**Climate Change Key Terms:**

**Acidification:** A process that lowers the pH of a solution. When carbon dioxide dissolves in water, it triggers chemical reactions that create carbonic acid.

**Atmosphere:**  The layer of gases surrounding Earth or another planet.

**Carbon:** The chemical element having the atomic number 6. It is the physical basis of all life on Earth. Carbon exists freely as graphite and diamond. It is an important part of coal, limestone and petroleum, and is capable of self-bonding, chemically, to form an enormous number of chemically, biologically and commercially important molecules.

**Carbon Dioxide** (or CO2): A colorless, odorless gas produced by all animals when the oxygen they inhale reacts with the carbon-rich foods that they’ve eaten. Carbon dioxide also is released when organic matter burns (including fossil fuels like oil or gas). Carbon dioxide acts as a **greenhouse gas**, trapping heat in Earth’s atmosphere. Plants convert carbon dioxide into oxygen during photosynthesis, the process they use to make their own food.

**Climate:** The weather conditions that typically exist in one area, in general, or over a long period.

**Climate change:** Long-term, significant change in the climate of Earth. It can happen naturally or in response to human activities, including the burning of fossil fuels and clearing of forests.

**Coal:** a dark-brown or black solid substance formed naturally from the compaction and hardening of fossilized plants and used as a fuel primarily for electricity generation.

**Dynamics:** describe how a system changes in response to external (or outside) forces.

**Drought:** An extended period of abnormally low rainfall; a shortage of water resulting from this.

**Ecosystem:** A group of interacting living organisms — including microorganisms, plants and animals — and their physical environment within a particular climate. Examples include tropical reefs, rainforests, alpine meadows and polar tundra. The term can also be applied to elements that make up some an artificial environment, such as a company, classroom or the internet.

**Ecosystem processes:** Key interactions among living and non- living parts of an ecosystem. These are common to all ecosystems, but may be performed by different species in different ecosystems.

**Fossil Fuel:** Any fuel — such as coal, petroleum (crude oil) or natural gas — that has developed within the Earth over millions of years from the decayed remains of bacteria, plants or animals.

**Glacier:** A slow-moving river of ice hundreds or thousands of meters deep. Glaciers are found in mountain valleys and also form parts of ice sheets.

**Greenhouse Gases:** Gases that contribute to the greenhouse effect by absorbing heat. Carbon dioxide and methane are two examples of such gases.

**Microclimate:** Localized climate that differs from the surrounding region.

**Natural Gas:** a mixture of hydrocarbon gases that occur natural beneath the earth’s surface. Used as a fuel, primarily for cooking and heating homes.

**Non-Renewable Resource:** A resource that cannot be regenerated within a reasonable time period.

**Positive Feedback Cycle:** Amplification of an initial change in a system as a result of interactions among the components of the Earth system.

**Range:** The full distribution of something. For instance, a plant or animal’s range is the total area in which it naturally lives.

**Renewable Resource:** A resource that is not depleted after use (Can be re-grown, etc.)

**Reservoirs** (also called pools, stocks, boxes): places where materials collect and are stored. For example, about twice as much carbon is stored in the permafrost reservoir than exists in the atmosphere. Reservoirs may act as sources or sinks and change between a source and a sink depending on the conditions.

**Sea Level:** The level of the water in the ocean over the entire globe when all tides and other short-term changes are averaged out.

**Sinks**: are reservoirs that are accumulating material. For example, the permafrost is currently storing more carbon than it is releasing, so it is acting as a carbon sink.

**Species:** A group of similar organisms capable of producing offspring that can survive and reproduce.

**Weather:** Conditions in the atmosphere at a specific place and a particular time. Usually described in terms of particular features, such as air pressure, humidity, moisture, any precipitation (rain, snow or ice), temperature and wind speed. Weather is the actual conditions that occur at any time and place. It’s different from climate, which is a description of the conditions that tend to occur in some general region during a particular month or season.
**Sources**- are reservoirs that are releasing material. For example, burning fossil fuels contributes carbon to other parts of the system, so it is acting as a carbon source.

**Systems thinking:** involves studying the relationships and interactions among the components of complex systems. For example, understanding how carbon dioxide levels in the atmosphere are changing involves understanding how carbon moves between plants, permafrost, and the atmosphere.

**Systems models (also called system diagrams):** are representations of systems that provide information about the interactions between the components and allow us to explore how the systems will change over time.