

Tide Activity

Overview:

All students will work together acting as the earth and moon to enact high and low tides. Tides are periodic rises and falls of large bodies of water caused by the gravitational interaction between the earth and the moon.

Goal: Students will be able to discuss the process, which creates high and low tides.

Objectives:

1. Students will understand that tides are created by the gravitational pull of the moon on the earth.
2. Students will understand that the moon and earth move in regular and predictable patterns, which create regular and predictable tides.

Time: 5-10 minutes

Materials: None

Procedure:

1. When you arrive at the salt marsh, feign surprise that either a) There are no mudflats! Where are they? or b) There is no water in the Bay! What is happening? Ask the students why. They will come up with all sorts of answers, but hopefully one of them will be that it is either high tide or low tide.
2. Ask students if they know what causes the tides. Take some ideas and suggestions. If no one knows, ask them to jump up. Then say “wait, I never said to jump back down! Why is everyone back down?” They will get the idea it has to do with gravity. Tell them that the moon also has a gravitational pull, and it is the gravity from the moon pulling on the earth which causes the tides. This activity is a simplified version of what really happens.
3. Have the group circle up and hold hands, they are the earth. What covers most of the earth’s surface? (Water). Tell the students that they represent the water on the earth’s surface, and you (the guide) are the moon. What will happen when the moon pulls on the water on the surface of the earth? (The water will move toward the moon).
4. Have the group spin slowly in a circle (as if they are playing ring-around-the-rosy) while you stand still. This represents the rotation of the earth while the moon is relatively stationary. As the “water” approaches the “moon” it is pulled toward the “moon.” So as the students approach you they should lean towards you, as if you are two magnets attracting each other. It should be explained that the “water” falls back into place after they have been pulled backward. This process creates a wave-like motion around the circle.
5. Explain that tides are caused by the gravitational interaction between the earth and the moon. The gravitational attraction of the moon causes the oceans to bulge out in the direction of the moon. Another bulge occurs on the opposite side, since the Earth is also being pulled toward the moon (and away from the water on the far side). Low tides occur on the perpendicular sides of the earth since all the water is caught up in these bulges. Since the earth rotates in one full circle a day, there are two high tides and two low tides each day.