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Water on Earth

Chapter 7

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Vocabulary

- Salinity
- Aquifer
- Water Table
- Reservoir
- Condensation
- Evaporation
- Precipitation
- Sublimation
- Sleet

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Describing the Oceans

- Unlike other planets, Earth has huge amounts of water.
- All the waters of the Earth make up the hydrosphere.
- The hydrosphere covers a little less than 75% of the Earthôs surface.
- Almost all of the hydrosphere is ocean water.
- All of the oceans are different. They can vary in temperature, amount of salt, depth, etc.
- Because of these differences, different organisms live in different oceans and different regions of oceans.

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Salts in Seawater

- Salinity is a measure of how salty water is.
- Seawater salinity varies from place to place.
- The salts in seawater mainly comes from rivers.
- Rivers dissolve small amounts of salts from rocks and soil in rivers, and they empty into the ocean.

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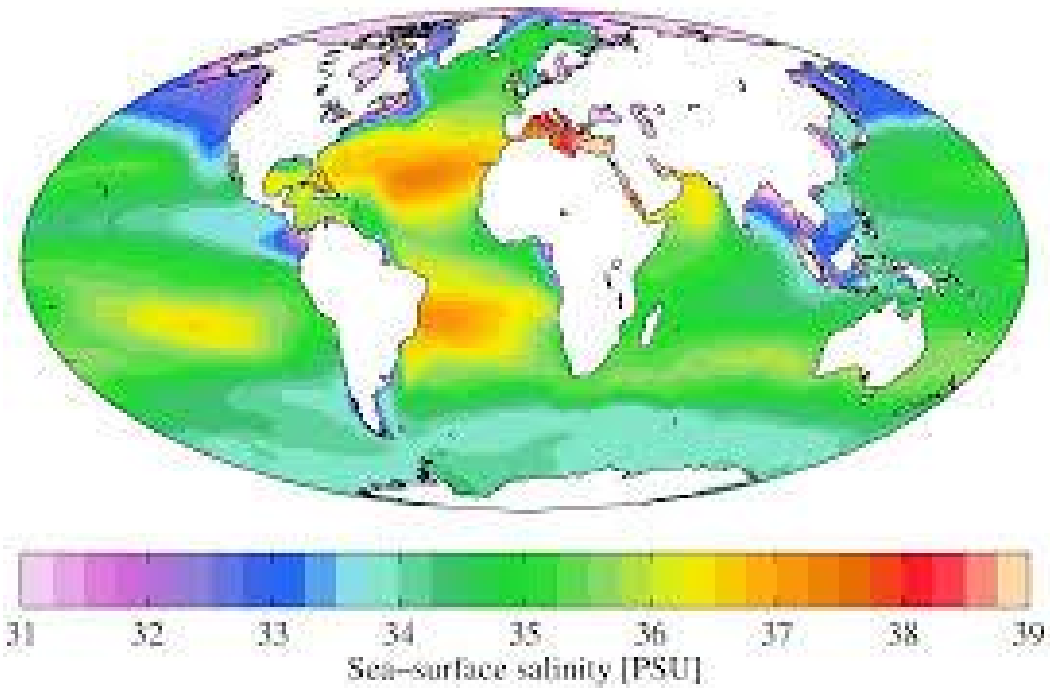
Salts in Seawater

- The main salt found in the oceans is Sodium Chloride ï table salt.
- Areas where rivers empty into the ocean have lower salinity.
- In places that are hot (like at the equator), water evaporates from the ocean, and the salts are left behind.
  - This increases the salinity.



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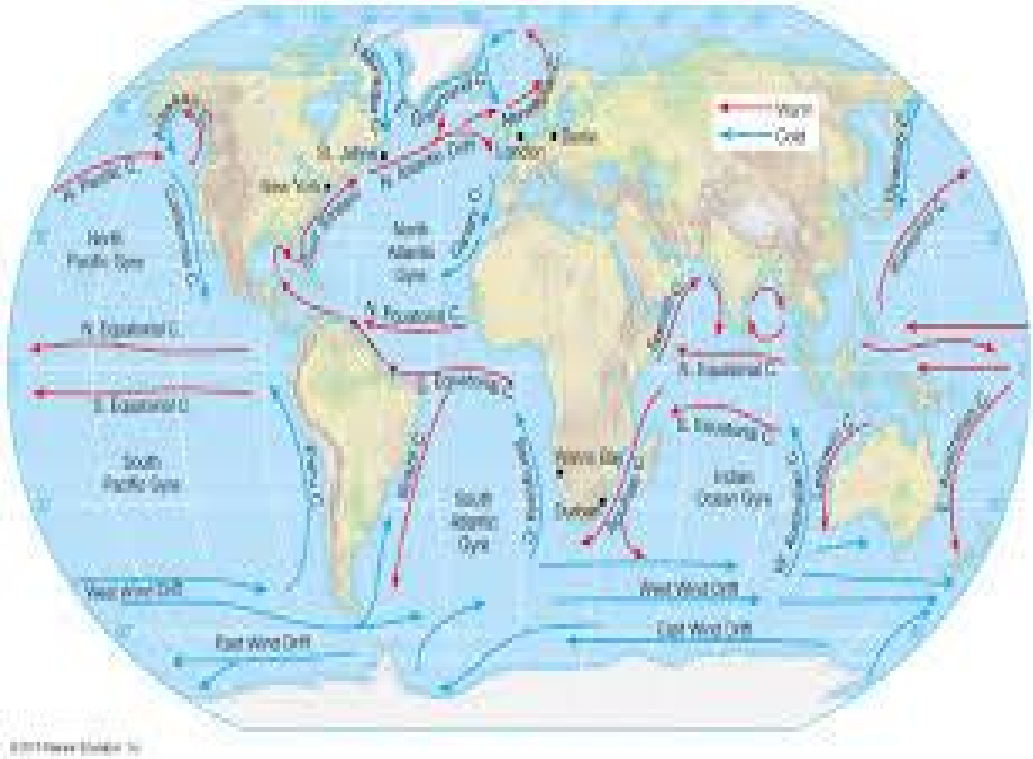
Ocean Temperatures

- Ocean water temperatures vary from place to place.
- Ocean water near the equator is about 30 degrees C (86 F).
- Ocean water near the poles is about -2 degrees C (28 F).
- Varying temperatures can cause ocean currents.
- Ocean currents move water from hot to cold areas, and cold to hot areas.
- Because of this, ocean water is always circulating around the globe.



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Ocean Resources

- We can use the ocean for many things, and get many resources from the ocean.
- We use the oceans to transport goods and people via ships.
- Moving water can be used to generate electricity.
- Minerals such as salt and magnesium can be removed from the water.
- Seawater can be turned into drinking water.
- We can catch food such as fish and shell fish
- We can use seaweed for food.
- There are large areas of oil under the ocean floor.

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Fresh Water

- Less than 3% of Earthôs water is fresh water.
- Fresh water has some dissolved salts, but much less than seawater has.
- Fresh water has less than 0.05% salt.
- Almost all of Earthôs fresh water starts out as precipitation.
- Some sinks into the ground, causing a water table.

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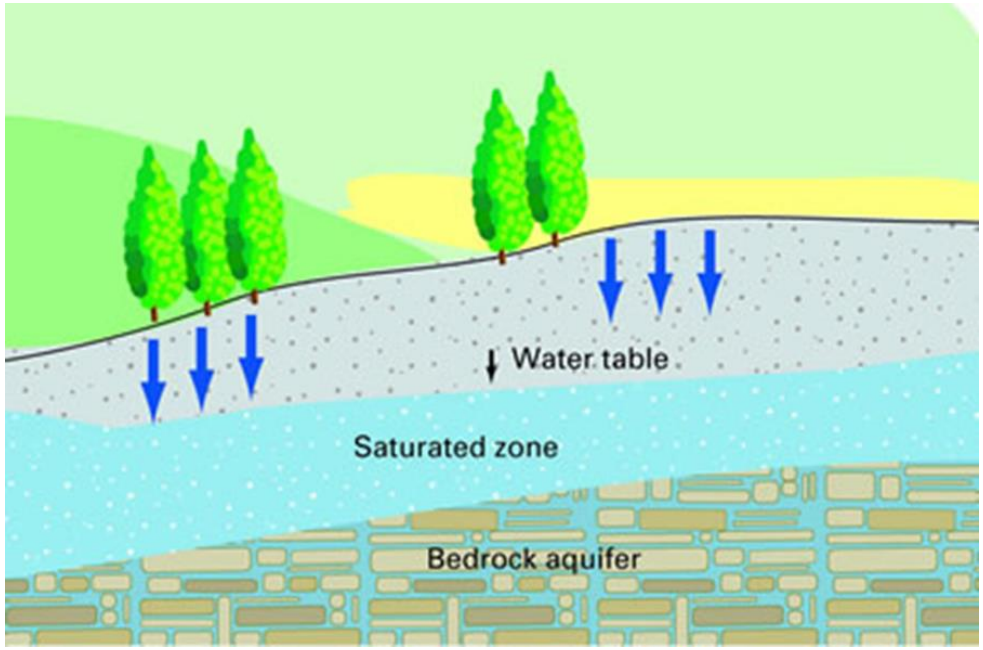
Groundwater

- Rain or melted snow that soaks into the ground is called groundwater.
- Groundwater sinks until it reaches a layer of rock or clay that it can not move through.
- The layer of rock or clay that holds groundwater is the aquifer.
- The top level of groundwater is the water table.
- The water table changes throughout the year, rising during rain or melting snow, and lowering during droughts.



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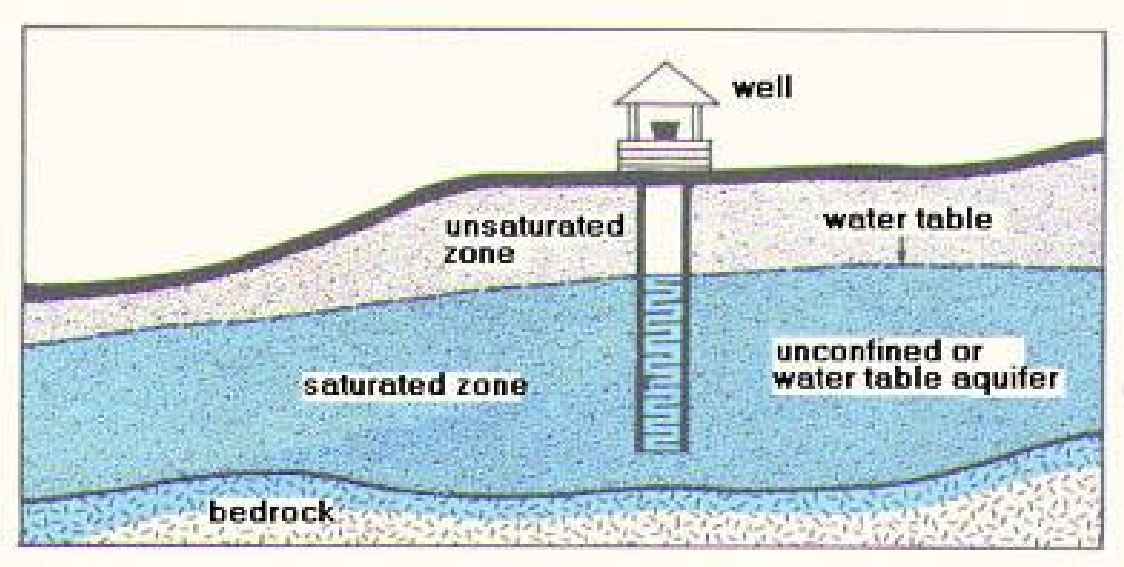
Groundwater

- Many people get their drinking water from wells that go into the aquifer.
- Polluting the ground can cause chemicals to seep into the aquifer, contaminating the water.
- Lakes, ponds, streams, and swamps form where the water table meets the surface of the Earth.



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Rivers

- Surface waters include rivers, streams, and lakes.
- Melting snow, rain, and ground water all help form Earthôs surface waters.
- Water from rain and melting snow flows downhill in small streams.
- These small streams join to form larger streams and rivers.
- Most rivers eventually drain into the ocean.

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Lakes

- Water sometimes flows into a place that is surrounded by a higher land or blocked by a dam.
- Lakes form where water collects into the low spot.
- A reservoir is an artificial lake that forms behind a dam.
- Water from lakes can flow into a river, seep under ground, or evaporate.

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Ice

- About 70% of Earthôs fresh water is frozen into ice.
- Most of Earthôs ice is on Greenland and Antarctica.
- The ice cap at the North Pole floats on the ocean; there is no ground beneath it.
- Glaciers and ice sheets form when each yearôs snowfall is greater than the amount that melts.
- When ocean water freezes, the ice is not salty; the salt is pushed out of the ice crystals as they freeze.

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The Water Cycle

- The water cycle is the repeated movement of water through the environment in different forms.
- Evaporation is the changing of water from a liquid into a gas (water vapor).
- Condensation is the changing of water from a gas (water vapor) into a liquid.
- Sublimation is the ice changing into water vapor without melting first.

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The Water Cycle

- During the water cycle, water can evaporate from bodies of water such as oceans, lakes, rivers and streams.
- It can also evaporate from plants and leaves, and sublimate from ice on top of mountains.
- As the water vapor rises into the atmosphere, it cools and condenses into clouds.

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The Water Cycle

- When the clouds meet warmer air masses, the water vapor turns into different forms of water, such as rain, snow or sleet, and falls back to the Earth.
  - This is known as precipitation
- This process occurs over and over again, recycling the water throughout the environment.

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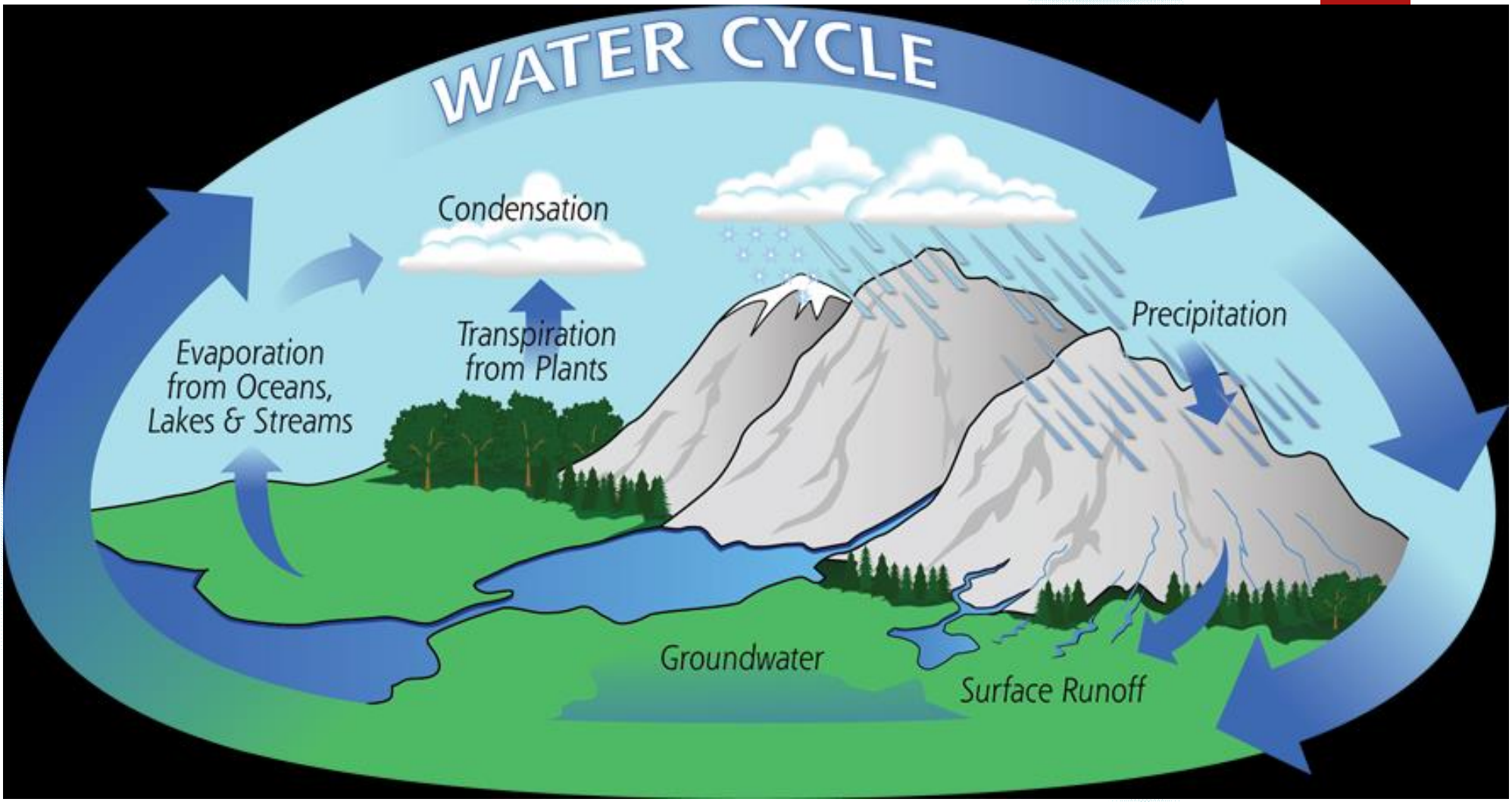

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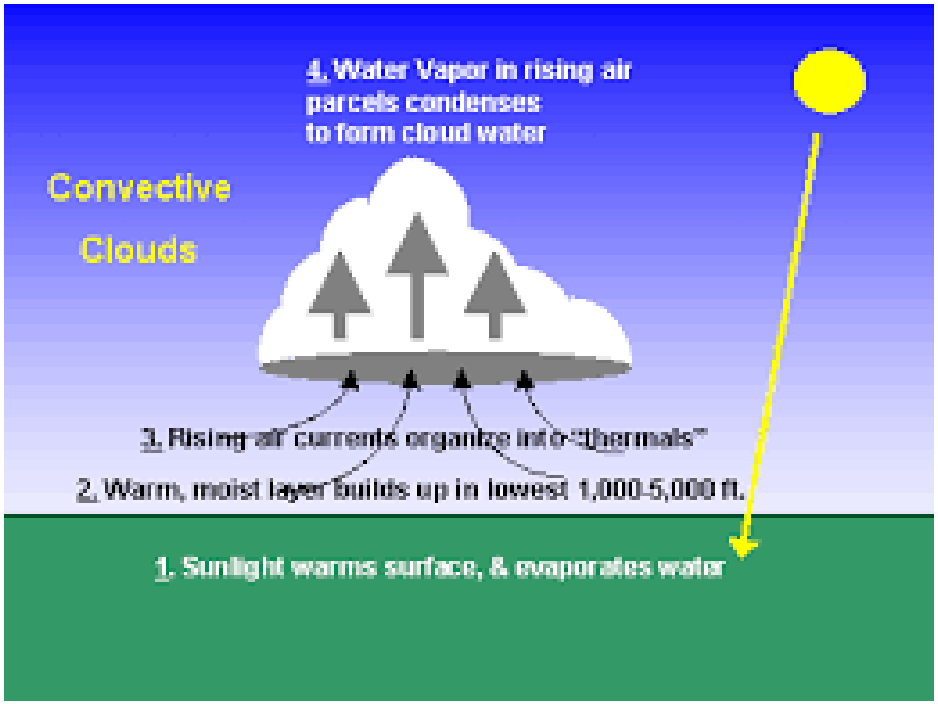
Cloud Formation

- Clouds form when water vapor changes into tiny water droplets of ice crystals.
- Clouds often form when warm and moist air moves upward to areas of lower pressure.
- When air moves up, the air pressure is less.
- The lower pressure allows the air to expand and cool.
- If it cools enough, a cloud will form.



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Precipitation

- Most precipitation in the US starts as snow.
- This is because the temperature of the air around clouds is below freezing.
- As the ice crystals in clouds get bigger and bigger, they get too heavy and fall.
- If the temperature between the clouds and the ground is below freezing, the precipitation will fall as snow.
- If the temperature between the clouds and the ground is above freezing, the snow will melt and turn to rain.

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Precipitation

- Sleet is frozen raindrops. If the snow melts while it is falling, then freezes again, it will turn to sleet.
- Sleet is much smaller than hail.
- Hail forms when strong winds blow raindrops back up into the freezing air at the top of a cloud. The frozen raindrop can fall and then be blown back up again and again, until it is too heavy and falls to the ground.

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Precipitation

- Freezing rain is rain that falls and freezes when it comes in contact with a surface that is below the freezing point.