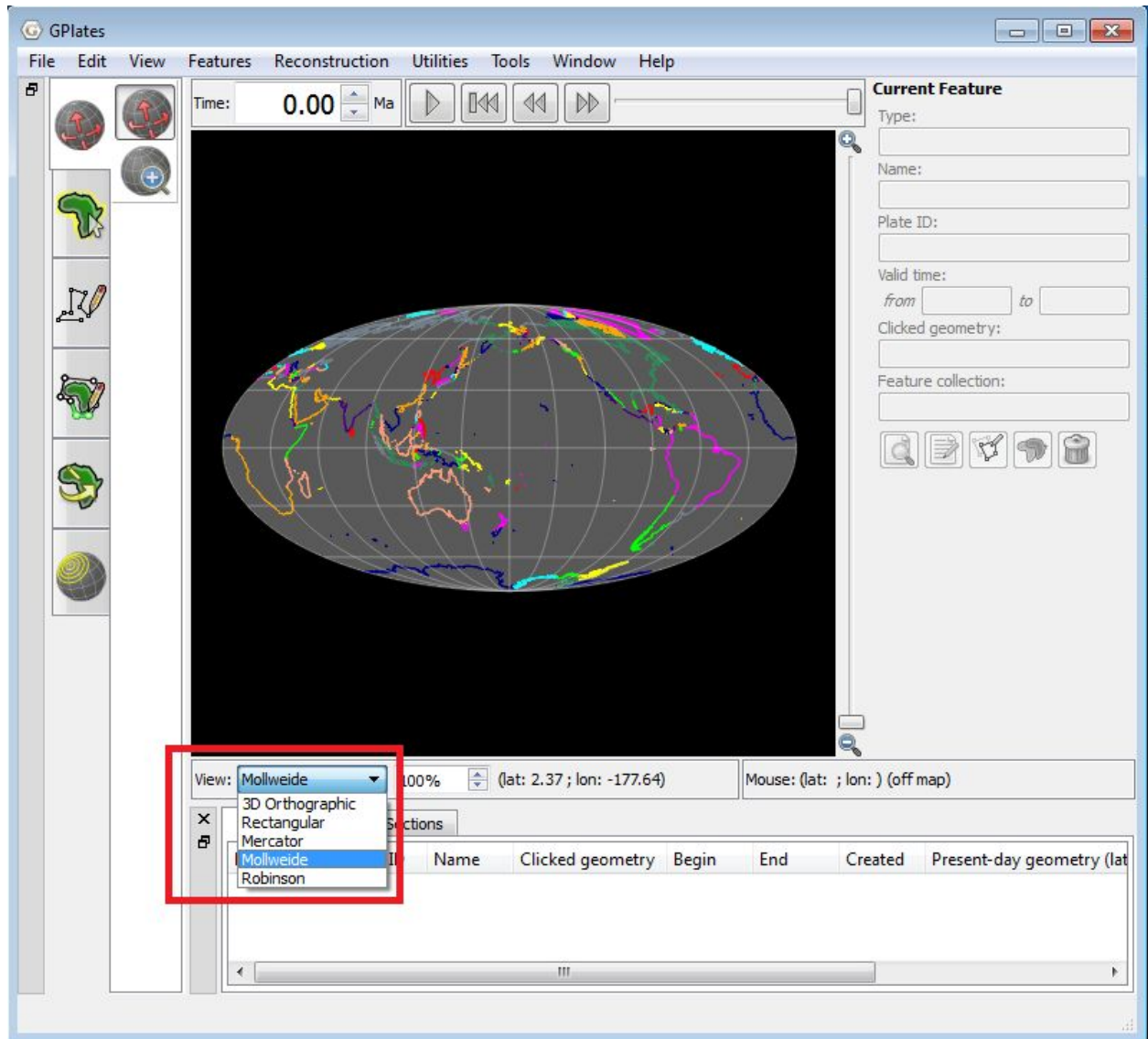
Figure 16. The View dropdown box enables the user to switch between projections from the main window.

To end the exercise change the projection back to '3D Orthographic'.