

# Waves

The bottom of the slide features a decorative graphic consisting of several overlapping, wavy lines in various shades of light blue and white, creating a sense of movement and depth.

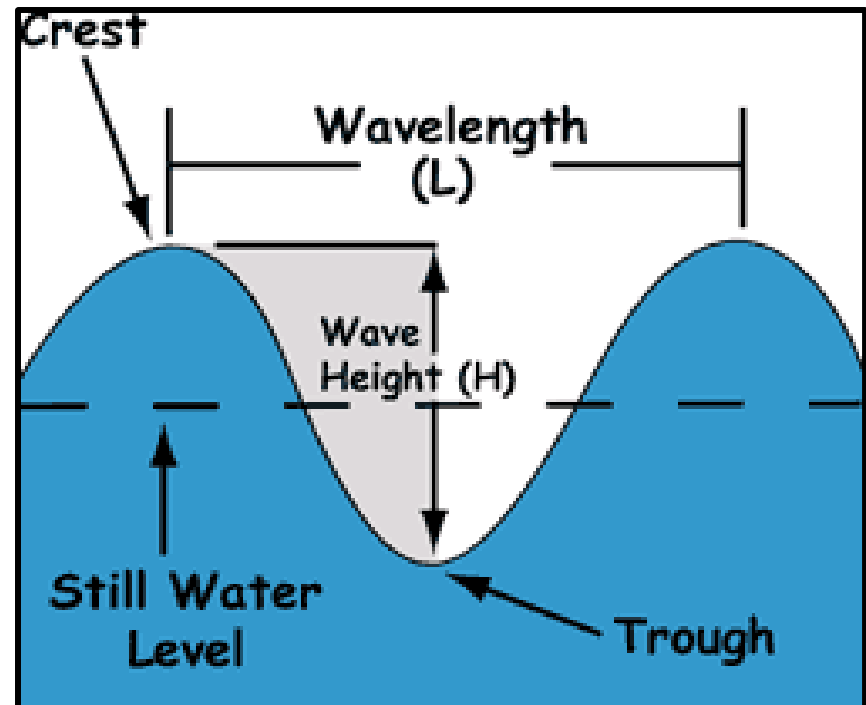
# Waves

- **An up and down movement of the ocean's surface.**
- Mostly caused by winds  
(Also earthquakes, volcanoes, grav. pull)
- Form of great energy



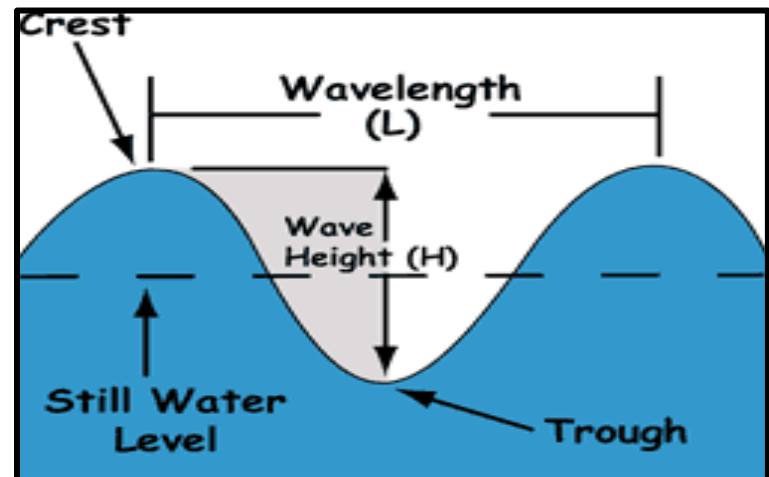
# Wave Characteristics

- **Crest** = high point
- **Trough** = low point
- **Height** = vertical distance from crest to trough



# Wave Characteristics

- **Wavelength** = Horizontal distance between crest to crest or trough to trough
- **Period** = The time it takes for successive crests or troughs to pass a specific point.
- **Frequency** = The number of crests or troughs that pass a point during a set time interval.



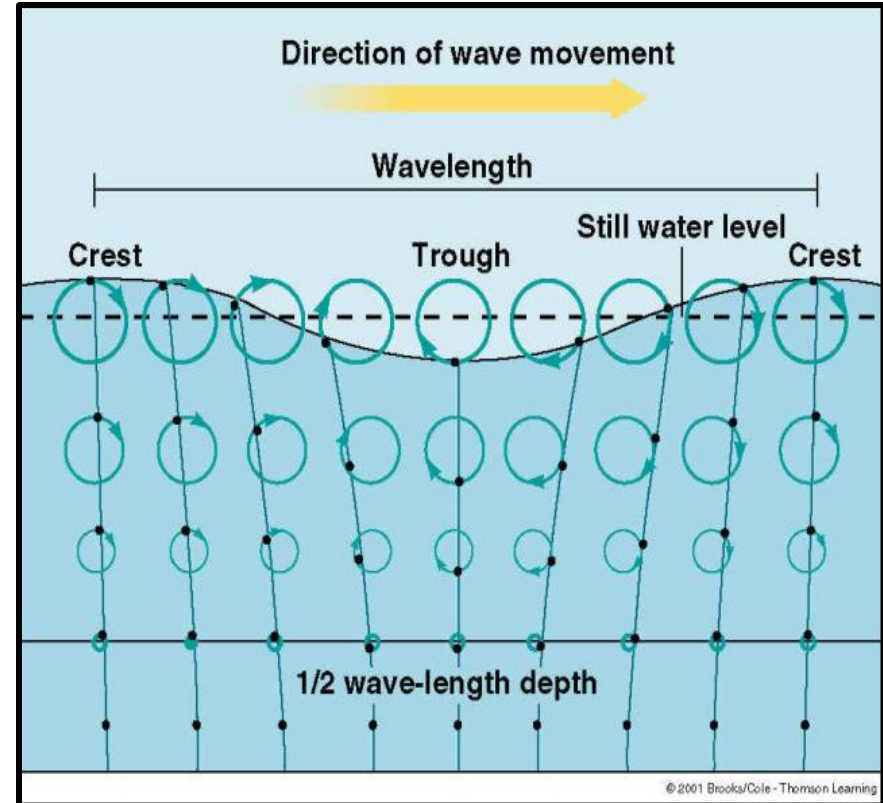
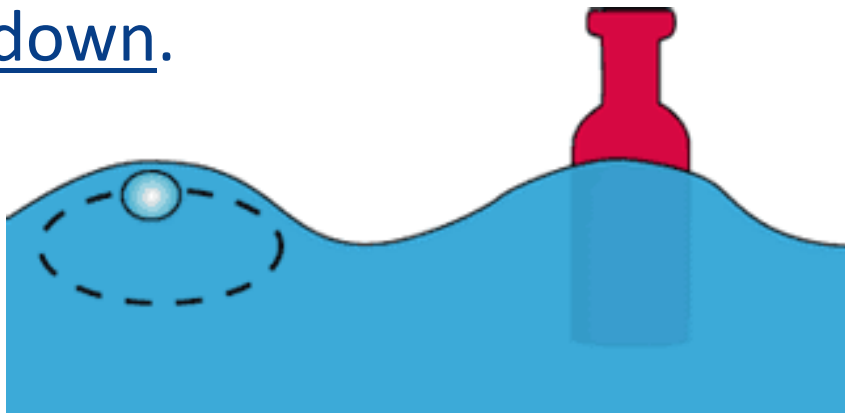
# Wave Size

- The size of a wave that is generated by wind depends on 3 things:
  1. Wind Speed
  2. Wind Duration (length of time wind blows)
  3. “Fetch” (span of open water across which the wind can blow)



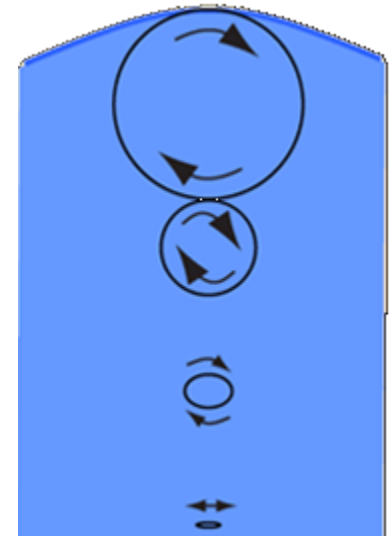
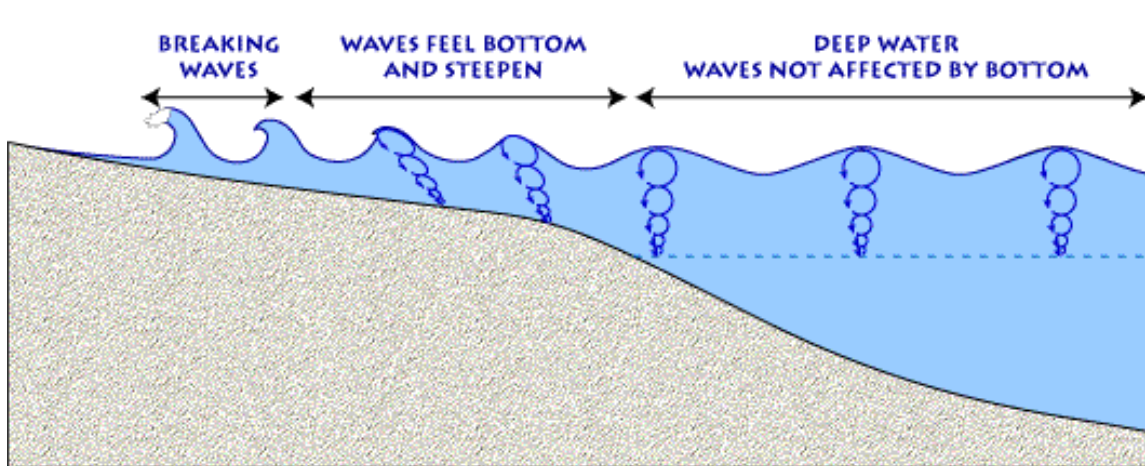
# Water Motion in Waves

- Water travels in circular orbits.
- Wave is a form of energy that moves across the water – water isn't moving horizontally, only up and down.



# Water Motion in Waves

- Wave motion lessens as depth increases.
- **At a depth of  $\frac{1}{2}$  the wavelength, there is no more wave motion.**
- Waves 'crash' when the bottom of them hits the ocean floor (they slow down and then collapse).



# Importance of Waves

- **Shape coastlines**
  - Erode cliffs.
  - Grind rock into sand.
- **Ecology**
  - Return  $O_2$  to water
  - Stir up food for filter feeders.



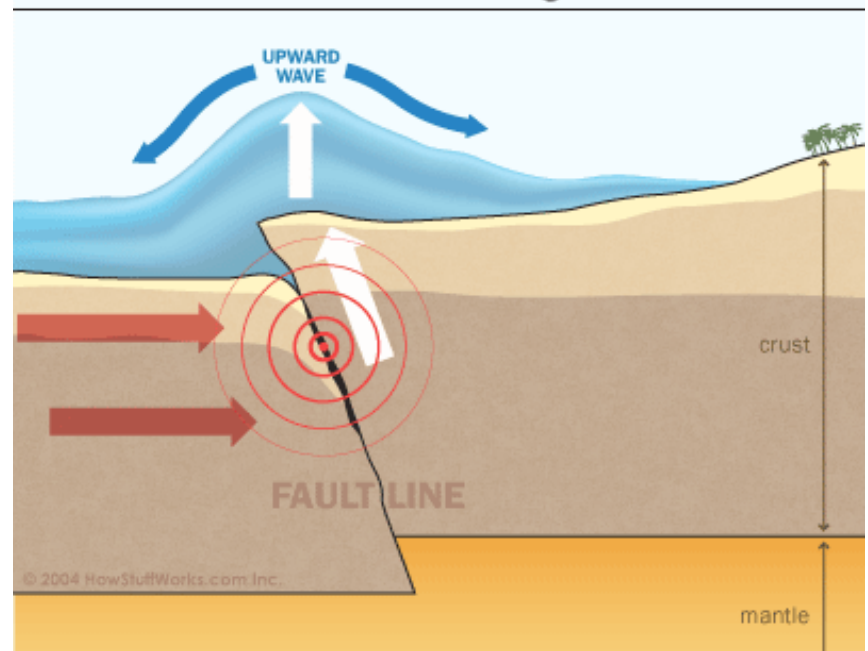


# Tsunami

- Giant wave generated by a disturbance in the Earth's crust (undersea earthquake, landslide, eruption).
- Energy from underwater disturbance reaches the ocean's surface and results in high-speed waves.

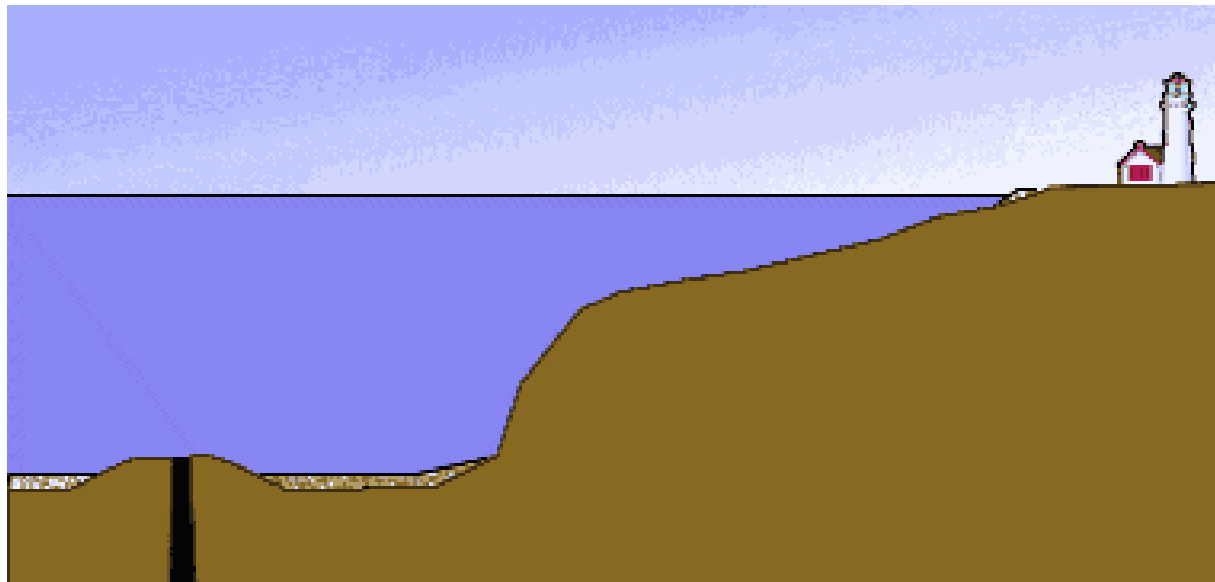


How Tsunamis Work: Tsunamigenesis



# Creation of a Tsunami

- Waves get larger as they come closer to land.
- As tsunami reaches shore, speed slows and wave height increases.



# Tsunamis