5 Google Earth Desktop

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This tutorial introduces you to Google Earth Desktop (not Google Earth Web or Google Earth Pro, which are covered in different tutorials). This version of Google Earth is no longer available, but we include this chapter for those who have this old version.

5.1 Introduction

Google Earth has 3 formats - (a) a mobile device version, (b) an on-line web version, and (c) a version called Pro (a prior version was just called Google Earth Desktop and was replace by Google Earth Pro). In this tutorial, we explore the old Desktop version. In many instances, if you had administrative control on your computer, you will find that it was replaced by Google Earth Pro during an update. Google Earth Desktop is a GIS because it provides a map display and Table of Contents where you can layer multiple files on top of the map document, and it has some basic features of a GIS and allows some personal mapping.

We will not be covering all features and abilities within Google Earth Desktop. We will cover some basics about settings, historical imagery, layers already present, and how to add data from a KML file and a GPS unit. We will also cover some basic editing of features and drawing.

If you are using Google Earth Pro, we recommend that you complete this tutorial. All capabilities within Google Earth Desktop are available in Google Earth Pro. With the exception of the name – Google Earth vs. Google Earth Pro at the top of the program page, all screenshots should be the same or very similar.

Please note, if you are a K-12 Educator, please read the Google Earth Acknowledgement and Use Agreement form as restrictions do exist depending on the age of your student. The Google Earth terms of service are located at https://www.google.com/earth/download/ge/agree.html

5.2 Let’s Get Started – Downloading Google Earth Desktop?

You can no longer download Google Earth Desktop. If you wish to have a desktop version, you will need to download Google Earth Pro, directly from Google Earth Web at https://www.google.com/earth/. Once you have launched Google Earth Web, click on the Menu button and at the bottom of the Menu pop-up window, you see a link to download Google Earth Pro.
How do you know if you have Google Earth Desktop (older version) or Google Earth Pro?

You will see the following icon for Google Earth Desktop:

![Google Earth Desktop Icon]

5.3 Using Google Earth Basics

Open Google Earth Desktop by doubling clicking on the icon. You will see the following:

![Google Earth Start-up Tips]

*Start-up tips* is enabled. We recommend that you leave this enabled until you get used to using Google Earth. If you don’t want it enabled, unclick the box at the bottom that says *Show tips at start-up* (red rectangle above). Once you have finished reading this information, click *Close* and the follow will show:
We are going to explore this window for a bit. On the left is the Table of Contents (actually two different ones-- we will discuss these later). On the right is the Map Window.

Within the Map Window, you see the lines for the Geographic Grid, in this display, lines of latitude and longitude. At this extent, it is only showing major divisions. You can turn on and off the Geographic Grid and we will cover that under settings.

In the upper right hand corner are the navigation tools.

You can:

- Rotate the Earth, north and south or east and west, with either of the two icons.
- Zoom in and out with the slider bar (you can also zoom in and out with your mouse wheel).

Play with these icons. Can you get the Earth to turn upside down (south on the top and north on the bottom)?

5.4 Metadata

Metadata is an important topic to understand. Go to the lower left hand corner for your first set of metadata. From right to left, you find altitude, latitude and longitude and the imagery date. Because we are in space right now looking at the Earth, the altitude is quite high, and measured in miles. As you zoom in, this will change. How do you know what spot on the Earth this figure represents? It is where your mouse pointer is located. The latitude and longitude are also for the location of your mouse pointer. In this display, latitude and longitude read as degree minutes and decimal seconds-- you can change these settings as we will discuss later. At this extent, if
you were to put your mouse in space, that reading will disappear. Finally, the image date – for this extent, this map of the Earth is a composite of the images, so the date represents the latest date for the composite of images. As you zoom in and out, the display date will change to the latest date that Google has for the image for that specific location on the Earth. This date also changes when viewing historical imagery, which will we cover later.

The other metadata information is extremely important – the source of the image displayed in the Map Window, located in the center at the bottom. When you are zoomed out to this extent, you see many sources because, again, this extent shows a composite of images.

If you were to zoom into one specific locale, you would get more specific information, for example Grand Junction, Colorado – is an aerial photo instead of satellite imagery and from the USDA (United States Department of Agriculture).

If you continue to zoom in and go to the extent of Street View, you will get © 2017 Google. Most Street View images are acquired by Google.
Other metadata can be found throughout Google Earth, especially when adding files under My Places, or look at the Layers already displayed in Google Earth. We will discuss these as we proceed.

### 5.5 Table of Contents – Google Earth Default

On the left hand side are two Table of Contents. The one on the top is called *Places* and this is where you will see any new files (layers) that you add to Google Earth. We will discuss this later.

The bottom Table of Contents automatically comes with Google Earth. Yours may look just a bit differently (check marks are present on all layers, which means all of these layers are turned on). You can turn layers on and off by checking or unchecking. (The same applies when you start adding your own layers to *My Places*.) Go ahead and check them all.

Let’s see how some of these work. First go to the top of the Table of Contents and search for Dubai, United Arab Emirates.

You will see this:

![Layer viewer screenshot](image)

It’s a bit messy. That is because we have all the layers turned on. Uncheck all layers except *Borders and Labels*.
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Your image should now look similar to this, much cleaner. But what is the symbology?

In the Table of Contents, click on the > next to Borders and Labels (red circle to the left) to expand it. It expands into two more categories – Borders (polygons) and Labels (points). But notice, we have two (2) more >, one next to each category. Click on each of these to expand further.

First, look under Borders-- we now have 6 different layers. Yellow polygons, hollow inside, are International Borders and Coastlines; light blue are 1st Level Administrative Borders (States/Provinces) and cyan is 2nd Level Administrative Borders (Counties). The Flags are layers including Country Names and 1st Level Administrative Names (States/Provinces). We only see International Borders and Coastlines in Dubai because United Arab Emirates does not have those Administrative levels as we find in other countries.
Now look under *Labels*.

We have red points for *Populated Places*, a point surrounded by a circle for *Islands*, green triangles for *Geographic Features* and waves for *Water bodies*.

We only see some red points in the extent for Dubai because the other features are not present.

If you want to see what some of these other features look like in your Map Window, zoom into the state of Colorado, United States. We now have both *Administrative Levels* and some *Geographic Features*. You see only *1st Level Administrative Names* because we are not zoomed in close enough to see the county names.

In this Table of Contents, the symbology is set by Google, so you can only turn it on and off, you cannot change the colors or the icon.

Let’s explore another layer. Please now go back to Dubai.

Check Photos and you will see little images of jpegs but also a red circle with 360 on it (If you don’t see any 360 photos, you may need to zoom in a bit.) Click on one of the red 360 circles. It provided a pop-up with additional information – more metadata. Go ahead and close the pop-up.
Now click on any of the photo icons. You get a photo that has been uploaded by an individual person (image on the left below). In this case, the person uploaded two. If you have photos of a specific location, you can upload them to Google Earth. However, if you do so, you lose your rights to the photos, they then enter public domain. Thus, a screen shot, as seen below, can be posted. If you click on *Fly to this photo’s location*, if Google has a *Street View*, you will get that (although it does not for this location). Otherwise, you will might get a blurry image (middle image below). You can click on the *Street View* icon and if a *Street View* image is not available, you will see *ground view*, noted in the upper right hand corner of the Map Window (image below on the right).

Go ahead and turn others on and off to familiarize yourself with the data provided. The messiest one is *More* (we will discuss that topic just a bit. If you click on the > in front of the word *More*, it extends the number of layers. Now you can see why *More* is the messiest – it is adding at least 9 more layers.

Two of these layers require additional discussion – *Spot Image* and *DigitalGlobe Coverage*. Turn on Spot Image. You don’t see much, except some lines. Spot is a satellite system-- the lines represent the boundary of the satellite scene\(^7\) covering the area. Let’s take a closer look. Turn off all the layers except *Spot Image, Spot One World, One Year*.

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\(^7\) A Spot Scene boundary is the area covered by one Spot Satellite image. For more information on Spot, and Spot One World, One Year go to [http://www.intelligence-airbusds.com/en/143-spot-satellite-imagery](http://www.intelligence-airbusds.com/en/143-spot-satellite-imagery) or [https://www.gim-international.com/content/news/spot-image-launches-one-world-one-year-imagery-layer-on-google-earth](https://www.gim-international.com/content/news/spot-image-launches-one-world-one-year-imagery-layer-on-google-earth)
World, One Year. Zoom out just a little bit so your Map Window looks like the following screenshot (we need to be able to see the boundaries of one Spot scene):

Click on any one of the round circle icons (white box indicates that one is clicked for this tutorial). This pop-up provides additional metadata for the satellite image contained within the boundaries shown thus-- an image was acquired by Spot 5 on the 28th of April, 2011 at 6:47:41 UTC (Coordinated Universal Time, formerly Greenwich Mean Time).
Now, turn off Spot and turn on DigitalGlobe\(^8\) Coverage. This is the messiest of them all. If you expand the layer, you encounter multiple years of DG Coverage. You can turn these, individually, on and off. In the screenshot on the left, turn on the year 2009 and expand the layer. You have different levels of cloud cover. The blue boxes are actually the boundaries of the individual scene.

Look at the Map Window, you see lots of lines and DG in a blue box with a date underneath in red (metadata). The date tells you the date of the Digital Globe Image (again, you may need to zoom in or out to see these). If you click on the blue box, it will display some metadata on the image – including the Digital Globe ID No., the Cloud Cover and Quality data. It also has the word preview. You can click on that word, and then you have to be patient while it loads the Digital Globe image – look at the bottom and you see a green status bar. You have to be very patient, it takes time to load. You might also have the page expire, depending on your internet connection. You may need to click on Open in Internet Explorer button in the upper right hand corner.

\(^8\) For more information on DigitalGlobe Satellite systems, go to: https://www.digitalglobe.com/content
We are now ending our exploration of the Google Earth provided here by the Table of Contents. Again -- you can further explore on your own.

### 5.6 Changing the Default Settings in Google Earth Desktop

Google Earth loads with many default settings, which you can change. On the Toolbar, go to *Tools, Options*.

The following window opens:

We will not discuss each of these. For example, the first row of boxes -- Texture Colors, Anisotropic Filtering, and Graphics Mode -- if you need more information, contact your IT Departments.

The second row, 1st box -- *Show Lat/Long*, here is where you can change the display of your Latitude and Longitude. Decimal Degrees would look like:

Universal Transverse Mercator (UTM):

UTM Zone – 40R and the coordinates in meters, East and North of the zone’s origin. You have only changed the coordinate system, so elevation and altitude are still showing in the default settings of feet and miles.

Change the *Unit of Measurement* (the next box)— now, everything is displayed as metric units:
You can change the 3D Font. (We won’t do that here.) You can also change other options in this specific window to help with faster rendering. We briefly will look at some of the other tabs.

Cache – is related to memory, check with your IT Department on any changes.

Touring and Navigation tabs are settings specific to zooming in and out, flying around in Google Earth, etc.

The General tab contains settings that might be helpful with regard to changing the language displayed for a non-English speaking students, emailing, tooltips, how errors are displayed, etc. If you are new to Google Earth Desktop, enabling Show start-up tips is recommended (red box).

We won’t discuss these, as they are each an individual choice as to how you want to receive information, or how your IT Department feels your emails or access to local drives should be handled. The best thing about Options is the button on the bottom left, Restore Defaults. You don’t need to remember what they were, just hit the button and click OK or Apply.

5.7 Exploring the Historical Imagery Option

For this next section, go back to Dubai and then zoom in on the coastal area as shown below (no, the white arrows are not present on your screen):
We are going to examine the changes to the coastal area using Historical Imagery within Google Earth. Most specifically, the human changes which added the Palm Islands (white arrows).

You can access the Historical Imagery option in two areas. 1st - on the toolbar, go to View and check Historical Imagery.

Or on the toolbar with icons, click on the icon within the black circle below:
Both options turn on the *Historical Imagery* sliding bar, which will pop up in the upper left of the Map Window.

As you can see, Google Earth has Historical Imagery for Dubai back to 1984 (red circle above). You can either grab the slider with your mouse and slide it back and forth, or use the arrows at each end of the line – going to the left, the imagery gets older and to the right is more recent imagery.

Before we talk more about what happens in the Map Window, let’s look at the sliding bar a bit closer. In the upper left corner of the pop up window are two zooms – these zoom in and out on the divisions in the sliding bar. As you can see below, one click on the Zoom in changed the display to go back only to 2007, but each white division line represents one historical image.

In the below screenshot, move the sliding bar to the left to 1984 and placed your mouse on one of the white lines. It shows the dates that each white bar represents.

Clicking on *zoom out*, you can change the sliding bar back to the original time line.

The setting button (red circle above) allows you to change the Date and Time Options for Historical Imagery.

Let’s now look at what happens in your Map Window when using the sliding Historical Imagery bar. When you first click on the slider, the screen changes and the date of the image is placed on the lower information bar on your screen and the image source in the bottom middle.
Remember, the image source also changes when you zoom in and out.

Now, either slide the slider to the left or click once on the left arrow. Look at the bottom— the image source is the same but the image date is now 12/30/2015. Keep clicking and watch how the features (called Palm Islands) in the Persian Gulf have changed, most specifically watch the areas indicated by the white arrows. The screenshot below is 12/30/2004.
For 12/30/2002, only one of the three Palm Islands is even partially present:

12/30/1984 below – not only are the Palm Islands not present, look at the change in the extent of the urban area. You can use the historical imagery to show changes over time.

Question – what is the source of the 1950 image of Las Vegas?  (Answer – NASA, obtained from the U.S. Geological Survey – do you remember how we found this metadata?)
The loss of water from the Aral Sea, 1972 to 2016

1984 to 2016, desert to irrigated agriculture in Saudi Arabia
5.8 Exploring the Table of Contents - Places

We are now going to discuss the top Table of Contents – Places. This is where Google Earth records your activity as Temporary Places. You can see it recorded when we clicked on the individual photo (red box). You can remove these – right click on the file name and hit delete. Google Earth will ask you if you are sure. Click OK.

My Temporary Places are now empty.

5.9 Adding a Placemark

You can add placemarks for places of your choice. To add a placemark, search for the location you wish to add a mark. Once you have found that location and it appears in the Map Window, go to Add, Placemark (red rectangle below).
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This adds a placemark in your map window, the yellow pushpin and opens the New Placemark window. If the placemark is not in the exact location you want it, you can move the Earth view around to put your placemark exactly where you want it. The latitude and longitude showing in the New Placemark window will change as you move it.

In the screenshot below, we are under the Description tab and the Name bar is highlighted (red rectangle). You can name your placemark anything you want. You can also add text, links, or images in the freeform box.

You can also change the icon from a pushpin. In the red box in the screenshot above, click on the button that has the yellow pushpin and you get an icon window. You can choose any of these, or click on Add Custom Icon at the bottom to get a browse window and choose another type of icon. For our purposes, we are just leaving it as a pushpin.

Below, placemark was named “Where I want to visit”, and you can see it also changed the name in the Map Window.

The color was originally yellow (prior screenshot), but look it is now blue. Click on the Style, Color tab and you can change the label and icon colors. You can also change the scale (size) and opacity. Go ahead and experiment to see what best suits your purposes.
Click on the text tab – View – to see additional settings for the Map Window that you can change. For example, checking the box next to Center in View (red rectangle) will move the icon into the center of the Map Window. Note – it won’t place your location in the center of the Map Window, it moves the placemark icon into the center, so be careful that is exactly where you want your placemark.

Click on the last tab – Altitude. Normally, we want our placemark **Clamped to the ground**, but as you can see, we have additional setting, if you want to view the differences or are interested in distances to or above the sea floor (of course, this likely only makes sense for coastal areas). **Please note that we do not recommend that you use Google Earth for calculating distances for rock climbing, snorkeling, scuba diving or any other activity that could results in injury or loss of life.**

Depending on which setting you choose, you will enable the *Ground to Space* sliding bar (as you slide to the right towards the word *Space*, you zoom out and the altitude measurement is added), the *Extend to ground* (lengthens the height of the cursor above ground) or the *Track cursor height* (tells you the length of the cursor above the ground) options.
When you have completed and are happy with your settings, click OK and it will add your placemark to your *Temporary Places*.

If you now close Google Earth (without taking any additional steps), you will get a dialog box asking if you want to save your placemark in your “Temporary Places” folder to your My Places folder or discard. If you save to My Places, it will show up next time you open Google Earth. You can also save it before you close Google Earth. See below.
As you can see from this dialog box, you also have many other options. You can copy your placemark, you can delete it, rename it, or email it. If you have not set your email (remember from Google Earth settings discussed above, you need to set your email), you will get the dialog box on the right.

From the dialog box on the left, you also can get directions, and there is also a Properties link.

If you click on Properties, it takes you to Edit Placemark, where you have the same tabs discussed above for Description, Style, Color, View and Altitude. So if you don’t like what you set when you added your placemark, here is where you can make changes.

To save any placemarks before closing Google Earth, right click on the name of your placemark in the Table of Contents, then click on Save to My Places. If you have a specific folder where you want to save it, for example, a folder for a specific class project for which you are using Google Earth, click on Save Place As and then navigate to the file folder where you want to save it. Once you have saved your placemark, it moves to My Places.

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9 If you don’t already have a file folder set up, you can right click on My Places to create one.
There are multiple ways to add placemarks. You can right click on the words *My Places* and add a placemark directly there, or you can right-click on the words *Temporary Places* and add a placemark.

5.10 Adding external files to Google Earth Desktop

5.10.1 KML Files

First, we need KML files. Go to [https://www.census.gov/geo/maps-data/data/tiger-kml.html](https://www.census.gov/geo/maps-data/data/tiger-kml.html) and we can get a KML files for your use.

You get this website – the US Census Bureau has files with boundaries at many different scales that you can download.

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10 What is KML? KML stands for Keyhole Markup Language, which is a file type supported in Google Earth. See [https://developers.google.com/kml/](https://developers.google.com/kml/) for more information.
Click on Region.

Then, click on \texttt{cb\_2016\_us\_region\_500K.zip} under Download.
You are downloading this file to your computer. You get the following pop-up:

Make sure the *Save File* button is chosen and then click *OK* to download it to your download folder. Once downloaded, go to your download folder and you will see the following zipped file.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date modified</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>cb_2016_us_region_500k</td>
<td>7/7/2017 4:14 PM</td>
<td>Compressed (zipped)</td>
<td>1.736 KB</td>
</tr>
</tbody>
</table>

Go back to the US Census Bureau KML Cartographic Boundary Files website (the first one) and also download the files for *Nation (US Outline)*, *States*, *Counties* and *Urban Areas*. We can use all five (or more) in Google Earth Desktop. Once all five files are downloaded, then proceed in this tutorial about unzipping the files.

Right click on the file and you will see the following window:

Click on *Extract All*…

Use *Browse* to navigate to the folder where you want to unzip the files.

Once you have chosen the correct folder, click on *Extract* at the bottom and the following files will be displayed in your file folder:
Perform these unzipping operations for all five downloaded files. Your file folder will look like this once all are unzipped:

<table>
<thead>
<tr>
<th>Name</th>
<th>Date modified</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ct_2016_us_county_500k.kml</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>312.94 KB</td>
</tr>
<tr>
<td>ct_2016_us_county_500k.kml.iso</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>23 KB</td>
</tr>
<tr>
<td>ct_2016_us_county_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>37 KB</td>
</tr>
<tr>
<td>ct_2016_us_county_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>23 KB</td>
</tr>
<tr>
<td>ct_2016_us_county_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>170 KB</td>
</tr>
<tr>
<td>ct_2016_us_county_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>7 KB</td>
</tr>
<tr>
<td>ct_2016_us_county_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>34 KB</td>
</tr>
<tr>
<td>ct_2016_us_nation_10m.kml</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>15 KB</td>
</tr>
<tr>
<td>ct_2016_us_nation_10m.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>5.744 KB</td>
</tr>
<tr>
<td>ct_2016_us_nation_10m.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>14 KB</td>
</tr>
<tr>
<td>ct_2016_us_nation_10m.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>34 KB</td>
</tr>
<tr>
<td>ct_2016_us_nation_10m.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>17 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>8.154 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>19 KB</td>
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<td>XML File</td>
<td>34 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>18 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>28.502 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>14 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>35 KB</td>
</tr>
<tr>
<td>ct_2016_us_state_500k.kml.sha</td>
<td>7/6/2017 1:30 PM</td>
<td>XML File</td>
<td>18 KB</td>
</tr>
</tbody>
</table>

Now go back to Google Earth and in the tool bar, click on **Open**.

Then, navigate to where you saved your unzipped files. We are only going to add one KML file right now, so highlight the one for the US Nation, which is the United States outline. Be sure you have highlighted the file type – KML as seen below. Once you have highlighted the correct file, click **Open**.
Once you have opened it, it will add to Google Earth in the **Temporary Places** Table of Contents and in the Map Window, zooming to the entire US (not just the continental US – see Hawaii in the west and Puerto Rico in the east?). Be patient, it might take a few seconds.

You can add multiple KML files at one time. Go back to *File, Open* and then navigate back to your folder containing your unzipped files. Highlight each of the other KML files (just the KML type) but holding down *ctrl* on your keyboard and click on each one to highlight, then click *Open*. 
All the KML files are now added. You can see them listed in your Temporary Places.

You cannot see all of them, but you can turn them on and off by unchecking or checking the box next to the layer name, just as we did under the Google Earth Table of Contents below.

You can also change the symbology for each of your layers. Turn off all the layers except the US Regions. The US is divided by the Census Bureau into 4 regions – West, Northeast, Midwest and South. You can see them displayed in the Map Window. How can you find their names?
Now click on > in front of the name ‘cb_2016_us_region_500k’, just like you did with the layers under the Google Earth Table of Contents.

It expanded the layer to show the individual features. You can change the symbology for all the features so they are the same or change the symbology for each individual one.

To change the symbology so it is the same for all of the features, right click on the name ‘cb_2016_us_region_500k’ and then click on Properties.

You get the dialog box like we have seen before, except it is titled Edit Folder. Click on Style, Color and you can change the symbology here, but it will be the same for all 4 regions.

So let’s do them individually.
First, be sure that the features are expanded so you can see each one of the regions listed.

The right click on any Midwest and click on Properties, you will get a warning message, just click OK.

Go to Style, Color and change the Line color to yellow (click on the blue box to get a color palette) and then under area, click on the drop down menu and click Outlined (we don’t want a fill color, just the outline). Click OK.

Midwest region will look like this:
Now go back and do the other 3 regions, so you final map looks like this:

There is one other item to show you before we return to the other layers. These layers have metadata. To access the metadata, left-click on any of the feature names and the metadata window opens. Click on Midwest and we have information as follows. The RegionCE, AFFGEOID, GEOID, NAME, LSAD are designated by the Federal Government. The other two ALAND and AWATER are the total area of land and water in the region.

Go back and turn off the Region layer and turn on States and Urban Area (UA) layers and make your Map Window, look like this:
One more thing to show you. Expand the layer for Urban Areas. It should look like this:

They are in alphabetical order. There are thousands of features. Left double-click on Aberdeen MS, it will zoom to Aberdeen and also give you the attributes (metadata) for that urban area. Yes, you could change the individual symbology, but it would take a very long time.
Like what you did? You can save your maps, just like you did by adding a placemark. Go to *File, Save* and then choose what you want to save:

Before proceeding to the next section, turn off all of your layers in *Temporary Places* and *My Places*.

### 5.11 Adding Data from a GPS Unit

If you have a GPS receiver with a USB cord, you can download data directly from that unit into Google Earth Desktop. Your GPS receiver must be turned off before you plug the USB cord into the computer. When you plug it in, your computer will turn it on (you do not need a specific program on your computer to load into Google Earth, just follow these steps).

Go to *Tools, GPS*

You get this window.

Choose the appropriate receiver, in our case it is Garmin.

Then click *Import*.

If you get this message:

Look at the GPS receiver and make sure it is on, and that it shows as an external drive on your computer. If it is not showing, give your computer a minute to recognize it.
Then try *Import* again. If you are still having problems, contact your IT Department.

But when Google Earth finds your GPS receiver, which in most cases, only takes a minute or less, you will see this message:

Once the data from your GPS receiver is loaded into Google Earth, you will get this message, and Google Earth will zoom to the location of your data. Of course, the number of tracks and track points will vary depending on what you collected on the GPS receiver. It is highly recommended that you delete any old information from your GPS before adding any new information.

Your GPS receiver will also show in your Table of Contents, under *Temporary Places*.

And the tracks and points will show in the Map Window. The display includes the date of data acquisition.

You can change symbology, just like you have done with other layers, the only difference is that you are working with 3 themes – track, points and labels:
You can also save, just as we have described under previous sections.

So, if you already have GPS data saved to your computer, you don’t need to go find the receiver and hope the data is still there. You just import from file:

which allows you to navigate to the file folder on your computer where you saved the GPS data (in all likelihood, it was saved as a GPS Exchange file (GPX)).
You can also add saved GPX files by going to File, Open and navigating to the file folder where you have the files. The only difference is that you have to change the file type in the bottom of the Open window (red rectangle below) so Google Earth knows to look for a file type other than KML.

Again, you can save it just like we discussed previously.

This concludes our tutorial on Google Earth Desktop. Google Earth Desktop can also perform many other functions. We did not complete any YouTube videos specifically to Google Earth Desktop but many of the Pro videos can assist with some of these functions.
Additional Information:

You can find Google Earth Outreach tutorials at this link:

https://www.google.com/earth/outreach/tutorials/

If you are interested in staying up to date on Google Earth, the following blog monitors changes on a regular basis:

http://www.portailsig.org/aggregator/sources/13