

Tsunamis

Tsunamis are one of the most powerful and dangerous natural forces on Earth.

What Does the Word 'Tsunami' Mean?

The word tsunami is pronounced 'soo-nah-mee'.

It comes from two Japanese words: 'tsu' and 'nami'. Tsunami means 'harbour wave' and it was used because tsunamis only seem to become visible when they are near the coast.

津

tsu
harbour

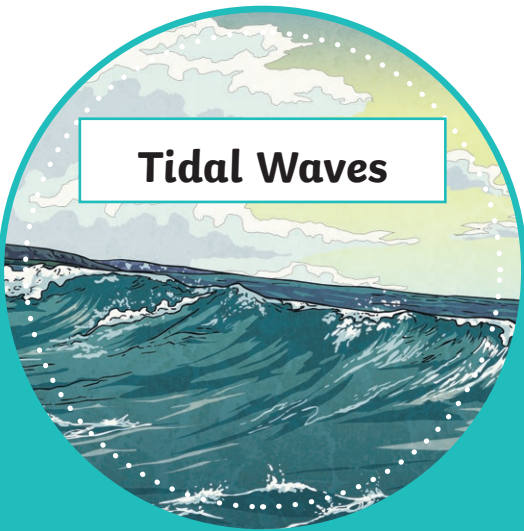
波

nami
wave

Is a Tsunami the Same as a Tidal Wave?

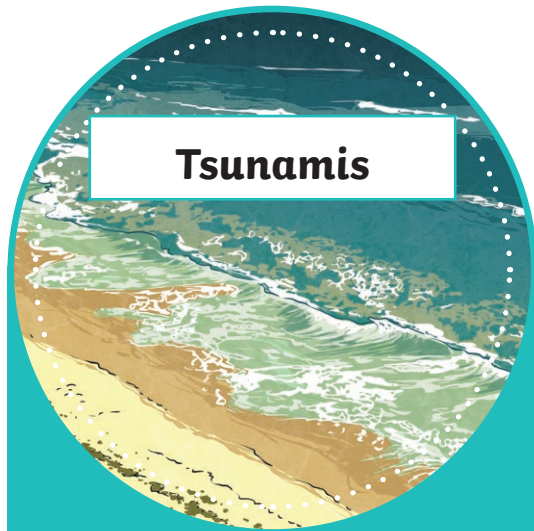
Tsunamis are sometimes called 'tidal waves' by mistake. However, they are not related to the tides, which are controlled by the Moon and the Sun.

Tidal Waves



- are shallow water waves;
- can be large in size;
- are always controlled by the Moon and the Sun;
- contain energy that comes from the wind;
- can only ever reach a limited size and speed.

Tsunamis



- are a series of much larger waves;
- are not controlled by the Moon and the Sun;
- are caused by the movement of a large amount of energy through the water but this energy does not come from the wind.

The energy in tsunami waves is caused by an underwater volcanic eruption, an underwater landslide or an earthquake on the ocean's floor. No one knows for sure how many volcanoes are in the ocean but scientists think that up to 80% of volcanic eruptions on Earth happen beneath the waves.

How Is a Tsunami Formed?

A huge amount of energy under the water tries to rise to the ocean's surface. As it does, it pushes water up with it. This causes the sea level to rise but **gravity** pulls this water back towards Earth. This means that the energy spreads out to the sides.

Water begins to race towards the land faster than an aeroplane can travel. A tsunami's waves can cross an entire ocean in less than one day without losing energy.

When the tsunami is far away from the shore, it can be hard to spot. This is because the energy is moving through very deep water and the waves of the tsunami can be as small as one metre tall.

Yet, when the tsunami gets closer to the shore and the water becomes shallower, there is less water for the energy to move through. This slows the waves down and the water becomes much taller.

Did You Know...?

A tsunami is not just one wave. It is a group of waves commonly known as a 'wave train'.

It is not always the first wave of a tsunami which is most destructive.

Tsunami waves are very long, and they can reach the shore at different times. Some waves can be as far as one hour apart from each other.



Why Are Tsunamis Dangerous?

It is not always possible to spot a tsunami because they move quickly across the ocean and the waves are not much bigger than sea level. Defences built by humans cannot stand up the sheer power of the tsunami so the waves cause a lot of damage. Boulders are lifted, buildings are destroyed and vehicles are swept away as the water races up to one mile

Glossary

gravity: The force that pulls an object towards the centre of Earth.

Questions

1. What does the word 'tsunami' mean? Tick one.

- ☐ great wave
- ☐ wave at the coast
- ☐ harbour wave
- ☐ powerful and dangerous

2. **Defences built by humans cannot stand up the sheer power of the tsunami...**

Which word means the same as sheer in this sentence? Tick one.

- ☐ tall
- ☐ absolute
- ☐ towering
- ☐ transparent

3. Fill in the missing words.

_____ are sometimes called '_____' by mistake.

4. List **two** events that can cause the energy found in tsunami waves.

- 1. _____
- 2. _____

5. **This causes the sea level to rise but gravity pulls this water back towards Earth.**

What does the word 'gravity' mean in this sentence?

6. A tsunami is one huge wave.

Is this sentence true or false? Explain how you know.

7. Comment on **two** ways that you know that a tsunami moves quickly.

8. What do you think that scientists should focus on to stop tsunamis being so dangerous?
Explain your answer.

Answers

1. What does the word 'tsunami' mean? Tick one.

- ☐ great wave
- ☐ wave at the coast
- ☒ **harbour wave**
- ☐ powerful and dangerous

2. **Defences built by humans cannot stand up the sheer power of the tsunami...**

Which word means the same as sheer in this sentence? Tick one.

- ☐ tall
- ☒ **absolute**
- ☐ towering
- ☐ transparent

3. Fill in the missing words.

Tsunamis are sometimes called '**tidal waves**' by mistake.

4. List **two** events that can cause the energy found in tsunami waves.

Accept any two of the following answers: an underwater volcanic eruption; an underwater landslide; an earthquake on the ocean's floor.

5. **This causes the sea level to rise but gravity pulls this water back towards Earth.**

What does the word 'gravity' mean in this sentence?

The word gravity means the force that pulls an object towards the centre of Earth.

6. A tsunami is one huge wave.

Is this sentence true or false? Explain how you know.

Pupils own responses, such as: This sentence is false. I know this because the text states that a tsunami is a group of waves commonly known as a 'wave train'.

7. Comment on **two** ways that you know that a tsunami moves quickly.

Pupils' own responses, such as: I know that a tsunami moves quickly because the text says that it can 'race towards the land faster than an aeroplane' and that it can 'cross an entire ocean in less than one day'.

8. What do you think that scientists should focus on to stop tsunamis being so dangerous? Explain your answer.

Pupils' own responses, such as: I think that scientists should focus on monitoring the ocean's floor so that earthquakes, landslides or eruptions can be spotted quickly and people can be prepared.