

Glossary

A

- **Aerosols** a collection of airborne particles, typically less than 100th of a millimetre in size, that reside in the atmosphere.
- **Aerosol Optical Depth (AOD)** a measure of how much light airborne particles prevent from passing through a column of atmosphere. Aerosols tend to absorb or reflect incoming sunlight, thus reducing visibility and increasing optical depth.
- **Anthropogenic** caused or produced by humans.
- **Attribution** the process of assigning causes to detected climate change, whether man-made or natural.

B

- **Biomass** -the mass of living organisms, and dead matter such as wood, leaves, and other organic matter.
- **Biosphere** that part of the Earth consisting of living organisms, including in the atmosphere, on land and in the ocean.

C

- **Central estimate** -The level at which half of possible outcomes lie above and half below; often referred to as the median.
- **CO₂** carbon dioxide, a gas in Earth's atmosphere. It occurs naturally and is also a by-product of human activity such as burning fossil fuels and land-use change. It is the principal anthropogenic greenhouse gas.
- **Climate** -average weather and its variability over a period of time, ranging from months to millions of years. The World Meteorological Organization standard is a 30-year average.
- **Climate change** a change in the climate's mean and variability for an extended period of decades, or more.
- **Climate feedback** -an initial process in the climate leads to a change in another process in the climate, which in turn influences the initial one. A positive feedback intensifies the original process, and a negative feedback reduces it. A warming climate could increase the release of carbon dioxide from soils. Since carbon dioxide is a greenhouse gas, the additional release of carbon dioxide would further warm the climate - this is an example of a positive feedback.
- **Climate models** -a mathematical representation of the climate system based on its physical, chemical and biological components, in the form of a computer program. The computer climate models used at the Met Office Hadley Centre are detailed three-dimensional representations of major components of the climate system. Coupled climate models are the most complex, combining various components such as atmosphere, ocean, sea ice and land surface. They are run on the Met Office's supercomputer.

F

- **Fossil-Fuels** -biomass lain down in the Earth millions of years ago, such as coal, oil, and natural gas, which when burnt produce carbon dioxide.

G

- **Geosphere** -the non-living, solid portion of the Earth, including rocks.
- **Global dimming**- the reduction in the amount of solar radiation at the Earth's surface, through the presence of aerosols.
- **Global warming** -a rise in the Earth's temperature, often used with respect to the observed increase since the early 20th century.
- **Greenhouse gases** -gases in the atmosphere, which absorb thermal infra-red radiation emitted by the Earth's surface, the atmosphere and clouds e.g. water vapour, carbon dioxide, methane and nitrous oxide.
- **Gulf Stream/North Atlantic Drift** -the Gulf Stream is a warm ocean current originating near the Caribbean and the Gulf of Mexico which follows the east coast of the USA before turning into the North Atlantic Drift towards north west Europe. This combined system transports heat from low to high latitudes, keeping north west European winter temperatures higher than they would otherwise be.

O

- **Ozone** -a molecule, which in the upper atmosphere (stratosphere) filters potentially damaging ultraviolet light from reaching the Earth's surface.

T

- **Thermodynamic** -is a branch of physics and of chemistry that studies the effects of changes in temperature, pressure, and volume on physical systems.
- **Thermohaline Circulation (THC)** the world's large-scale ocean circulation driven by differences in temperature and salinity of the water masses.