KS3 Geography. Plate tectonics.

Tsunamis.

[INTRODUCTION]	The tectonic plates of our planet are moving: slowly and constantly. We usually only notice when it results in earthquakes, or volcanic eruptions. But a lot of tectonic activity occurs below the oceans - and it can also have devastating impacts.
	An earthquake is the sudden release of tension caused by tectonic plates being pushed towards each other, or pushed past each other. When forces build up, large sections of land can be violently displaced. When this happens under the sea, a large amount of water is also displaced, creating a wave.
[TSUNAMI DEFINITION]	The high levels of energy cause large, high speed waves which spread out in all directions. And when such a wave hits land, it's called a tsunami.
	Anyone looking out to sea as a tsunami approaches, would see the water moving in a particular way. First, the sea would recede - as if it was being sucked away. Then a large wave would form - getting taller and taller - before rushing onto the land and breaking.
	These effects occur as the wave reaches the shallow water of a coastal area. The shallower the depth of the water, the more the front part of the wave is slowed down. With the back part of the wave still moving at higher speed, the water rises up. And the impact as a tsunami wave breaks onto land can be truly devastating.
[JAPAN 2011]	On 11 March 2011, an underwater earthquake occurred near the coast of the Tohoku area of Japan. The force of the quake displaced a 300km long section of the seabed.
	The quake was felt on the land - directly damaging some buildings. But it also created a series of powerful tsunami waves, which spread outwards at speeds of around 640kph.
	People living in the area closest to the source of the quake had just ten minutes warning as the first wave approached themand built up to a height of 40m. The surge of water devastated entire towns, and at least 19,000 people were killed.

B B C TEACH

[FUKUSHIMA PLANT]	As the shock from the earthquake was first detected, the reactors of the region's nuclear power stations were shut down, as an automatic safety measure.
	But at the Fukushima station, the waves damaged the backup generators, and the cooling system. And in the following weeks, the nuclear cores melted and burned through their containment vessels, releasing high levels of dangerous radiation into the surrounding area.
	The clean up operation, and the rebuilding of the devastated area, is still not finished.
[INDONESIA 2018]	Not all tsunamis are caused by earthquake activity. Anak Krakatau in Indonesia is a volcano that began to rise out of the sea 150 years ago. Its <i>caldera</i> form has been slowly shaped by successive small eruptions.
	In 2018, monitoring stations detected increases in volcanic activity. In December 2018, a major eruption shook the structure of the cone apart. A huge section broke off entirely and fell into the sea.
	The landslide caused tsunami waves, at the moment of a particularly high tide. Twenty-seven minutes after the collapse, 2m high waves struck the inhabited coast of Java.
	But unlike Japan, the Sunda Strait area isn't heavily populated. Although thousands of homes and hundreds of ships were destroyed, the casualties were relatively low - with 426 people losing their lives.
[CONCLUSION]	So the energy of tectonic activity can have terrifying effects as it transmits through sea water. But the exact impact felt by local people will depend on the warning systems they have in place, how many people live in the area, and the magnitude of the event.