**Earth Science Review**

Weather vs. Climate

1. **Weather:** the day-to-day conditions in a particular place that include precipitation, temperature, air pressure, and wind (**percentages - %)** – AFTER A COLD FRONT PASSES THROUGH there will be CLEARIER SKIES
2. **Climate:** the usual weather in a place (**averages – avg.**) the average weather conditions of a particular place over a long period of time (10 years or more)

**Weather Vane Barometer Anemometer Rain Gauge Thermometer**

    

Wind Direction Atmospheric Pressure Wind Speed Amount of Precipitation Temperature – weather is measured in °F

* Atmosphere - The blanket of gases that surrounds Earth
* Climate - The average weather pattern of a region
* Humidity - The amount of water vapor in the air
* Weather - What the lower atmosphere is like at any given place and time

Water Cycle - The Sun's energy makes water evaporate into the air; water returns to the ground as rain or snow; the process repeats over and over again. *(The beginning of the cycle is evaporation.)*



* Evaporation – when cooler water is **heated** creating water vapor or steam (gas)
* Transpiration - process in which plants give off water through their stomata
* Condensation – when water-**cools** creating water droplets or even ice (clouds)
* Precipitation – any form of water that falls from the sky (rain, snow, sleet or hail)

(**5.7A) - Recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth’s surface by wind, water, and ice; *Readiness Standard***

**Changes to Earth’s Surface**

Slow Changes:

1. Weathering – (BREAK) when wind or water breaks down rock into soil, sand, and other tiny pieces
2. Erosion – (MOVE) when sediment moves from one place to another
3. Deposition – (ADDING) dropping off of sediments to a new or different place
	* **Delta** – A triangular shaped build-up of sediments at the mouth of a river.
	* **Canyon** – A steep valley usually formed by a river, weathering, and eroded rocks.
	* **Sand Dune** – A hill of sand usually formed by wind erosion. –*Particles of sand settle to* increase (make bigger) the size of a sand dune. *Sand that is compacted and cemented creates sandstone.*

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**Sedimentary Rock** – a rock formed by sediment that is deposited in layers, formed over time. Fossils are often found in this type of rock. **(Sandstone – sand cemented together)**

 Sedimentary rock is rock that has formed from sediment, like sand, mud, small pieces of rocks. Over long periods of time, these small pieces of debris are compressed (squeezed) as they are buried under more and more layers of sediment that piles up on top of it. Eventually, they are compressed into sedimentary rock. It is made of strata, or layers. The layers that are farther down in the Earth are older than the top layers. **Most fossils are found in sedimentary rock.**

 **Compaction + Cementation = Lithification (New Sedimentary Rock)**

**Causes of WED – (weathering, erosion, deposition)**

**Water** • Can dissolve some rocks and minerals

• Can form caverns by dissolving rocks

• Rivers can slowly carve canyons.

**Wind** • Wind that carries sand can wear away rock like sandpaper wears away wood.

**Ice** • Liquid water collects in cracks.

• When the water freezes, it expands and can break rock.

**Plants** • Plants can sprout in the cracks of rocks.

• As plants grow, the roots spread and push the rock apart which can cause parts of the

 rock to break off.

**Gravity** • Can cause landslides

• Can slowly cause glaciers

Rapid Changes: volcano, earthquake, landslide

### Destructive force - a force that tears down the land on Earth

## Constructive force - a force that builds up the land on Earth

**Fossil Fuels (Nonrenewable)–**

**Take There are three major forms of fossil fuels: coal, oil and natural gas.** All three were formed many hundreds of millions of years ago before the time of the dinosaurs – hence the name fossil fuels.

As the trees and plants died, they sank to the bottom of the swamps of oceans. They formed layers of a spongy material called peat. Over many hundreds of years, the peat was covered by sand and clay and other minerals, which turned into a type of rock called sedimentary.

**More and more rock piled on top of more rock, and it weighed more and more. It began to press down on the peat. The peat was squeezed and squeezed until the water came out of it and it eventually, over millions of years, it turned into coal, oil or petroleum, and natural gas.**

**Alternative Energy is an alternative to fossil fuels and is RENEWABLE because it reoccurs within our lifetime. (Bear HuuGS)**

**Biofuels**—renewable energy made from biomass (crops, wood, trash, manure)

**Hydroelectric Power**—energy from water

 • Turbines inside of dams can change moving water into electrical energy.

**Wind Energy**—Moving air can turn the blades of windmills (turbines), changing the wind’s kinetic energy

into electrical energy.

**Geothermal Energy**—energy from heat from molten rock deep below the Earth’s surface due to plate

tectonic forces

**Solar Energy**— energy from the sun

• Solar cells can be mounted on roofs of buildings to capture the Sun’s energy and produce

 electricity and heat energy.

**Advantages of renewable (alternative) energy**

* It can be used without depleting it.
* There is no green gas emissions, no pollution emissions - no contribution to global warming.
* Renewable energy is healthy and environmentally friendly.
* All forms of energy are expensive, but as time and technologies progresses, renewable energy generally gets cheaper, while fossil fuels generally get more expensive.

**Disadvantages of renewable energy**

* All forms of energy are expensive. This is because it is a new technology and as such has extremely large capital cost.
* It is difficult to generate the quantities of electricity for example that are as large as those produced by traditional fossil fuel generators. So if we use renewable energy we will need to build more energy facilities. The best solution is to have a balance of many different power sources.
* The reliability of supply. Renewable energy often relies on the weather for its source of power: hydro generators need rain to fill dams to supply flowing water; wind turbines need wind to turn the blades; solar collectors need sunshine to collect heat and make electricity. This can be unpredictable.

**Earth, Moon, Sun System**

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**Revolve** means to **go around** another object. We say that the planets revolve around, or orbit, the Sun.

One **revolution** of Earth around the sun takes about **365 days**, or **one year**.

**Rotate/ Rotation: When the Earth spins on its axis**

* **Earth’s Rotation is the reason the sun *appears* to move across the sky.**
	+ **Rotation causes the day/night cycle**



**Earth’s Tilt + Revolution = Seasons**

**When our northern hemisphere tilts towards the Sun, we experience summer; while the southern hemisphere experiences winter.**

**As we revolve around the sun, and our northern hemisphere points towards cold space, we experience winter.**

**The MOON takes 28 days to revolve around the Earth.**

