



Teacher Guide

Cool Career

Geologist

Diane Evans

NASA Jet Propulsion Laboratory

Space-eye View

Did you know that sometimes you can learn more about Earth from far away than from close up? That's why geologist Diane Evans uses satellites, which orbit hundreds of miles above our planet, to do her fieldwork. "The satellites give a broad view, so you can see patterns," Diane explains.

The Big Picture

The goal of one of Diane's satellite missions, the Aquarius mission, is to map ocean salinity, or salt content. The satellite uses instruments that are specially tuned in to the way salt in the ocean emits radiation. Even though the instruments are in space, they're so precise that they can detect half a teaspoon of salt in a gallon of seawater! If Aquarius shows that the amount of salt is dropping, it could mean the oceans are being diluted by melting polar ice—a sign of global warming.

Hey, Coach!

Diane oversees satellite missions to make sure everything—and everybody—is coordinated. "I'm like the coach of a team," Diane says. She learns what scientists want to know about Earth. Then she works with technology experts to design just the right instruments for the job.

A geologist studies the history and makeup of Earth's rock and soil. Diane studies Earth using space-based radar instruments on satellites. **Other geologists**

- > look for mineral deposits.
- > investigate contaminated soil and figure out how to clean it up.
- > study how to predict volcanic eruptions and earthquakes.
- > examine the causes of landslides.



"I'm always learning something new."



Diane also enjoys getting an up-close view of the ocean.

After you read about Diane Evans, do these activities.

Salty Eggsperiment

Diane is investigating the salinity, or saltiness, of Earth's oceans to see if it is changing. Try this investigation to find out what effect salinity has on an object's tendency to float.

Teacher note: Divide students into groups and give each group a large hard-boiled egg in the shell, a jar containing 1 liter of water, 1/2 cup of table salt, a tablespoon, and safety goggles for each student. Have students follow the steps and record their observations.

Answer Key

1. Place a hard-boiled egg in a large jar containing 1 liter of tap water. Describe what happens to the egg. *[When students first put the egg in the water, it will sink to the bottom of the jar.]*
2. Predict what will happen if you add table salt to the water. *[Predictions will vary. Sample prediction: I don't think adding salt to the water will make a difference in what happens to the egg because the egg will still be heavier than the water.]*
3. Add 1 tablespoon of salt to the water. Record what happens. *[Sample answer: The egg stayed at the bottom of the jar.]*
5. Continue to add 1 tablespoon of salt at a time. Record what happens after each addition. *[After students have added several tablespoons of salt, the egg should slowly rise to the top of the water.]*
6. What do you think caused the egg to do what it did? *[The egg sank when it was first put in the water because the egg is denser than fresh water—the egg has more matter than the same volume of fresh water does. Adding salt to the water makes the water denser. When enough salt had been added, the water became denser than the egg, so the egg rose to the top.]*

Is It 4 U?

Like many geologists, Diane enjoys

- > figuring out new ways to study our planet.
- > working with a team of people.
- > designing high-tech instruments for other scientists.
- > learning new things.

Discuss with a partner what parts of Diane's job interest you. Then write a paragraph explaining what kind of work you would like to do if you were a geologist.

STANDARDS ALIGNMENT

CCSS RTS.6-8.3: Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
W.6-8.3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.