

5.4 NATURAL ENERGY SOURCES

ENERGY

- Capacity to do change
- In Science we often say it is “the ability to do work”



NATURAL PHENOMENA & ENERGY

- All natural phenomena from plants growing to rivers flowing or tornadoes blowing require energy

**Where does this energy
come from?**



SOLAR ENERGY

- Energy can be found in many different forms in nature but they basically all stem from the sun

EX: WATER CYCLE

- The evaporation of water from bodies of water is due to heat from the sun
- Once in the air, this water vapour cools and condenses leading to precipitation
- This cycle is responsible for almost all meteorological events on our planet!

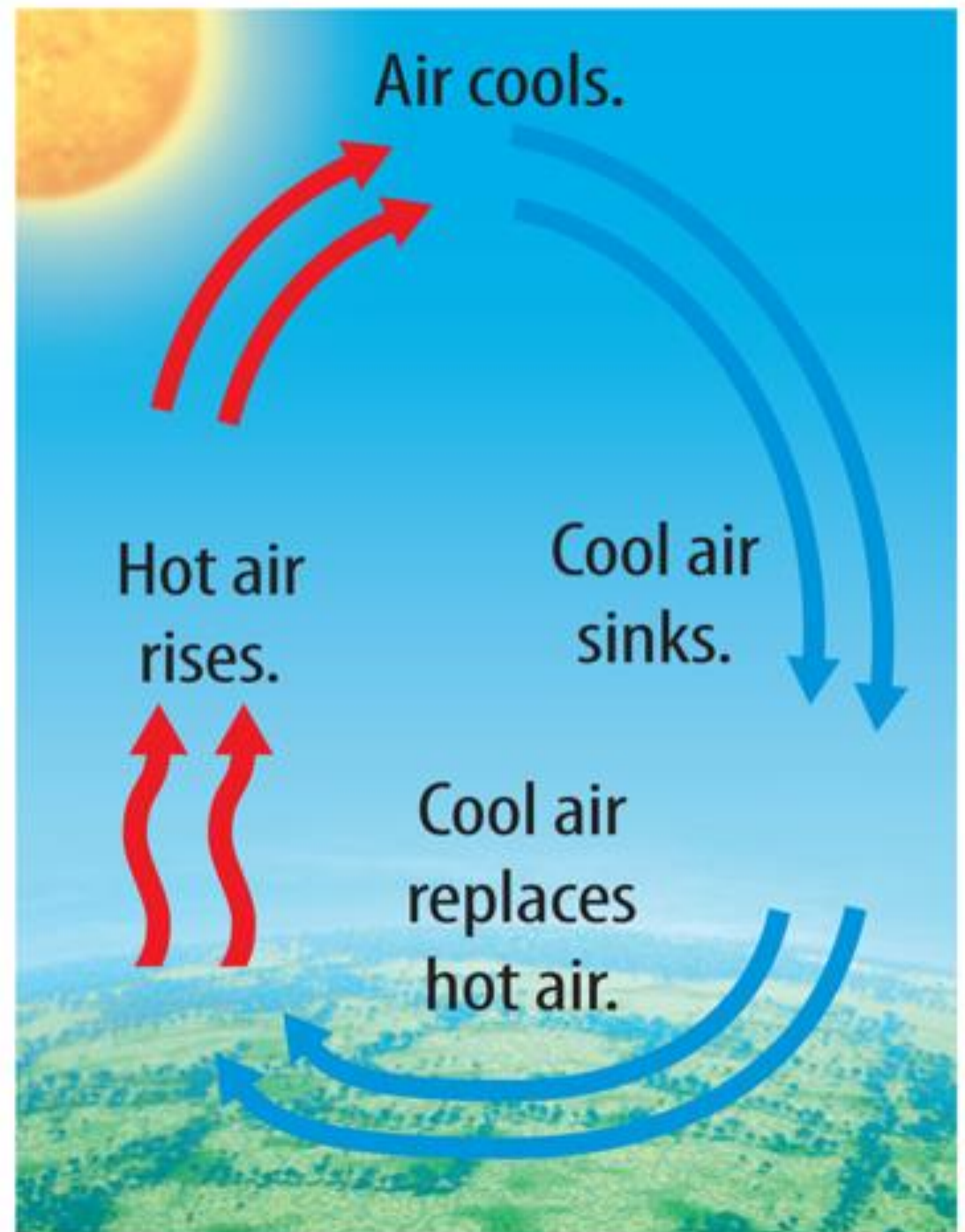
EX: PHOTOSYNTHESIS

- Plants absorb sunlight and use it to grow
- They also consequently make this energy available to the rest of the food web

EX: WIND

- The sun heats the air around us
 - So some air is warmer than the rest
 - This leads to differences in pressure which in turns causes a movement of air
→ wind!

- Hot air rises (less pressure)
- Cold air sinks (higher pressure)



EX: WIND

- Wind is also created by the movement of the Earth



CONVECTION



5.5 RENEWABLE & NON-RENEWABLE ENERGY SOURCES

RENEWABLE ENERGY

RENEWABLE ENERGY

- A source of energy that replenishes naturally (and relatively quickly)
- It must also be abundant enough that it can be used continuously

SOLAR ENERGY

- **Source:** The sun
- **How it's used:**
 - - solar panels
(photovoltaic cells)
 - - heating water



WIND ENERGY

- **Source:** The wind
- **How it's used:**
 - - wind turbines (transform wind into electricity)



HYDROELECTRIC ENERGY

- **Source:** Currents from rivers, waterfalls, etc



How it's used:

- the moving water turns a turbine and the turbine generates electricity

TIDAL ENERGY

- **Source:** Ocean tides
- **How it's used:**
 - - the moving water turns a turbine and the turbine generates electricity

BIOMASS ENERGY

- **Source:** Organic matter (wood, peat, etc)
- **How it's used:**
 - - burn the organic matter (ex: wood) to heat our homes directly or to boil water which can be used to turn turbines, etc

GEO THERMAL ENERGY

- **Source:** Earth's internal heat
- **How it's used:**
 - Use Earth's internal heat to boil water which can be used to heat a house directly or turn turbines and produce electricity

NON-RENEWABLE ENERGY

NON-RENEWABLE ENERGY

- A source of energy that does NOT replenish naturally
- Or replenishes slower than the rate at which it is being used up

NUCLEAR ENERGY

- **Source:** Radioactive elements (ex: uranium)
- **How it's used:**
 - Splitting of radioactive atoms releases huge amount of energy; this energy boils water which then turns a turbine and produces electricity

FOSSIL ENERGY

- **Source:** fossil fuels (ex: coal, oil, natural gas)

How it's used:

- Burn the fossil fuels to generate heat which can be used to heat homes directly or turn turbines for electricity



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