



Pack Your Bags

Objective: Students will learn facts about weather on the planets in our solar system while creating a travel brochure advertising Earth to visitors from other galaxies.

Grade Level:

Elementary

Subject Areas:

Science, Math, Language

Setting:

Classroom or outside

Skills:

Observation, creativity, cooperation, researching, designing, organizing, presenting

Prior Preparation:

Hang all the posters of the planets up in the classroom. Each poster shows a picture of the planet; some give facts about discoveries that have been made. If your class has done a solar system unit, review facts about each planet.

Vocabulary:

None

South Dakota Education Standards for 4th grade:

Science

4.CT.2.1

4.IL.1.1

4.IL.2.1

4.E.2.1

Math

4.M.1.1

4.M.1.3

Language

4.W.1.1

4.W.1.2

4.W.1.3

4.LVS.1.3

4.L.2.1

4.L.2.2

4.S.1.1

4.S.2.2

Materials:

Posters of the planets (8)

[Weather fact cards](#) for each planet (8)

Pack Your Back weather fact card [teacher's key](#) sheet

A Drop Around the World

A Drop Around the World Teacher's Guide

Travel brochures

Pencils, paper, markers

Atlases, geography books, magazines (optional)

Background:

When we think of weather, we normally think about rain or sunshine or snow. However, there is another kind of weather that is beginning to make an impact on people's lives: space weather. Space weather is the concept of changing environmental conditions in outer space. Our space weather is a consequence of the behavior of the sun, the nature of Earth's magnetic field, and our location in the solar system.

Space is not empty. It is filled with very thin electrically charged gas consisting mostly of protons and electrons. Earth is a magnet. Earth's magnetism is what makes a compass needle point north or south and is what plays an important part in space weather. The sun produces an electrically charged gas called solar wind that flows out from the sun in all directions. When the solar wind hits Earth's magnetic field, it creates currents or storms.

Solar winds affect weather on all the [planets](#) in our solar system. Planets have a thin atmospheres or no atmosphere at all. The weather (or lack of) on the surface of many of our planets is not someplace most humans would want to live!

Procedure:

- Read aloud *A Drop Around the World*. Then read the information entitled "Temperature Tamer" in the back of *A Drop Around the World*. This will be a set up to the activity (The book is an introduction to the water cycle. It also allows students to understand that Earth is a water planet). Hold a discussion with the class about the Earth's water resources. Help students identify the water features of this planet. During this discussion, stress to the class that Earth's atmosphere allows the water cycle and weather to sustain life. Without the unique atmospheric composition, Earth's placement in the solar system, its magnetic field, and its rotation, existence here would be quite different.

- Divide the students into eight groups. Give each group one of the weather fact cards containing facts about each planet.
- Instruct each group to read the facts and decide to which planet they correspond. Have students bring their card to the front of the class and place it next to the correct poster. (**Note:** Students may want to research their space weather facts on the internet. There are several sites that discuss space weather conditions, including NASA’s site.)
- Correct any errors and read aloud all the facts.
- Ask students what similarities they notice between Earth and the other planets. What differences do they notice? Point out that a big difference is that Earth contains a lot of water, using the Earth poster as a reference.
- Instruct student groups to design and make a travel brochure advertising Earth to the inhabitants from other galaxies. Have each group emphasize places of interest on Earth that include water and have interesting climates. Show students sample travel brochures to give them examples about how places of interest are featured. Have them use *A Drop Around the World*, atlases, geography books, and magazines to find unique and unusual places and ideas. Remind them that they can use “frozen water” to focus on such places as the Alps, Antarctica, or Alaska.
- When finished, have groups present their brochures to the class as if they were travel agents. After the presentations, lead a class discussion identifying three or more creative or well-done features about each brochure.

Extensions:

- Go to NASA’s internet site: <http://solarsystem.nasa.gov/kids/papermodels.cfm>. Have your students construct one of the models shown on the page. A suggestion would be the “Genesis” model, which is the model that NASA uses to catch solar winds.
- Complete additional activities in the *A Drop Around The World* teacher’s guide. These activities are a good introduction to and reinforcement of the water cycle.
- Contact the EROS Data Center to arrange for a guided tour of the facilities. When touring, ask about the global climate tracking this organization does and explore how the USGS is looking to the future today.