

Extreme Earth

Learning Objective:

To find out about extreme weather conditions across the world.

NEXT

What is the weather like today?

What was it like
yesterday?

What do you
expect it to be
like tomorrow?



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For many parts of the world, weather changes very little. It can be hot or cold, wet or dry, windy, snowy, icy or foggy, but these changes are simply the changes you would expect to see with the seasons.

However, freak weather occurrences can happen anywhere in the world and some places frequently have to endure extreme weather.

How many types of extreme weather can you think of?



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Lightning

Lightning is one of the most dramatic weather phenomena. Lightning occurs in storm clouds when ice and water rub together. This creates static electricity and makes parts of the cloud become charged. The charge is eventually released as a fork of lightning that shoots down to Earth or as flashes in the clouds.



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Did you know that thunder comes from lightning? Thunder is the sound lightning makes but we hear thunder after we see lightning because light travels faster than sound.



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Lightning will always look for objects closest to them to strike. This could be anything sticking up from the ground such as mountains, buildings, trees or people.

Did you know that in the world around 24,000 people every year are struck by lightning?



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Tropical Storms

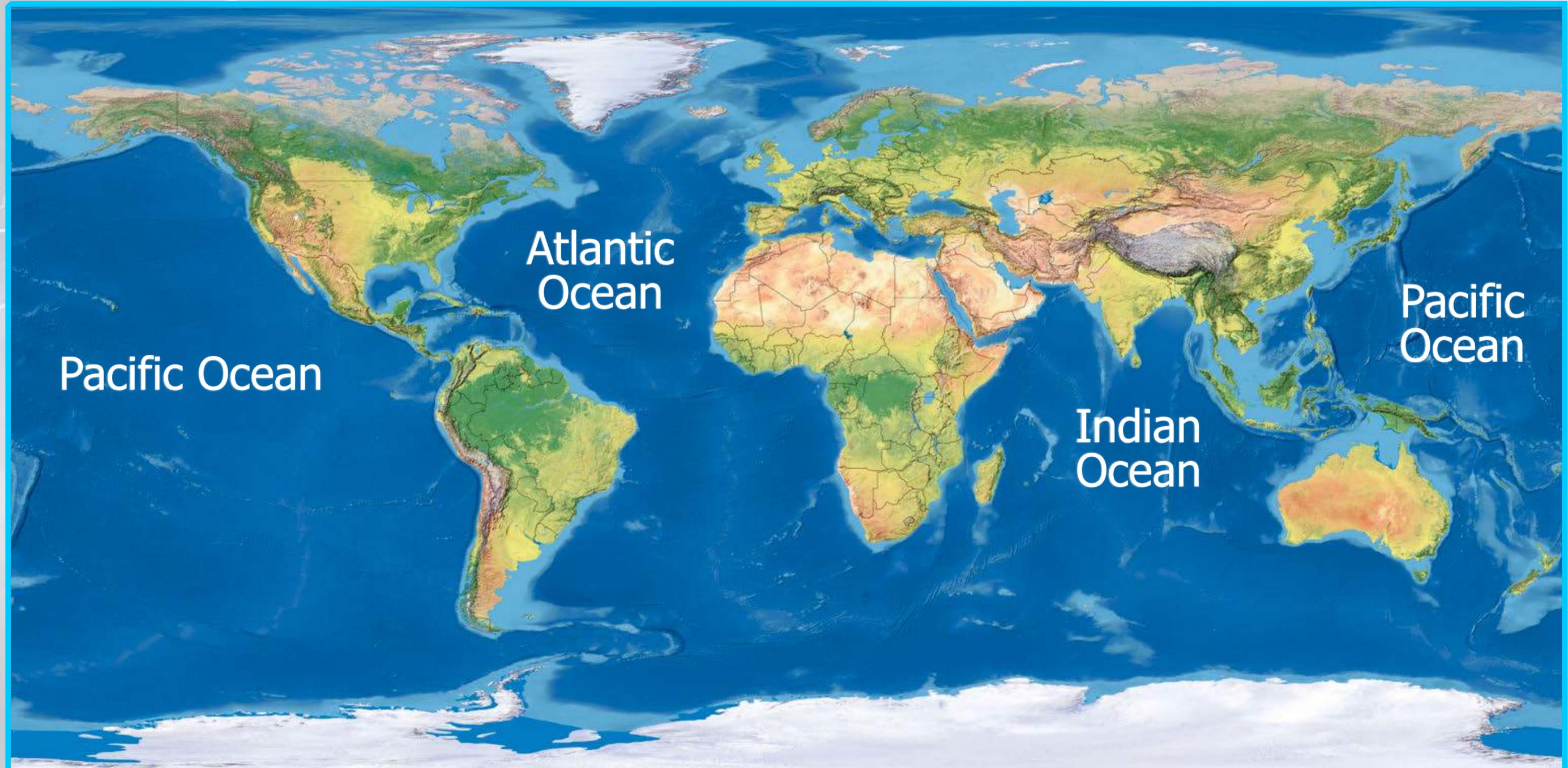
Tropical storms can be some of the fiercest storms on Earth. These storms develop in tropical areas of oceans and are called different things depending on where they are. Hurricanes, typhoons and cyclones are all types of tropical storms.

This picture shows a tropical storm from space. The middle of the storm is called the **eye**. The eye is an area of calm around which the storm rages.

The warm air in tropical regions, mixed with ocean currents and high sea temperatures, causes small thunderstorms which gather energy from the heat and make the storms become more powerful.

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Tropical storms in the Pacific Ocean are called **typhoons**.

Tropical storms in the Atlantic Ocean are called **hurricanes**.

Tropical storms in the Indian Ocean are called **cyclones**.

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When a hurricane, cyclone or typhoon hits land, it can cause devastation. High waves, strong winds and heavy rain can batter the land and destroy buildings. They cause a danger for people too.



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These pictures show damage caused by typhoons. **What can you see?**



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Floods

Flooding is the biggest natural disaster on Earth, besides disease. As well as destroying crops and buildings, floods also carry the biggest death toll.

Floods are more common in tropical areas due to the frequency of tropical storms but they can happen anywhere in the world.

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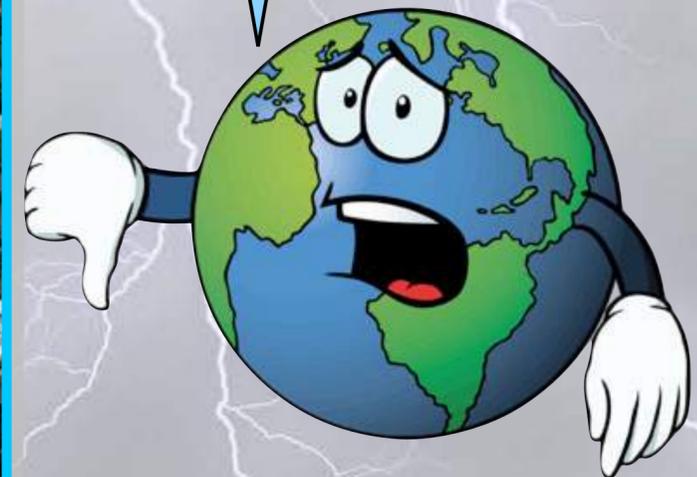


Floods can occur when there is more rainfall than usual. This can make rivers burst their banks and cause floods in areas where the rain has nowhere else to go. Areas on the coast can be flooded after a sea storm too.

Brisbane floods, 2011



In 2011, the Brisbane River in Australia burst its banks. 20,000 homes were flooded.



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Hail Storms

Another example of extreme weather is hail storms where balls of ice fall as precipitation. Some hailstones are small but some can measure up to 12cm in diameter. Hailstorms can destroy crops and cause damage to cars and buildings. They will also hurt a lot if you get hit by them!



Check out the size of these hailstones!



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Blizzards

Blizzards are severe winter storms. Blizzards have high winds, low temperatures and heavy snow. In severe blizzards, winds can blow over 45mph (72kmh). The strong wind and driving snow make visibility drop to almost zero.



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Blizzards can occur very quickly, catching people off-guard. In 1967 in Midwestern America, a blizzard dropped around 61cm of snow with winds faster than 50mph (80kmh). The storm left 76 people dead.



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Tornadoes

A tornado (or twister) is a spiralling funnel of air which descends from a storm cloud. They are formed when warm air is drawn in at the base of the cloud. It then rises upwards, spiralling as it does so to create a funnel.



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Tornadoes are vicious and destroy anything in their path. The strongest tornadoes can reach speeds of 300mph (482kph) and can be up to a kilometre wide. They can pick up buildings, people, animals, cars and trees.

Can you see the path taken by this tornado in Oklahoma, USA?



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Photo attribution: <http://commons.wikimedia.org/wiki/File:OKCTornado2.jpg>

Have you ever experienced any of these types of extreme weather?
What was it like? How did you feel?



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Worksheets

Choose from

A

B

C

Answers are at the end!

Name: _____ Date: _____



Cut out the names of these different types of extreme weather, then see if you can match each one to their correct definition.

Hurricane	Cyclone	Typhoon	Flood
Tornado	Hail	Blizzard	Lightning

Balls of frozen rain up to 12 cm in diameter that fall in showers.	An overflowing of water beyond its usual limits causing an inundation of the land.
A tropical storm with strong winds and heavy rain that originates in the Indian Ocean.	A winter storm with low temperatures, high winds and heavy snow.
A mobile storm of rotating air that causes a funnel descending from a storm cloud.	A tropical storm with strong winds and heavy rain that originates in the Atlantic Ocean.
A tropical storm with strong winds and heavy rain that originates in the Pacific Ocean.	A natural electrical discharge of high voltage either from a cloud to the ground or from cloud to cloud.

Which of these types of extreme weather would you least like to experience and why?



Name: _____ Date: _____



Can you write a definition for each of these types of extreme weather? Use as much detail as you can in your descriptions.

Extreme Weather Glossary	
Blizzard	
Cyclone	
Flood	
Hail	
Hurricane	
Lightning	
Tornado	
Typhoon	

Which of these types of extreme weather would you least like to experience and why?



Name: _____ Date: _____



Can you complete this chart to describe some different types of extreme weather? Use as much detail as you can.

	What are they?	Effects/Damage	Where (or when) are they most likely to happen?
Blizzard			
Cyclone			
Flood			
Hail			
Hurricane			
Lightning			
Tornado			
Typhoon			

Tornado Alley

What is a tornado?

A tornado (also known as a twister) is a spiralling funnel of air which descends from a storm cloud to the ground. Tornadoes are formed when warm air meets cold air which causes the air to twist around. This creates a vortex which then descends to the ground. Tornadoes are mobile and move across the Earth for anything between a few minutes and a few hours, destroying anything in their path.

How are tornadoes measured?

The strength of a tornado is measured on the Fujita Scale. Around 75% of all tornadoes are F0 or F1 tornadoes.

The Fujita Scale			
	Intensity	Wind Speed	Description
F0	Gale	40-72 mph	Light damage; branches broken, minor roof damage
F1	Moderate	73-112 mph	Moderate damage; mobile homes pushed off foundations; roofs damaged
F2	Significant	113-157 mph	Considerable damage; mobile homes destroyed; trees uprooted; strong-built homes unroofed
F3	Severe	158-206 mph	Severe damage; trains turned over; cars lifted from ground; outside walls blown away
F4	Devastating	207-260 mph	Devastating damage; houses levelled leaving piles of debris; cars thrown 250m
F5	Incredible	261-318 mph	Incredible damage; strongly-built homes completely blown away; objects the size of cars become airborne

Where is Tornado Alley?

Tornado Alley is the name given to the area in the USA that receives more tornadoes than anywhere else in the world. The main states affected by tornadoes are Texas, Oklahoma, Kansas and Nebraska, although other surrounding states also get many tornadoes each year. Most houses in this area have storm cellars so that people protect themselves underground if a tornado hits.

The Moore Tornado, Oklahoma, 2013.

Of the thousands of tornadoes in the USA every year, only a few are F4 or F5 tornadoes. However, on 20th May 2013, a devastating F5 tornado hit Moore, Oklahoma. 24 people were killed and 377 people were injured. A hospital and two elementary schools were severely damaged, as well as many homes and businesses. The tornado carved a trail over a mile wide and 17 miles long across Moore and the surrounding areas. The tornado caused billions of dollars worth of damage.



Some of the damage caused by the Moore Tornado



President Obama reviewing the damage at an elementary school with the school's principal



President Obama comforting the principal of Plaza Towers Elementary School as they survey the damage



A man surveys the spot where his house used to be just one day earlier



A US soldier helps to clear up the debris



A girl stops her bike to observe the emergency responders



A volunteer finds a birth certificate amongst the debris



A woman stands in her storm shelter in front of the remains of her home



Debris blocks many roads and pathways making aid difficult



First responders search for survivors in the wreckage

Name: _____ Date: _____



Cut out the names of these different types of extreme weather, then see if you can match each one to their correct definition.

Hurricane	Cyclone	Typhoon	Flood
Tornado	Hail	Blizzard	Lightning

<p>Hail</p> <p>Balls of frozen rain up to 12 cm in diameter that fall in showers.</p>	<p>Flood</p> <p>An overflowing of water beyond its usual limits causing an inundation of the land.</p>
<p>Cyclone</p> <p>A tropical storm with strong winds and heavy rain that originates in the Indian Ocean.</p>	<p>Blizzard</p> <p>A winter storm with low temperatures, high winds and heavy snow.</p>
<p>Tornado</p> <p>A mobile storm of rotating air that causes a funnel descending from a storm cloud.</p>	<p>Hurricane</p> <p>A tropical storm with strong winds and heavy rain that originates in the Atlantic Ocean.</p>
<p>Typhoon</p> <p>A tropical storm with strong winds and heavy rain that originates in the Pacific Ocean.</p>	<p>Lightning</p> <p>A natural electrical discharge of high voltage either from a cloud to the ground or from cloud to cloud.</p>

Which of these types of extreme weather would you least like to experience and why?



Name: _____ Date: _____



Can you write a definition for each of these types of extreme weather? Use as much detail as you can in your descriptions.

Extreme Weather Glossary	
Blizzard	A winter storm with low temperatures, high winds and heavy snow.
Cyclone	A tropical storm with strong winds and heavy rain that originates in the Indian Ocean.
Flood	An overflowing of water beyond its usual limits covering the land in water.
Hail	Balls of frozen rain up to 12 cm in diameter that fall in showers.
Hurricane	A tropical storm with strong winds and heavy rain that originates in the Atlantic Ocean.
Lightning	A natural electrical discharge of high voltage either from a cloud to the ground or from cloud to cloud.
Tornado	A mobile storm of rotating air that causes a funnel descending from a storm cloud.
Typhoon	A tropical storm with strong winds and heavy rain that originates in the Pacific Ocean.

Which of these types of extreme weather would you least like to experience and why?



Name: _____ Date: _____



Can you complete this chart to describe some different types of extreme weather? Use as much detail as you can.

	What are they?	Effects/Damage	Where (or when) are they most likely to happen?
Blizzard	A winter storm with low temperatures, high winds and heavy snow.	Heavy snow can reduce visibility making driving and traveling dangerous. The high amounts of snow can also trap people in their houses.	Most likely to happen whilst it is snowing during cold temperatures on wide open land.
Cyclone	A tropical storm with strong winds and heavy rain that originates in the Indian Ocean.	High waves, strong winds and heavy rain batter the land and can destroy buildings.	Most likely to happen in tropical areas of oceans.
Flood	An overflowing of water beyond its usual limits covering the land in water.	Water covering the land makes it difficult to travel and can have dangerous currents.	Most likely to happen after it has rained more than usual and a river bursts its banks.
Hail	Balls of frozen rain up to 12 cm in diameter that fall in showers.	Larger hailstones can injure people if they get hit. Hail can destroy crops and cause damage to cars and buildings.	Most likely to happen in cool climates which are often cloudy.
Hurricane	A tropical storm with strong winds and heavy rain that originates in the Atlantic Ocean.	High waves, strong winds and heavy rain batter the land and can destroy buildings.	Most likely to happen in tropical areas of oceans.
Lightning	A natural electrical discharge of high voltage either from a cloud to the ground or from cloud to cloud.	Lightning strikes objects that are closest to it, normally objects sticking up from the ground like buildings, trees or people.	Most likely to happen when there are storm clouds.
Tornado	A mobile storm of rotating air that causes a funnel descending from a storm cloud.	Tornadoes can be strong enough to lift cars and mobile homes into the air. The strong winds can destroy most things in their path.	Most likely to happen where strong winds of cold air and warm air meet.
Typhoon	A tropical storm with strong winds and heavy rain that originates in the Pacific Ocean.	High waves, strong winds and heavy rain batter the land and can destroy buildings.	Most likely to happen in tropical areas of oceans.