2. Google Earth Web (or Google Earth for Chrome)

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This set of tutorials introduces you to Google Earth Web (not Google Earth Desktop or Google Earth Pro, which are covered in a different tutorials). The browser - Google Chrome - is now required to download Google Earth, or run Google Earth Web, so if you do not have Google Chrome, you can download it by clicking this link:

https://www.google.com/chrome/browser/desktop/index.html

2.1 Introduction

Google Earth has 3 formats, a desktop version, on-line web version and a mobile device version). We start with a discussion of the web version in this tutorial because if you don’t have the desktop version, you must go through the web version to download it to your desktop. Google Earth Desktop and Pro are discussed in other chapters. Google Earth Web is on-line GIS software, it has the display features of a GIS and allows some personal mapping. For our YouTube video introducing you to the Google Earth produces, go to:

https://youtu.be/DaluBU8ZO3A.

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 Agreement and Use Terms can be found at:

https://www.google.com/earth/download/gep/agree.html

2.2 Let’s Get Started

Enter https://www.google.com/earth/ into your Google Chrome web browser.

For our YouTube video introducing you to Google Earth Web, go to:
https://youtu.be/NjWJlt-jWF4
You see the following window:

Click on **LAUNCH GOOGLE EARTH**. This window opens (the first time you do this, it might take a minute). When you launch Google Earth web, you will see **“This is the new Google Earth.”** It takes you through a video tutorial or you can click “Skip” and x out of the video.

Let’s first point you to metadata on the above screen. You see Google in the bottom middle – if you plan on using any images from Google Earth, please refer to the use agreements at: [https://www.google.com/permissions/trademark/](https://www.google.com/permissions/trademark/).
Second, look at the bottom right of the page where Google Earth provides information as to where it obtained the images displayed.

This information will change as you zoom in and out. If you have questions as to the reliability of these images, you can search for the individual information on the web. For example, Landsat – a system of United States land observation satellites is found at https://landsat.usgs.gov/, also a U.S. Geological Survey site; NGA is the National Geospatial Agency; Copernicus is found at http://www.copernicus.eu/.

Now let’s explore the tool bar on the left side of the screen. Click on the Menu button in the upper left corner:

You get the pop up window on the right.

Click on SIGN IN – you use your Google Account or your Gmail sign in. If you have a Google Educational Account, use that.

The next button, below, is Search. You use it to navigate to a specific location. You can enter the location by name, such as Paris, France or with latitude and longitude (for Paris in decimal degrees, this is 48.8566° N, 2.3522° E, but you can enter using degrees and decimal minutes or degrees, minutes, seconds). We do not recommend that you use the – sign instead of south latitude or west longitude; enter S or W.
Go ahead and search for Paris France and see how the screen and metadata changes.

At the following extent, we see Digital Globe and Copernicus, but Google Earth Web is also displaying some physical features, has placed a point on Paris, and provided a pop up window (a Knowledge Card) with some basic information on Paris.

As you zoom further in, Google Earth Web provides the details in 3-D.
Let’s further explore the information in the bottom right corner (these are Navigation tools, for the YouTube video, go to https://youtu.be/1-SNUm58tc4).

This area provides information that the images at this level are from Google, gives the latitude and longitude of the reference point on the larger map and the elevation of that point in meters, notes that the images are in 3D, and provides a reference point (actually in red) on the world icon. The reference point identifies that Paris France is located on the European continent.

Click on the icon of a person and drag it to a specific street, you will enter street view on that specific street. You are in 2D view at street level.

The other icons in the bottom right are zoom in and out (you can also use your mouse wheel) and fly to your location (Google will need to access locational information on your device). The icon within the white circle is navigate, if you hold it down, you can navigate around in street view or in Earth view.

Zoom out so you can see all of Paris, but only far enough that you can still see some labeled features. If you hover your mouse on one of these features, it turns blue. If you click on the blue words, you zoom to that feature and will get some information about it with a Knowledge Card that popped open:
Let’s go back to Menu and explore one other feature. We will review the others later.

The next icon is *Voyager* (yellow oval). If you click on this icon, you can access difference types of information about various places on Earth. We will not go into any detail on *Voyager*. For My Places (maroon oval), we will discuss it in more detail below.

### 2.3 Map Style

Let’s look at Map Style. Click on it. *(The YouTube video on Map Style is [https://youtu.be/rN1aBhNt7Tc](https://youtu.be/rN1aBhNt7Tc).*

This allows you to customize how you see the map when you are zoomed in at a location. The one that is in color is how it will be displayed on the map.
As an example, change it to the 3rd map style – *Everything* - and the display of Paris France changed, as seen below.

The last one – *Custom*, gives you many more options. We will not explore each one of these, you can do that on your own.

Now, back to the Menu icons.

The *Feedback* icon allows you to communicate with Google. *Help* takes you to the *Google Earth Help Center*. (For the YouTube video on these items, see the Introduction to Google Earth Web video - [https://youtu.be/NjWJlt-jWF4](https://youtu.be/NjWJlt-jWF4)).
Now click on **Settings** and you get the following screen:

Here, you can turn on and off the *Fly Animation* and change the *Fly Animation Speed*. Google has accessed our location and noted our region as US.

You can change the *Units of Measurement*, you only have two options:

You can turn on and off the *zoom buttons*.

You can change the Memory cache size. You would only need to do this if you are working with a very large class.

The last one – Enable KML\(^1\) file import (experimental). This button is turned off. Turn it on here, we will explore it later in this Chapter on Google Earth Web, and we will use it extensively in the Google Earth Pro tutorial (this ability is not experimental in Google Earth Pro).

Once that is turned on, you can close out the **Settings** window by clicking on **Save** in the bottom right corner.

Now, let’s go back to the original toolbar on the left side of the screen. We have discussed the first two icons - **Menu** and **Search**.

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\(^1\) 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.
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The next icon is Voyager again (yellow circle). Clicking on it here, takes you to the same information as when you accessed it under menu.

The next icon is called I’m feeling Lucky (green circle). If you click this icon, Google Earth does a random search and choose what it thinks might interest you.

We skip to the last icon – Share (red circle). If you click on this icon, you get the following pop up: This has a Classroom icon, which we will discuss in more detail later.

For now, just close the window.

2.4 My Places

Let’s now discuss the last icon – My Places (white circle). This is where Google Earth Web becomes interactive.

If you still see Enable KML import in Settings at the bottom of the window on the right, you did not enable the KML button. Go back to the previous page and do the steps again.

2.5 KML Files

Now, we need to take a little side trip, because we are going to need a KML file to import as an example. (YouTube video on finding KML files: https://youtu.be/8bLweAYxQoM).

Go to https://www.census.gov/geo/maps-data/data/tiger-kml.html and we can get a KML file for your use.
You get this website – the US Census Bureau has files with boundaries at many different scales.

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.

Right click on the file and you will see this 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:
Now go back to Google Earth Web and open the *My Places* window.

Click on *Import KML File* (for the YouTube video on Using KML in Google Earth Web go to [https://youtu.be/G2uGOSbk6ns](https://youtu.be/G2uGOSbk6ns)).

Then click on *Open file*…
Navigate to the folder where you unzipped the KML file, highlight the file that shows type KML and then click Open. Be patient, a file with many features may take a minute or more to load.

If you choose the same file, the file will display in Google Earth Web and is listed in the Table of Contents on the left. The US is divided into 4 regions – Northeast, South, Midwest and West - the boundary for each is medium blue.
Click on the down arrow (aka carrot) at the beginning of the file name and each region is listed. If you click on the name of any region, a dialog box opens and provides you information about the region (information from the US Census Bureau. If you are familiar with shapefiles, this is metadata in the Attribute Table). You can get this same information if you click on that particular region in the map document window.

You can remove the file from Google Earth by clicking on Discard, the trash can or by right clicking on the file name and choosing delete. Clicking on Rename, you can rename the file to something simpler – like Midwest.
If you click on the eyeball, it removes that individual region from the map display.

If you click Save, you can save the map to your device. Then when you go back into Google Earth Web and sign in, you can reopen the file.

You can also zoom into one particular feature.
Double click on Northeast and it zoomed to the Northeast Region as seen below.

If you click on Export as KMZ file, it will save the map so that you can just click on the title in your file folder and it will open as it. If you have clicked on just one of the regions, only that feature will be saved. Please note that the file will open in Google Earth Pro, if it is on your computer.
Look at the bottom left of the window, you can see the exported file there - just saving the one feature, not the entire Region file.

Double click on the file name, it opened in a new window. I have Google Earth Pro, so that is the program that opened below:

Can you add multiple KML files? Yes, but it slows down Google Earth Web tremendously. If you want to work with multiple KML files, we recommend using Google Earth Pro.
Additional examples are included below, so you can work with different KML files.

All urban areas in the United States, listed in alphabetical order in the Table of Contents (again a file downloaded from the US Census Bureau website):

Zoomed into Grand Junction, Colorado.

Exported as a KMZ for that specific feature.
Opened as its own file in Google Earth Pro:
The individual states of the United States.

Performing the same functions -- Colorado as a separate file and displayed in Google Earth Pro.
In the next screenshot, the files for Mesa County, Colorado, the Western Region of the United States (from the region file), and the boundary for the US were added.

Grand Junction is in Mesa County, the State of Colorado, and the Western Region of the United States of America. These are all displayed in Google Earth Pro and the theme colors selected individually.

2.6 Using Placemark in My Places

So what if all you want to do is search for a place and add it to *My Places*? (For the accompanying YouTube video, go to [https://youtu.be/njzDD-t6TSQ](https://youtu.be/njzDD-t6TSQ)).

Use *Search* to locate your place. A balloon will be located on the map and the *Knowledge Card* will show up. Click on the Add button at the bottom of the *Knowledge Card*. 
Google Earth will add it to your My Places Table of Contents. Yes, you can add places even when you already have a KML file on display!

2.8 Sharing

You need a Google Educational Account if you wish to Share to a classroom. If you do not, check with your school’s resource or technology officer to obtain the information. (For our YouTube video on Sharing, go to https://youtu.be/KkS8MVH8Me4.)

Go to the Share button and then click on Classroom. You get the following window. Click continue.
When you sign in, if you signed in using your education account, it will take you to your Classrooms. Additionally, after you select your class, you choose to add it as an assignment, announcement or question. If you have not joined a classroom, you can also do that here.

This concludes our tutorial on Google Earth Web. Please see the tutorials Google Earth Pro (Chapter 3) or Google Earth Desktop (Chapter 5) for additional features.

The YouTube Videos that accompany this chapter are found at:

1. Introduction to Google Earth
   https://youtu.be/DaluBU8ZO3A
2. Introduction to Google Earth Web
   https://youtu.be/NjWJlt-jWF4
3. Locating KML Files for Google Earth
   https://youtu.be/8bLweAYxQoM
4. Navigating in Google Earth Web
   https://youtu.be/1-SNUm58tc4
5. My Places in Google Earth Web
   https://youtu.be/njzDD-t6TS0
6. Map Styles in Google Earth Web
   https://youtu.be/rN1aBhNt7Tc
7. Sharing in Google Earth Web
   https://youtu.be/KkS8MVH8Me4
8. Using a KML File in Google Earth Web
   https://youtu.be/G2uGOSbk6ns