

## Microclimates

A microclimate is where the climate of a small area is different from that in the surrounding area e.g. in urban areas where buildings store heat and release it slowly, raising the temperature.

## British climate

The climate of the British Isles can be described as:

- **Maritime** - because it is affected by ocean currents they bring higher rainfall to the west and moderate the temperature.
- **Moist** - because precipitation (rain) is reliable all year and is never exceptionally low.
- **Temperate** - because temperatures at sea-level are rarely extreme (very hot or very cold).

## How does it rain?

There are three main types of rainfall:

- **Relief rainfall** - When moist air is forced over mountains. As it rises it cools, condensation occurs to form clouds so it rains.
- **Convectonal rainfall** - when the ground surface is heated by the sun, the air above it is warmed up. This air rises and as it cools down clouds form and rain follows.
- **Frontal rainfall** - when warm air meets cooler air, it rises up over the cooler, heavier air. As it rises it forms and rain flows.

Refer to the diagrams you have drawn in your book.

## High and low pressure

The weight of air pressing down on us from above is called pressure. This pressure varies from place to place and results in the development of pressure systems. Areas with above average pressure (high pressure) are called **anticyclones** and usually give good weather. Areas with less than average pressure (low pressure) are called **depressions** and usually give poor weather.

Cool air sinks

Warm air rises

High pressure  
**Anticyclone**

Low pressure  
**Depression**

## What sort of weather do anticyclones bring?

- High pressure
- Sinking air, so few clouds
- Fine settled weather
- Light winds
- Summer - hot, sunny weather with 'heat wave' conditions.
- Winter - clear skies, low temperatures, frost and fog.

## Depressions

Depressions develop where warm air meets cold air. The boundary of the 2 different air types is called a **front**. Along a front there will be cloud and usually rain.

- Rising air so clouds form
- Unsettled weather
- Strong winds
- Storms
- Front bring belts of cloud and rain.

# Weather Hazards STORMS

## Tropical storms

Tropical storms are intense low-pressure systems that build up near the Equator where ocean temperatures are high. They are known by different names in different parts of the world - hurricanes, cyclones, typhoons.

### How are tropical storms formed?

Tropical storms contain massive amounts of energy that comes from the heat of the atmosphere and moisture from the ocean. They have the following features in common:

- Ocean temperatures of over 27°C
- Warm-water ocean depths of at least 70m
- High levels of heat causing violent updrafts of air
- High levels of humidity

### Why are tropical storms a hazard?

- Strong winds reaching up to 200km/h. These winds can tear up vegetation and push over electricity pylons.
- Heavy rainfall can lead to flooding. On steeper slopes there is a risk of landslides.
- Storm surges. Strong winds create huge waves, which push towards coastal areas causing extensive coastal flooding e.g. in Bangladesh.

### What happens in a tropical storm?

Because of high temperatures, massive amounts of moisture are evaporated from the ocean and this rises rapidly into the atmosphere. When this warmer air meets cooler air at high altitude, it condenses to form clouds. As the warmer air rises, more air is sucked in to take its place and this provided the source of energy for the storm.

The storm spirals because of the rotation of the earth. The air is thrown outwards from the centre, while the eye is thrown outwards from the centre, while the eye remains calm as warmer air descends. The wind then moves the storm towards land where it often does most damage in coastal areas. When the storm begins to move across land its source of energy (the ocean) is cut off, so it begins to lose power.

## Can tropical storm be predicted?

Warning systems can monitor storm developments and try to forecast the strength and direction of movement.

Despite modern scientific methods, prediction is not easy because the strength and direction of storms can change quickly.

Although tropical storms affect both MEDCs and LEDCs, often poorer countries don't have the money and technology to predict or prepare for them.

## Hurricane Mitch, 1998

In October 1998 a tropical storm developed to the east of Central America and began moving towards the countries of Nicaragua and Honduras. Large areas were flooded and about half a million people had lost their homes - many had to be evacuated to safe areas.

**Impact on Honduras** - 17,000 dead; many towns completely destroyed; schools, roads, bridges and power lines lost; over 70% of the year's crops ruined, leading to food shortages.

**Impact on Nicaragua** - 3000 dead; 20% of population made homeless; all main roads out of the capital destroyed; 20% of farms ruined.

### Could the impact have been reduced?

Honduras and Nicaragua are 2 of the poorest countries in Central America, and they do not have the money or technology to prepare for hurricanes. However, some people have suggested that the disaster was made worse because homes were poorly constructed, villages were built on steep slopes and towns had no proper storm drains. Also, deforestation may have left slopes bare, increasing the possibility of landslides.