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## National Ocean Service (/welcome.html)

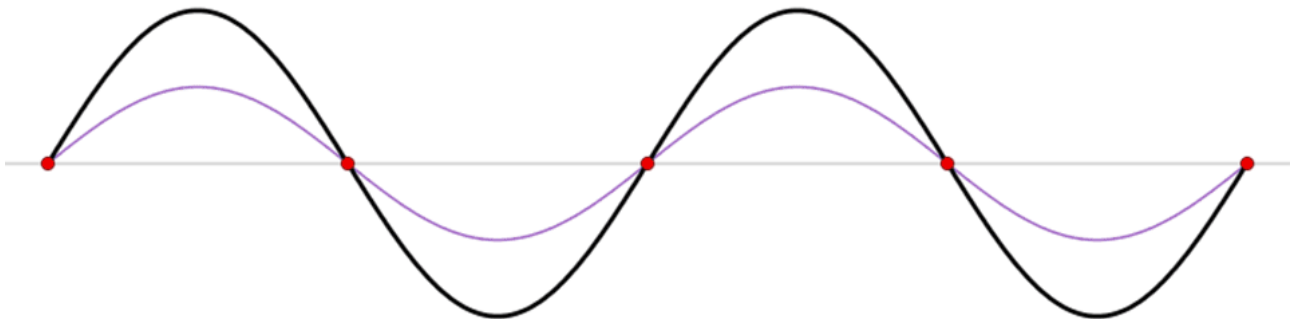
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# What is a seiche?

A seiche is a **standing wave** oscillating in a body of water.



*This animation shows a standing wave (black) depicted as a sum of two propagating waves traveling in opposite directions (blue and red). Similar in motion to a seesaw, a seiche is a standing wave in which the largest vertical oscillations are at each end of a body of water with very small oscillations at the "node," or center point, of the wave. Standing waves can form in any enclosed or semi-enclosed body of water, from a massive lake to a small coffee cup.*

## Seiches and meteotsunamis. What's the difference?

Seiches and meteotsunamis (/facts/meteotsunami.html) are often grouped together, but they are two different events. Winds and atmospheric pressure can contribute to the formation of both seiches and meteotsunamis; however, winds are typically more important to a seiche motion, while pressure often plays a substantial role in meteotsunami formation. Sometimes a seiche and a meteotsunami can even occur at the same time. Seiches are

standing waves with longer periods of water-level oscillations (typically exceeding periods of three or more hours), whereas meteotsunamis are progressive waves limited to the tsunami frequency band of wave periods (two minutes to two hours). Seiches are usually limited to partially or fully enclosed basins, such as Lake Erie. Meteotsunamis can occur in such basins but are also prevalent on the open coast. A single meteotsunami can travel long distances and influence a very large range of the coastline.

If you have observed water sloshing back and forth in a swimming pool, bathtub, or cup of water, you may have witnessed a small-scale seiche (pronounced saysh). On a much grander scale, the same phenomenon occurs in large bodies of water such as bays and lakes. A seiche may occur in any semi- or fully-enclosed body of water.

Seiches are typically caused when strong winds and rapid changes in atmospheric pressure push water from one end of a body of water to the other. When the wind stops, the water rebounds to the other side of the enclosed area. The water then continues to oscillate back and forth for hours or even days. In a similar fashion, earthquakes, tsunamis, or severe storm fronts may also cause seiches along ocean shelves and ocean harbors.

Lake Erie is known for seiches, especially when strong winds blow from southwest to northeast. In 1844, a 22-foot (6.7 meter) seiche breached a 14-foot-high (4.3 meter) sea wall killing 78 people and damming the ice to the extent that Niagara Falls temporarily stopped flowing. As recently as 2008, strong winds created waves 12 to 16 feet (3.66 to 4.88 meter) high in Lake Erie, leading to flooding near Buffalo, New York. Lake Pontchartrain, Louisiana, is also known to routinely form small seiches after the passage of afternoon squall lines during summer months.

In some of the Great Lakes and other large bodies of water, the time period between the "high" and "low" of a seiche can be as much as four to seven hours. This is very similar to the time period between a high and low tide in the oceans, and is often mistaken as a tide.

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The motion of a seiche (animation), Earthguide, Scripps Institution of Oceanography  
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