

# Modeling the Wind and Make a Cloud Activity Sheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Model The Wind!

1. Gather your materials to model the wind!
  - a. Clear plastic tray with sides
  - b. Thin paper
  - c. Tape
  - d. Water
  - e. Optional: Blue food coloring
2. Tear or cut your paper into a few (3-5) thin strips.
3. Tape the strips to one end of the plastic tray. The strips should be taped to the outside but face into the tray. (The side of the tray with the paper strips represents the windward mountains.)
4. Fill your plastic tray with enough water to cover the bottom. The water represents the ocean. If you want, add a few drops of food coloring.
5. You are the wind! Model the movement of Easterly trade winds across the ocean:
  - a. Blow along the bottom of the tray (toward the paper strips). You should see waves form on the surface of the water.
  - b. Observe what happens to the paper strips.
  - c. Record your observations and answer activity questions #1-5.

## Activity Questions: Wind

1. What happened to the paper strips when you blew across the ocean?
2. Why did the paper strips move up when you blew across the ocean?
3. How does this model of wind blowing across the plastic tray relate to trade winds blowing across the ocean toward the mountains of Hawai'i?
4. What do you think happens to the wind as it rises up the mountains?  
(Hint: do you think it gets warmer or colder.)



## Part B: Make a Cloud

Adult supervision required for part B!

1. Gather your materials to make a cloud (Clear jar with a lid, hot water, Ice cubes, matches or incense stick and a lighter).
2. With supervision from an adult, cover the bottom of the jar with a thin layer of hot water. Swirl the water around so it touches the sides as much as possible.
3. Attach the lid to the jar and place ice cubes on top.
  - a. Observe what happens inside the jar. Do you see a cloud forming?
4. Remove the lid and place the ice cubes to the side. With supervision from an adult, light a match and let the smoke go into the jar. Drop the match into the water to put it out and quickly attach the lid.

*(Note: If you are using incense, let the smoke from the incense go into the bottle and then attach the lid.)*
5. Place the ice cubes back on top of the jar.
  - a. Observe what happens inside the bottle. Do you see a cloud forming?

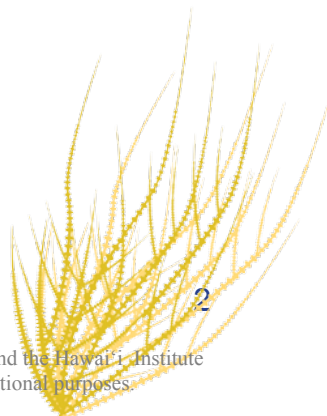


6. Take off the lid and watch the cloud escape!

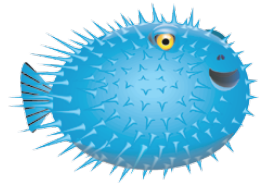
## Activity Questions: Clouds

1. When air cools, the water in it also cools. This can cause the water to change from a gas to a liquid. This process is called condensation.
  - a. Where in this experiment did you see condensation?
  - b. Where do you see condensation in real life?
2. Water needs something to collect on in order for a cloud to form. In the sky, water collects on microscopic pieces of dust, pollen, and salts. Scientists call these tiny cloud-collecting particles condensation nuclei.
  - a. What did you use as condensation nuclei in this experiment?
  - b. What did the condensation nuclei do in this experiment?
3. What happens when the water drops in a cloud become very large?

*(Hint: precipitation!)*
4. How is this experiment similar to how clouds form in the sky?



## Culminating Activity Questions



1. Your experiments showed that (circle the best answer):
  - a. air moves up / down when it blows towards the mountain
  - b. water from wet air will disappear / condense / evaporate when it cools
2. Use these findings from question #1 as evidence to write an explanation of why clouds form when wind pushes air up a mountain.
3. Why do clouds and rain form more often on the windward sides of the Hawaiian Islands than the leeward sides?
4. Why are the windward sides of the Hawaiian Islands more green in color than the leeward sides?  
(*Hint: think about the effect of rain on plant growth.*)
5. The difference in rain and plant growth between the windward and leeward sides of the Hawaiian Islands is similar to the differences along mountain ranges across the world. Use the information you have learned in this activity to explain why a mountain range might have a lush forest on its windward side and a desert on its leeward side.

