

**Around and Around Water
Goes, Where It Stops . . .
Nobody Knows!**

How Plants Adapt to Rain and Snow

In the Incredible Journey activity each person is a drop of water that moves around the water cycle. Every drop of water will have a different journey and travel to many places. Some places are common. Every drop of water will spend some time in the ocean. Every drop of water will evaporate into the sky. Water will condense to form clouds. Winds will push the clouds around the world. Where will the rain or snow fall?

It can fall anywhere. Maybe it will fall in a place with a wet climate, a place that gets lots of rain or snow, year after year.

Wet climates might look like this . . .



<http://kidcyber.com.au/tag/animal-and-plant-adaptations-for-kids/>

. . . or this.



<http://www.buzzle.com/articles/taiga-plants.html>

Maybe it will fall in a place with a dry climate.

Dry climates might look like this . . .



<http://www.edupic.net/desert.htm#desert>

. . . or this.



<http://voices.nationalgeographic.com/2011/12/29/>

A rain storm may be powerful, but it is just weather. Weather tells us how hot it is and how rainy it is right now. Climate describes how hot and rainy it is year after year.

Plants are good at living in the climate where they grow. Look at the pictures again. What adaptations do plants have to live in these places?

Hot and wet climate



In places with lots of rain and water the bark of many trees is thin. It does not need to protect the water the roots suck up. Water is everywhere. Leaves are big, thick and waxy so rain can pour off them. Pointed leaves help direct the water down. Some flowering plants grow on trees, so they can get high enough to find sunlight. These plants will get their water from the air, not from the ground.

Cold and wet climate



Pine trees grow well in places where snow falls often. The trees are shaped like cones. The branches droop, so heavy snow slides off easily. Branches that droop all the way down to the ground can grow roots. A new tree, just like the old tree, grows from the branch. Growing close together protects the trees from the wind and cold.

Hot and dry climate



Many desert plants have small leaves so the water does not evaporate as quickly. Roots spread out near the top of the ground to catch any rain that falls. Cactus leaves are curled into spines. The stems of the plant are large and waxy and hold water in. The spines protect the cactus from being eaten by thirsty animals.

Cold and dry climate



Plants can grow in very cold and dry places, but they are very small and low to the ground. They grow close together to protect against cold winds. Mosses and grasses are the most common plants. Some plants have hairs or fuzz that protects them from the winds. Many kinds of arctic plants can grow under the snow.

Climate can change. Here in New Mexico, we have an interesting way to tell how our climate has changed over hundreds of years. Packrats tell us. Here's how it works.

A packrat builds a nest of sticks, twigs, or cactus. To keep its nest clean, the packrat pushes out the garbage. Sometimes the garbage collects in a crack of the rock. We call that garbage pile a midden. The nest is passed from packrat mother to packrat daughter for hundreds of years, and the midden grows. The oldest garbage is at the bottom. The newest garbage is on the top.

Pack rat pee is thick, like honey. In our dry desert, it forms crystals that keep the garbage preserved for hundreds of years!

We can tell how climate changed while the midden was made by looking at the seeds or sticks are in the midden. Cactus seeds or cactus spines tell us that the climate was dry. Plants that need a lot of water to grow, like ferns, tell us that there was more rain during those years. The climate was wet.

Packrat middens tell us that New Mexico has had many long droughts. Droughts happen when we do not get as much rain as the plants need. Some plants cannot survive. They die. Other plants can adapt and keep growing, but they are stunted and make fewer seeds. Plants from drier places move in.

Albuquerque was built in a desert. It does not look like a desert because we use our drinking water to grow plants from wet climates. Grass lawns need 32 inches of water a year. We only get about eight inches of rain a year. We must add 24 inches of drinking water to grow grass lawns. It is smarter to grow plants that do not need much water. Desert plants can be beautiful and they are adapted to live in our dry climate. We cannot stop droughts, but we can be careful with the water we have.



These plants do not take much water to grow! <http://bloomingnativegardens.com/xeriscape-rebate/>

Vocabulary:

1. Journey
2. Evaporate
3. Condense
4. Climate
5. Weather
6. Adaptation
7. Midden
8. Preserve
9. Stunted
10. Drought

Things to think about:

1. How is weather different from climate?
2. What are some adaptations plants or trees have for wet climates?
3. What are some adaptations plants have for dry climates?
4. How can people adapt to living in a dry climate like ours in Albuquerque? How can we change the ways we use water?
5. Invent and draw a plant that is adapted to live in a dry climate. Invent and draw a plant that is adapted to live in a wet climate. What do they have in common? How are they different?



Plant Adaptations Informational Text



Summary: Students read about plants and how they have adapted to live in heat or cold, humid or dry environments.

Grade: Three

Subject Areas: Reading
Informational Science Text

Common Core Standards and Benchmarks

READING INFORMATIONAL TEXTS

Key Ideas and Details:

[CCSS.ELA-Literacy.RI.3.1](#)

Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

[CCSS.ELA-Literacy.RI.3.2](#)

Determine the main idea of a text; recount the key details and explain how they support the main idea.

Integration of Knowledge and Ideas

[CCSS.ELA-Literacy.RI.3.9](#)

Compare and contrast the most important points and key details presented in two texts on the same topic.

NextGen Science Standards and Benchmarks

3-LS4 Biological Evolution: Unity and Diversity

LS2.C: Ecosystem Dynamics, Functioning, and Resilience

☑ When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)

LS4.C: Adaptation

☑ For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

LS4.D: Biodiversity and Humans

☑ Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

NM Science Standards and Benchmarks

Strand II: Content of Science Standard II (Life Science):

3.1. Know that an adaptation in physical structure or behavior can improve an organism’s chance for survival (e.g., horned toads, chameleons, cacti, mushrooms).

3.2. Observe that plants and animals have structures that serve different functions (e.g., shape of animals’ teeth).