

Introduction to Google Earth



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In this exercise you will explore the fundamentals of Google Earth. You will navigate the globe and use it to locate places and examine both current and historical imagery. In addition to learning how to save and print screen shots, you will learn how to create, edit, and share your own KML files, which are a type of text-based spatial data file which can be used by other mapping programs.

Working in Google Earth

Step 1: Open Google Earth and practice navigation

Step 2: Creating a KMZ file in Google Earth

Step 3: Working with KMZ files and their content in Google Earth

Step 4: Visually re-positioning or otherwise editing a placemark

Step 5: Saving an image of the map for printing or sharing

Working in GOOGLE EARTH

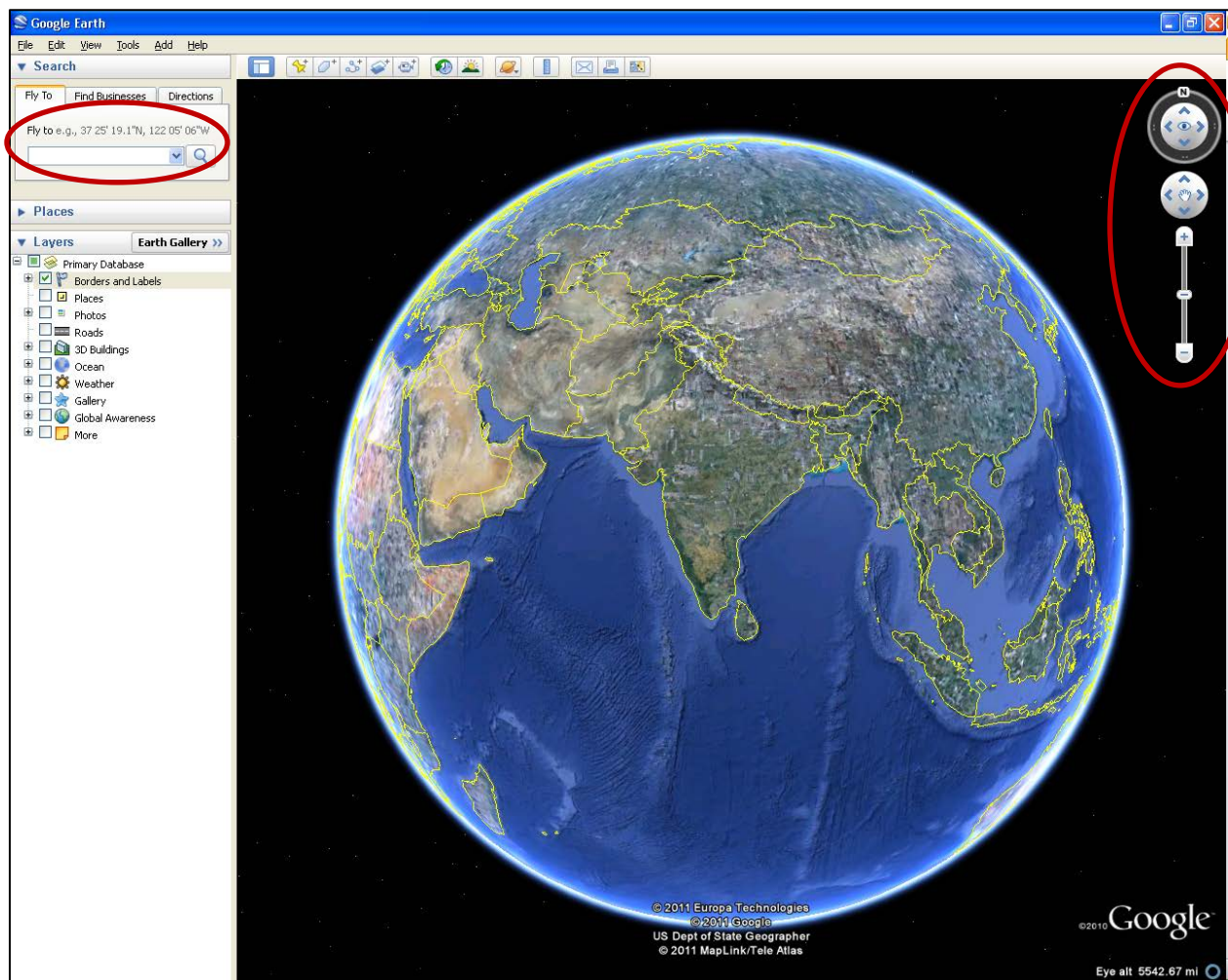
Step 1: Get introduced to Google Earth, open it, and practice navigation.

Google Earth is a “digital globe”, an imagery viewing program which can also display customized map data as overlays. It is not really a true GIS (geographic information system) in that it has limited data classification, map production, and data analysis capabilities. But it can be very useful in examining geographic data and it is available for free. It does require an initial internet connection in order to load the background imagery.

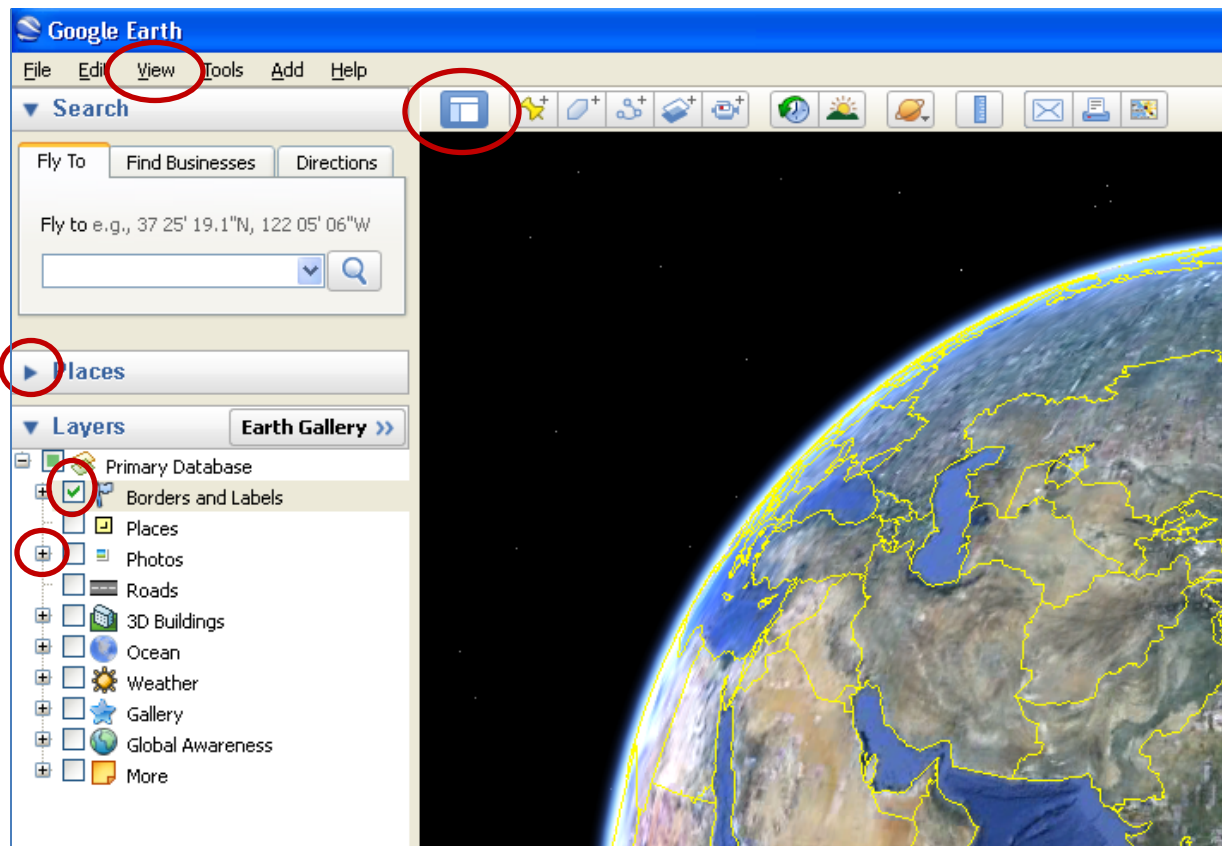
This tutorial assumes the use of Google Earth version 6.0, provided as part of this course or available as a free download here:

<http://www.google.com/earth/>

- ☐ Double-click the icon for Google Earth on your screen. You should see the main view screen and menus:



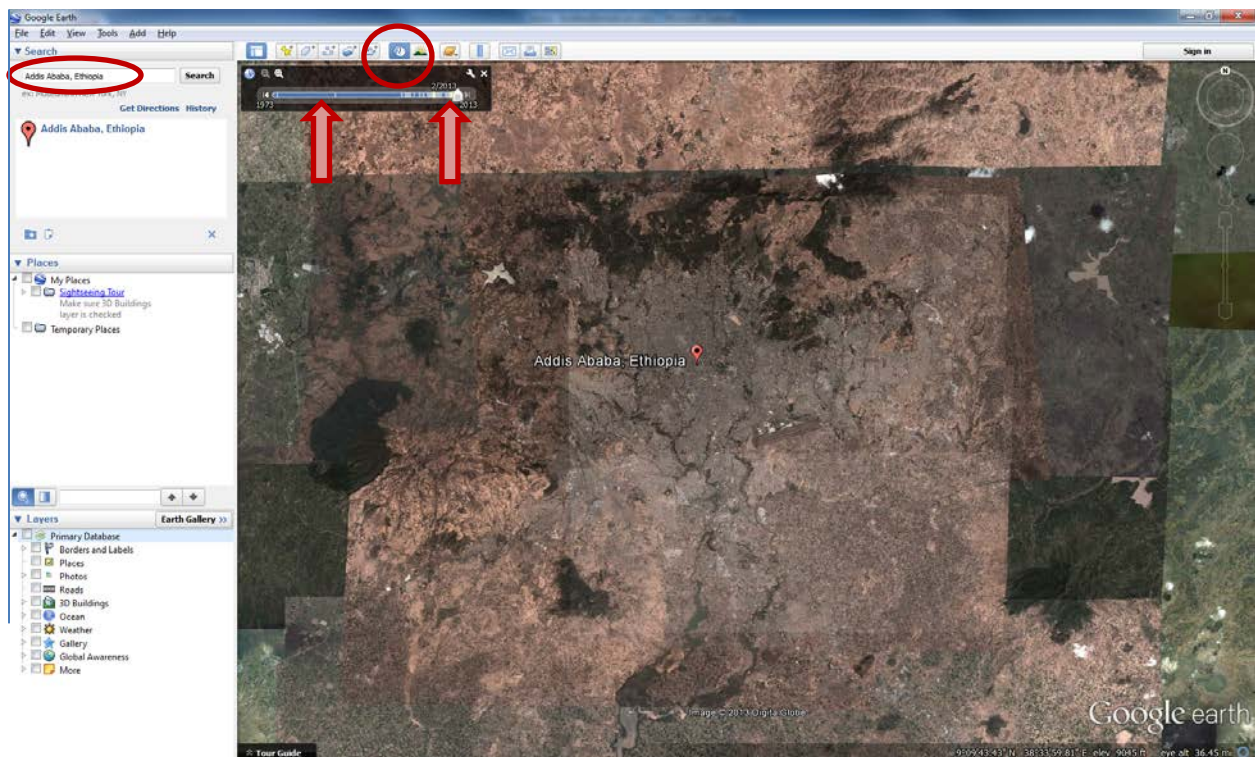
- ☐ Click and drag anywhere on the globe to rotate the globe's viewing area. To zoom in to a particular position, either double-click on it, or enter its name or its coordinates into the "fly to" box, highlighted above (upper left).
- ☐ Practice using the Navigation controls (also highlighted above, upper right) to zoom in and out and change position. HINT: To orient the viewing area at any time so that North is toward the top of the screen and the viewing angle is straight downward, click the letter "R" on your keyboard.
- ☐ Turn the navigation controls on and off by choosing from the top menu View>Show Navigation>Always (or Automatic or Never).
- ☐ Expand or collapse the Sidebar boxes on the left by clicking on the little triangles to the left of each of them: Search, Places, and Layers.
- ☐ To fill the screen with the main view, click on the show/hide sidebar toggle button as highlighted below:



- ☐ Turn on and off the streaming content available from Google Earth's Primary Database by clicking in the boxes to the left of the descriptions in the Layers

sidebar. Clicking the “+” sign will expand each layer into its sub-layers for more viewing control. (In the view above, only “Borders and Labels” has been displayed, as indicated by the yellow country borders in the viewing window.)

- ☐ Fly to Addis Ababa, Ethiopia, by entering “Addis Ababa” in the “Fly To” box in the Search sidebar.
- ☐ Examine historical satellite imagery by clicking on the “clock” icon along the top command bar (see below). Click on the bar which appears to select imagery from different dates. Try 1/1986 and 2/2012. Do you see any changes over the course of this period of time? Examine a variety of dates and notice that some images taken at different times of the year or with different satellites may have variations in color, clarity and even cloud cover.



- ☐ Close Google Earth to complete this portion of the tutorial.

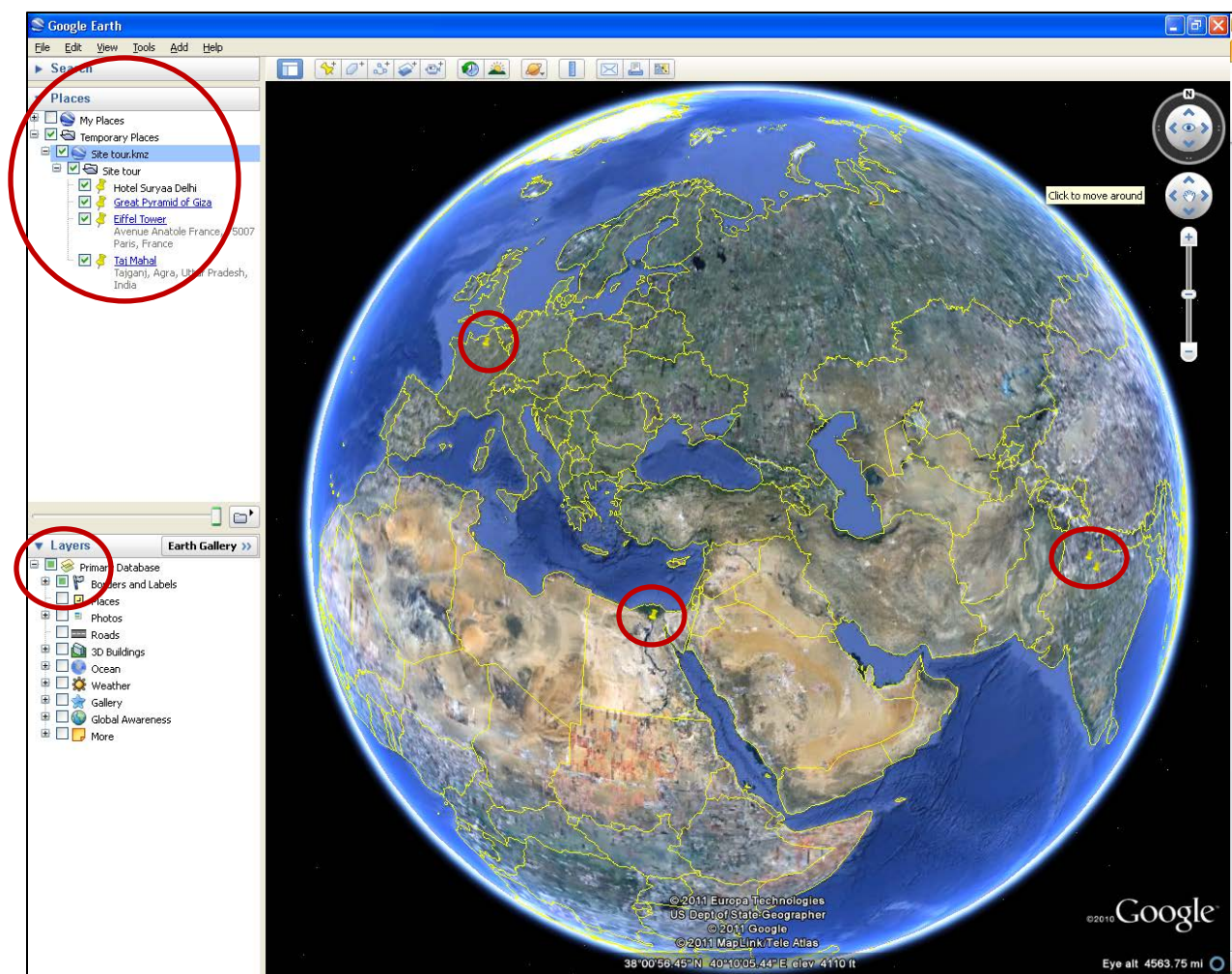
Part 2: Creating a KMZ file in Google Earth

You are now ready to begin opening and creating KMZ files, a map file format which can be read by Google Earth and displayed on top of its imagery. KMZ files can contain

lines, polygons, and points. KMZ is a compressed form of a KML file. A KML file can be read by Google Earth and some other GIS (geographic information system) programs, and can also be edited in an XML editor.

NOTE: KML/KMZ files use longitude and latitude (and, optionally, altitude) coordinates as defined by the World Geodetic System of 1984 (WGS 84). When using any mapping program or GPS unit it is important to note the coordinate system in use by any given map. Some GIS systems can read and convert dozens of different coordinate systems. It can be tricky to convert data accurately from one coordinate system to another, and usually requires the use of a GIS. Points collected in a coordinate system other than WGS 84 will not necessarily line up with the imagery in Google Earth.

- ☐ Locate the file “Site tour.kmz” on your computer and double-click its icon to open the file in Google Earth.



Your file will appear in the Places sidebar under “Temporary Places”.

- ☐ Click on the “+” sign to display the list of the 4 point locations that are contained in the file. The globe image will also rotate and zoom automatically to include a view of everything contained in this file. The 4 points (displayed as yellow “pushpins”) have been circled above in red—zoom into each of them for a closer look using the navigator controls in the upper right. In the Layers sidebar, I have chosen to display the “borders and labels” database layer for added visual reference by clicking the box to the left of its name. The borders are showing up here in yellow.

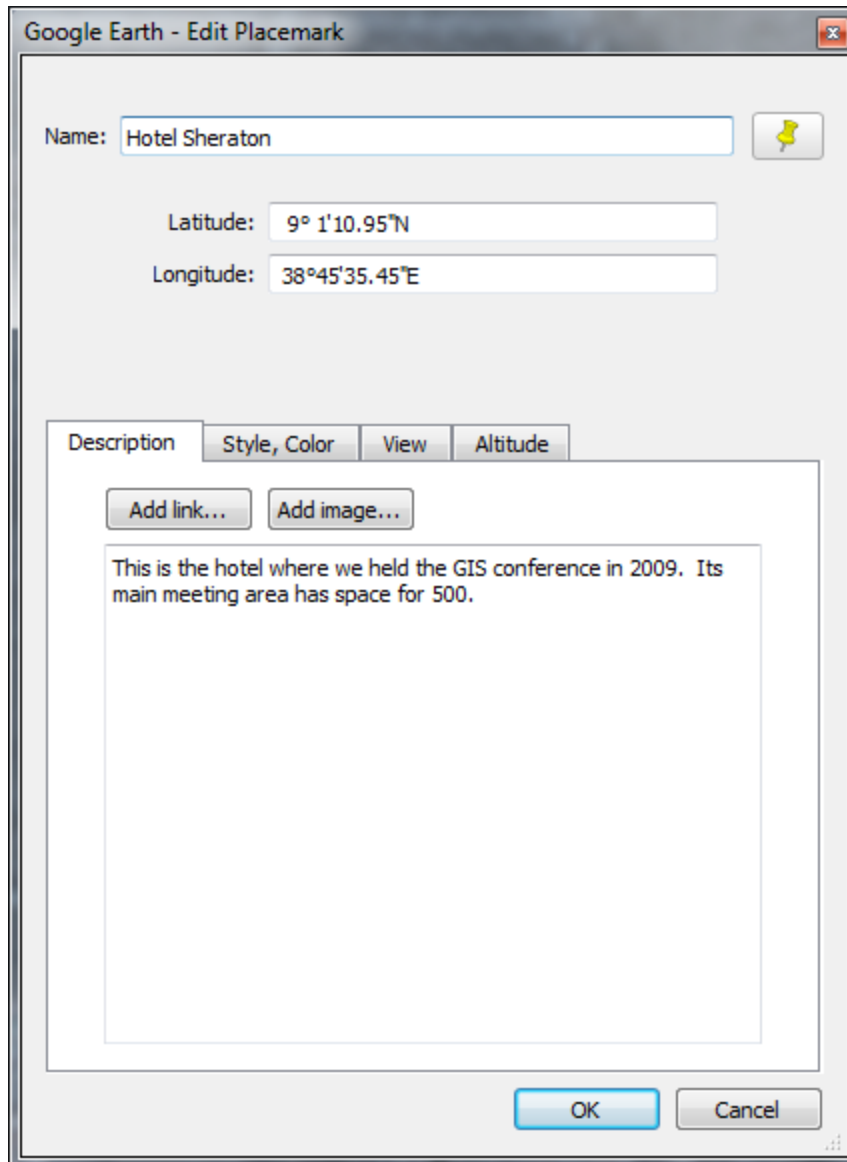
NOTE: If you wish to save the KML file to “My Places”, Google Earth will then find and open this file each time you open Google Earth. If not, you will need to locate it on your own to open it. You will be asked, each time you close GE, whether you would like to save the files in your “Temporary Places” folder in this manner. Not saving a KML file to “My Places” does **not** delete the file from your computer; it simply means you will need to find it on your own next time in order to view it in Google Earth.

- ☐ Next we will create a KML file of our own. Using the navigation controls, zoom into your home city and visually locate 5 places of interest (for example, hospitals, health facilities, schools, etc.).
- ☐ Zoom into the first place of your choosing and choose Add>Placemark, or simply click on the appropriate button as circled in red below.

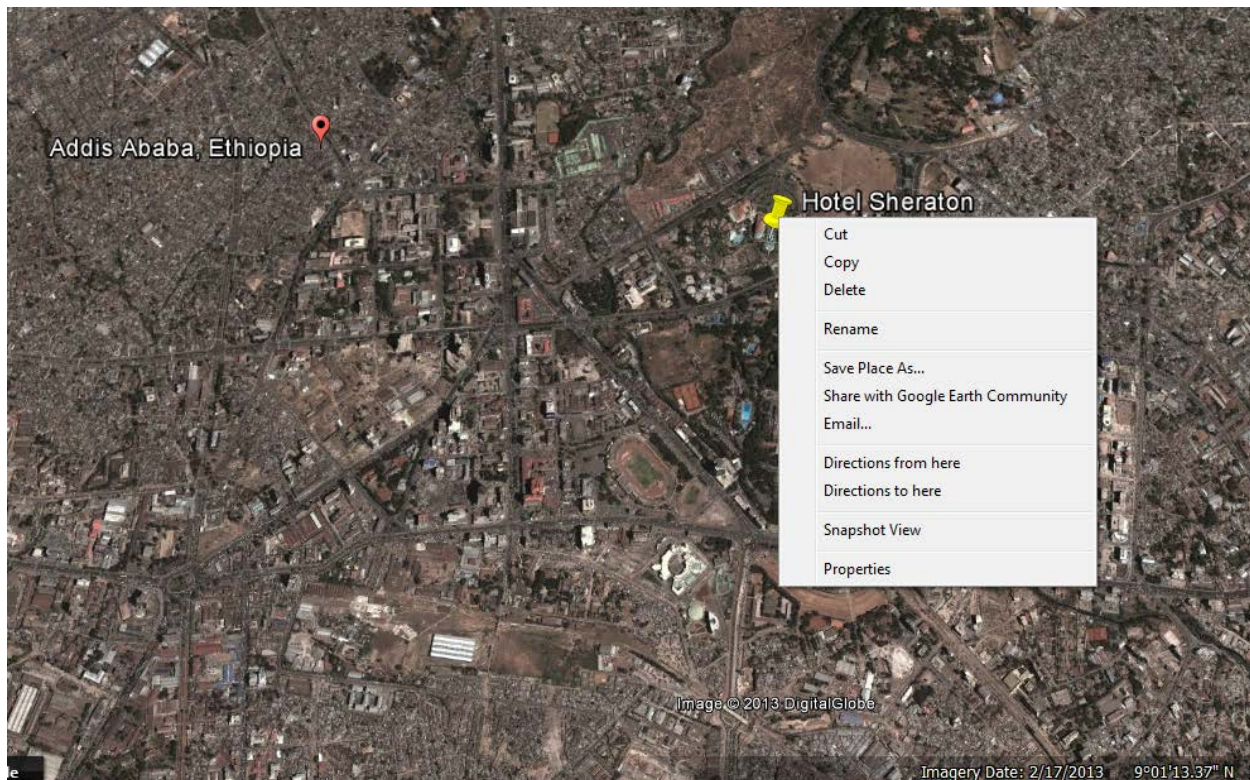


A new marker will be placed in the middle of the current view screen and a dialog box will open (see next figure below).

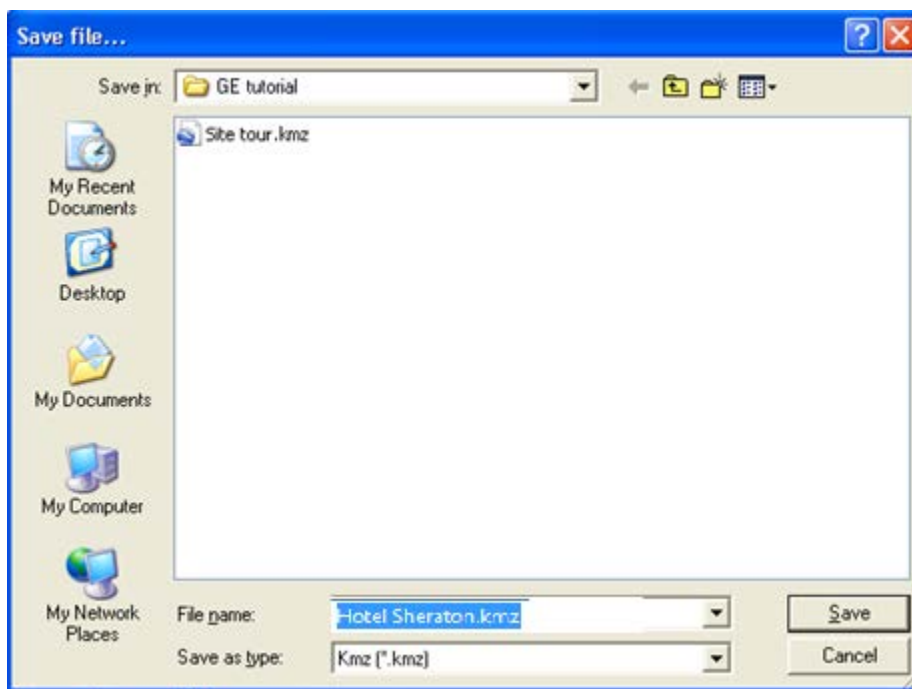
- ☐ You may enter into this dialog box the name you wish to appear beside the marker on the map.
- ☐ You will note that the latitude and longitude of the location you have chosen will automatically appear in the dialog box as well. If you edit these, the marker will move to the new corresponding location.
- ☐ You can also enter a description in the large box at the bottom. Enter the name and description for the feature you have selected. An example for the Hotel Sheraton in Addis Ababa is shown below. (This description will appear in a pop-up bubble whenever you left-click on the point in the future.)



- ☐ Choose OK to save the information. To save this point in a KML or KMZ file, right-click on it to see a pop-up menu, as below:



- ☐ Now choose “Save Place As . . .” and browse to the location you would like to store your file.



In this case I have chosen to save it in the same folder as the “Site tour” file, with the default name of “Hotel Sheraton”. You can save your file with whatever name is

appropriate (NOTE: A further option under “Save as type” would be KML, which is simply an uncompressed and more easily editable version of a KMZ file.)

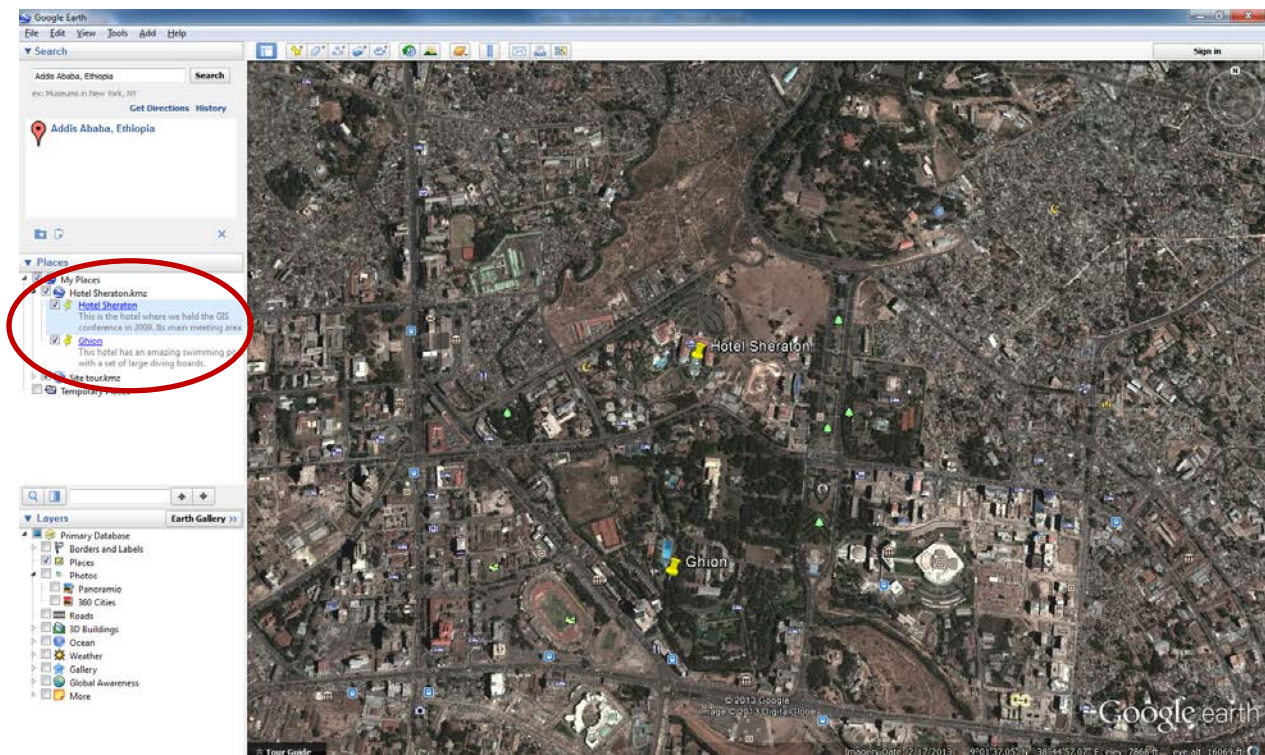
Step 3: Working with KMZ files and their content in Google Earth

Next we will look at other selected locations in Addis.

- ☐ Open the file “Hotel Sheraton. KMZ”.

Say we want to save other hotels as points within the same KMZ file. To the south of the Sheraton is another hotel called the Ghion. Its coordinates are 9°0'50.60"N, 38°45'33.40"E.

- ☐ Click the “add placemark” button (or choose it from the “add” menu) and enter its information into the dialog box, then choose OK. You should see something like the view below:



There are now 2 points within the “Hotel Sheraton.kmz” file. (If both points are not under the same .kmz file, you can drag their names in the Places sidebar to fix this.)

- “Hotel Sheraton” is not a good name for the file, as it now contains another location as well, so right-click its name and choose “rename” from the pop-up menu. Type in “Addis Hotels” as a new KMZ file name.
- Then right-click again and choose “Save Place As. . .” and click “Save” to make sure all locations are now saved in the same KMZ file.

Step 4: Visually re-positioning or otherwise editing a placemark.

To edit the location of a placemark, you have two choices:

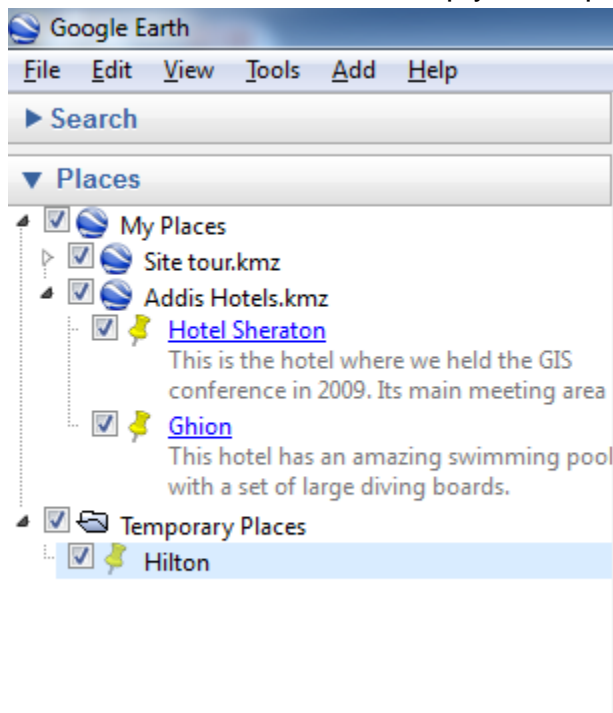
- (Choice 1) right-click on the placemark, choose “properties” from the pop-up menu, and type in new lat/long coordinates, or
- (Choice 2) right-click on the placemark, choose properties, and observe that the placemark now has a flashing, highlighted “bull’s eye” box around it (if necessary, move the “Edit Placemark” dialog box out of the way by dragging its title bar). While the placemark is highlighted in this manner, you can click on it and drag it to a new position on the background image.
- While the Properties dialog is open you can also edit the description or name of the point.
- Next choose “OK”.

No matter which method you have used to move the placemark, in order to **save** the new position as part of the old KMZ file, you will need to right-click on the file name in the “Places” sidebar and choose “Save As. . .”, being sure to replace the old file with the new one.

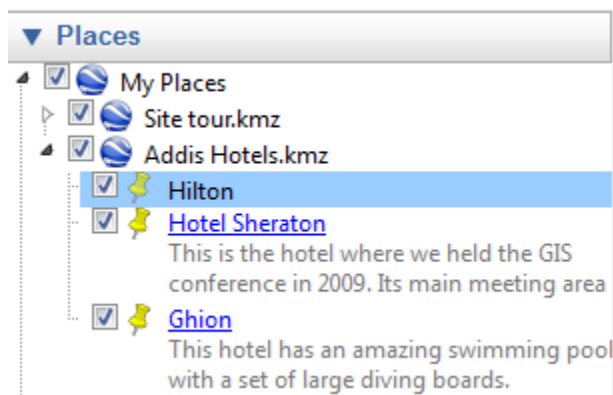
NOTE: If you do not re-save your KMZ file after making edits or adding points, (or, alternatively, do not save any of your new points to “My Places”), then your information will be lost upon exiting Google Earth.

Some details to note: When you chose “Add Placemark” be careful to note where the new point is being entered. In the illustration below, “Hilton” was added to the Temporary Places folder and not to “Addis Hotels” (note the dotted lines to the left of the

names in the sidebar which help you keep track of the hierarchies/locations).



If you wanted this point to be part of the hotels file, you could click on its name and drag it onto the name of the Addis Hotels file. (See the result below).



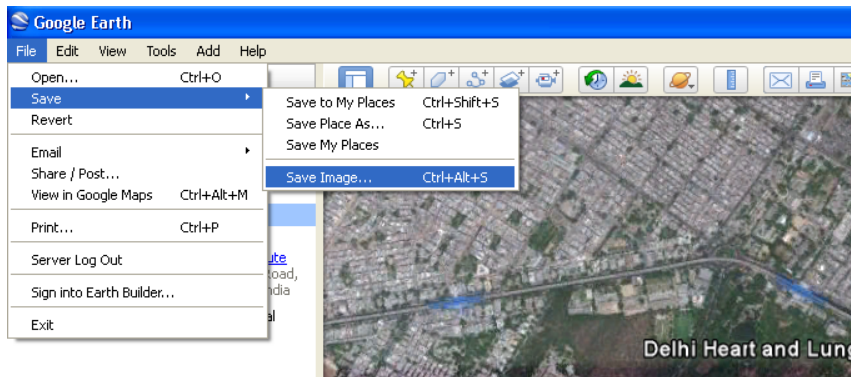
Don't forget to right-click on the KMZ file and "Save As File. . ." to include the new point as part of the old file. Keep the same name (which will result in an alert message telling you it already exists and you are replacing the original—choose "Yes" to do so.)

A final point to note: If you right click on any of the names of the files in the Places sidebar and choose "Delete", you are not deleting the actual file. You are simply removing it from the Temporary Places (or My Places) location. This procedure is unique to Google Earth and may take some getting used to; you may want to try it for yourself until you feel comfortable manipulating your map files within the Places sidebar.

Step 5: Saving an image of the map for printing or sharing.

In addition to saving your point file as a KML or KMZ, you may also want to save the background image as it displays in the Google Earth viewing window.

- ☐ Choose File>Save>Save image. . .



- ☐ Enter a file name in the dialog box which appears (such as “hospitals image”). This will save a JPG (photograph format) file to the indicated folder.
- ☐ Navigate to your file using Windows Explorer and click on it to view the image.

This image can be printed or sent to others for viewing. Unlike the KML/KMZ file, this image will not require Google Earth to be installed on the recipient’s machine in order for them to open it.

NOTE: It is important to note that if you wish to manipulate your locations from within another mapping program, such as ArcGIS or QGIS, *you will need the KML file*. The JPG is simply a screenshot image and does *not* contain location data and is not tied in any way to the surface of the earth.

Exercise End

MEASURE Evaluation is funded by the U.S. Agency for International Development (USAID) and works globally with other agencies to promote a cycle of data demand, collection, analysis and utilization to measure progress toward addressing and confronting disease, population issues, and poverty. The information provided in this exercise is not official U.S. government information and does not necessarily represent the views of USAID or the U.S. government.