

Rainfall

Convection

Relief / Orographic

Frontal / Cyclonic

How do clouds form?

What is condensation?

How does air get cooled?

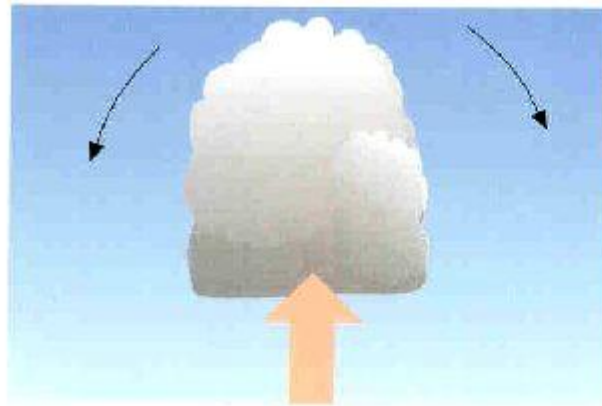
What causes precipitation?

Basic Principles of rain formation

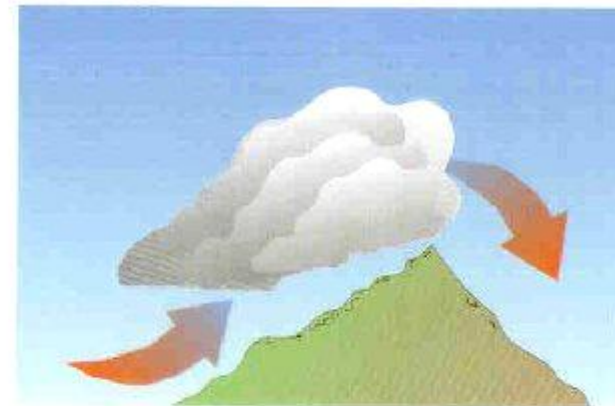
1. Warm air containing water vapour rises, cools and condenses into droplets that form clouds.
2. They eventually get too heavy and can no longer be suspended in the atmosphere.
3. The droplets fall back to the surface of the earth as rain.

**What causes air to rise
and move vertically
in the first place?**

Methods of cloud formation



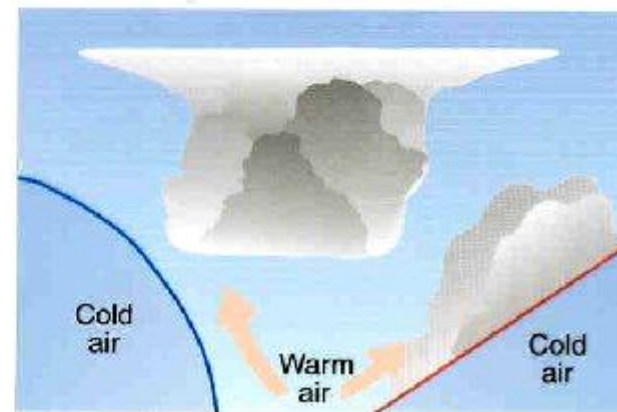
5 km
Convection
(a)



150 km
Topography
(b)

Each method in which air rises forms a type of cloud

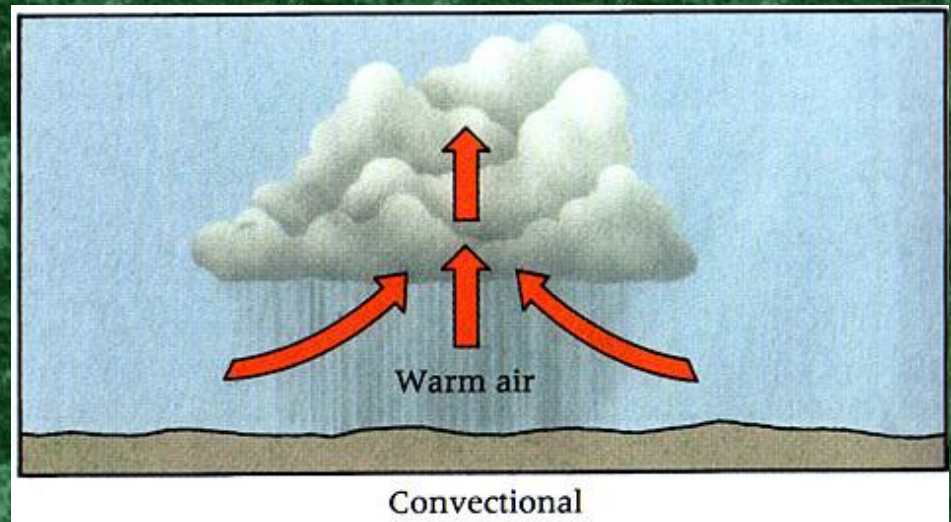
Each type of cloud is associated with a type of rainfall



1500 km
Lifting along weather fronts
(d)

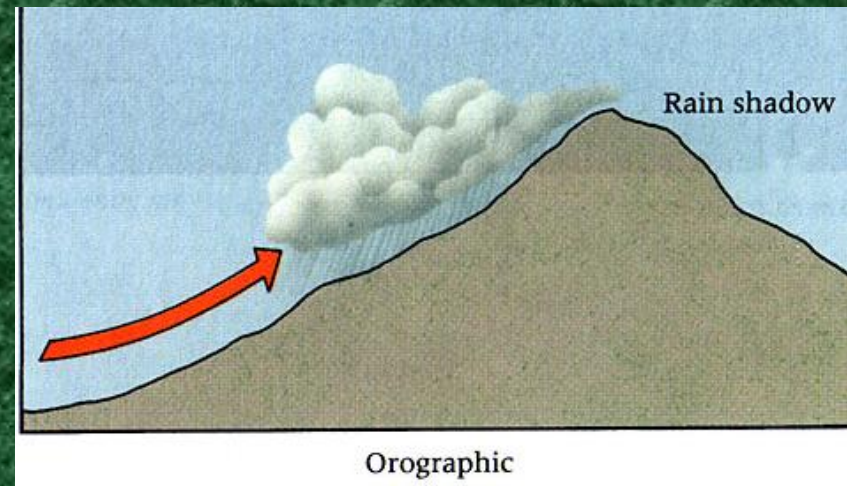
Convictional

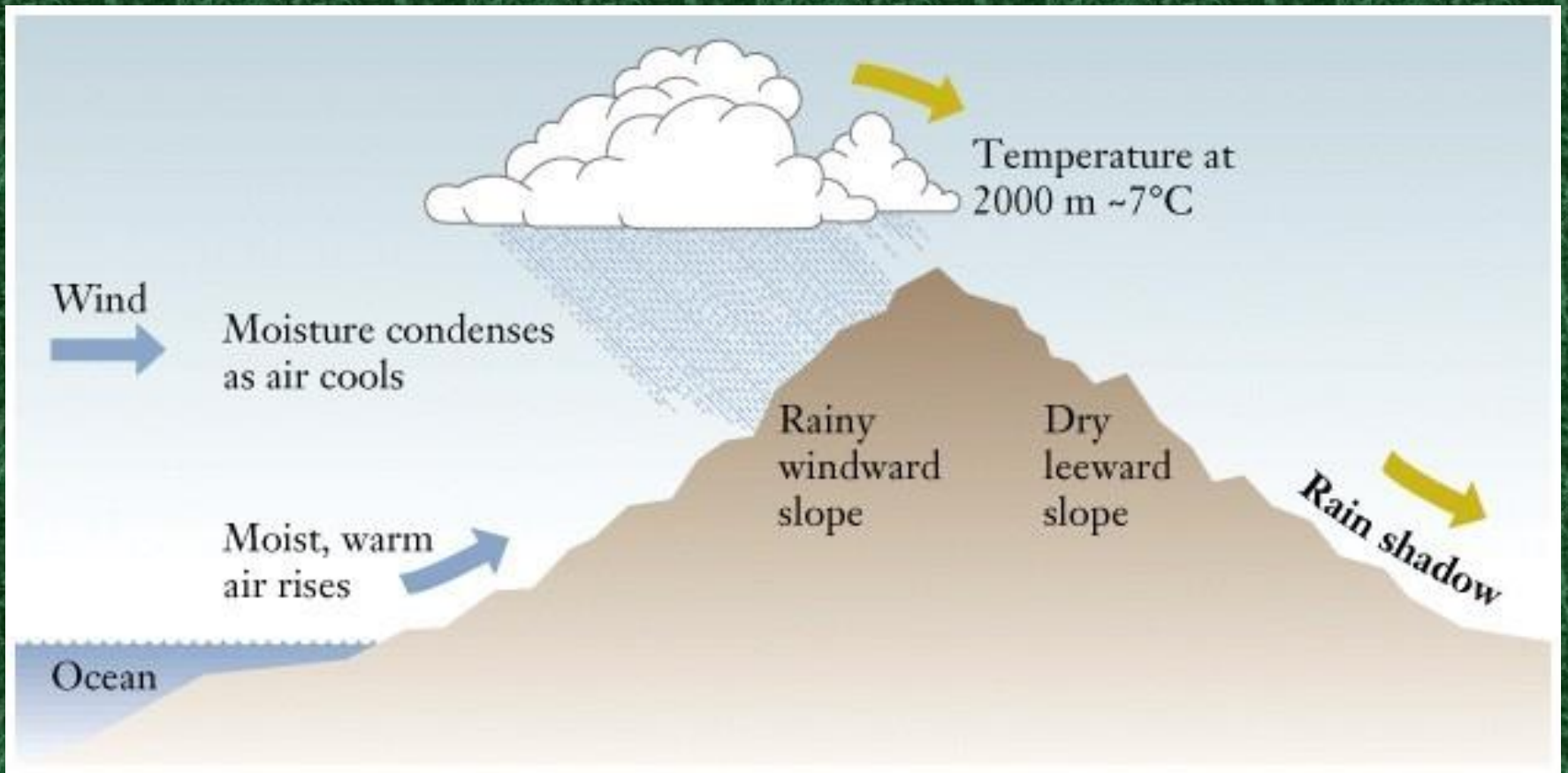
- Air that rises because it has absorbed heat from the earth's surface causes convectional rain.



Relief / Orographic

- Air that is forced to rise over an area of high elevation will cause relief (orographic) rain





Cyclonic or Frontal (Depressions)

- Air that rises because there is a cooler, denser air mass flowing beneath it that forces it upwards causes cyclonic (frontal) rain.

Uh, what are fronts?



- **Front:** the boundary between contrasting masses of air

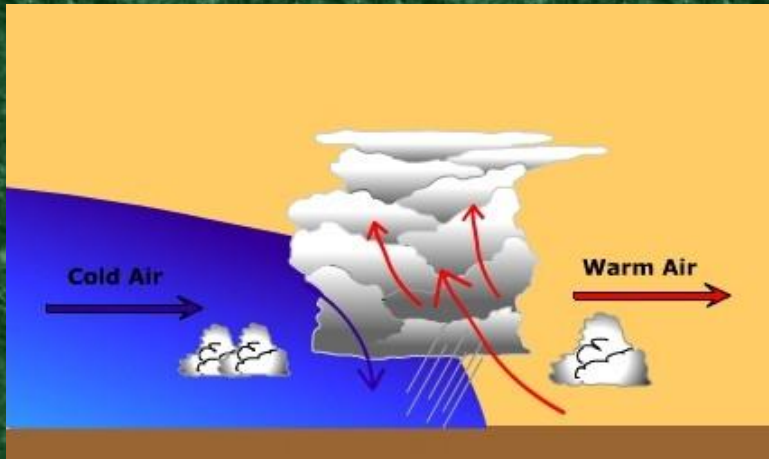
- 3 main types:



- cold fronts
- warm fronts
- occluded fronts

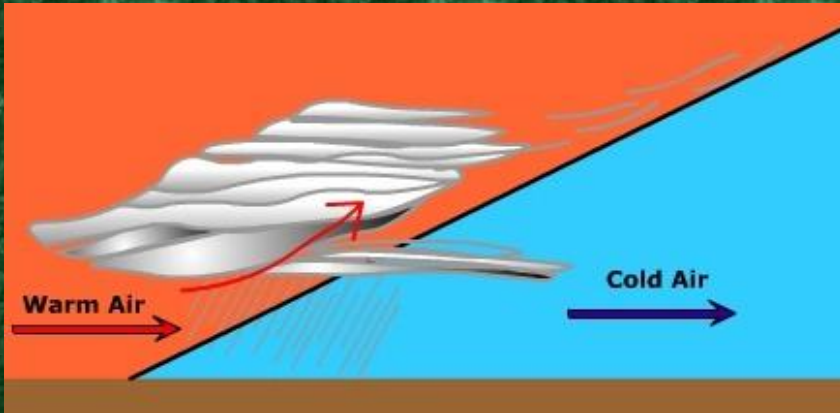
(Cold "catches up" with warm)

Cold Front



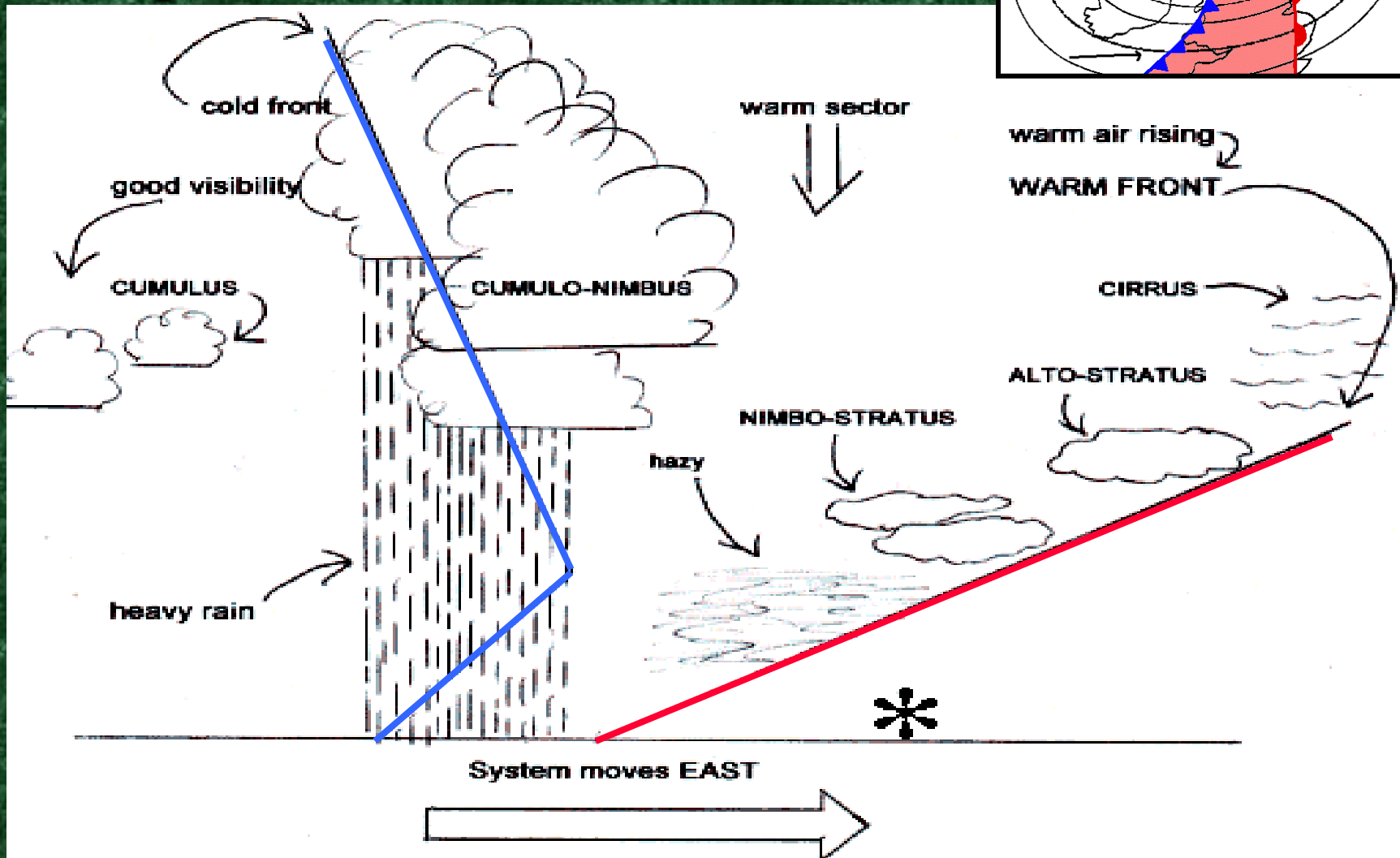
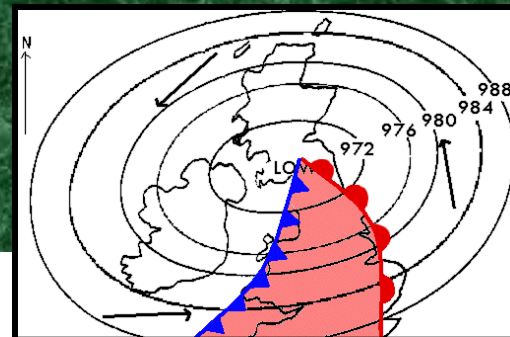
- Cold air replaces warm air
- Steep frontal surface.
- Vertically developed, cumulus-type clouds.
- Heavy precipitation of short duration.

Warm Fronts



- Warm air replaces cold air
- Gentle frontal surface.
- Layered, stratus-type clouds.
- Light precipitation of long duration along front

Low Pressure System: Depression



Activity

- Model of a depression
- Description of a depression