Floods

What is the difference between floods and flash floods:

Floods:

An overflow of water onto normally dry land. The inundation of a normally dry area caused by rising water in an existing waterway, such as a river, stream, or drainage ditch. Ponding of water at or near the point where the rain fell. Flooding is a longer term event than flash flooding: it may last days or weeks.

Types of floods:

River floods:

River floods are caused when consistent rain or snow melt forces a river to exceed capacity.
River Flooding can happen at any time of the year, but is most common in the late winter/early spring due to snowmelt and heavy spring rainfall. A second peak in river flooding appears in the late summer when the remnants of Tropical Storms and Hurricanes can bring heavy rain to Pennsylvania.

Coastal Floods:

Coastal floods are caused by storm surges associated with tropical cyclones and tsunami.

Coastal flooding is a sudden and abrupt inundation of a coastal environment caused by a short-term increase in water level due to a storm surge and extreme tides. The magnitude and extension depend on the coastal topography, storm surge conditions and broader bathymetry of the coastal area.

Flash Floods:

A flood caused by heavy or excessive rainfall in a short period of time, generally less than 6 hours and rivers, streams, channels or roads may be overtaken.. Flash floods are usually characterized by raging torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them. They can occur within minutes or a few hours of excessive rainfall. They can also occur even if no rain has fallen, for instance after a levee or dam has failed, or after a sudden release of water by a debris or ice jam.

Causes of floods:

- Floods are often caused by heavy rainfall, rapid snowmelt or a storm surge from a tropical cyclone or tsunami in coastal areas
- Overflowing of the rivers , Collapsed dams , Deforestation , Emission of greenhouse gases and Climate change
- Develop slowly or quickly. Flash floods can come with no warning

Now let's on each cause

1- Heavy Rainfall:

- **Definition:**

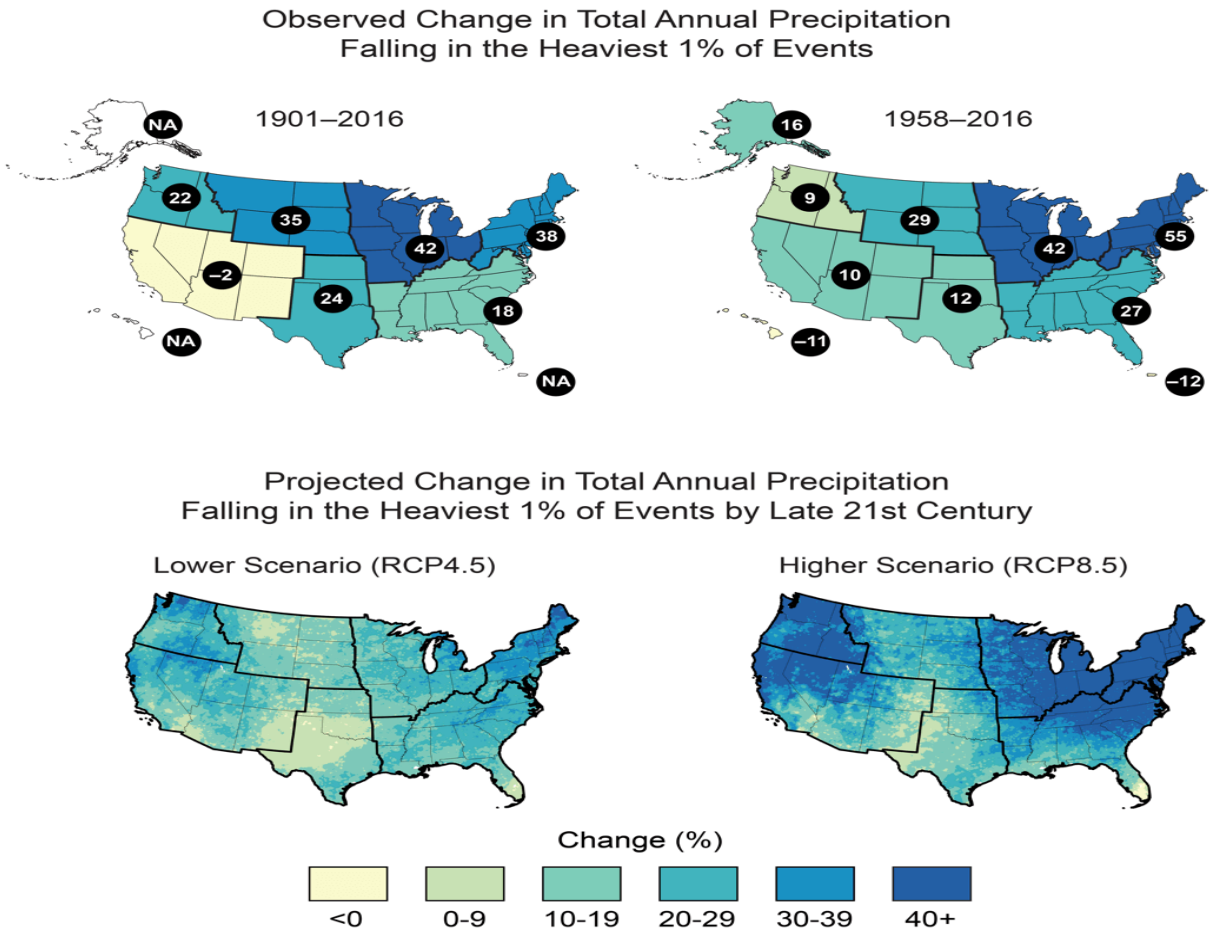
  Heavy rainfall is defined as high amounts of precipitation in a short period of time, which usually falls spatially limited and is accompanied by short warning times due to its convective origin.

- **Causes of heavy rainfall:**

  Climate change can affect the intensity and frequency of precipitation. Warmer oceans increase the amount of water that evaporates into the air. When more moisture-laden air moves over land or converges into a storm system, it can produce more intense precipitation

  Extreme precipitation events have increased in frequency and intensity in the U.S. and across many regions of the world since the 1950s

  In the contiguous United States, annual precipitation has increased at a rate of .2 inches per decade since 1901


Observed Change in Total Annual Precipitation
Falling in the Heaviest 1% of Events
1901–2016
NA
22
35
42
38
–2
24
18
NA
NA
1958–2016
16
9
29
42
55
10
12
27
–11
–12
Projected Change in Total Annual Precipitation
Falling in the Heaviest 1% of Events by Late 21st Century
Lower Scenario (RCP4.5)
Higher Scenario (RCP8.5)
Change (%)
<0
0-9
10-19
20-29
30-39
40+