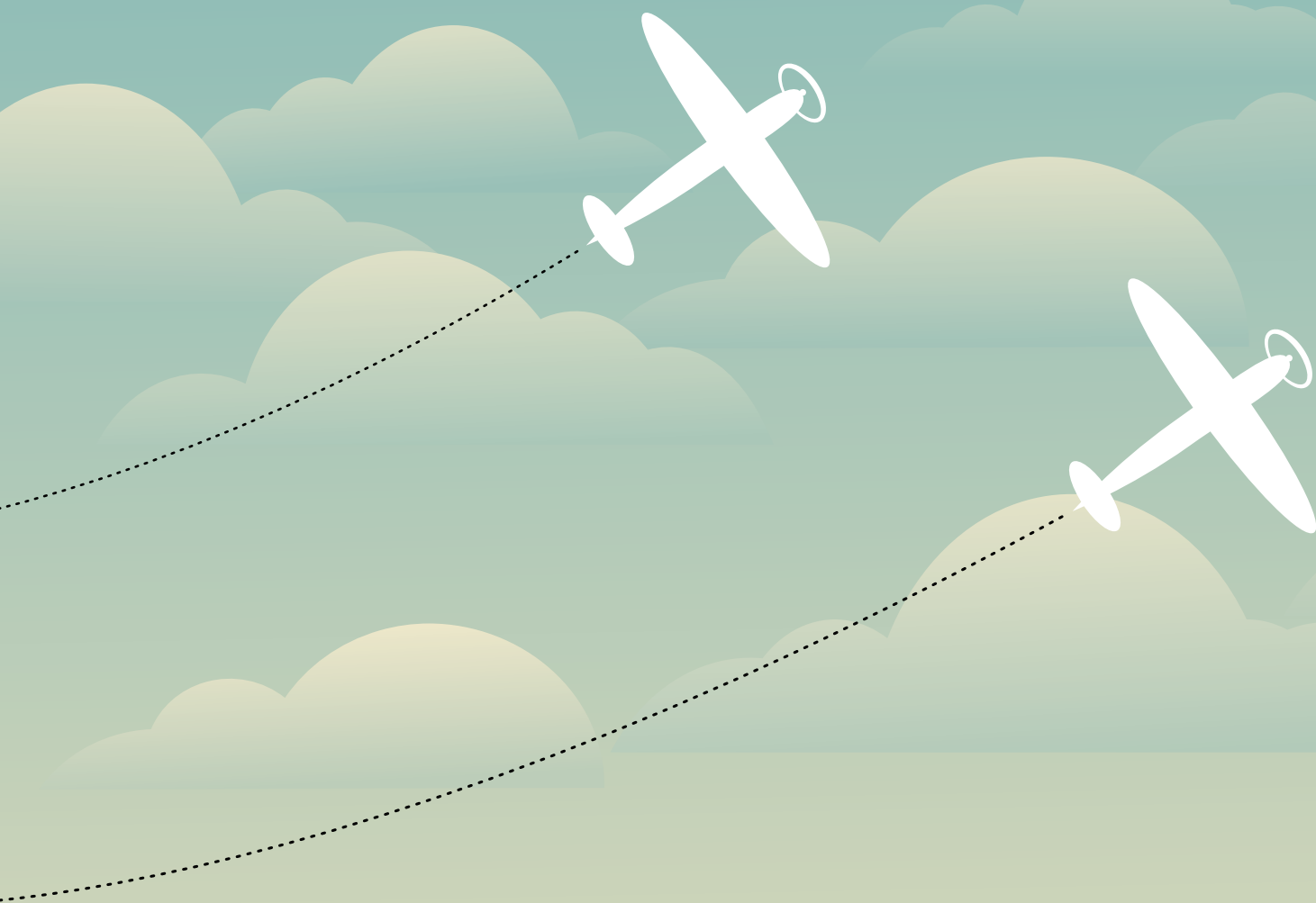


WEATHER AND CLIMATE SCIENCE



AUTHORS

Natalie Carroll • professor of youth development and agricultural education

Ted Leuenberger • writer, teacher

Gretchen Leuenberger • writer, teacher

BOOK PRODUCTION TEAM

Lafayette, Indiana

Nancy Alexander • copyediting

Natalie Powell • Just Natalie Graphic Design, design and layout

CONTENTS

Weather

Air Masses and Front

Isaac's Storm

Monitoring Weather

Pressure Systems

Weather Station Models

Weather in the Troposphere

Windchill and Heat Index

Climate

Climate and Climographs

Drought Monitoring

Energy in the Atmosphere

Energy Balance

Impacts of Climate Change

Investigating Climate Change

The Sun–Earth Relationship

Sunspot Cycle

Volcanoes

DROUGHT MONITORING



How do drought conditions affect people and the environment?



Drought can have devastating effects on an area's environment, economy, and people.

Droughts are often accompanied by unusually hot temperatures that can be stressful and a health concern for people, particularly the elderly and very young. Droughts affect plant growth — crops, gardens, and trees. They also reduce water levels in streams, lakes, ponds, and groundwater. The environmental and economic impact of a drought can last for years.

Drought occurs when there is not enough rainfall to sustain normal conditions. Normal conditions are based on 30-year averages for the area. Climate data is calculated and updated at the end of each decade at weather stations across the country. Weather conditions in 2015 would be compared to the average rainfall from 1980–2010 to determine if drought conditions exist in a particular area. If the rainfall is significantly lower than the average, the area is considered drought-stricken.

Droughts are big news and often talked about when a community is living through one. But at other times we tend to forget the stress of not having our usual precipitation, particularly in the Midwest, which is fortunate to generally have reliable precipitation. Other areas of the United States and the world are not so fortunate, and drought can be a constant threat. So while you may not currently be experiencing drought conditions, it is likely that drought is a major concern somewhere in the world

as you read this. In this activity, you will investigate a recent U.S. drought and its impact.

OBJECTIVE: Research the agricultural, environmental, economic, and social effects of drought on an area.

Weather Tote:

- ☐ Internet access for data using the NOAA drought monitor, www.ncdc.noaa.gov/sotc/drought webpage
- ☐ Graph paper or computer software to make graphs
- ☐ Access to news reports concerning drought effects on a region or state



- 1 Use the NOAA drought monitor data, www.ncdc.noaa.gov/sotc/drought, to find a recent drought episode in a region or state.
 - Collect temperature and precipitation data each week for two months.

2 Use line and/or bar graphs to make a **climograph** showing the temperature and precipitation data you collected (see Figure 1).

- Show the dates of data collection on the x-axis.
- Show the temperature and precipitation data on two y-axes as seen for Indianapolis, IN in the figure.

3 Research the effects of that drought on that region through news reports.

- Include how the drought influenced agriculture, the environment, local economics, and social activities.
- Keep a list of all resources that you use.

4 Create a report or display showing the drought data and your research results on the effects.

5 Discuss the Chat questions with a parent, friend, or adult helper.



SHARE WHAT HAPPENED: What location and year did you study?

APPLY: How might climate change affect drought monitoring?

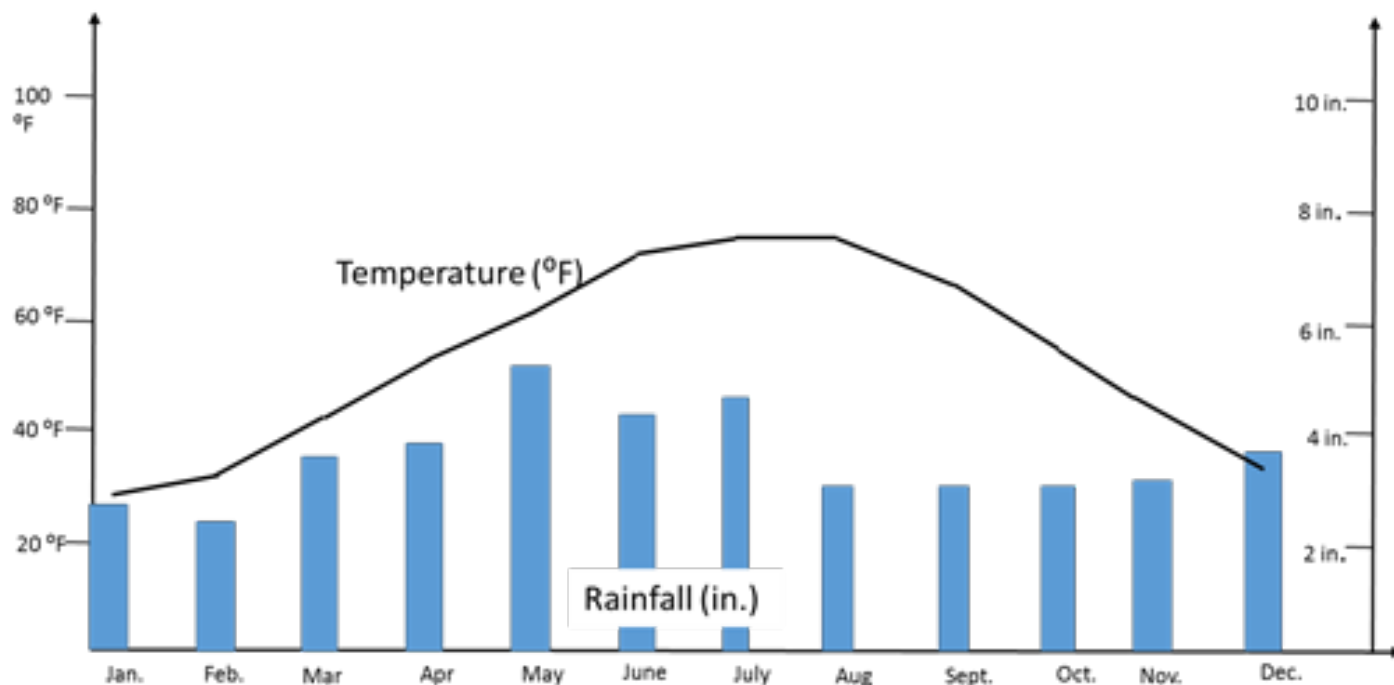
GENERALIZE TO YOUR LIFE: How could an increase in the incidence of droughts affect your landscaping plans for the first home you purchase?



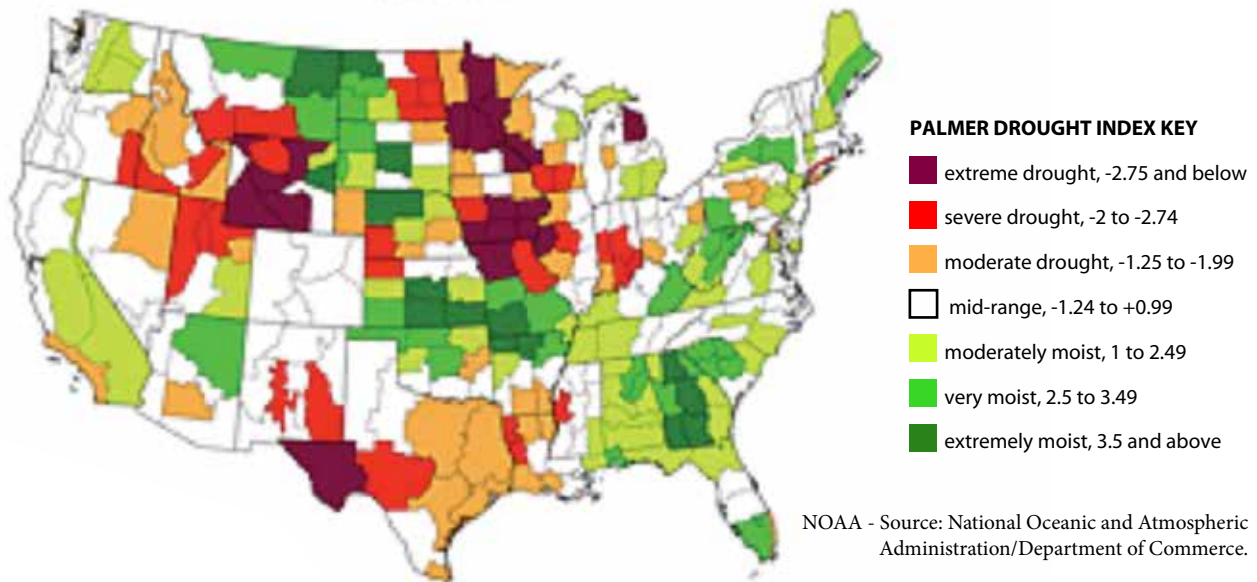
Fly Higher

Use the NOAA drought website, www.ncdc.noaa.gov/sotc/drought, to study previous droughts, wildfires, tornadoes, hurricanes, snow, and ice in the U.S. or globally.

CLIMOGRAPH FOR INDIANAPOLIS, INDIANA [FIGURE 1]



PALMER Z INDEX SHORT-TERM CONDITIONS [FIGURE 2]



NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.