A DISCUSSION ABOUT OUR CLOUD FORMATIONS ON PLANET EARTH

My partner, Marilyn is intrigued with cloud formations in our skies. As we travel, she is constantly photographing the sky. This article will assist her in identifying this natural phenomenon for her knowledge and benefit.

Yes, and mine too!

The following has been copied from the internet:

The Three High Level Clouds

Cirrus (Ci) – High-altitude, thin, and wispy cloud streaks made of ice crystals

Cirrocumulus (Cc) – Small, flakey, and white high-altitude cumulus patches

Cirrostratus (Cs) – Thin, transparent, high-altitude layer capable of producing a halo

The Three Middle Level Clouds

Altocumulus (Ac) – Middle-altitude cumulus clouds arranged in groups or rolls

Altostratus (As) – Featureless, gray layer cloud capable of masking the sun

Nimbostratus (Ns) – Dark and featureless layer cloud responsible for rain and snow

The Four Low Level Clouds

Cumulonimbus (Cb) – Dark-based storm cloud capable of impressive vertical growth

Cumulus (Cu) – Low-altitude, fluffy heaps of clouds with cotton-like appearance

Stratus (St) – Gray, featureless low-altitude cloud capable of ground contact

Stratocumulus (Sc) – Thicker, dark gray, and somewhat conjoined heaps of clouds

In the next section, we'll discuss the origins of these cloud types, their latin names and how they got their names, and how it pertains to the craft of cloud identification.

The 5 Latin Terms of Cloud Types

The ten different types of clouds are comprised of only five latin terms: cirro-, cumulo-, strato-, nimbo-, and alto-. These five terms are the building blocks of cloud types. The better you understand these terms and how to apply them, the easier cloud identification becomes.

Cirro- is translated from latin meaning 'curl'.

There are three clouds that include the term 'cirro': cirrus, cirrocumulus, and cirrostratus. While this term is translated as 'curl', that doesn't mean these three clouds are curly (though cirrus clouds can be, which makes it an appropriate name). The more important takeaway from this term is that the three clouds that include the term 'cirro' are found in the highest layer of the troposphere, which is the lowest layer of the Earth's atmosphere found closest to the ground. That means these clouds can be found between approximately 16,000 and 50,000 feet, or 5 and 15 kilometers.

Cumulo- is translated from latin meaning 'heap'.

There are five clouds that include the term 'cumulo': cumulus, stratocumulus, cumulonimbus, altocumulus, and cirrocumulus. Heap can also be described as piled or puffy. That means these five clouds have at least some puffy and heap-like characteristics to them.

Strato- is translated from latin meaning 'layer'.

There are five clouds that include the term 'strato': stratus, stratocumulus, nimbostratus, altostratus, and cirrostratus. A layer cloud can be described as a cloud blanket that has much less definition relative to a heap cloud. The five clouds that listed here are generally featureless clouds relative to other clouds.

Nimbo- is translated from latin meaning 'rain'.

There are only two clouds that include the term 'nimbo': cumulonimbus and nimbostratus. They are the only clouds that are regular rain producers.

Alto- is translated from latin meaning 'high'.

There are only two clouds with the term 'alto': altocumulus and altostratus. The translation can be a bit deceiving because these clouds aren't the clouds found in the highest part of the troposphere. Altocumulus simply means they're still cumulus clouds, but they're found higher than regular cumulus clouds. Similarly, altostratus means they're still stratus clouds but found higher than stratus clouds. These clouds can be found between approximately 7,000 and 23,000 feet, or 2 and 7 kilometers.

Two Approaches to Identifying Cloud Types

Now that we have a basic knowledge of cloud types and their relative latin terms, let's discuss cloud identification techniques. In our own personal cloud classification journeys the past several years, we've found it best to organize clouds in two ways. The first is by cloud levels (relative distance from the ground), and the second is by specific groupings relating to their latin terms we just discussed above.

Cloud level groupings

The first strategy is to organize clouds by their altitude levels: high, middle, and low. This is a bit of a repeat from the above table when you were introduced to cloud types, but it's important enough to review once more.

High altitude: Cirrus, cirrocumulus, and cirrostratus are the three cloud types found in the highest level of the atmosphere. As a general overview, these clouds are high wispy clouds, high puffy clouds, and high layer clouds respectively.

Middle altitude: Altocumulus, altostratus, and nimbostratus are the three cloud types found in the middle level. Note that the nimbostratus cloud base is found in the lower level closest to the ground, but grows vertically into the middle level.

Low altitude: Cumulus, stratocumulus, stratus, and cumulonimbus clouds are the remaining four clouds, which are found in the lower level. It should be noted that cumulus clouds have the potential to grow vertically into the middle level, and cumulonimbus clouds are the only cloud that extends into all three levels, though their cloud base is always in the low level.

Latin term groupings

The second strategy is to organize clouds by five specific groupings outlined below. This is also a bit of a repeat of the latin terms that were already discussed, but again, an important concept worth learning.

Three (3) layer clouds: Stratus, altostratus, and cirrostratus. These three clouds can be described as featureless blanket cloud layers. Each of these clouds are found at different levels.

Three (3) heap clouds: Cumulus, altocumulus, and cirrocumulus. These three clouds can be described as puffy clouds, each found at different levels.

One (1) layer-heap cloud: Stratocumulus clouds. They're a low level cloud that fall somewhere in between a cumulus and a stratus cloud. This cloud stands alone and have a lot of characteristics that make it unique.

Two (2) rain clouds: Cumulonimbus and nimbostratus. These clouds are easier to pick out. If the cloud is producing precipitation, there's a very strong chance that it's one of these two clouds. A general rule of thumb is if it's stormy, it's cumulonimbus. If it's not, it's nimbostratus.

One (1) wispy cloud: Cirrus clouds. Their wispy appearance makes them unique and easy to pick out. Cirrus clouds stand in a league of their own as high, feathery streaks.

As you become more comfortable with understanding both above cloud identification techniques of cloud level and latin term groupings, cloud classification becomes almost effortless.

Cloud Identification 201: Species, Varieties, & Beyond

Cloud identification doesn't stop with the cloud type! Did you know that in addition to the ten main cloud types, there are 34 other latin terms that can be utilized to further describe a cloud? There are fifteen cloud species, nine cloud varieties, eleven supplementary features, four accessory clouds, and five other kinds of clouds.

If you're learning about this for the first time, don't worry! We've designed cloud identification chart that can help you visualize all cloud types and subtypes in a single infographic.

As you become more familiar with these terms, you'll see not all cloud types can be any species, variety, etc. For example, the calvus cloud species describes a cumulonimbus cloud that has a bald appearance. This term is only used to describe a particular cumulonimbus cloud and no other cloud type.

Understanding what each of these 34 latin terms mean, what each cloud physically look likes, and when to apply these terms will take some time and discipline. We've organized this site in such a format that we hope makes the whole learning process much easier.

Proper Hierarchy of Cloud Classifications

Before jumping in to several examples of identifying clouds, let's discuss the hierarchy of cloud classification. Remember back to biology class where you studied the scientific classification of animals? You have the seven levels of animal taxonomy: kingdom, phylum, class, order, family, genus, and species. Cloud classification isn't much different.

When applying cloud classification hierarchy, the proper taxonomic ranks would be as follows: cloud type > cloud species > cloud varieties > supplementary features > accessory clouds > other clouds.

There are only a few subtleties you should know. First, a cloud type doesn't necessarily need to be given any species, varieties, features, or accessories. You'll find plenty of instances where it's perfectly acceptable to classify a cloud as only 'cirrus' or 'cumulus'. Second, a cloud cannot have more than one associated cloud species applied to it. Finally, it's possible for a cloud to have multiple cloud varieties, supplementary features, and accessory clouds.

As you go about identifying and classifying clouds, if you're certain of the cloud type but uncertain about the cloud species or varieties, a good rule of thumb is to not apply species, varieties, etc. Don't feel obligated to apply a cloud species or variety if it doesn't better describe the cloud.

Cloud Identification Isn't Always Black and White

As you learn more about cloud identification, you'll come across photographs of a sky full of only high, wispy cirrus clouds. Or you'll be shown a picture of a sky that contains one lone, perfectly structured, cumulonimbus cloud. For learning purposes, it's ideal to be shown clouds in this format. It's visually pleasing and avoids confusion between varying cloud types.

But the reality is that more often than not, you'll walk outside on any given day and see a complex sky full of different cloud types, species, and varieties. The sky is constantly shifting and clouds are forever evolving. This is an important concept that's for some reason rarely discussed in other cloud identification guides and literature.

Additionally, clouds also may receive a different classification depending on varying points of view. A thunderstorm cloud (cumulonimbus) can look very different viewing it 30 miles to the west compared to viewing it 10 miles to the east. Cirrus clouds viewed on the distant horizon might receive a different classification than if you they were viewed from right beneath them.

When you try to determine the species of insects, birds, or trees, there's a right and wrong answer. That's not the case with cloud identification. Other cloud identification guides and books fail to drive this point home. This is probably the most challenging aspect of cloud identification, but it's what makes cloud identification fun!

So that is the way we learn about our environment.

Thank you, Marilyn, for initiating this discussion.

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