READING MATERIAL

Read About Predicting Natural Disasters

WHAT IS PREDICTING NATURAL DISASTERS?

Natural disasters are not preventable but their impacts can be reduced with the help of science and engineering. Some natural disasters can be forecasted based on past scientific data. Scientists look for patterns in data to determine where and when natural disasters are likely to occur, like tornadoes. Other disasters like earthquakes are not yet predictable.

To better understand how to predict natural disasters...

LET'S BREAK IT DOWN!

Reducing Impact of Natural Disasters

Natural disasters cannot be prevented, but some can be predicted, allowing humans to engineer and design solutions for minimizing the impact of natural disasters. Scientists and engineers work together to improve existing technologies or develop new ones to increase their benefits hoping to reduce the impact of natural hazards such as earthquakes, tornadoes, wildfires, tsunamis, and hurricanes.

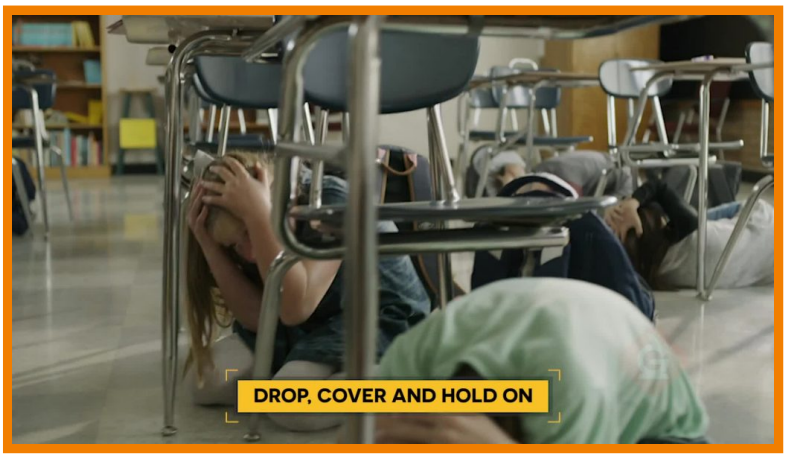
Some Natural Disasters Can Be Forecasted

Meteorologists use weather data such as air pressure, wind speed, and temperature to make predictions about weather systems. Because of that, severe thunderstorms that have the capability of producing tornadoes can be forecasted, sometimes allowing people to be prepared for a tornadic event by taking shelter and having supplies. Tornadoes are most common in the central United States in an area known as “tornado alley” and are known to cause mass destruction reaching wind speeds in excess of 100 miles per hour. Other times, however, weather systems can change rapidly without warning, and it can make it more difficult to predict storm systems with accuracy.

Other Natural Disasters are Less Predictable

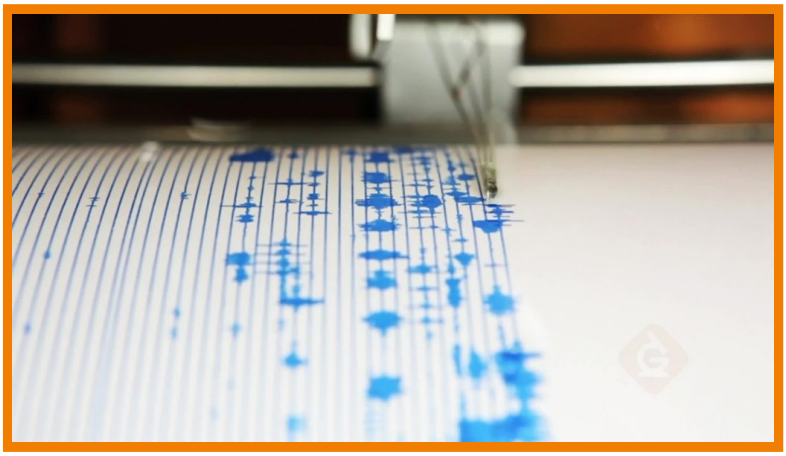
Earthquakes are examples of natural hazards that are less predictable than weather events. Earthquakes are a result of tectonic plates rubbing and compressing together, breaking rock beneath the Earth’s surface. When this rock breaks, it generates energy causing other parts of the Earth’s crust to shake and tremble. Earthquakes can also occur on the ocean floor, resulting in massive wave systems to rush in various directions from the earthquake. This is known as a tsunami. Seismologists use data from past earthquakes to make predictions about future events, but scientists have not yet figured out how to determine when and where an earthquake will occur.

Take Cover in Earthquakes



Earthquakes can cause mass destruction to buildings and property. It is important to take proper precautions when an earthquake strikes. If you live in areas that have high earthquake activity, it is important to be prepared with essential supplies like water and food because you could be without power for an extended period of time. Additionally, when an earthquake starts, you should drop right where you are, cover yourself to protect from falling objects, and hold on to something with stability. Engineers and architects work together to design structures in places that have high earthquake activity to be very stable and withstand high magnitude earthquakes.

Scientists Work to Predict Natural Disasters



Seismologists, volcanologists, and meteorologists are all examples of scientists that collect and analyze data over periods of time to make predictions about future geologic or weather events. Scientists look for patterns in data that help them to learn more about how and why these events occur while attempting to predict when, where, and how intense the next event will be. These scientists use different types of instruments to collect data. Seismologists use a seismograph that detects the intensity of energy waves produced from an earthquake.

PREDICTING NATURAL DISASTERS VOCABULARY

Natural disaster — A natural event that can cause great damage.

Earthquake	A shifting of tectonic plates causing breaking of rock and movement of the Earth's surface, sometimes causing severe destruction to property.
Tectonic plates	Fragments of Earth's crust that interact with one another causing various geologic events like volcanoes, earthquakes, and tsunamis.
Tsunami	A series of huge waves that rush onshore resulting from an earthquake occurring at the ocean floor.
Tornado	A rapidly rotating column of air that occurs when cold air masses and hot air masses collide, causing patterns of circulating air to move at high speeds.
Hurricane	A large, rapidly rotating storm system that begins over warm water, usually in tropical or subtropical areas, causing high winds, heavy rain, and severe thunderstorms.

PREDICTING NATURAL DISASTERS DISCUSSION QUESTIONS

How can humans reduce the impact of natural disasters?

Humans can reduce the impact of natural disasters by analyzing scientific data to make predictions about future events and also by improving engineering design to make buildings and structures that are more likely to withstand damage in earthquake activity.

What makes predicting tornadoes different from predicting hurricanes?

Tornadoes are predicted by meteorologists analyzing atmospheric conditions like wind speed and air pressure. Hurricanes are predicted by satellite imaging that detects rotating air masses over warm, tropical, and subtropical waters.

Where are earthquakes predicted to most likely to occur?

Earthquakes occur most commonly along plate boundaries. When plates rub against or compress on one another, rock breaks beneath the surface of Earth, releasing energy and causing the Earth's crust to move and shake.

How does a seismologist minimize the impacts of earthquakes?

A seismologist uses trend data of past earthquakes to make predictions about future events. This helps to estimate the areas that have the highest risk for severe earthquakes that can cause mass destruction.

Why do earthquakes happen?

Earthquakes happen when tectonic plates rub and compress on one another causing rock to break beneath Earth's surface. When the rock breaks, it releases energy causing Earth to shake. How much energy is released determines where the earthquake is measured on the Richter scale.

How are volcanologists and meteorologists similar and different?

Both volcanologists and meteorologists use scientific instruments and data to observe patterns in natural hazards, allowing them to predict them with more accuracy. Volcanologists study geologic events while meteorologists study atmospheric events.