

WaterViz Investigation 5 Worksheet

Activity Directions: Tables of long-term water cycle data collected at Hubbard Brook are provided for the following water cycle components. What trends do you notice in each of the data tables?

- Temperature
- Precipitation
- Streamflow

Temperature

The Fahrenheit scale (°F) is often used to report temperature in the United States, but scientists more commonly use the Celsius scale (°C).

Decade (10-year period)	Average Annual Temperature (°F)	Average Annual Temperature (°C)
1960-1969	41.2	5.1
1970-1979	41.5	5.3
1980-1989	41.5	5.3
1990-1999	42.3	5.7
2000-2009	42.8	6.0
2010-2019	44.3	6.8

Describe any trends you notice in the temperature measurements:

Precipitation

Inches (in) are often used to report rainfall in the United States, but scientists more commonly use millimeters (mm).

Decade (10-year period)	Average Annual Precipitation (in)	Average Annual Precipitation (mm)
1960-1969	48.0	1219
1970-1979	54.6	1387
1980-1989	50.8	1291
1990-1999	54.8	1393
2000-2009	56.8	1444
2010-2019	59.8	1519

Describe any trends you notice in the precipitation measurements:

Streamflow

Decade (10-year period)	Average Annual Streamflow (mm)
1960-1969	703
1970-1979	900
1980-1989	806
1990-1999	925
2000-2009	938
2010-2019	976

Describe any trends you notice in the streamflow measurements:

Activity Directions. Preparing the Foam Block:

1. Your team will build a 3D model to represent the data for 1 water cycle component.
2. Each straw will be used to represent the average value for one decade (10-year period).
3. You will insert the straws into the foam block. You can decide how you would like to display the data. Be sure to arrange the straws in the correct order from 1960 to 2019.
4. Mark the block with the location for each straw. Be sure to mark the location for all 6 straws in your data set.

Activity Directions. Preparing the Straws:

1. Each group will build a 3D model for 1 water cycle component.
2. You will need 6 paper straws, one for each decade of data.
3. Part of each straw will be inserted into the foam block. It is important to insert each straw to the same depth. Mark each straw to indicate the depth you will insert it into the foam block.
4. When measuring straw lengths, place the 0 cm mark of your ruler on the mark you made on the straw.
5. The table below shows the length that each straw should extend from the foam block. The conversion factors used to calculate these lengths are included below the table.
6. Use a ruler to measure each straw length (begin your measurement at the mark you made on the straw not at the end of the straw).
7. Use scissors to cut the straws and art supplies to decorate them.
8. Insert the straws into the foam block in order from 1960 through 2019. Be sure to insert the straws to the same depth.
9. Label your model (type of data, units, decades).

Note: Use the table below to determine the length (cm) that each straw should extend from the block.

Decade	Temperature (T)	Precipitation (P)	Streamflow (SF)
1960-1969	10.2 cm	12.2 cm	7.0 cm
1970-1979	10.6 cm	13.9 cm	9.0 cm
1980-1989	10.6 cm	12.9 cm	8.0 cm
1990-1999	11.4 cm	13.9 cm	9.3 cm
2000-2009	12.0 cm	14.4 cm	9.4 cm
2010-2019	13.6 cm	15.2 cm	9.8 cm

Conversion Factors:

Temperature: 2 cm of straw represents 1 degree Celsius

Precipitation and Streamflow: 0.01 cm of straw represents 1 mm of water