

Glossary

Aerosols - microscopic particles suspended in the atmosphere, originating from both natural sources (e.g., volcanoes) and human activities (e.g., coal burning).

Albedo - the reflectivity of Earth.

Biomass - technically, the total dry organic matter or stored energy content of living organisms in a given area. Biomass refers to forms of living matter (e.g., grasses, trees) or their derivatives (e.g., ethanol, timber, charcoal) that can be used as fuels.

Btu (British thermal unit) - the amount of heat needed to raise the temperature of one pound of water by 1°F at a temperature of 60°F and a pressure of 1 atmosphere.

Carbon budget - the sum of the flows of carbon to and from a carbon reservoir. See also Carbon cycle.

Carbon cycle - general term used in reference to the sum of all reservoirs and flows of carbon on Earth. The flows tend to be cyclic in nature; for example, carbon removed from the atmosphere (one reservoir) and converted into plant tissue (another reservoir) is returned back into the atmosphere when the plant is burned.

Carbon reservoir or sink - within the carbon cycle, the physical site at which carbon is stored (e.g., atmosphere, oceans, Earth's vegetation and soils, and fossil fuel deposits).

Chlorocarbon - a compound containing chlorine and carbon; examples include carbon tetrachloride and methyl chloroform, both of which are ozone depleters.

Chlorofluorocarbons (CFCs) - compounds containing chlorine, fluorine, and carbon; they generally are used as propellants, refrigerants, blowing agents (for producing foam), and solvents. They are identified with numbered suffixes (e.g., CFC-11, CFC-12) which identify the ratio of these elements in each compound. They are known to deplete stratospheric ozone and also are greenhouse gases in that they effectively absorb outgoing infrared radiation in the atmosphere.

Climate - the average weather together with its variability of representations of the weather conditions for a specified area during a specified time interval (usually decades).

Cogeneration - the simultaneous generation of both electric power and heat; the heat, instead of being discharged without further use, is used in some fashion (e.g., in district heating systems).

Deforestation - converting forest land to other vegetation or uses (e.g., cropland, pasture, dams).

Denitrification - microorganisms taking nitrogen out of its fixed form in the soil and putting it back into the atmosphere. Besides yielding molecular nitrogen (N_2), denitrification produces nitrous oxide.

Emissions - flows of gases, liquid droplets or solid particles into the atmosphere. Gross emissions from a specific source are the total quantity released. Net emissions are gross emissions minus flows back to the original source. Plants, for example, take carbon from the atmosphere and store it as biomass during photosynthesis, and they release it during respiration, when they decompose, or when they are burned.

Feedback - one variable in a system (e.g., increasing temperature) triggers changes in a second variable (e.g., cloud cover), which in turn ultimately affect the original variable (i.e., augmenting or diminishing the warming). A positive feedback intensifies the effect; a negative feedback reduces the effect.

Fluorocarbon - a compound containing fluorine and carbon; among these are chlorinated fluorocarbons (CFCs) and brominated fluorocarbons (halons).

Fossil fuel - coal, petroleum, or natural gas or any fuel derived from them.

Global warming - the apparent recent trend of increasing world-surface and tropospheric temperatures, thought to be caused by pollutants, and their “entrapment” of heat. This phenomenon is popularly known as “the greenhouse effect.”

Greenhouse effect - the effect produced as certain atmospheric gases allow incoming solar radiation to pass through to Earth’s surface, but prevent the outgoing (infrared) radiation, which is re-radiated from Earth,

from escaping into outer space. The effect is responsible for warming the planet.

Greenhouse gas - any gas that absorbs infrared radiation in the atmosphere.

Halocarbon - an organic chemical containing carbon and at least one halogen. This is the most general term used to refer to ozone-depleting halogenated compounds.

Halogen - a class of non-metallic elements consisting of the elements Fluorine (F), Chlorine (Cl), Bromine (Br), and Iodine (I).

Halogenated - a compound containing a halogen. A fully halogenated CFC is one in which all hydrogen has been replaced with chlorine and/or fluorine. A partially halogenated CFC is one in which some hydrogen remains.

Hydrocarbon - a large class of organic chemicals made up of carbon atoms linked to hydrogen and, sometimes, oxygen. Hydrocarbons are used for fuel and other economically important materials. Hydrocarbons can be altered by the addition of other chemicals, such as halogens.

Nanometer - the unit equal to one-billionth of a meter, frequently used to measure wavelengths of electromagnetic radiation in the solar spectrum.

Nitrogen fixation - the process by which microorganisms convert atmospheric nitrogen into forms such as ammonia (NH_3) which can be used by plants.

Ozone - a molecule consisting of three bound atoms of oxygen. Its chemical nomenclature is O_3 . Most oxygen in the atmosphere, O_2 , consists of only two oxygen atoms.

Ozone layer - something of a misnomer, since ozone does not occur in a flat "layer" in the atmosphere. This term refers to ozone in the stratosphere where it occurs in its highest concentrations — roughly from 1 to 10 parts per million. This atmospheric zone lies between 15 and 50 kilometers above Earth's surface, depending upon latitude, season and other factors.

Polyurethane - a plastic which can be blown into various kinds of com-

mercial foams, rigid and flexible. Sometimes referred to as “PU.”

Radiation - refers to electromagnetic energy, not to be confused with “radioactivity” (the emission of radiation, generally alpha or beta particles from the nucleus of an unstable isotope).

Stratosphere - the zone of the atmosphere between about 10-15 and 50 kilometers above Earth’s surface. Most of the ozone in the atmosphere is in the stratosphere. The stratosphere is separated from the troposphere below by a boundary layer called the tropopause.

Troposphere - the part of the atmosphere in which we live, ascending to about 15 km above Earth’s surface over which depth temperatures generally decrease with height. The atmospheric dynamics we know as “weather” take place within the troposphere.

Ultraviolet radiation - electromagnetic energy with frequencies higher than visible light or wavelengths shorter than visible light (less than 400 nm). Commonly abbreviated as “UV.”