



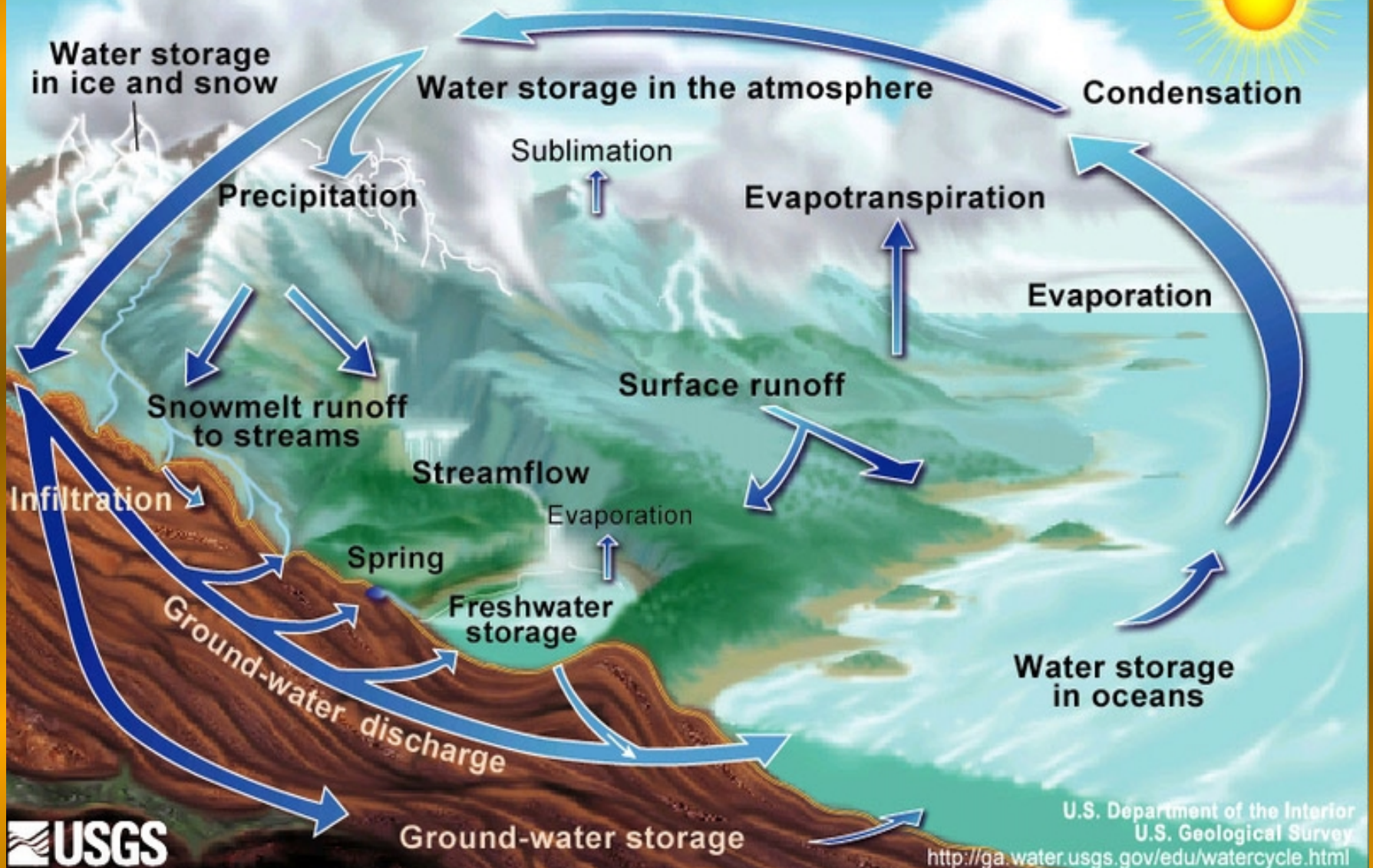
Precipitation



What is precipitation?

- In meteorology, precipitation is any form of water that falls from the sky as part of the weather to the ground.
- This includes snow, rain, sleet, freezing rain, and hail.
- Precipitation is a major component of the water cycle, and is responsible for most of the fresh water on the planet.

The Water Cycle

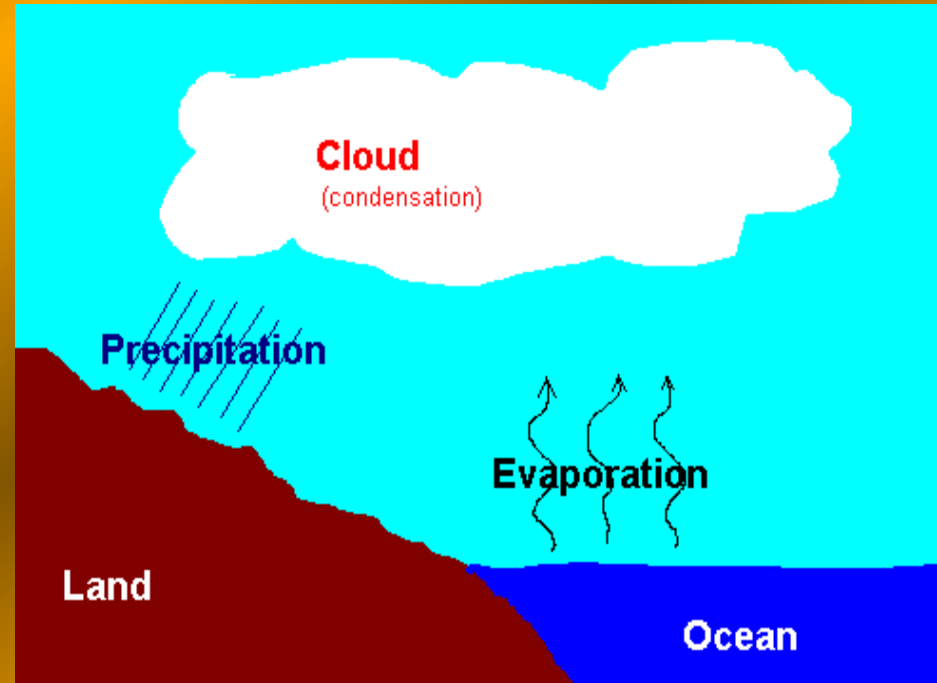


How precipitation forms

Precipitation begins forming when warm, moist air rises.

As the air cools, water drops begin to condense forming clouds.

After the water droplets grow large enough, precipitation forms.



How many types of precipitation are there?

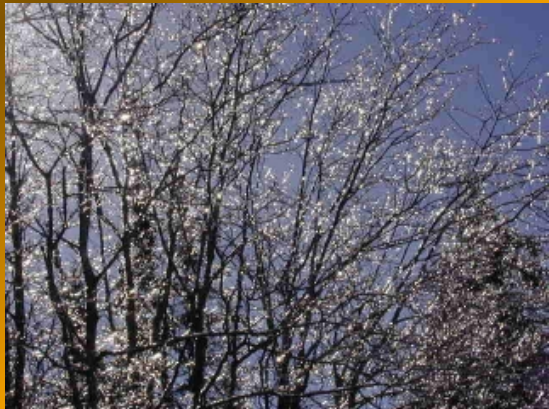
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How many forms of precipitation are there?

9

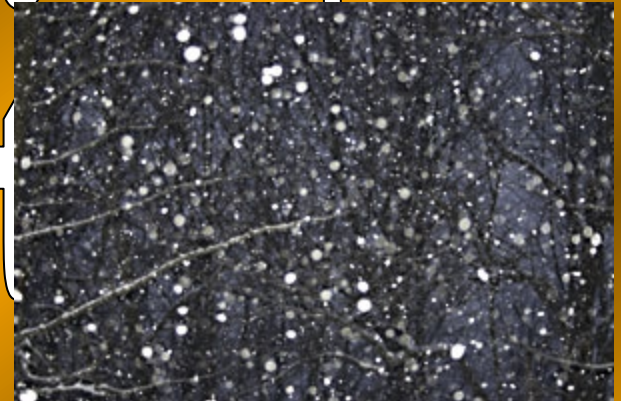
Types of precipitation

Liquid Precipitation



Freezing Precipitation

Frozen Precipitation



A photograph of a waterfall cascading down a rocky ledge into a pool of water. The water is white and frothy as it falls. The background is a lush green forest. The text "Liquid precipitation" is overlaid in large, bold, light blue letters with a black outline, centered across the middle of the image.

Liquid precipitation

Drizzle

Liquid water drops having a diameter of less than 0.5 mm.

You can often tell the difference between rain and drizzle because drizzle doesn't usually cause ripples in standing water puddles.



Rain



**Drops of water falling from a cloud,
and having a diameter of greater than 0.5 mm**



Freezing precipitation

Freezing Drizzle



Freezing drizzle is drizzle that freezes on contact with the ground or an object at or near the surface.

Freezing Rain

Freezing rain begins as snow falling from a cloud towards earth.



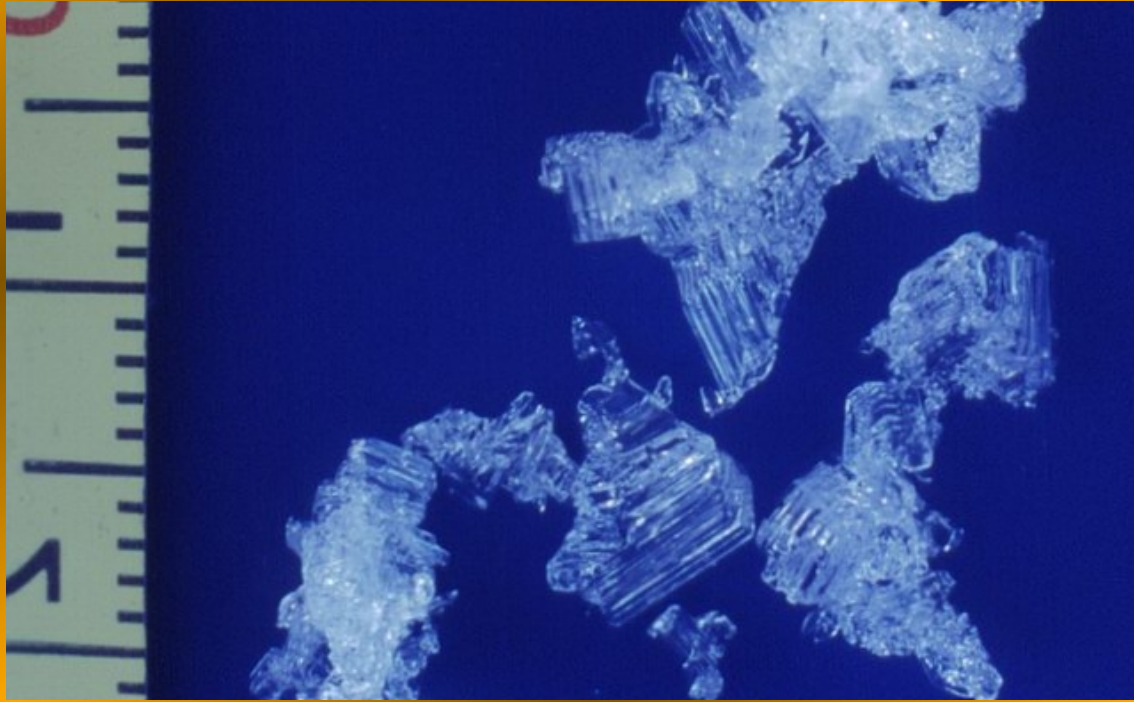
It melts completely on its way down through a layer of above freezing air and then supercools in a layer of cold air just before it hits the ground. Due to being supercooled the water freezes again upon impact.

Supercooling is the process of chilling a liquid below its freezing point, without it becoming solid.



Frozen precipitation

Snow Grains



Snow grains - frozen equivalent of drizzle.

Diameter < 1 mm.

Snow Pellets



**Snow pellets are larger than snow grain,
but have diameter < 5 mm.
Snow pellets are crunchy and
break apart when squeezed.**

Ice pellets



Sleet is frozen raindrops.

If greater than 5 mm in diameter, it is called hail.

Hail

Hail begins as a snowflake that partially or completely melts, and then refreezes.



But, instead of immediately falling to the ground, it gets caught in an updraft and can make several trips up and down through the cloud, each time accumulating more ice.

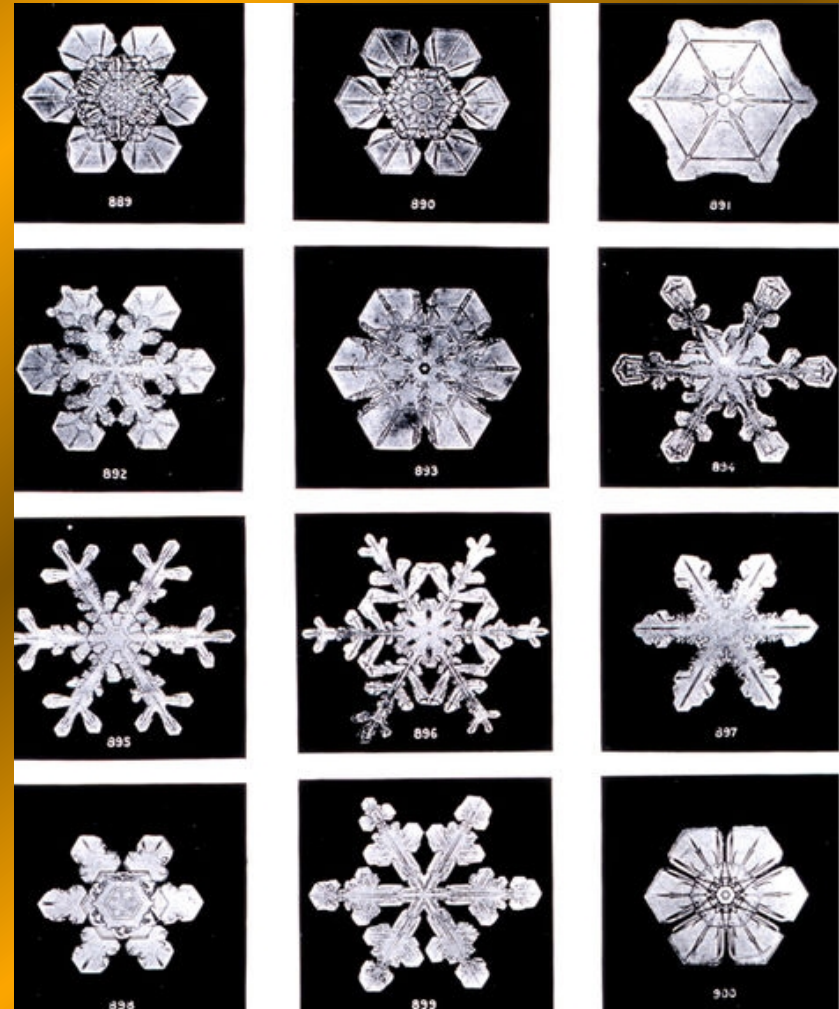
Hail is only formed in very strong thunderstorms.

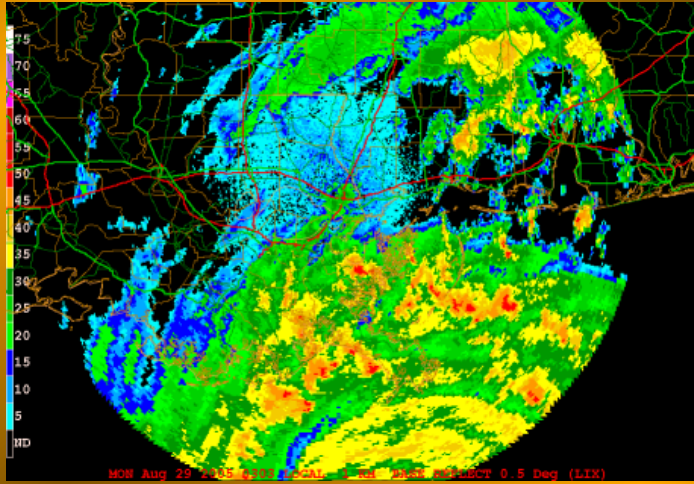
Hail has diameters > 5 mm. If smaller, it is either snow pellets or ice pellets, depending on its hardness and crunchiness.

Snow

Snow is just ice crystals
clumped together.

The shape of
snowflakes
varies with the temperature at
which they are
formed.





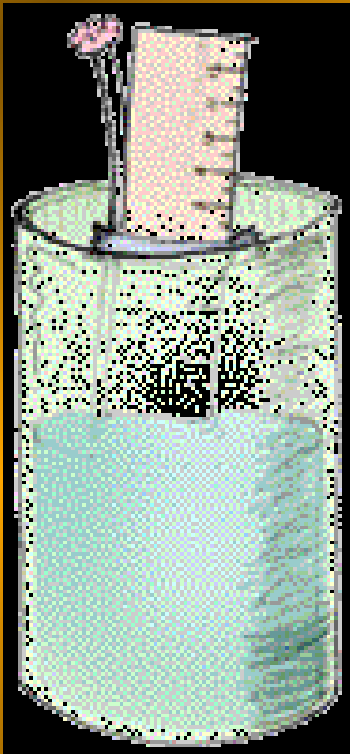
Measuring Precipitation



Measuring Precipitation

Rainfall is measured in inches per hour.

Any flat bottomed, vertically sided container can be used as a rain gage.



Rainfall rate:

Trace - less than 0.01 inches per hour

Light - between 0.01 and 0.1 inches per hour

Moderate - between 0.1 and 0.3 inches per hour

Heavy - greater than 0.3 inches per hour

Measuring Precipitation



On average, 10 inches of snow is equivalent to 1 inch of rain.

Snowfall is measured in one of two ways:
Depth of the snow
or
the depth of the liquid water.

Liquid water is measured by melting the snow and then measuring the height of the resulting water.

Measuring Precipitation



Radar can also be used to estimate precipitation rates and amounts.