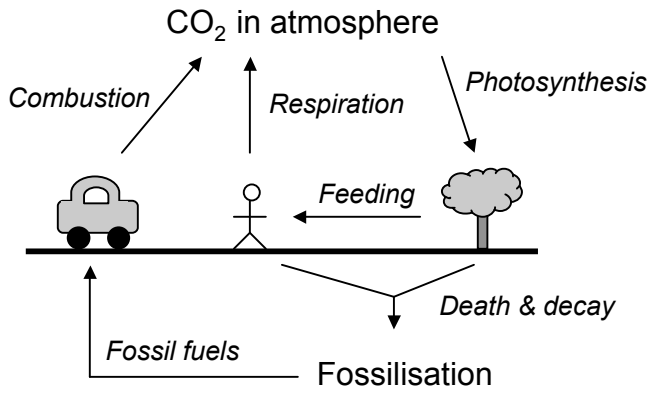
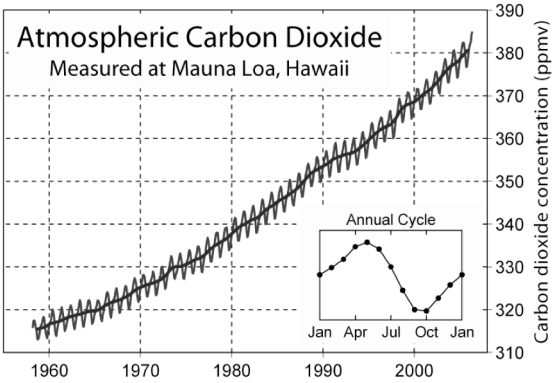
The Greenhouse Effect (5.2)

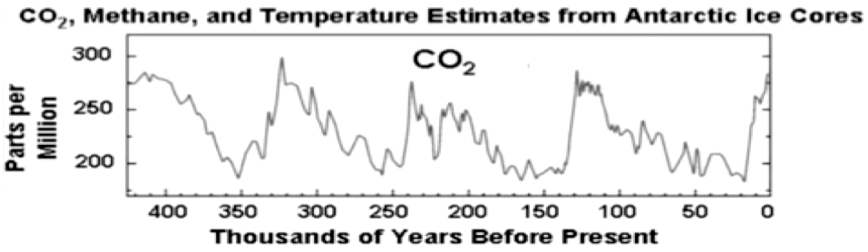
Draw and label the carbon cycle (5.2.1)



Analyse historical records (5.2.2)



Data taken from Mauna Loa, Hawaii



Data taken from Vostok, Antarctica

Long-term Trends:

- *CO_2 levels fluctuate with ice ages and warm ages*

Short-term Trends:

- *CO_2 levels are higher than any time in last 400,000 years (and are still rising)*

Explain the relationship b/w atmospheric gas and greenhouse effect (5.2.3)

- Greenhouse gases are naturally occurring and include CO_2, CH_4 & oxides of nitrogen
- Radiation from sun enters the atmosphere as short waves (light) and is re-radiated as long waves (heat)
- The atmospheric gases trap the long-wave radiation, heating the Earth - this is the greenhouse effect
- Levels of greenhouse gases are rising due to human influence (industrialization, deforestation, etc.)
- This enhanced greenhouse effect is potentially increasing global temperatures and causing climate change

Precautionary principle (5.2.4 / 5.2.5)

*If an action has a risk of causing **harm** to the public or environment then, in the **absence of scientific consensus**, the onus falls upon those **advocating action** to prove it is **not harmful***

Arguments *For* Climate Action:

- Potential risks of inaction include increased frequency of droughts or floods, rising sea levels, higher spread of disease & loss of biodiversity
- Changes in climate conditions may affect food production or destroy certain industries, leading to economic depression that results in famine, unemployment and global poverty

Arguments *Against* Climate Action:

- Cutting emissions may delay economic growth in developing countries, while trade boycotts on non-compliant nations may fuel international tensions
- Future technologies and advances may not occur under a restrictive carbon trading scheme

Changes to arctic ecosystems (5.2.6)

Remember: **DIE ICE**

- **D**iminished snow cover and permafrost
- **I**ncreased decomposition of detritus and burning of fuels *(once trapped in permafrost)*
- **E**xpansion of ranges of habitats available to temperate species *(loss of tundra)*
- **I**ncreased success of pest species and pathogens *(leads to extinction of native species)*
- **C**hanged behaviours of native species *(e.g. migration, hibernation, birthing cycles)*
- **E**xtinction and loss of biodiversity
- Additionally temperature rises may release CO_2 stored in ocean *(increasing warming)*