

Dr. Jim Miller – Climate Change & Natural Resources Glossary

TERM	DEFINITION
Albedo	The fraction of solar radiation reflected by a surface or object, often expressed as a percentage.
Amplification	A natural or artificial device that makes a signal stronger.
Climate Change	Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.
Climate Feedback	An interaction mechanism between processes in the climate system is called a climate feedback, when the result of an initial process triggers changes in a second process that in turn influences the initial one. A positive feedback intensifies the original process, and a negative feedback reduces it.
Climate Model	A numerical representation of the climate system based on the physical, chemical and biological properties of its components, their interactions and feedback processes, and accounting for all or some of its known properties. Climate models are applied, as a research tool, to study and simulate the climate, but also for operational purposes, including monthly, seasonal and inter-annual climate predictions.
Climate System	The climate system is the highly complex system consisting of five major components: the atmosphere, the hydrosphere, the cryosphere (all snow, ice and permafrost on and beneath the surface of the earth and ocean), the land surface and the biosphere, and the interactions between them.
Coupled Climate Model	Coupled models provide a more comprehensive representation of the climate system.
Emission Scenario	A plausible representation of the future development of emissions of substances that are potentially radiatively active (e.g. greenhouse gases, aerosols), based on a consistent set of assumptions about driving forces (such as demographic and socio-economic development, technological change) and their key relationships.
Envelope	Range of values. For example, a species climate envelope is a representation of the geographic area that a species lives within based upon their temperature tolerances/preferences.
Greenhouse Effect	The result of heat absorption by certain gases in the atmosphere (called greenhouse gases because they effectively 'trap' heat in the lower atmosphere) and re-radiation downward of some of that heat. Water vapor is the most abundant greenhouse gas, followed by carbon dioxide and other trace gases. Without a natural greenhouse effect, the temperature of the Earth would be about zero degrees F (-18°C) instead of its present 57°F (14°C).

Infrared Radiation	Radiation emitted by the Earth's surface, the atmosphere and the clouds.
Parts per Million (ppm)	Unit of measure to represent the concentration of a substance within a mixture as how many parts of the substance per million parts of the mixture.
Sea Level Rise	Long term changes in relative sea level caused by either eustatic changes (e.g. brought about by thermal expansion) or changes in vertical land movements (e.g., continental rebound).
Temperature Anomaly	A departure from a reference value or long-term average. A positive anomaly indicates that the observed temperature was warmer than the reference value, while a negative anomaly indicates that the observed temperature was cooler than the reference value.
Thermal Expansion	The increase in volume (and decrease in density) that results from warming water.
Uncertainty	An expression of the degree to which a value (e.g. the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. Uncertainty can therefore be represented by quantitative measures (e.g. a range of values calculated by various models) or by qualitative statements (e.g., reflecting the judgment of a team of experts).