



CLIMATE CHANGE AND HOW IT HAS IMPACTED THE UNITED STATES

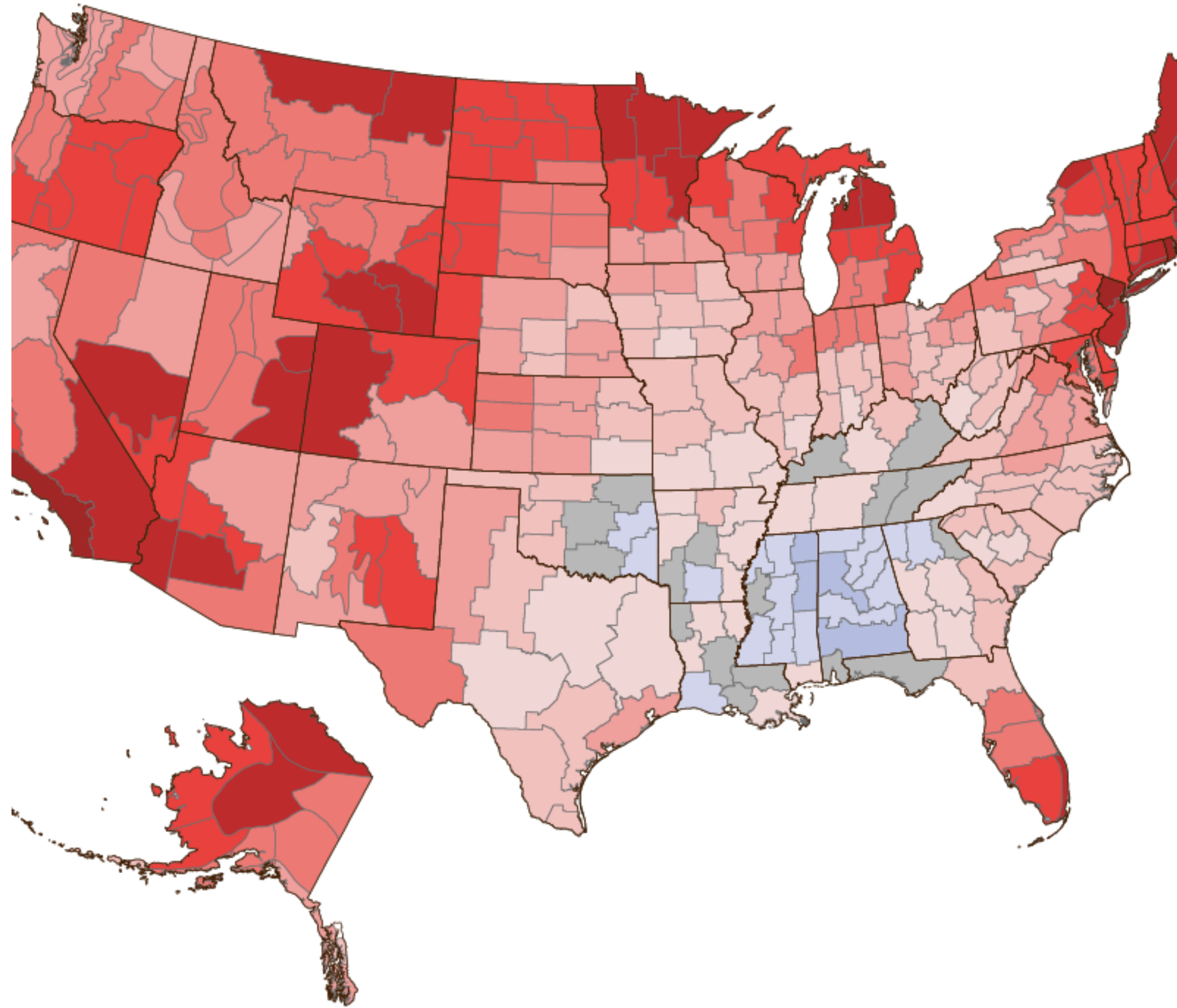
*By Mohamed M.
HIST 108. York College, CUNY
Prof. Remi Alapo*

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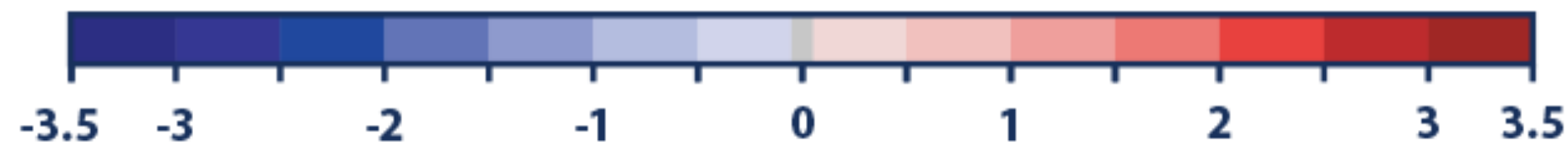


DEFINE CLIMATE CHANGE & HOW HAS OUR PLANET BEEN IMPACTED?

- Climate change is a long time process caused by human activities that have increased the earth's temperature. Climate change has affected every aspect of life on the planet, such as extreme heat events, rising sea levels, deeper droughts, desertification, more significant wildfires, and more intense storms.



Rate of temperature change (°F per century):



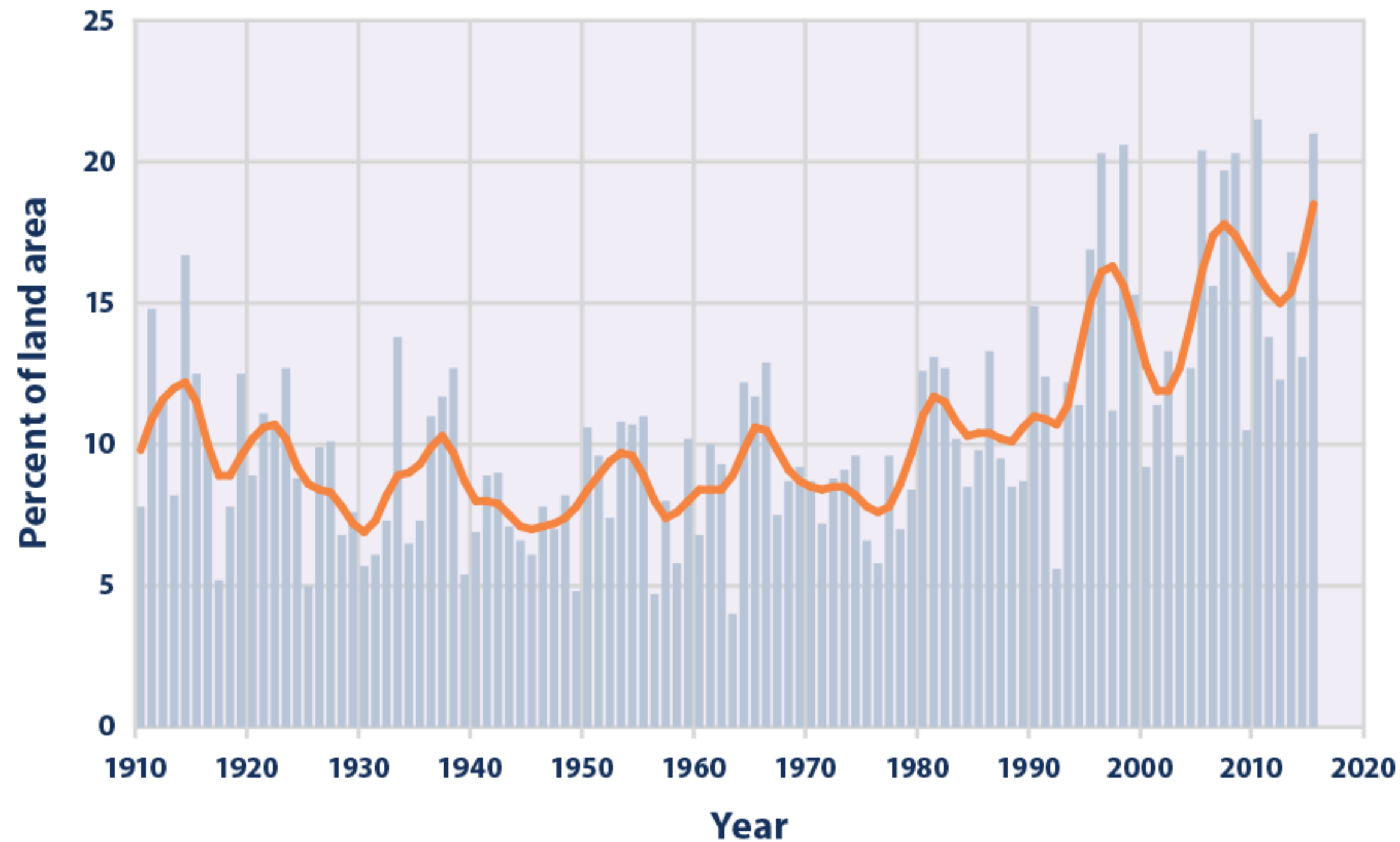
Gray interval: -0.1 to 0.1°F

TEMPERATURE

- ▶ Hot and cold weather can develop long and intense weather events, such as summer heat and winter cold.
- ▶ As the earth's climate heats all around, regardless, heat waves are predicted that will become more frequent, and more extended, and heavy. According to EPA, “Higher heat index values (which combine temperature and humidity to describe perceived temperature) are expected to increase discomfort and aggravate health issues. Conversely, cold spells are expected to decrease. In most locations, scientists expect daily minimum temperatures—which typically occur at night—to become warmer at a faster rate than daily maximum temperatures. This change will provide less opportunity to cool off and recover from the daytime heat.”

- In 1901, the average surface temperature throughout the contiguous 48 States had increased at an average rate of 0.14°F per decade. The average temperature has increased during the late 1970s to around 0.29 to 0.46°F every ten years, as we see in this figure, a massive increase in temperature in the United States.
- The increase in temperature may lead to an increase in heatwaves, which can cause sickness and death.
- The temperature change may affect a wide range of natural resources such as plants and animals.
- Heat traps green gas from coming out, which has increased the number of greenhouse gas in the atmosphere.
- According to EPA, “. Extreme heat can lead to power outages as heavy demands for air conditioning strain the power grid while freezing weather increases the need for heating fuel.”

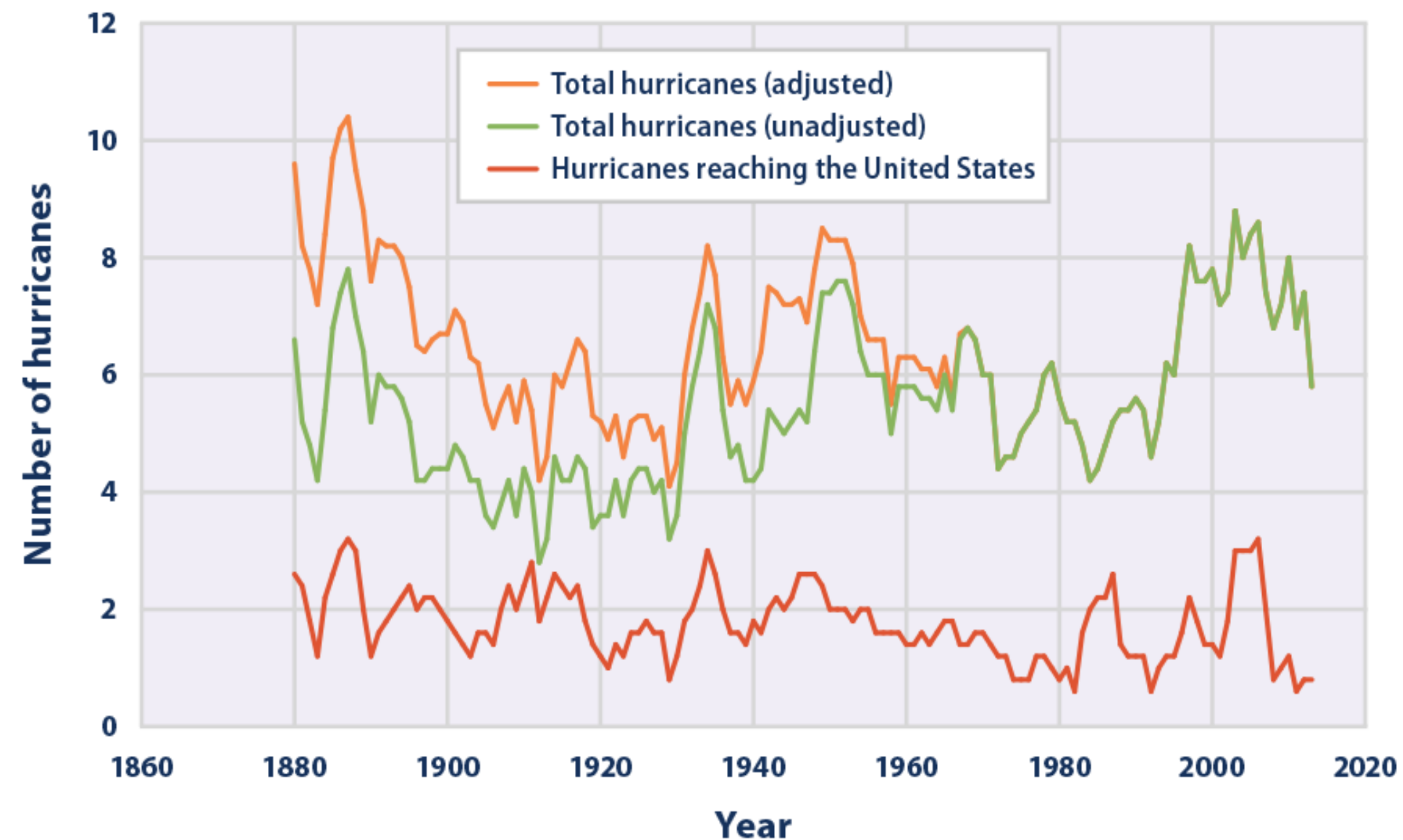
HEAVY PRECIPITATION



- Precipitation can have an overall effect on the ecosystem. Rainfall, snowfall, and the melting of snow could affect the amount of surface water.
- The increase in rainfall may cause river flooding, which affects the plant that grows there or animal
- The average temperature at the earth's surface is increasing, which leads to more evaporation and increasing rainfall.

- This figure shows how the annual precipitation has over the United state.
- Since 1910, the precipitation in the United States has increased by 0.17 every ten years.
- In some places in the United States has experienced a significant increase in rain, but in a few areas in the Southwest, rainfall has decreased.

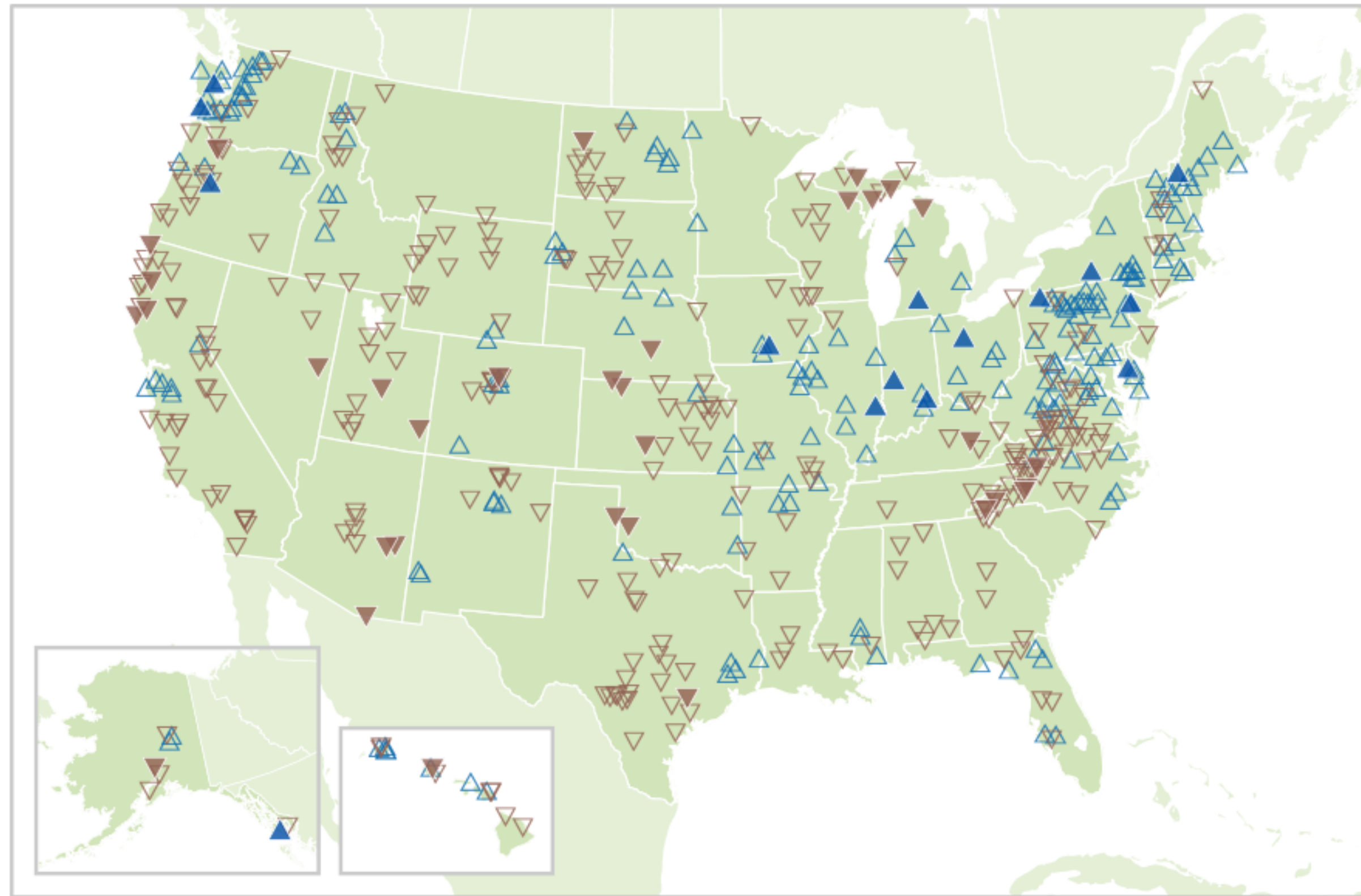
TROPICAL CYCLONE ACTIVITY



- Cyclones break up into different categories such as Hurricanes, tropical storms, and other types of storms. Cyclones have two main types: tropical and extratropical, in which they form outside the tropics. A tropical storm gets there power from the warm tropical oceans. Extratropical storm gets its energy from the jet stream and the changes in temperature between cold, dry air and the higher latitude and warm, and moist air mass at lower margins
- Our part talks about the tropical cyclone in the Atlantic oceans, the Caribbean, and the Gulf of Mexico. Tropical storms usually command during the hurricane season, which runs from June to November.

- Tropical storms can create many problems and are well known. Some of these problems are, at sea, the storm may disrupt ship traffic when the storm reaches big and intense rain and high wind which can cause Serval house damages, life loss, soil erosion, and flooding. The storm surges a large amount of ocean water mixed with the storm may cause many injuries.
- According to the climate change program, “Climate change is expected to affect tropical cyclones by increasing sea surface temperatures, a key factor that influences cyclone formation and behavior. The U.S. Global Change Research Program and the Intergovernmental Panel on Climate Change project that, more likely than not, tropical cyclones will become more intense over the 21st century, with higher wind speeds and heavier rains.”
- The more the climate changes, the more hurricane the United States will have.

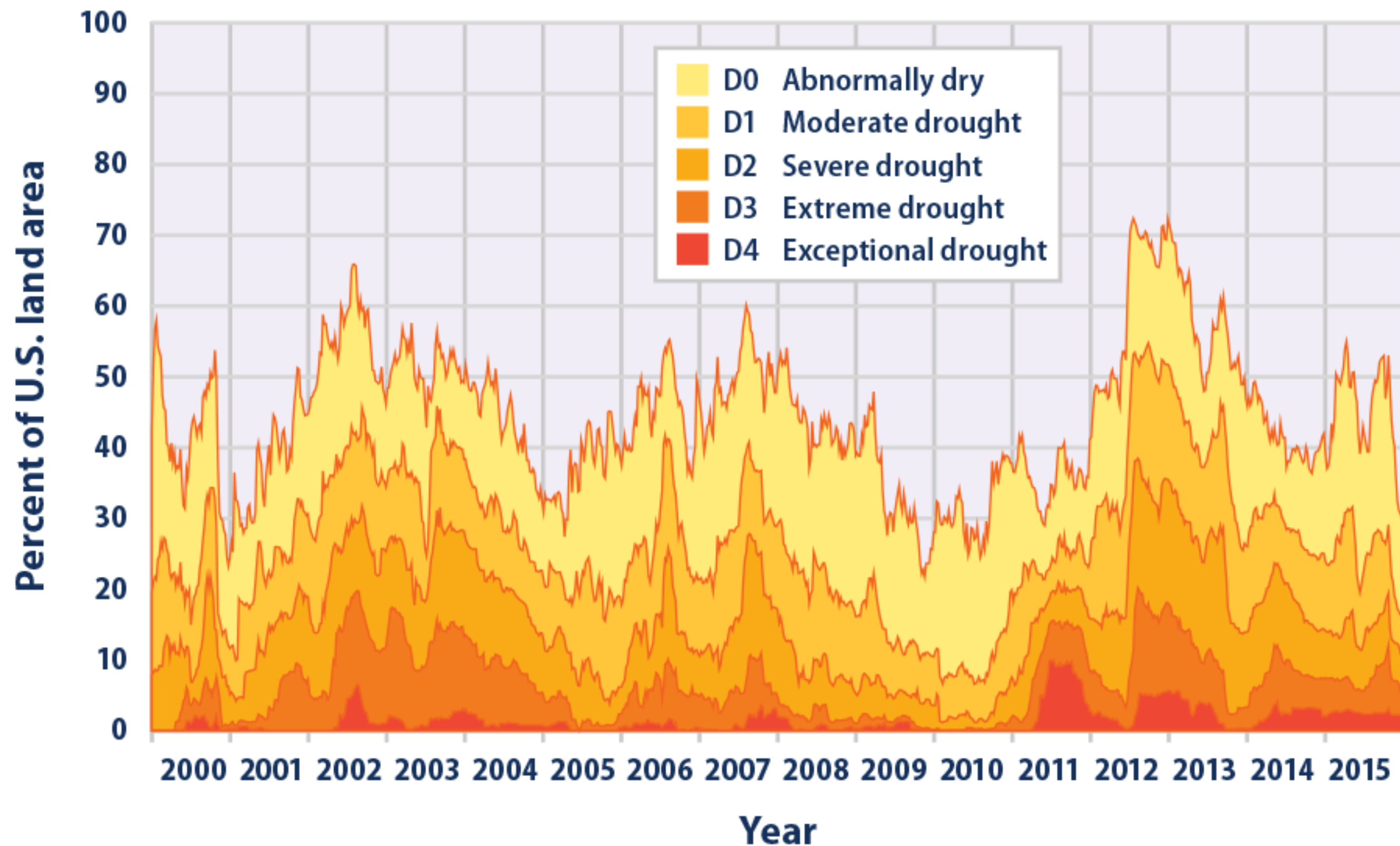
RIVER FLOODING



- Flooding is now a severe concern resulting from heavy rainstorms or snowmelt during the spring that quickly drains into rivers and streams. Although the danger of flooding may have different reasons for the United States, most areas are susceptible to flooding; even if it was a dry mountain region. Flood largely depends on how much weather changes.
- Flooding can cause many problems, such as house damage, road damage, bridge damage, removal of our crops, etc. The more flooding is happening, the more disruption to our ecosystem.

- Climate change has played a significant role in increasing flood in the United States; As the more the temperature becomes warmer, the more water is being evaporated from the land and the ocean, changes in the size and frequency of enormous precipitation.
- According to the figure, “The prevalence of extreme single-day precipitation events remained fairly steady between 1910 and the 1980s but has risen substantially since then. Over the entire period from 1910 to 2015, the portion of the country experiencing extreme single-day precipitation events increased at a rate of about half a percentage point per decade (see Figure 1).”

DROUGHT



- Meteorologists typically define drought as a long time of dry weather caused by a lack of rain that results in water shortages for some activity, and ecological system. Drought can be an extended unevenness between evaporation and precipitation.
- As an increase of temperature due to climate change, the earth's water cycles have sped up because of the increased evaporation rate. An increase in evaporation can make more water available in the air for precipitation, provides dry soil in some areas, leaving less water in the ground.

- As the climate still changes, many areas can have more precipitation, which will increase floods. While area away from the storms will be to experience less rainfall and increase the chance to have a drought. According to the article, “As a result, since the 1950s, some regions of the world have experienced longer and more intense droughts, particularly in southern Europe and West Africa, while other areas have seen droughts become less frequent, less severe, or shorter (for example, in central North America.
- Drought can negatively affect our ecosystems, such as agriculture, water supplies, etc. Drought can threaten medicine and culturally important plant and animals and reduce water quality and availability.
- According to the figure, “Over the period from 2000 through 2015, roughly 20 to 70 percent of the U.S. land area experienced conditions that were at least abnormally dry at any given time (see Figure 2). The years 2002–2003 and 2012–2013 had a relatively large area with at least abnormally dry conditions, while 2001, 2005, and 2009–2011 had substantially less area experiencing drought.”

SUMMARY

- Climate change has been an issue in the United States because different Countries experience significant climate change. Research has identified many problems due to climate change, such as the spread of invasive species, increased temperature, increased flooding, drought, storms, etc. Climate change had been a significant threat to the United States.

RESOURCES

- “Climate Change Indicators: Heavy Precipitation.” EPA, Environmental Protection Agency, 1 Nov. 2020, www.epa.gov/climate-indicators/climate-change-indicators-heavy-precipitation.
- Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2.
- Borunda, Alejandra. “Climate Impacts Grow, and U.S. Must Act, Says New Report.” Environment, 23 Nov. 2018, www.nationalgeographic.com/environment/2018/11/climate-change-US-report0/.

