

Clouds



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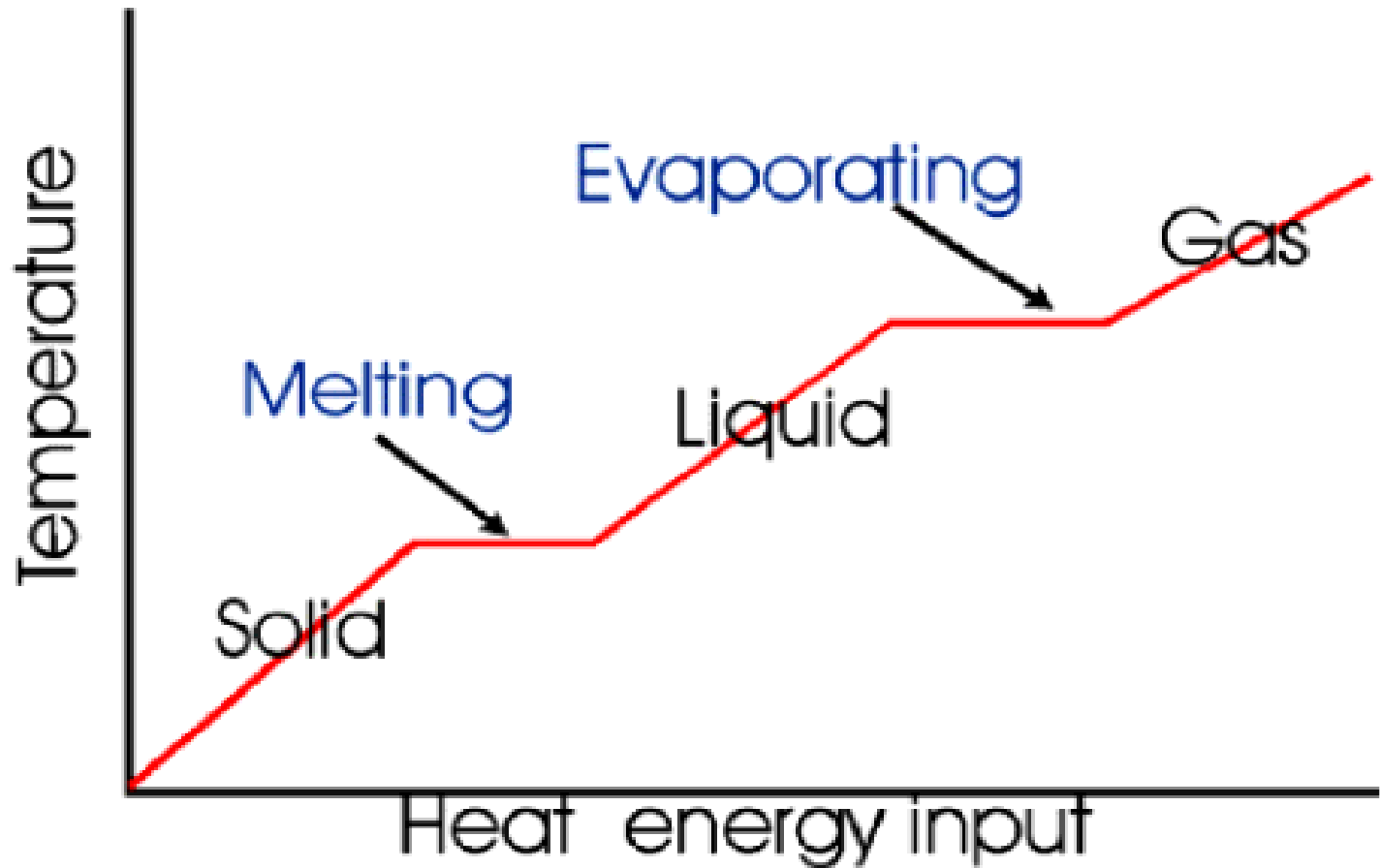
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Water is strange stuff!

Water can occur in 3 states:

- **Gas** - water vapour (invisible)
- **Liquid** - water droplets (visible)
- **Solid** - ice crystals, hail, snow



What are clouds?

- Clouds are formed of tiny droplets of water or ice.
- Clouds form when water vapour cools and **condenses**.
- The temperature at which condensation occurs is called **dew point**.
- **Condensation** also requires **nucleii** (small particles) such as dust.

What happens when air is cooled?

- **Relative humidity** increases.
- **Dew point** is reached (100% relative humidity).
- Water vapour (invisible) **condenses** to form water droplets (visible).
- Sometimes the water vapour may change straight into solid state: called **sublimation**.

How is air cooled?

- **Contact** eg with a cold surface such as over land in winter.
- **Convection** eg uplift over warm ground.
- **Orographic** eg rising over mountains.
- **Frontal** eg when a mass of warm air meets and rises over a mass of cold air.

Cloud shapes

Clouds can be classified by their **shape** and **height**

Flat clouds
eg Stratus (St)



Fluffy clouds
eg Cumulus (Cu)



Wispy clouds
eg Cirrus (Ci)



Cloud heights

Clouds can also be classified by **height of cloudbase**

Low level (below 2000m)
eg stratus



Middle level - alto
(2,000 to 6,000m)
eg alto-cumulus



High level - cirro
(above 6,000m)
eg cirrus



Spot the cloud!

Low and flat



Stratus

Spot the cloud!

Middle level,
fluffy



Alto -Cumulus

Spot the cloud!

High level,
wispy



Cirrus

Spot the cloud!

Rain bearing,
storm clouds



Cumulo-Nimbus

World cloud patterns

World Cloud Cover Pattern



GRAPHICS BY NASA/GISS



Can you explain the major world cloud belts?