*Key Vocabulary ES11 – The Atmosphere*

**Atmosphere** – The air around and above us. The atmosphere is a mixture of different gases, water droplets, and dust particles.

**Composition** – The “ingredients” of a substance. The composition of the atmosphere has changed over time.

**Concentration** – How much of gas is in the atmosphere. The concentration of oxygen has increased. Humans can control the concentration of carbon dioxide.

**Substantial Oxygen** – A lot of oxygen. Earth is special because we have a lot more oxygen in our atmosphere than other planets.

**Most Primitive Atmosphere** – What Earth’s atmosphere was like when it first formed. The atmosphere was made out of helium and hydrogen but it didn’t last long.

**Early Atmosphere** – What the Earth’s atmosphere was like after meteorite impacts on Earth slowed down. Volcanoes caused the early atmosphere to be mostly carbon dioxide (CO2), carbon monoxide (CO), and water vapor (H20).

**Climatologist** – Someone who studies how the climate of Earth has changed over long periods of time.

**Early Photosynthetic Life** – The first organisms to use the carbon dioxide in the atmosphere to make breathable oxygen (O2). This allowed animals to evolve. Early photosynthetic life was cyanobacteria – also called blue-green algae.

**Trace Gas** – Small amounts of a type of gas. Carbon dioxide is now a trace gas but can still have a big impact on the greenhouse effect.

**Ozone** – A form of oxygen (O3) that protects living things from the sun’s ultraviolet radiation. Ozone belongs in the upper atmosphere as part of the ozone layer.

**Ground Ozone** – Ozone that hangs out just above the ground that we might breathe. It is harmful to breathe and comes from air pollution.

**Ultraviolet Radiation** – High-energy radiation (high-energy light wave) made by the sun. Ultraviolet (UV) radiation can give animals skin cancer and can even kill plants.

**Chlorofluorocarbon (CFC)** – A human-made chemical that can destroys ozone and cause holes in the ozone layer. Not a good thing.

**Retain Heat** – To hold onto heat. Carbon dioxide and water vapor let sunlight in but retain heat. They keep the heat from escaping into space. They retain the heat by absorbing it.

**Greenhouse Gas** – A gas that can let sunlight in but keeps the heat from escaping Earth’s atmosphere. Carbon dioxide and water vapor are greenhouse gasses.

**Climate Feedback Mechanism** – A repeating process that makes something stronger, stronger, and stronger – OR – weaker, weaker, and weaker. For example; as air gets warm, the oceans get warm, warmer oceans release more carbon dioxide and water vapor, which makes the air warmer, which releases more carbon dioxide and water vapor so it just gets warmer, and warmer, and warmer.

**Oxygen Sinks** – Natural or human-caused processes that remove oxygen from the atmosphere. Iron rusting is an oxygen sink. This happened in the oceans for a long time.

**Carbon Sinks** – Natural or human-caused processes that remove carbon from the atmosphere. Plants using photosynthesis is a carbon sink (the carbon becomes part of their body). The ocean is also a carbon sink. Carbon dioxide dissolves in the oceans and react with things like calcium to become seashells and limestone rock.

**Sulfur Dioxide** – A gas that erupts from volcanoes that reflect sunlight and cool the Earth.

**Volcanic Activity** – What a volcano does. This includes erupting dust and sulfur dioxide, which cool the Earth. Volcanoes also erupt flood lavas and carbon dioxide which in rare cases can lead to global warming. Overall, volcanic activity causes cooling, not warming. Acid rain is also a result of volcanic activity.

**Meteorite Impact** – When a space rock hits Earth. It affects the atmosphere by sending dust up to block the sun, which causes global cooling. It can also send water vapor and carbon dioxide into the air, which could later have a warming effect when the dust clears. It can also result in wildfires and acid rain.