



## Hydrologic Cycle

### Activity 3

# Pine Cones - Mother Nature's Weather Forecasters

#### Objectives and Standards

##### - s Addressed

Content Standards

A, B, C, D, F, G

##### 4-H SET Abilities Addressed

Predict

Problem Solve/Design Solutions

Observe

Communicate

Summarize/Relate

Interpret/Analyze/Reason

#### Background

Part of a region's climate is defined by its humidity, or the amount of water vapor suspended in the air. The humidity of an area is related to the bodies of water around it, as well as the amount of rainfall the area receives. For instance, Arizona on an 80° day is hot and dry because they get little rainfall and are not near any large bodies of water. Because of this, there isn't any water available to evaporate and make the air humid. Florida on an 80 degree day, however, feels hot and wet, 'muggy,' because they receive a fair amount of rainfall and are located near the Gulf of Mexico and Atlantic Ocean. So, while humidity is related to rainfall, it is another aspect of what defines a region's climate. In this activity, we will explore how pinecones are natural indicators of humidity in a region, and why.

#### CoCoRaHS Extension Ideas

In a national map of precipitation from CoCoRaHS volunteers, circle areas that have very little precipitation for months at a time. What kind of vegetation grows in these areas? Do they have any special adaptations that help them live in areas with little or no precipitation?

#### Activity

#### Supplies Needed

- spray bottles
- water
- It's the Humidity worksheet
- masking tape
- small lumps of clay
- 1 pinecone per group (preferably long, light-weight, skinny, open pinecones)
- 1 widemouth jar (taller than pinecone) per group

1. Put a piece of clay in the bottom of each jar, and attach the stem of the pinecone (the part that normally attaches to the tree) to the clay.
2. Use the spray bottle to mist the pinecone inside the jar. Mist thoroughly, screw lid on the jar tightly, and turn jar upside down. Now the pine cone hangs like it would on the tree.
3. Monitor pinecone hours, writing your observations on the worksheet provided.
4. Once the cone has closed, open the jar. Leave the jar open overnight.
5. In the morning, or after several hours have passed, record your observations of the pinecone on the worksheet.

#### Discussion

Pinecones are Mother Nature's hygrometers, or devices that measure humidity in the air. Pinecones contain the seeds of the pine tree on which they grew, much like apples and peaches contain seeds for their trees. Because pine seeds are transported by the wind, they must be as light as possible. Therefore, pinecones only open their scales to disperse the seeds when the air is dry, and they close their scales when the air is moist to protect the seeds and keep them dry.

Because pinecones need dry air to disperse their seeds, are there certain climates in which pine trees cannot survive? Where are these locations, and what do their climates look like?



*Please send us your feedback!*

As a 4-H Educator, you know what has worked well, what has not, and how we can improve the *Tracking Climate in Your Backyard* curriculum. Please share your feedback about the curriculum. We'd love to receive copies of any reports or newspaper coverage about completed *Tracking Climate in Your Backyard* projects.

Fax or mail your completed feedback to Trisha Smrecak, Museum of the Earth, 1259 Trumansburg Rd., Ithaca, NY, 14850 or fax to: 607-273-6620.

Check the activity completed	Suggestions for improving the activity
<b>Rainfall Activities</b> <input type="checkbox"/> Make It Rain <input type="checkbox"/> Where Does the Rain Come From? <input type="checkbox"/> Stormy Weather	
<b>Snowfall Activities</b> <input type="checkbox"/> Confetti Snow Maps <input type="checkbox"/> How Much Water? <input type="checkbox"/> Edible Education <input type="checkbox"/> The Snowflake Game <input type="checkbox"/> Snow Journaling	
<b>Temperature Activities</b> <input type="checkbox"/> Energetic Weather <input type="checkbox"/> Shade of the Old Oak Tree <input type="checkbox"/> Temperature Through Time	
<b>Wind Activities</b> <input type="checkbox"/> Why Does the Wind Blow? <input type="checkbox"/> Make Your Own Wind Dial	
<b>Hydrologic Cycle Activities</b> <input type="checkbox"/> The Incredible Journey <input type="checkbox"/> Understanding Evapotranspiration <input type="checkbox"/> Pinecones: Mother Nature's Weather Forecasters <input type="checkbox"/> What is a Watershed?	
<b>Climate Activities</b> <input type="checkbox"/> Where is My Backyard? <input type="checkbox"/> Soak up the CO <sub>2</sub> <input type="checkbox"/> Buckets O' CO <sub>2</sub> : How Your Backyard Can Change the Ocean <input type="checkbox"/> Raise the Waters	
<b>CoCoRaHS Participation</b> <input type="checkbox"/> Precipitation measurements and other activities	

Please share your suggestions for improving the Tracking Climate in Your Backyard curriculum.

How have you used Tracking Climate in Your Backyard in your community?

Thank you for completing the Tracking Climate in Your Backyard curriculum feedback. We appreciate learning about how you are using the curriculum and receiving your suggestions for improving it.

Organization \_\_\_\_\_ Contact Person \_\_\_\_\_  
 Email \_\_\_\_\_ Date \_\_\_\_\_