

Waves



I AM SURE that when God designed the usefulness of waves, he said “Neat!” or, as we read in the Bible, “It was good!” Waves are neat because they are all over creation.

In creation there are four main types of waves: the waves people experience in water, the sound waves people hear, the seismic waves people feel in the ground when there is an earthquake, and the waves in the electromagnetic spectrum that people see as light. In light, earthquakes, sound, and water, waves are very similar.


Think about how waves are created. They usually start because something moves. In fluorescent lights, electromagnetic waves are created when electrons and protons move quickly. Sound waves are produced when violin strings vibrate. With earthquakes, waves are created when two plates slide against each other. And water waves are produced when wind moves against the water. In each case,

waves are created by the energy of something moving.

All four kinds of waves look similar, too. Though waves can have different sizes, they all have repeating high and low points called crests and troughs. One way a wave is measured is by its wavelength—the distance between two crests. Seismic waves—the ones caused by earthquakes—usually have wavelengths between 40 and 250 km (64 and 155 miles). Water wavelengths can be anywhere from less than a centimeter up to 200 meters or more. Sound waves range from around 17 meters (deep bass sounds, like those whales make) to about 17 millimeters (annoying high-pitched sounds). Finally, electromagnetic waves range from about a millimeter (radio waves) down to 380-700 nanometers (billionths of a meter) for the colors in the light we see and even shorter for things like X-rays. However, no matter the wavelength, they all act the same when crashing against a solid object.

For example, imagine waves crashing against a rocky cliff: they bounce back. Seismic waves can bounce off a hard surface back to the interior of the earth. When sound waves bounce, they create an echo. Light waves bouncing off an object allow us to see that object.

Finally, because waves carry energy, all waves cause things to move. Seismic waves cause buildings to sway, sound waves make our eardrums to vibrate, water waves move sand, and light waves cause molecules to vibrate.

I don’t know when God created waves. He could have created them on the first day, when he created light, the third day when he created land and seas, or on the fifth or sixth day when he created animals that bray, honk, and whistle. However, I imagine God laughing when he first created waves because they are so amazing and useful in all corners of his creation! 



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