The Digital Explorer

Virtual Fieldwork

Using Google Earth

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Acknowledgements

The initial expedition which generated the idea for this course and manual was kindly supported by the Royal Geographical Society (with IBG), Applied Satellite Technology, ABC News, Discover Ltd, Eastbury Comprehensive School and Eton College.

Since then, the Digital Explorer project has received great support from Jason Chuck and Cristin Frodella at Google with licenses and permission to reproduce some of their guidance here, and Mark Peacey at Garmin and Kate Stevens at GCI UK for the loan of GPS units.

The support and enthusiasm from the Royal Geographical Society (with IBG) has been invaluable in piloting these materials and the training course, with special thanks to Shane Winser and Judith Mansell.

Thanks must also go to the superb work of Lucy Bruzzone at the Royal Geographical Society for providing all the back-up for the course.

And last but by no means least Marjan Shirzad, whose support and resourcefulness has made this all possible.

2. Using the 3D Viewer

2.1 Basic Navigation

2.1.1 Using the Mouse

To get started navigating with your mouse, simply position the cursor in the middle of the 3D viewer (image of the earth), click one of the buttons (right or left), move the mouse and note what happens in the viewer. Depending upon which mouse button you press, the cursor changes shape to indicate a change in behaviour. By moving the mouse while pressing one of the buttons, you can:

- Drag the view in any direction
- Zoom in or out
- Tilt the view (requires middle button or scroll wheel)
- Rotate the view (requires middle button or scroll wheel)

The following list describes all the actions you can accomplish using the mouse.

Move the view in any direction (north, south, east, or west) - To move the view, position the mouse cursor on the viewer and press the LEFT/main mouse button. Notice that the cursor icon changes from an open hand to a closed hand. Pull the viewer as if the hand cursor is like a hand on an actual globe, and you want to drag a new part of the earth into view. You can drag in any direction to reveal new parts of the globe, and you can even drag in circular motions.

Drift continuously across the earth - If you want to drift continuously in any direction, hold the left/main mouse button down. Then, briefly move the mouse and release the button, as if you are "throwing" the scene. Click once in the 3D viewer to stop motion.

Zoom in - There are a number of ways to zoom in with the mouse.

- You can double-click anywhere in the 3D viewer to zoom in to that point. Single-click to stop, or double-click to zoom in more.
- If your mouse has a scroll wheel, use it to zoom in by scrolling towards you. Use the ALT (alt/option on the Mac) key in combination with the scroll wheel to zoom in by smaller increments.
- You can also position the cursor on the screen and press the RIGHT mouse button (CTRL click on the Mac). Once the cursor changes to a double arrow, move the mouse backward or pull toward you, releasing the button when you reach the desired elevation. If you want to zoom continuously in, hold the button down and briefly pull the mouse down and release the button, as if you are "throwing" the scene. Click once in the viewer to stop the motion.
- On some Macintosh laptops, you can drag two fingers across the trackpad to zoom in and out.

Zoom out - There are a number of ways to zoom out with the mouse.

- Using the RIGHT mouse button (CTRL click on the Mac), double-click anywhere in the 3D viewer to zoom out from that point. The viewer will zoom out by a certain amount. Single-click to stop, or right double-click (CTRL click on the Mac) to zoom out more.
- If your mouse has a scroll wheel, you can use the scroll wheel to zoom out by scrolling away from you (forward motion). Use the ALT (alt/option on the Mac) key in combination with the scroll wheel to zoom out by smaller increments.
- You can also position the mouse cursor on the screen and press the RIGHT mouse button (CTRL click on the Mac). Once the cursor changes to a double arrow, move the mouse forward or push away from you, releasing the button when you reach the desired elevation. If you want to zoom continuously out, hold the right button (CTRL click on the Mac) down and briefly push the mouse forward and release the button, as if you are "throwing" the scene. Click once in the viewer to stop motion.

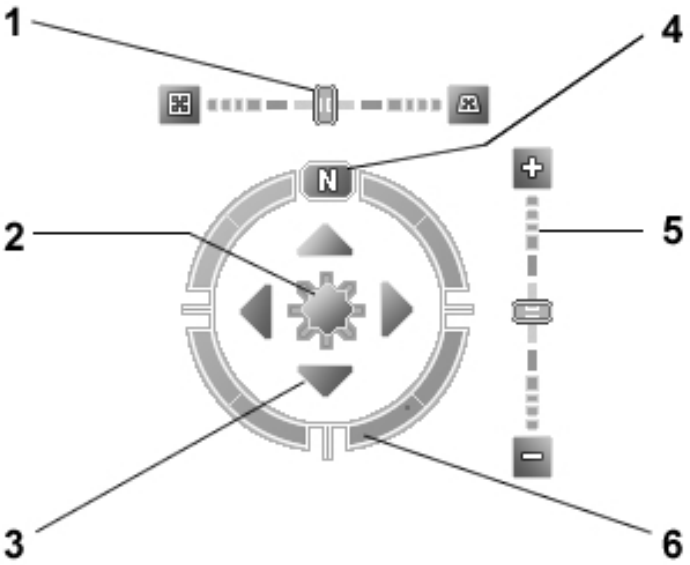
Tilt the view - If your mouse has either a middle button or a depressible scroll wheel, you can tilt the view by depressing the button and moving the mouse forward or backward. If your mouse has a scroll wheel, you can tilt the view by pressing the SHIFT key and scrolling DOWN to tilt the earth to "top down" view, or scrolling UP to tilt the earth for horizon view.

Rotate the view - If your mouse has either a middle button or a depressible scroll wheel, you rotate the view to the left by clicking on the middle button and moving the mouse to the left. To rotate the view right, click on the middle button and move the mouse to the right. You can also use the CTRL (⌘ on the Mac) key in combination with the scroll wheel to rotate the view. Press CTRL (⌘ on the Mac) and scroll UP to rotate clockwise, CTRL (⌘ on the Mac) + scroll DOWN to rotate counter-clockwise.

2.1.2 Using the Navigation Controls

Note - To view and use the navigation controls, move the cursor over the right corner of the 3D viewer. The navigation controls automatically appear whenever you do this; they fade from sight when you move the cursor elsewhere.

The Google Earth navigation controls offer the same type of navigation action that you can achieve with mouse navigation. In addition, you can use the controls to tilt the view (perhaps for a perspective on terrain) or to rotate the viewer around the centre. The following diagram shows the controls and explains their functions.



1. Use the tilt slider to tilt the terrain toward a horizon view. Move the slider to the left for a top-down view or to the right for a horizon view. Click the icons at the end of the slider to reset the tilt all the way to a top-down view or to a horizon view.
2. Use the joystick to move the centre point of the view down, up, right or left. Click the centre, hold the mouse button, and move in any direction.
3. Click the direction arrows to move the view in the direction you wish.
4. Click the north up button to reset the view so that north is at the top of the screen.
5. Use the zoom slider to zoom in or out (+ to zoom in, - to zoom out). Click the icons at the end of the slider to reset the zoom all the way in or out.
6. Click and drag the navigation ring to rotate the view.

Navigation Activity

Experiment with using the mouse and navigation controls.

To navigate in Google Earth you need to be able to do four things:

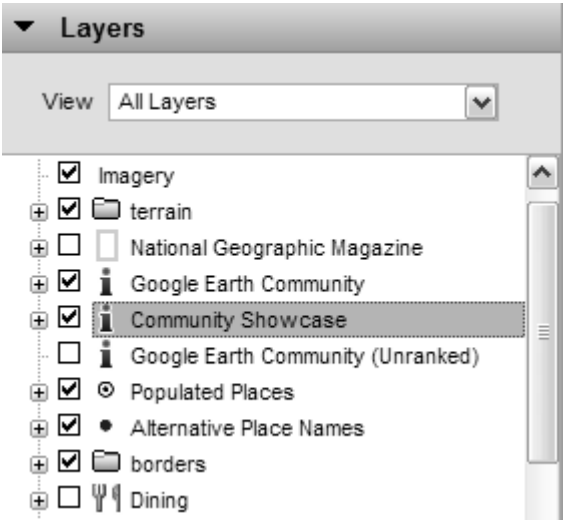
- Drag the view
- Zoom in and out
- Tilt the view
- Rotate the view

Think of an area of the planet you want to have a look at.

1. Drag the view using the mouse or navigation controls so that you are directly over this area.
2. Zoom in and out over this view. See how much detail Google has for this area.
3. Tilt the view so that you are no longer looking at this area from directly above.
4. Rotate the view so that you have different perspectives on this area.

2.2 Using Layers

The *Layers* feature in Google Earth provides a variety of data points of geographic interest that you can select to display over your viewing area. This includes points of interest (POIs) as well as map, road, terrain, and even building data. The full list of layers is available in the *Layers* panel:



The most useful layers to select (☑) are:

- **terrain** - shows terrain in 3D
- **borders** - shows international and state borders
- **Populated Places** - shows major towns and cities

Other layers that may be of interest are:

- **Geographic Features** - includes information on mountains, volcanoes and earthquakes
- **Featured Content** - content from e.g. National Geographic, Discovery Networks and Jane Goodall Foundation

Layers Activity

Experiment selecting and deselecting the various layers.

The terrain layer is the most important to see the 3D view of the planet. However, new views will take longer to load when the terrain tab is selected.

Some other interesting layers...

Geographic Features > Volcanoes

1. Expand the 'Geographic features' layer folder by clicking on the '+'.
2. Select (☑) the 'Volcanoes' layer. This will show you the location of all volcanoes (useful for teachers of hazardous environments). You may need to zoom in to see the volcano icons.
3. Click on any red triangle icon to see information provided by the Smithsonian Institution's Global Volcanism Program.

Featured Content > National Geographic Magazine

1. Expand the 'Featured Content' layer folder by clicking on the '+'.
2. Select (☑) the 'National Geographic Magazine' layer. This will show you the location of all online photographs from the National Geographic Magazine archive.
3. Click on any National Geographic logo to see information images and links to online materials.

2.3 Finding Places

You can search for specific locations using the *Fly To* tab in Google Earth. To do this, enter the location in the input box and click on the *Search* button.

 Search button

Google search recognizes the following types of search terms, which you can enter with or without commas.

Format	Example
City, State	Buffalo, NY
City Country	London England
Number Street City State	1 Kensington Gore London
Zipcode or Postal Code	SW7 2AR
Latitude, Longitude in decimal format	37.7, -122.2
Latitude, Longitude in DMS format	37 25'19.07"N, 122 05'06.24"W or 37 25 19.07 N, 122 05 06.24 W Note that format 37d25'19.07"N, 122d05'06.24"W does not work with Google Earth.

Finding Places Activity

Finding home

The first thing that most people do when encountering Google Earth is to find their house.

In the UK this is done simplest by typing your home postcode into the search box.

Finding what you want

Look at other ways of finding places. Google Earth is getting better and better at finding places that you are looking for.

A search of Gilgit will take you to North Pakistan. A search for Mara will take you to North East England and so if you are looking for the Masai Mara, it would be better to set the country i.e. 'Mara, Kenya' or 'Mara, Tanzania'.

There are no hard and fast rules to what search query will work and like all search functions, trial and error is the best way.

Viewing interesting 3D features

Search for the following features to see the 3D terrain of Google Earth in full glory:

- Mount Fuji
- Grand Canyon
- Gangtok

Use the navigation controls to zoom, rotate and tilt.

3. Viewing Placemarks and Tours

3.1 Opening Saved Placemarks

You can use the following methods to open placemarks and folders saved to the file system on your computer's hard drive.

Google Earth data is kept in KML and KMZ file types. KML, or *Keyhole Markup Language*, is an XML grammar and file format for modelling and storing geographic features such as points, lines, images, polygons, and models for display in Google Earth and Google Maps. KMZ is a compressed form of KML. It is processed by Google Earth in much the same way that HTML and XML are processed by web browsers.

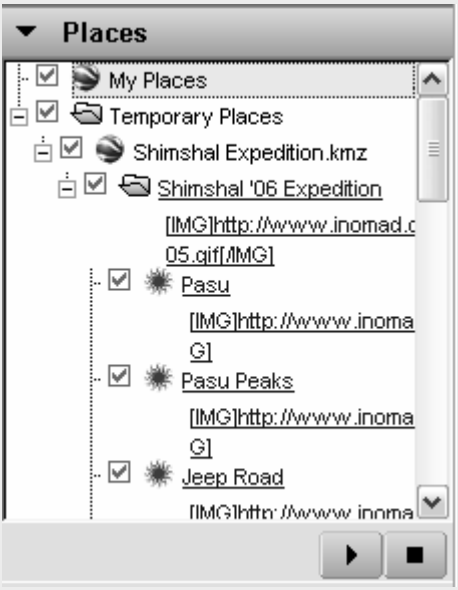
- From the File menu, select Open. Navigate to the folder on your computer that contains the KMZ or KML data you want to open in Google Earth. Select the file and click the *Open* button. The folder or placemark appears beneath the *Temporary Places* folder and the 3D viewer flies to the view set for the folder or placemark (if any).

- Locate the file you want to open. Once you have located the file on your computer, you can simply drag and drop the KMZ file over the *Places* panel or 3D viewer. The 3D viewer loads the file and flies to the view set for the folder or placemark (if any).

- Locate the file you want to open. Once you have located the file you can double click on it to open it.

Download Practice Placemarks and Tour

1. Open your internet browser
2. Go to www.inomad.co.uk/listSearchR001.asp?id=25
3. Click on link: Google Earth Training practice placemarks
4. The placemarks will appear in the 'Temporary Places' folder of 'Places' as Shimshal '06 Expedition



5. To expand the folder click '+' icons
6. To view individual placemarks double click the icon
7. To view information about individual placemarks click the blue hyperlink e.g. 'Pasu', 'Pasu Peaks', etc.

3.2 Showing and Hiding Places Data

Once you begin collecting a fair amount of places data, you can use the show/hide features of Google Earth to quickly manage the amount of content visible in the 3D viewer.

To hide places data, select or de-select the check box next to an item. To turn off the display for a single placemark or overlay in the 3D viewer, click the item to remove the check mark. To turn on a single item, select the check box. For entire folders, you can turn on all items in the folder by selecting the folder's check box if it is not already selected. In this case, all items in the folder are turned on. A subsequent click turns off all items in the folder.

Note - If a square ⊡ appears in the check box for a folder, this indicates that some (but not all) of the items within that folder are currently displayed.

Selecting Placemarks Activity

Using the information in the Shimshal '06 Expedition file, we can decide which placemarks are viewed at any one time.

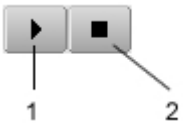
An example would be if you wanted to show just the inhabited placemarks on the expedition: Pasu, Shimshal Central and Shuwerth.

Hide the places data for the other placemarks by deselecting the check box next to the item.

Alternatively, deselect the check box for the folder and select the placemarks you would like to view.

3.3 Touring Places

You can tour items in your *Places* listing by selecting the check box next to items you want to tour and clicking on the *Play Tour* button at the bottom of the *Places* panel. The tour begins playing in the 3D viewer, which flies to each location and stops for a period of time before flying to the next place in the list. To stop the tour, click the *Stop Tour* button beneath the *Places* listing.



1. Play Tour button
2. Stop Tour button

You can control which items are visited in your tour:

	Action Required	**Result**
Tour all checked items	Place a checkmark next to all placemarks, overlays, and paths that you want to tour. Click the *Play Tour* button (bottom of the *Places* panel).	All items that have a checkmark next to them are visited in the tour, beginning with the first one in the list.
Tour only one folder or item	Check the appropriate folder or item. Uncheck all other folders and items in the Places folder. Click the *Play Tour* button (bottom of the *Places* panel).	Only individual placemarks, overlays, and lines within a folder are toured. Everything else is ignored by the tour even if it is checked. *Note:* This also includes any subfolders within the parent folder.

3D Fly-by Activity

This is one of the most visually engaging functions of Google Earth and great for use in the classroom or lecture theatre.

Note: to ensure maximum impact ensure you have selected the Terrain layer.

Touring the entire expedition

Ensure that the Shimshal '06 Expedition folder is checked (☑), and then press the play button 

Touring parts of the expedition

If you only wanted to show a certain portion of an expedition in the classroom or to another audience select the places you wish to tour (using the checkbox system) and then press the play button 

Note: when you are viewing tours think about the angles and viewpoints you might wish to use in your own placemarks and tours. The view for each placemark can be set, so that you can fly through a valley, rather than track placemarks from an overhead view.