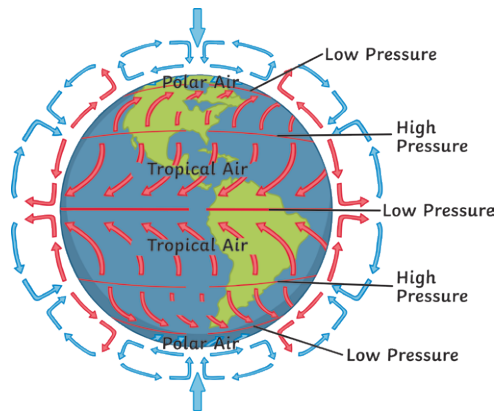


The Challenge of Natural Hazards: Weather Hazards Knowledge Organiser

- Natural hazards pose major risks to people and property.
- Natural hazards are natural processes which cause damage, injury and death.
- Meteorology hazards are caused by the weather and climate.
- Different factors affect hazard risk including the severity of the natural hazard, the ability of a place to cope with the hazard and the likelihood that a hazard will occur.

Global Atmospheric Circulation



Global atmospheric circulation causes tropical storms to develop in the tropics and depressions to develop in the UK.

Monitoring Tropical Storms

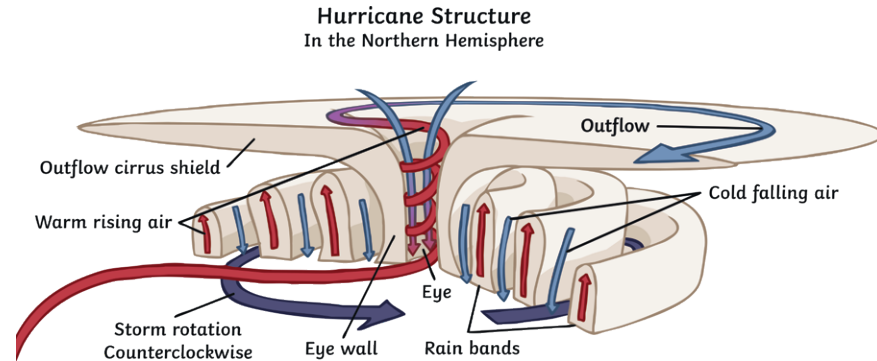
Scientists use computer models, which use satellite and aircraft data, to predict a path for storms.

People use this information to prepare for the coming storm (e.g. boarding up windows and evacuating).

Planning for future storms means that building in certain areas may be avoided. Also, governments may plan and prepare for disaster scenarios with emergency services as well as plan evacuation routes from disaster-prone areas.

Future buildings can be protected from future storms by using reinforced concrete or by building on stilts. Flood defences and sea walls may also protect homes from future storms.

Tropical Storms (hurricanes/cyclones/typhoons)



- Tropical storms form in the tropics when warm air rises rapidly over warm seas (over 27°C). This creates an area of low pressure on the Earth's surface causing strong surface winds. These winds rotate anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere due to the Coriolis effect.
- Energy from the warm sea causes the storm to become more powerful.
- They can last for **7-14 days**.
- Tropical storms **travel west** due to the easterly winds that blow from the equator (global atmospheric circulation).
- Tropical storms are circular (100-2 000km in diameter).
- The eye is an area of very low pressure (sinking air) in the centre of the storm. It can be 30-300km wide.
- The **eye-wall** consists of tall clouds that surround the eye of the storm. Here the air rises most rapidly and the wind/rain is most severe.
- Tropical storms are less powerful towards their edges.
- Tropical storms lose energy as they travel over land or cooler water.

Global warming could increase sea temperatures increasing the likelihood/strength of tropical storms. More places may experience tropical storms as a result.

Some believe that global warming is responsible for extreme weather events becoming more frequent in the UK, for example:

- December 2010 was the coldest December in 100 years.
- April 2011 was the warmest April on record.
- Storms are becoming more frequent, with 2013 being the stormiest December since 1969.
- December 2015 was the wettest month ever recorded.

Tropical Storm: Hurricane Sandy, October 2012

Primary Effects (Immediate Impacts)	Secondary Effects (Happened Afterwards)
<ul style="list-style-type: none"> • 6700 national guards deployed. • 80% of New York school damaged. • Storm surge travelled down the entire eastern USA coast, killing 41 people. • 650 000 homes damaged in USA. • 59 deaths from flooding in Haiti. • 8.5 million people lost electricity. • 11 million commuters were without service and public transport was cancelled. 	<ul style="list-style-type: none"> • Millions left without electricity for several weeks. • New York Bellevue Hospital was evacuated two days after the storm due to extensive damage. • 87 deaths resulted from a lack of electricity, e.g. from hyperthermia or emissions from unsafe heaters. • Monitoring/prediction/warnings improved.
Immediate Responses	Long-Term Responses
<ul style="list-style-type: none"> • Rescue teams search for survivors/recover bodies. • Treat injuries. • Provide shelter, food, water and medical supplies. 9000 people spent the night in a New York shelter. • Companies donated \$33 million. • Gas was rationed for several weeks. 	<ul style="list-style-type: none"> • Rebuild/repair damage. • Restore utilities. • Promote economic recovery. • Rehome homeless people. • The government approved \$137 million for repair and restoration.

Keywords

Economic impact, environmental impact, extreme weather, global atmospheric circulation, immediate responses, long-term responses, management strategies, monitoring, planning, prediction, primary effects, protection, secondary effects, social impact, tropical storm

A Recent Extreme Weather Event in UK: Cumbria Floods 2015

Causes	Social and Economic Impacts	Environmental Impacts	Management Strategies
<ul style="list-style-type: none"> • Storm Desmond (5-6th December) • Deep atmospheric low pressure formed over Atlantic Ocean. • Ground already saturated by second wettest November since 1910. • 341.4mm rainfall at Honister Pass, Cumbria in 24 hours (a UK rainfall record). • December 2015 was the wettest month on record. 	<ul style="list-style-type: none"> • Thousands of homes/business flooded. • Tens of thousands of homes without power. • Many bridges swept away. • One death. • Road/rail links cut. • Schools and hospitals closed. • Over 1000 people evacuated. 	<ul style="list-style-type: none"> • Millions of tonnes of sediment were transported and deposited downstream. • Thousands of trees ripped from river banks. • Saturated land resulted in landslides. • Large areas severely eroded. 	<ul style="list-style-type: none"> • The government announced a £50million rebuilding scheme. • National Flood Resilience Review to protect the UK from future flooding and extreme weather events. • Cumbrian Floods Partnership Group will investigate flood defences.



FLOOD ALERT
FLOODING IS POSSIBLE, BE PREPARED.