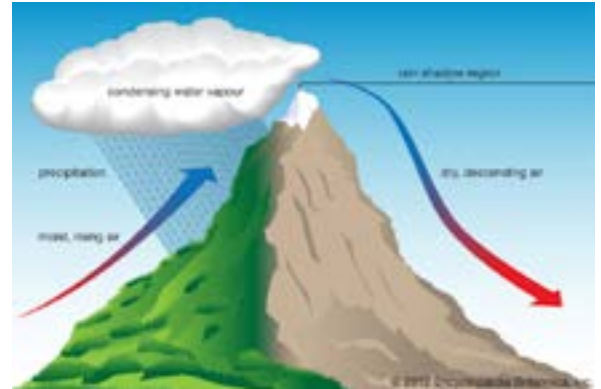


## Rain Shadow

The Pacific Northwest landscape is a dramatic example of the orographic effect. As wet air from the Pacific Ocean blows east, it must travel over a very tall barrier: the Cascade Mountain Range! When the wet air gains elevation, the water vapor gets colder, condensing to form clouds and rain. This results in heavy rainfall and moist ecosystems on the west side of the Cascades.

After traveling up and over the summit of the Cascade Range, the air begins to lose elevation, warm up again as it drops down. Water vapor evaporates at these warmer temperatures. The east side of the Cascades, therefore, is in a rain shadow, where the ecosystem is dryer and gets significantly less rain.



### Materials needed:

- Newspaper
- 3 tall cups
- Fan
- Spray bottle full of water

### Step-by-step instructions:

1. Drape newspaper over the cups to create a mountain range.
2. Hold the spray bottle in front of the fan, pointing at the mountain range.
3. Spray water so the fan blows droplets toward the mountains.
4. Make observations about where the water falls on the newspaper.



### Additional exploration:

- Choose a real mountain range. Label your newspaper mountain range with real towns and landmarks. Look up annual rainfall data for these towns. Does the rainfall data match what you observed during your experiment?

### Discussion questions:

- Which side of the mountain range is drier? Which is wetter? Why?
- How do you think rain shadows affect where wildlife and plants can live?

### Additional resources:

PBS Interactive Lesson "Mountains and Rain Shadows"

<https://lsintsp13.wgbh.org/en-us/lesson/mountains-and-rain-shadows>