

October 3, 2016

## Forms of Precipitation

Two main forms: rain and snow

Other forms: hail and sleet

- Dependent on the temperature of air which moisture must fall.

When upper air rises and begins to cool it is able to hold less and less moisture. As the air temperature drops it reaches the temperature at which air is **SATURATED** with moisture. This is the **DEW POINT** temperature. The **RELATIVE HUMIDITY** at this temperature is 100%.

If the air temperature falls below the dew point temperature, moisture will condense to form tiny droplets that form *clouds*.

If the temperature continues to drop, these droplets of moisture join together becoming heavy enough to fall to the ground. Such small droplets of **RAIN** form drizzle. If the updrafts of air in the clouds are stronger the droplets must be bigger and heavier before they can fall to the ground as regular sized raindrops.

If falling rain **starts off in warmer air** but **passes through air below freezing**, the raindrops cool to the freezing temperature and freeze onto surfaces when they hit the ground. This is called **SLEET**.

If the air is cooled below the freezing point of water, then the condensing moisture will quickly freeze into ice crystals (SNOW). As ice crystals form, more water condenses and freezes onto them forming snowflakes. When the snowflakes are big and heavy enough, gravity makes them fall to the ground. Snowflakes are always 6-sides and each flake is a different shape. *Did you know the largest snowflake on record was 38 cm in diameter?*

**HAIL** forms in the tall cumulonimbus clouds where the updrafts of air are very strong carrying moisture so high that it reaches air below freezing. Droplets of moisture freeze in the upper parts of the cloud. As the strength of the turbulence created by the updrafts shift, the frozen droplets move up and down many times through the upper half of the cloud. These drops gather more moisture as they drop. This moisture freezes onto the surface each time that frozen cores are lifted back up into the upper part of the cloud. This is how hail stones get larger and larger and why it is layered. Eventually the stone is so heavy the updrafts cannot keep it suspended in the cloud any longer so it falls to the ground. The bigger the hailstone, the stronger the updrafts must have been.