

“HOME OF THE WORLD’S WORST WEATHER LIVE”

ACTIVITY SHEET: Monday, April 6, 2020

Collecting Temperature Data on Mount Washington



Since 1932, scientists living at the top of Mt. Washington, New Hampshire have been collecting weather data used in forecasting and climate research. How do they do it?

In this program we will learn all about one of the most important pieces of data they collect: **Temperature!**



Temperature is the most basic ingredient in any weather observation. What is Temperature? For a simple explanation, visit [Dictionary.com](https://www.dictionary.com), and enter “Temperature” at the top of the page. Enter the first description that you see.

Definition of Temperature:

Measuring Temperature with a Thermometer. Temperature may be the warmness or coldness of a substance and has been studied by scientists for hundreds of years but development of the first Thermometer did not come about until the early 1600s. Early thermometers had no temperature scale and were glass tubes filled with air with one end in a container of water. Over time, these tubes were closed, filled with substances such as alcohol or mercury, and a scale was developed in order to record temperature trends.

On Mt. Washington, we use a **Mercury Thermometer** to record temperature. The mercury inside the thermometer expands or contracts depending on the temperature of the air around it. For a full range of temperatures we might see up here, please visit our [Normals, Means and Extremes](#) page. Take a look at the **Record High** and **Record Low Temperatures** for each month.

What is the *Highest* temperature recorded on Mt. Washington? What was the Year(s)?

What about the *Lowest* temperature recorded? What was the Year?

As you can see, there is a wide range of temperatures on Mt. Washington. With an **average temperature of just 27 degrees**, we are often colder than the rest of the New England region. What are the record temperatures for your town? To find out, visit <https://weather.com/weather/monthly/> and enter your town in the Search box. You can find your **Record High** and **Record Low Temperatures** on the right-hand side of the page under “Almanac.”

Your Town and State

Your Record High/Low Temperatures

Next, take a look at the graph at the bottom of the page for your home town. Notice the colored lines corresponding to the Average High (Orange) and Average Low (Blue) Temperatures. What is the **Average High Temperature** for July in your town? What is the **Average Low Temperature** for January for your town?

Average High for July: _____ *Average Low for January:* _____
From Weather to Climate

Let's now take a look at the **Climate** for two very different locations within the United States: Hilo, Hawaii and Phoenix, Arizona. As a reminder, **Climate is the average weather conditions for a location**, often expressed as the **average temperature and precipitation** for that location. To calculate both for Hilo, Hawaii, visit <https://weather.com/weather/monthly/> and enter Hilo, Hawaii in the Search box. You can find the **Average High Temperature** by adding together each month's averages along the graph at the bottom of the page and divide by 12 (Keep in mind that **Orange numbers** are the Average High Temperatures). To calculate **Average Yearly Precipitation**, simply add together all 12 months' worth of average precipitation (the **Green numbers**) found at the bottom of the graph.

Average High Temperature for Hilo, HI: _____ *Average Yearly Precipitation for Hilo, HI:* _____

Now do the same for Phoenix, Arizona and record the average high temperature and precipitation for that location below:

Average High Temperature for Phoenix, AZ: _____ *Average Yearly Precipitation for Phoenix, AZ:* _____

You now have everything you need to compare the Climates between these two very different locations. While Hilo, Hawaii and Phoenix, Arizona are warm year round, they do not have the same amounts of precipitation.

Can you guess which location has a dry, arid climate and is classified as a desert? What kinds of plants grow here? What kinds of animals?

Can you guess which location is classified as a tropical rainforest and receives lots of rain throughout the year, along with warm temperatures? What kinds of animals and plants live in a rainforest?

Compare Hilo, Phoenix and Mt. Washington

Now let's compare the climates of Hilo, HI and Phoenix AZ with the summit of Mt. Washington, NH. We know from an earlier exercise that the average temperature at Mt. Washington is 27 degrees, but what about the average yearly precipitation? We can find this back on the [Normals, Means and Extremes](#) page at MountWashington.org. Scroll to the Precipitation section and look at the number marked 'Annual.' This is the average amount of rain plus melted snow the mountain receives in a single year. Please record that below.

Average Yearly Precipitation at Mt. Washington: _____

What similarities and differences do you see between these three locations? One obvious difference is the temperature. Why do you think the average temperatures between Hilo and Phoenix are more similar than either is to Mt. Washington? What about precipitation? Why would Hilo and Mt. Washington be more similar in their precipitation levels than either are to Phoenix? Mt. Washington's climate is classified as sub-arctic, which means that it has much more in common with locations in Northern Canada than the rest of the United States.