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**CLOUDS**

Clouds are an important part of the water cycle. The water cycle is the movement of water from the Earth into the sky and then back down to Earth again. Did you know that around 71% of the Earth is covered in water? Approximately 97% of the water on Earth is in the form of salt water (the water that is found in the oceans and saltwater lakes) and the other 3% is fresh water (water that is found in glaciers, rivers, ponds, lakes, streams, underground and in the atmosphere). The sun heats water on the surface of the Earth, and causes it to evaporate. Evaporation is the process when water moves from being a liquid to being a gas (water vapor). Water vapor is made up of tiny water droplets in the air. Water can also move into the air through transpiration. Transpiration is the movement of water out of plants. During photosynthesis, plants make oxygen and water. Water then moves out of tiny holes on the leaves and into the air. Water vapor rises up into the atmosphere, and as it cools, it condenses. When the water vapor condenses it forms clouds. Precipitation happens when so much water vapor condenses that the air cannot hold it anymore. The clouds get so heavy that some of the water must fall back down to Earth as rain, snow, sleet or hail.

There are many different types of clouds. Clouds are classified according to **shape**, **altitude** and **precipitation**. The names of the clouds tell you their location, how they are shaped and if they are producing precipitation. There are three basic cloud types.

**Stratus**clouds are low altitude clouds found below 2000 meters. These clouds occur as flat layers or bands that are light to dark gray and cover all or most of the sky. While these clouds can produce some dark and gloomy days, they do not produce precipitation. Did you know that we can walk right through a certain type of stratus cloud? When fog forms, it is a stratus cloud that is on the ground. Blue skies once these clouds break up.

**Cumulus** clouds are another type of low altitude cloud found below 2000m. These are the clouds that are fluffy and rounded and look like big balls of cotton. These are also the clouds that are fun to observe to see what kinds of images they form. Cumulus clouds are associated with nice weather and there is usually a lot of blue sky between the clouds. If these clouds dissipate, the weather will remain nice, but if they grow they can build up to form thunderstorms.

**Cirrus**clouds are high altitude clouds that form above 6000 meters. These thin and wispy or feathery clouds form when water vapor condenses to form ice crystals. These clouds will often appear to have tails and can show the direction of the winds in the upper troposphere. Cirrus clouds are associated with fair or nice weather, but can often be a sign that a storm is approaching.

You may have noticed that we talked about low altitude clouds and high altitude clouds, but did not mention any middle altitude clouds. That is because many of the other types of clouds are called combination clouds and contain a trait from one of the three main types of clouds and additional characteristics as well.

**Nimbostratus** clouds are the third type of low altitude clouds (found below 2000m) that we will discuss. The stratus part of the word tells us that these clouds are in flat layers or bands and cover all of the sky. All clouds that are in layers or bands will have stratus as part of their name. However, the nimbo part of the word comes from the root word nimbus which indicates a cloud that is producing precipitation. Any cloud with nimbus or nimbo as part of its name is a cloud that will produce constant or heavy precipitation. Nimbostratus clouds are so thick that you can’t see the sun or the moon through them and create wet and gloomy weather with precipitation for hours or even days.

**Stratocumulus** clouds are our fourth type of low altitude clouds (below 2000m). They are low, lumpy, light grey to dark grey clouds that occur in layers or bands. They can be confused with altocumulus clouds, but the individual elements (rounded clouds) are much larger in stratocumulus clouds. A guideline to use if determining between these two cloud types is to hold a hand up towards the sky and if the clouds appear the same size as your fist, they are stratocumulus and if they appear thumb size, then they are altocumulus. In addition, stratocumulus clouds tend to cover most or all of the sky with only a very few breaks. These clouds are associated with “dull”, dreary weather, but typically produce no precipitation or only light drizzle. They often appear preceding a warm front and can come before windy and stormy weather.

**Altostratus** clouds form higher than stratus, cumulus or nimbostratus clouds. They are middle altitude clouds and form between 2000 and 6000 meters. In fact, any middle altitude cloud will have the prefix alto at the beginning of its name. Altostratus clouds are in bands or flat layers, but these layers are thinner than normal stratus clouds and you can see a bit of the sun through the clouds, but the sun will be hazy or ‘watery’. If you see altostratus clouds, a storm with continuous rain or snow may be on the way.

**Altocumulus**clouds are another type of middle altitude clouds found between 2000 and 6000 meters. These clouds look like puffy balls or blobs, and sometimes appear in rows. Notice that cumulus is part of this cloud’s name. Any cloud with cumulus or cumulo in the name will be puffy and rounded in shape. Part of these clouds is usually darker than the rest, and this helps to set them apart from higher cirrocumulus clouds. While they do not produce any precipitation, if you see these clouds on a hot summer morning it often means that there will be thunderstorms in the afternoon.

**Cirrostratus**clouds are high altitude clouds found above 6000 meters. You may have noticed the cirro at the beginning of the word is very close to the word cirrus. Cirrus is another root word and the appearance of cirrus or cirro in a cloud name tells us that it is a high altitude cloud. These clouds form as very thin, veil-like layers and are so thin that you can see the moon and the sun clearly when they are present. Sometimes you only know that there are cirrostratus clouds in the sky because you can see a fuzzy halo around the sun or the moon. This halo is caused because the ice crystals in the cloud bend the light from the sun and the moon. Cirrostratus clouds are not associated with precipitation, but usually mean that there is a warm front and precipitation approaching within the next 24 hours.

**Cirrocumulus**clouds are the third type of high altitude (above 6000m) clouds that we will discuss. They look like small rounded puffs or cotton balls, either alone or in rows. When the puffs are in rows, the sky has a rippling look, and this is how you can tell that they are cirrocumulus clouds, and not cirrus or cirrostratus clouds. Some people describe these clouds as looking like fish scales or like the rows in a farm field. Keep in mind, as thin high altitude clouds, there is still lots of blue sky surrounding them. Cirrocumulus clouds are short lived clouds as they indicate an unstable and changing upper atmosphere. Like all high altitude clouds, they do not create precipitation. Cirrocumulus clouds may indicate rain in the next 8 – 10 hours or may form as a thunderstorm cloud is breaking up.

**Cumulonimbus**clouds are one of the most easily recognized clouds because they are the biggest. These clouds are thunderstorm clouds. They are towering, puffy clouds that can reach from the ground to over 6000 meters and are often anvil-shaped. As was mentioned before, the cumulo part of this cloud name indicates a puffy cloud and the word nimbus or nimbo means precipitation producing cloud. While nimbostratus clouds produce steady rain, cumulonimbus clouds produce downpours of heavy precipitation. Cumulonimbus clouds are usually heavy and gray and they can produce rain, hail or snow. Once these clouds break up, the weather typically clears up quickly.

These are the 10 most commonly observed clouds, but they are certainly not all of the cloud types that appear. If you remember the key words that indicate shape, altitude and precipitation, you will be able to describe a cloud’s characteristics just by hearing its name.