

## Photo Description



The ground is very dry and cracked into many pieces. The dirt looks like puzzle pieces that don't fit together anymore. There are small plants trying to grow in some of the cracks.

## Scientific Phenomena

This image shows drought conditions as the anchoring phenomenon. The cracked, dried mud occurs when soil loses its water content over time due to lack of rainfall and high temperatures. As water evaporates from the soil, it shrinks and contracts, creating tension that causes the ground to crack in polygonal patterns. The small plants visible are demonstrating resilience by finding ways to survive in harsh, water-scarce conditions.

## Core Science Concepts

1. Water Cycle Disruption: When areas don't receive enough rain for long periods, the soil dries out completely
2. Material Properties: Wet soil is soft and moldable, but dry soil becomes hard and brittle
3. Plant Survival: Plants need water to live, but some can survive with very little water
4. Weather Patterns: Different places get different amounts of rain throughout the year

### Pedagogical Tip:

Have students touch wet clay or playdough, then let it dry overnight. They can observe how the material changes from soft to hard and may even crack, making the abstract concept of drought tangible.

### UDL Suggestions:

Provide multiple ways for students to express their observations: drawing pictures, acting out the cracking process with their bodies, or building models with clay to accommodate different learning preferences.

## Zoom In / Zoom Out

**Zoom In:** At the microscopic level, soil particles are held together by thin films of water. When drought occurs, this water evaporates, causing the particles to pull closer together and create stress that results in cracking patterns.

**Zoom Out:** This local drought connects to larger weather systems and climate patterns. It affects entire ecosystems, from the plants and animals that live there to the farmers who grow food, showing how weather impacts communities across large regions.

## Discussion Questions

1. What do you think happened to make the ground look like puzzle pieces? (Bloom's: Analyze | DOK: 2)
2. How might the small plants growing in the cracks be getting the water they need? (Bloom's: Evaluate | DOK: 3)
3. What patterns do you notice in how the ground cracked? (Bloom's: Analyze | DOK: 2)
4. If you were a farmer, what would you do if your field looked like this? (Bloom's: Create | DOK: 3)

## Potential Student Misconceptions

1. Misconception: "The ground is broken and needs to be fixed"

Clarification: The cracks are natural and happen when soil loses water - it's not damaged or broken

2. Misconception: "Plants can't grow without lots of water"

Clarification: Some plants are adapted to survive with very little water and can grow in dry conditions

3. Misconception: "Drought only affects plants"

Clarification: Drought affects all living things, including animals and people who depend on water and plants

## NGSS Connections

Performance Expectation: 2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly

Disciplinary Core Ideas:

- 2-ESS1.C - The History of Planet Earth
- K-ESS3.B - Natural Hazards

Crosscutting Concepts:

- Patterns
- Cause and Effect

## Science Vocabulary

- \* Drought: A long time when an area gets much less rain than usual
- \* Evaporate: When water changes from liquid to invisible water vapor in the air
- \* Soil: The dirt and earth that plants grow in
- \* Crack: A thin opening or split that forms when something breaks apart
- \* Survive: To stay alive even when conditions are difficult

## External Resources

Children's Books:

- The Magic School Bus Wet All Over by Joanna Cole
- Water is Water by Miranda Paul
- Come On, Rain! by Karen Hesse

YouTube Videos:



## Drought — 2nd Grade Lesson Guide

- 
- "Water Cycle Song" - Educational song explaining evaporation and precipitation with animations (<https://www.youtube.com/watch?v=ncORPosDrjl>)
  - "Drought Explained for Kids" - Simple explanation of what causes droughts and their effects (<https://www.youtube.com/watch?v=8mGX9vXKbYs>)