

Investigating Weather with Google Earth Student Guide

In this activity, you will use Google Earth to explore some factors that affect weather. You will:

1. Determine how different factors affect a location's climate.
2. Explore, analyze, and interpret weather patterns in 7 different U.S. cities.

Read **all** instructions and answer **each** question on your field guide.



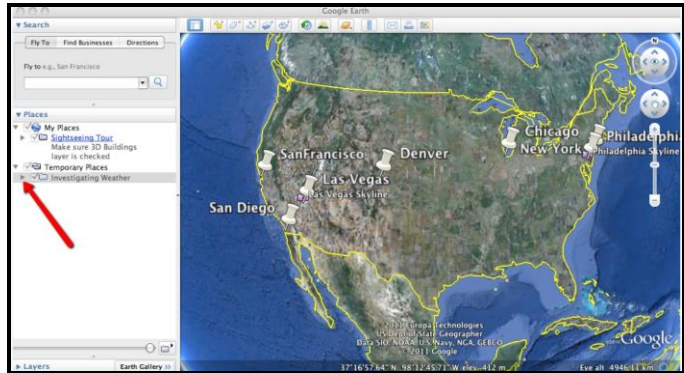
Step 1: Download data

a. Open your Web browser. Go to <https://eli.lehigh.edu/learners/climate-change>

b. Under Investigating Weather with Google Earth, click on **Google Earth file: investigatingweather.kmz**.

Note: If the file download does not automatically launch Google Earth, double-click on the downloaded file **investigatingweather.kmz** to launch Google Earth.

c. Click the arrow to the left of **“Investigating Weather”** in the left panel (see red arrow).



d. The Investigating Weather drop-down list will extend. If you cannot see the whole list, scroll down.

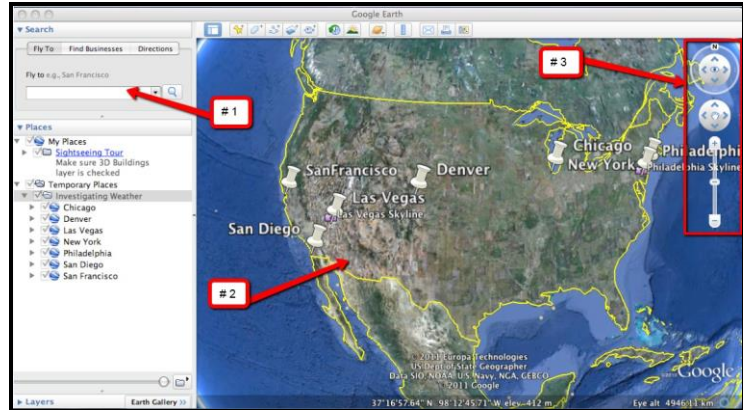




Step 2: Basic features of Google Earth

Note the following Google Earth features, tools, and navigation controls in the figure on the right.

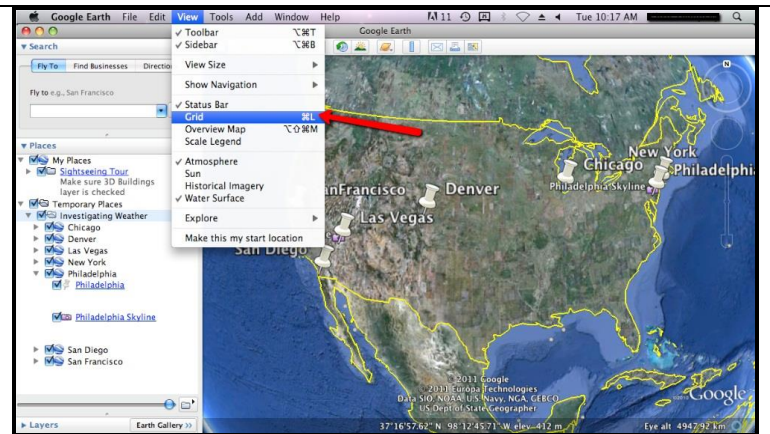
1. **Search Panel** (arrow #1) – Type in the white box to find a location.
2. **3-dimensional (3D) Viewer** (arrow #2) – This window shows the Earth and its terrain.
3. **Navigation Controls** (arrow #3) – Use these controls to zoom, look, and move around. If the navigation controls are not visible click on View>Show Navigation>Always.



Step 3: Interpreting climatographs

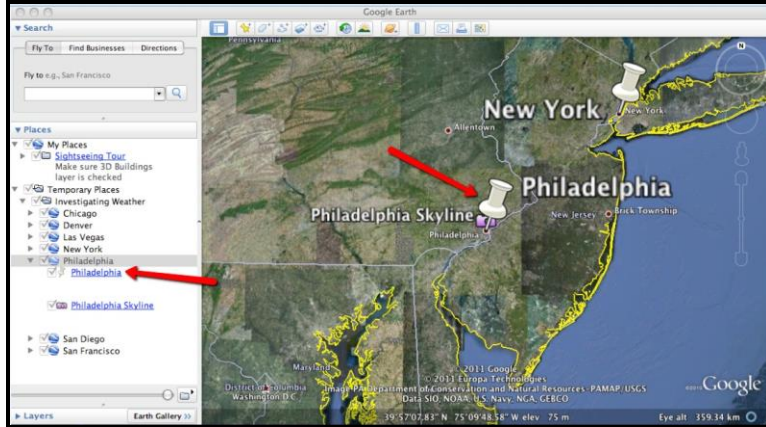
You will explore annual temperature patterns in 7 different U.S. cities using climatographs in Google Earth. During your explorations, you will record data and answer analysis questions on the **Investigating Weather with Google Earth Student Exploration Sheet**.

- a. **Turn on the Gridlines.** Click on **View**. Then select **Grid** if the gridlines are not activated as shown in the picture to the right.



b. **Double-click** on **Philadelphia** in the **Places** window. Google Earth will zoom in to the city of Philadelphia.

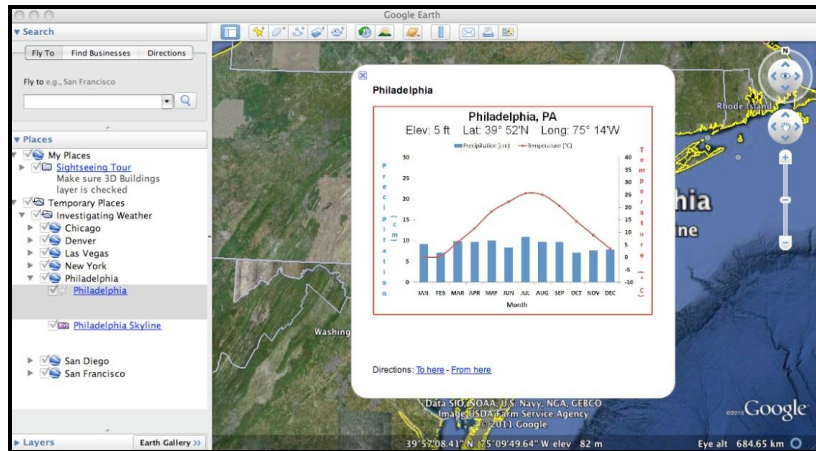
c. **Click** on the underlined word **Philadelphia** in the **Places** window (as shown to the right) or **click** on the **Push-Pin** in the 3D viewer to view the Philadelphia climatograph.



d. To the right is the **Philadelphia** climatograph. Note that “months” are located on the x-axis, “temperature in degrees Celsius” is located on the right y-axis, and “precipitation in centimeters” is listed on the left y-axis. The average monthly **temperature** is noted by the **red** points on the graph. The average monthly **precipitation** is noted by the **blue** bars on the graph.

Observe the pattern in the climatograph’s temperature data. The climatograph displays a seasonal pattern with lower temperatures during the winter months and higher temperatures during the summer months. Average annual temperatures increase during the spring months and decrease during the fall months.

Observe the pattern in the climatograph’s precipitation data. In the Philadelphia climatograph, the average monthly precipitation tends to be higher during the spring and summer and lower during the fall and winter.





Analyze climatographs from 7 different U.S. cities in order to complete a series of data tables and answer analysis questions on the **Investigating Weather with Google Earth Student Exploration Sheet**. Follow the directions below.

For each city, you will record weather patterns (both temperature and precipitation) based on a **seasonal** cycle. Note the season(s) in which temperature and precipitation highs and lows occur.

Navigate to cities by selecting the city names from the drop-down menu in the Places window or by using the Google Earth navigational tools.

Note: If you are zoomed out far enough to view the push-pins for more than one city in the 3D Viewer, you can view the climatographs by selecting the push-pins.



Step 4: Exploring weather patterns in San Diego and San Francisco

Navigate to the cities of **San Diego** and **San Francisco** with Google Earth. Examine the weather patterns in these climatographs.



Complete the data table and answer analysis questions # **1-3** on the **Investigating Weather with Google Earth Student Exploration Sheet**. Focus on **seasonal patterns** in the climatographs. Look for periods of (1) cold and warm monthly temperatures and (2) high and low periods of monthly precipitation.



Step 5: Exploring Weather Patterns in Denver and San Francisco

Navigate to the cities of **Denver** and **San Francisco** with Google Earth. Examine the weather patterns in these climatographs.



Complete the data table and answer analysis questions # **4-5** on the **Investigating Weather with Google Earth Student Exploration Sheet**. Focus on **seasonal patterns** in the climatographs. Look for periods of (1) cold and warm temperatures and (2) high and low periods of precipitation.



Step 6: Exploring Weather Patterns in New York, Chicago, and San Francisco

Navigate to the cities of **New York**, **Chicago**, and **San Francisco** with Google Earth. Examine the weather patterns in these climatographs.



Complete the data table and answer analysis question # 6 on the **Investigating Weather with Google Earth Student Exploration Sheet**. Focus on **seasonal patterns** in the climatographs. Look for periods of (1) cold and warm temperatures and (2) high and low periods of precipitation.



Step 7: Exploring Weather Patterns in Las Vegas and Philadelphia

Navigate to the cities of **Philadelphia** and **Las Vegas** with Google Earth. Examine the weather patterns in these climatographs. **Click** on the camera icon at both locations to observe the skyline pictures associated with these 2 cities. This will be helpful in your analysis.



Complete the data table and answer analysis question # 7 on the **Investigating Weather with Google Earth Student Exploration Sheet**. Focus on **seasonal patterns** in the climatographs. Look for periods of (1) cold and warm temperatures and (2) high and low periods of precipitation.