



Just Add Water

<p>Video Focus Questions: Where is water found on Earth? How can water impact the lives of animals, people, and the land?</p>	<p>Length of video: 9 minutes 26 seconds</p>
<p>Science Standards</p> <p>TN 2.ESS2.2 Observe and analyze how blowing wind and flowing water can move Earth materials (soil, rocks) from one place to another, changing the shape of a landform and affecting the habitats of living things.</p> <p>NGSS 2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.</p>	
<p>Main Learning Goal: Water is found in different forms on earth and can affect not only the land, but also the plants and animals around it.</p>	
<p>Science Content Storyline</p> <p>Water covers much of the Earth and can be found in all three states of matter. Moving water can be redirected by land, but it can also shape the land over long periods of time. Water helps animals to survive, but animals can also have an impact on where water is located—which in turn affects other living things in the area. Water that is part of weather can also affect humans, plants, and animals in short periods of time.</p>	
<p>Ideal Student Response to Focus Question: Water can be found in oceans, rivers, ponds, and other places on Earth. Sometimes the land can change the way water moves, while other times water can change the land. Water can affect plants and animals by changing the places they live with more or less water.</p>	

Preparation

<p>In Advance</p> <ul style="list-style-type: none"> • Preview the video. • Decide if you would like to have students do any of the optional extension activities. 	<p>Materials</p> <p>Teacher</p> <ul style="list-style-type: none"> • Pictures of land affected by glaciers (optional extension) • Pictures of land affected by liquid water (optional extension) <p>Student</p> <ul style="list-style-type: none"> • Aluminum foil (optional extension) • Mud, sticks, and rocks (optional extension) • Pitchers or bottles of water (optional extension) • Water source (optional extension)
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Key Activities and Reflection

Timestamp	Science Content Outline	Guidance to Support Students
0:23	Introduction	Play the introduction for students then pause the video. Ask students to share where they have seen or heard about water on Earth. Depending on their experiences, students may list ocean, river, streams, or even puddles when it rains. Accept all answers to this question.
0:48	Water on Earth	Start the video again. Students will have an opportunity to see images of water in different places and in different states of matter. Ask them to think of words to describe the water as they watch.
2:01	Describing Water	Have the students listen as the educator describes different states of matter and other ideas about water. Then pause the video to have students list at least five words to describe water. This will help them think about the many different forms of water we have on Earth.
2:31	Moving Water	In the short clip between timestamps 2:31 and 2:43, students have an opportunity to see the Grand Canyon and hear how the Colorado River shaped it. You may wish to share with students that the Grand Canyon is in Arizona and that this process took place over millions of years.
2:43	Modeling a River	<p>In the next several minutes of the video, educators will use a model to help students consider how water and land impact each other. Pause at the different parts of the model to allow students to make predictions about what will happen. The parts of the model are as follows.</p> <ul style="list-style-type: none"> • A piece of aluminum foil represents the river bottom and sides. When water runs down the foil, it flows easily and in one direction. • The educators add rocks to the foil. Pause the video briefly to allow students to make a prediction about what they think will happen when water moves through the rocks. Students should notice that the water flow narrows to move between the rocks. The educator describes some other observations. The land impacts the water. • Next, the educators add mud to the foil. Briefly pause the video so students can make a prediction about what will happen. Then continue the video to allow them to see what happens and to hear the educator’s description. In this case, the land impacts the water, and the water impacts the land. • The educators add sticks across the foil. Again, pause the video so students can make a prediction, then continue it so they can observe what happens and hear the description. • Finally, the educators build a “riverbed” that has sticks, rocks, and mud, which is more realistic. Give students time to make a prediction. Then play the video so students can observe what happens. They should notice that the water impacts the land, and the land impacts the water. This is also true in real rivers.

7:05	Animals Can Impact Water Flow	Continue the video so students can learn about how beavers impact water flow. Pause the video after the graphic to discuss the impact of the beaver dam on the area. Make sure students notice three things: a pond formed upstream of the beaver dam, the water slowed after the beaver dam (similar to what happened with the sticks in the model) and a much greater diversity of plants grew in the area. This may be a surprise to students. You might want to share with them that beavers can affect the plants that grow in an area because there is a different amount of water available, the flow of the water is different, and beavers generally clear out some of the trees, which allows more sunlight to reach the ground. All these lead to more diversity in plants—and, as a result, the animals—in an area.
8:05	Impacts of Water from Weather	If your students have studied the water cycle, remind them that weather is part of how we experience water. The video briefly shows examples of how weather affects people and land. As students watch the video, have them think about the different ways they see water in our weather. You can discuss that lots of water, in the case of a hurricane or flooding, can make people change their plans or leave their homes. These images are not meant to scare students; rather, their purpose is to show water in different forms and areas. Please be mindful about limiting the discussion around the more devastating effects of these storms, particularly if you are sharing this video with young students. However, the purpose of these pictures is to show water in different forms and areas—not to scare students—so try to limit any discussion about the more devastating effects of these storms, particularly if you are sharing this video with young students.
8:50	Conclusion	Share the conclusion with students. Challenge them to watch for ways water impacts the land around them, whether it is a shallow ditch from water that runs out of a drainpipe or a local gorge that took many years to form.

Extension Activities

- Each of the videos in the Science Streams series has an introduction by people in different departments at the Aquarium. This offers an opportunity to talk about the many different types of jobs it takes to run an aquarium.
- You can have students build their own stream beds with aluminum foil and materials, such as rocks, sticks, and mud. Have them experiment with different combinations or see if they can make changes that speed up or slow down the water flow.
- Glaciers are often called “rivers of ice.” Have students compare pictures of the impact of glaciers moving compared to liquid water flowing. For example, the Matterhorn, a mountain in the Alps shaped like an almost symmetrical pyramid, was formed by glacial erosion and looks very different from the Grand Canyon. The weight of the ice combined with its gradual movement and the way it picks up and leaves behind debris leads to some interesting results. See if students can find patterns in the way ice shapes the land compared to liquid water.