

Natural Disasters

Natural disasters are caused by natural events and cannot be prevented. They cause damage to buildings and the environment and kill people. There are many kinds of natural disasters. Some examples are tornadoes, hurricanes, earthquakes, and floods.

We live on the Earth's outermost layer, or surface. Below these layers, a lot of unseen activity takes place. Some of the world's most destructive natural disasters are formed below the Earth's crust. They are caused by magma (molten rock) that is finding its way to the surface. When there are cracks in the crust, and when both sides show some movement, earthquakes are caused. The giant pieces are called tectonic plates. If this situation occurs under the sea, a tsunami can be the result. Tsunamis can have waves over 100 feet tall!

Hurricanes, tornadoes, and other violent storms happen more often, and are caused by weather conditions. Wildfires are another kind of natural disaster that can be a result of droughts or lightning.

The number of serious natural disasters has increased in the last few decades. In some regions of the world, people have found ways to prepare themselves. However, in poorer areas of the world, most people don't have the funds or knowledge to do so.

Interesting Facts

- In the last ten years, natural disasters have caused over \$1.7 trillion in damage, and have affected more than 2.9 billion people.
- In the last 10 years, more than 1 million people have died as a result of natural disasters.
- The number of natural disasters has grown 400% in the last 30 years.
- Floods are the world's most expensive type of natural disaster because the damage can be very extensive.

Tsunamis

Tsunami is a Japanese word; 'tsu' means harbor and 'nami' means waves. When a tsunami occurs, a number of waves move in all directions and can reach places that are hundreds of miles away. The waves of a tsunami move at very high speeds but can hardly be seen in the open ocean. When the waves are near shallower waters they get taller, sometimes even up to a hundred feet! These waves are extremely powerful and pretty much destroy anything that gets in their way.

A tsunami is formed when an earthquake occurs under the sea. The crust of the Earth contains many plates that always move. In some cases, one plate moves on top of another plate. When this happens, the plate that moves upward pushes the water above. This results in massive waves, and a tsunami is born.

The earthquake releases a lot of energy that creates these waves. The waves move in all directions and can reach speeds of up to 560 mph. The waters near coastlines are not very deep, so the water piles up. When the tsunami reaches the coast it slows down to around 30 mph. The powerful wave will crash onto the coast, and destroy beaches, buildings, roads and everything else, without difficulty.



Volcanic Eruptions



A volcano is a mountain with molten rock (magma) below the surface and a top that can open. Sometimes, magma can find its way to the surface, which generally happens when there is an increase in pressure. Finally, an eruption occurs. Volcanic eruptions are extremely powerful, and are capable of destroying entire villages and forests. A volcanic eruption can also cause other natural disasters such as earthquakes, tsunamis, rock falls, and mudflows.

When magma under the surface works its way to the outside, a volcanic eruption occurs. Lava is the flow of molten rock out of a volcano, and there are also massive ash deposits. When a volcano starts erupting, it will continue for a long period, and get bigger and bigger.

There are three kinds of volcanoes: extinct, dormant, and active. A volcano that is extinct has erupted thousands of years ago and will not erupt again. A dormant volcano is a kind of sleeping volcano. It has not erupted in a long time, but there is a chance that it may happen in the future. A volcano that is active has recently erupted and may erupt again soon.

The crust of the Earth consists of many pieces, called tectonic plates, which fit together like a jigsaw puzzle. Sometimes, these plates move, which causes friction between them. This is the cause of earthquakes and volcanic eruptions near the edges of the plates.

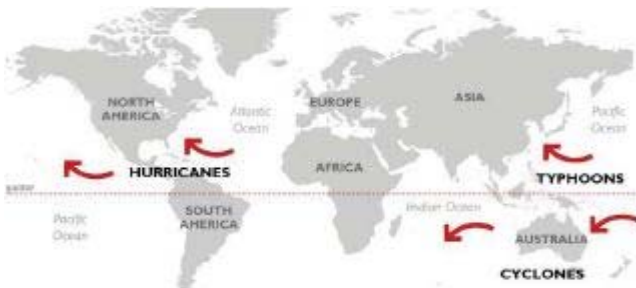
There are more than 1,500 active volcanoes on our planet. Indonesia has the most active volcanoes, with numbers reaching more than 120! There are also active volcanoes in the USA. These are found mainly in Hawaii, Alaska, Washington, Oregon and California.

Hurricanes

Hurricanes are violent storms that can be more than 600 miles across. The winds of a hurricane can reach speeds of over 200 mph, and usually move inwards and upwards. The hurricane itself just moves at between 10 and 20 mph over the open ocean. Hurricanes form above oceans with warm water. The warm water releases heat and energy that causes these violent storms.



The winds of a hurricane always rotate in a counter-clockwise direction around the 'eye' of the storm. Tropical storms that occur in the Northern Hemisphere always rotate anti-clockwise, and storms in the Southern Hemisphere rotate clockwise. The 'eye' is the center of a hurricane, and is the calmest part of a storm. When these storms hit land, near the coast, they can cause a lot of damage to buildings, cars, and trees.



Tropical storms can occur in several parts of the world, they all form above warm ocean waters and there are, in fact, three different names for these same types of storms. Tropical storms that occur in the Atlantic Ocean, Gulf of Mexico, and the Eastern Pacific Ocean are called hurricanes. Typhoons occur in the Western Pacific Ocean and cyclones form in the Indian Ocean, the Bay of Bengal, and Australia. The official

name for these three types of storms are tropical cyclones. All types of tropical cyclones move westward. The rotation of the Earth forces the storms to move in that direction.

Earthquakes

Earthquakes result in the shaking of the surface of the Earth. It is a natural way of the Earth to release stress. More than a million earthquakes hit our planet each year. The west coast of the United States is an area where earthquakes occur. Other risky areas in the world are Indonesia, Japan, China, and Iran. When an earthquake occurs, they can be felt over a large area, but usually last less than a minute. Unfortunately, earthquakes cannot be predicted, but scientists are working hard to find a way to do so.



The Earth has around 20 plates near its surface that move slowly past each other. Sometimes, these plates stretch or squeeze, as a result of which massive rocks are formed at the edges and these then shift with an amazing force. When such a situation occurs, earthquakes are the result. It is similar to breaking a pencil. When you hold both ends and apply force, the pencil will bend. After more force is applied, the pencil will eventually break. Stress is released in the middle, where it is broken.

The crust of the earth works in a similar way. When plates move, they put force on other plates and also on themselves. When the force is strong enough, the crust will break. The result is that a tremendous amount of energy is released at the time the crust breaks. This energy will move through the Earth in the form of waves, and when this happens, we feel an earthquake.

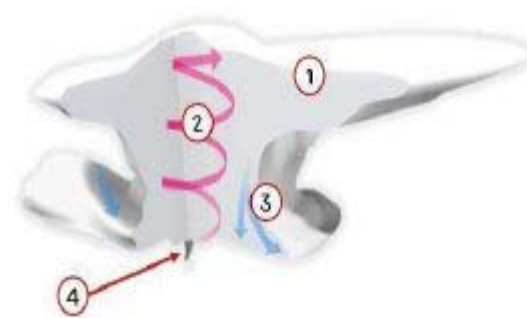
Tornadoes



Tornadoes are violent storms with a rotating column of air that extends from a thunderstorm to the ground. Some of the most violent tornadoes cause tremendous destruction, with winds that can reach speeds up to 300 mph. They are able to hurl vehicles hundreds of yards away, uproot trees and even destroy large buildings. The damage paths of these violent storms can be up to 50 miles wide. There are around 1,200 tornadoes in the USA each year.

The United States are the most vulnerable to tornadoes, with about 1,200 storms occurring in the country each year. The deadliest and most destructive tornadoes happen in the Midwest and Southwest regions of the US. The area where most tornadoes occur is called Tornado Alley.

Most of the time, tornadoes are caused by thunderstorms. The ingredients that form a tornado are warm and moist air (from the Gulf of Mexico) and cool and dry air (from Canada). When these two masses of air meet, they create instability in the atmosphere. An increase in the speed of the winds and a change in direction creates an invisible, horizontal spinning effect in the lower atmosphere. Warm, rising air tilts the rotating air from a horizontal to a vertical position. The area where the winds rotate is usually between 2 and 6 miles wide. Most tornadoes are formed in these areas where the rotation is the strongest.



Drought



A drought is a long period of time without rain. Unlike most other natural disasters, a drought develops very slowly. It takes months or even years for a drought to fully develop, and they are generally very difficult to predict. Weather conditions play an important role in the development of droughts. Natural events such as global warming, ocean temperatures and changes in jet streams all affect droughts.

The effects of droughts can be devastating for the people who live in those areas. When there is a lack of water, plants will not grow and there is not enough water for people to drink. People will have insufficient nutrition, which leads to all kinds of health issues.

When there is not enough rain, farmers cannot grow crops and there will not be enough food. This means that farmers cannot generate an income and whole areas become very poor. The people in these troubled regions often have conflicts about who should be able to access the limited food supply. In some cases, these events result in violent conflicts.

There are three types of droughts:

Meteorological drought – a long period without rain.

Agricultural drought – not enough water for crops to grow.

Hydrological drought – low levels of water in lakes, reservoirs or underground.

Floods

A flood is an overflow of water onto land. Most floods are caused by too much rain that cannot be absorbed by the soil. Another cause of floods are rivers that burst their banks, or strong winds that make huge sea waves that surge onto the land. Floods are the most common natural disaster in the world. In some situations there may only be a few inches of water, but some floods can even cover a house to the rooftop.

River floods occur when there is too much water in a river that cannot be carried away. The extra water can be a result of rain or melting snow. When there is too much water, it starts rising and overflows onto normal land. This can destroy farmlands, wash away houses, and may even drown people and animals.



Coastal floods are caused by strong winds that blow massive waves onto the land. Most of the time, violent storms like hurricanes cause coastal floods. In many countries, large groups of people live near coastal areas; therefore, many people are affected.

Flash floods happen quickly and are usually the result of heavy rain or thunderstorms. The huge amount of water that falls in a short time cannot be handled by the sewage, and complete cities become flooded. Sometimes flash floods happen so rapidly that people cannot prepare themselves.

Landslides



Landslides are movements of rock, debris, or earth down a slope. Sometimes, landslides are very small, and barely noticeable, but they can also be massive, as when the whole side of a hill or mountain slides down. Landslides can be caused by different events. The most common cause is rain, which increases the weight of the side of a slope and causes the soil to slide. Erosion is another factor that can cause these slides. When the base of a slope is removed, or when trees are cut, the entire side of a mountain weakens.

When a slide occurs it can reach enormous speed and energy. There are reported cases of landslides that have moved at over 200 miles per hour! Many landslides are caused by natural phenomena, but in some cases they are the result of human activity. There are basically four main types of landslides:

- A fall is a sudden and quick movement of ground or rocks falling down. Falls are usually triggered by erosion or earthquakes.
- A topple is caused by falling or sliding rocks that move very quickly. This type of landslide is normally caused by a fracture pattern in a rock. The rocks suddenly fall, slide, bounce, or roll down a hill.
- A flow is the most dangerous and destructive kind of landslide. Large amounts of water weaken the side of a hill and the flow destroys anything that is in its way.
- A slide is a common form of landslide, and is caused by the removal of the base of a slope. The ground of the slope can be broken into pieces or may move entirely downhill.

Wildfires

Wildfires are also known as forest fires or bush fires. A wildfire is an uncontrollable fire that occurs in a wild land area but is also capable of destroying houses and farmlands. Generally, wildfires start in a small area without anyone noticing, but they can spread very quickly over very large areas. Wildfires are usually caused by lightning, arson or volcanic eruptions. Droughts, heat waves and climate change also dramatically increase the risk of wildfires. Nevertheless, more than 80% of all wildfires are caused by people.



These destructive fires can basically happen anywhere, but they are most common in forested areas in Canada and the United States. They actually happen in many other places around the world. The forested areas of Australia and South Africa are prone areas as well. The climates of areas where wildfires occur are usually moist enough for plants to grow, but experience a long, dry and hot period. Most wildfires break out during the summer and fall, when fallen branches and leaves dry out and become highly flammable.

Wildfires can be very difficult to control or put out. Some of them are enormous in size and can quickly change direction. They sometimes move at a speed of over 6 miles per hour and can even ‘jump’ over rivers and roads. However, firefighters are trained to tackle these massive fires.

There are two main techniques that firefighters use to control wildfires. The best way to stop a fire is by getting rid of the fuel of the fire, such as trees or grass. Firefighters often remove the trees in the area towards which the fire is moving. This approach is called ‘firebreak’. The other method is called ‘air drop’. On some occasions, firefighters use planes and helicopters to drop water, or special chemicals onto the fire from the air. These aircrafts are able to carry thousands of gallons of liquid and drop it in areas that are difficult to reach via land.