

A Renewable Resource

Activity 2

Where it comes from — where it goes

Introduction

All life on Earth depends on water for its survival. As population grows, it becomes increasingly difficult to provide a safe and reliable water supply. This activity explores the availability of fresh water in the US, by looking at the distribution of rainfall and what happens to that water once it is on the surface.

Explore

Precipitation patterns

Precipitation provides Earth's fresh water, in the form of rain and snow. Where this precipitation falls and what happens to it when it reaches the surface depends on several factors. In this part of the activity, you will explore several of these factors in detail.

- ▶ Launch ArcView and locate and open the **waterres.apr** file.
- ▶ Open the **Precipitation Patterns** view.

This view is a map of the continental United States, color-coded to show annual precipitation in centimeters per year. Notice how dramatically the precipitation varies across the country. Use the map and its legend to answer these questions:

2.1 What is the highest annual precipitation for the continental US, and where does it occur?

2.2 What is the lowest annual precipitation, and where does it occur?

2.3 Compare and contrast the precipitation pattern in the western US with the pattern in the eastern US.

- ▶ Turn on the **Prevailing Winds** theme.

The arrows in this theme show the generalized atmospheric circulation pattern across the US.

2.4 How might the prevailing winds affect the precipitation patterns in the US?

- ▶ Turn off the **Prevailing Winds** theme.

Next, you will compare the precipitation patterns to topography.

- ▶ Turn on the **Shaded Relief** theme.

- 2.5 Compare and contrast the topography of the western US with the topography of the eastern US.

- ▶ Use the Zoom in tool  to zoom in on the state of California (CA).
- ▶ Turn the **Annual Precipitation** theme on and off, and look for relationships between the precipitation and the topography.

- 2.6 Describe the relationship between topography and precipitation in California.

- 2.7 Develop a hypothesis about the relationship between topography and precipitation. What evidence supports your hypothesis?

- 2.8 How might you test this hypothesis?

- 2.9 Identify two places that support your hypothesis.

Precipitation and elevation

Next, you will examine the relationships between precipitation and distance from the ocean and between precipitation and topography in more detail.

- ▶ Choose **View ▶ Full Extent** to see the entire map.
- ▶ Turn on and activate the **Precipitation Profiles** theme.

This theme adds two profile lines, one across the state of Washington and into Idaho, the other from Louisiana north into Illinois. The elevation and annual rainfall along each line are plotted as a line graph to show how elevation and rainfall change with distance from the ocean.