

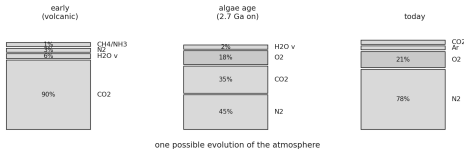
Topic 9: Chemistry of the atmosphere

AQA GCSE Chemistry 8462 · spec 4.9 · sheets 9.1–9.3

Four billion years of air

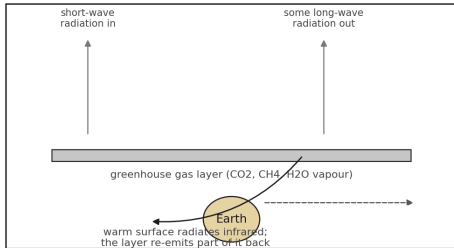
- Volcanoes built the early air; life rebuilt it.
- Greenhouse gases now warm the rebuilt air.
- Combustion pollutants are the human addition.

The evolving atmosphere



- Early — CO₂, water vapour, nitrogen, methane; no oxygen.
- Oceans condensed; CO₂ dissolved into carbonate sediments.
- Photosynthesis — oxygen up, carbon buried as fossil fuels.

The greenhouse effect



- CO₂, methane, water vapour — the greenhouse gases.
- In — short-wave; out — long-wave infrared, partly trapped.
- Human causes — fossil fuels, deforestation, cattle, landfill.

Pollutants from fuels

- Incomplete combustion — carbon monoxide, toxic, and soot.
- SO₂ from sulfur impurities — acid rain; NO_x from hot engines.
- Complete combustion — only CO₂ and water.

Check yourself

- Checklist before you call this topic done.
- Evolution sequence with the uncertainty caveat.
- Greenhouse mechanism in wavelengths; each pollutant source to effect.