

A rare cloud formation recently occurred outside our Pittsburgh lab. This phenomenon—known as a “mammatus cloud” or mammotocumulus for those who prefer longer words—did more than light up our social media feeds as everyone seemed to want to share the foreboding feeling the community felt. It got us, here at the *GeoSampler* thinking about clouds in general. The fluffy ones, the stripey ones, the stormy ones. Even the clouds that house our data. So now here we are sharing our cloudy thinking with you. Enjoy. But maybe with an umbrella nearby.

HEAD IN THE CLOUDS?

According to NASA (and those folks know a lot of stuff), “a cloud is a mass of water drops or ice crystals suspended in the atmosphere.” When water condenses in the sky, clouds form. The condensation allows us to see the water vapor. Clouds, an important part of Earth’s weather and climate, take on a lot of different forms.

Have you ever found yourself staring out the window wondering, ‘what kind of cloud is that?’ Okay, maybe you don’t daydream as much as we do. BUT, if that thought has ever occurred to you—and you never got around to looking up cloud formations—today is your lucky day, because we’re here to do it for you.

Really? Latin?

Clouds are grouped into 10 different genera, organized by the shape and the altitude where they’re found.

The genera names are all formed from the same five latin terms—cirro, cumulo, strato, nimbo, alto—which are mixed and matched to create names like cumulonimbus, cirrostratus, cirrocumulus ... you see where we’re going here. Knowing these Latin roots is key to keeping your clouds straight:

Cumulo translates to “heaped.” Think puffy, piled, marshmallowy clouds.

Strato translates to “layered.” Clouds with strato in their name are often flat and form a wide layer across the sky.

Nimbo translates to “rain,” and is used for the two clouds that regularly produce rain.

Cirro translates to “curl.” These clouds are sometimes (but not always) curled and are found in the highest layer of the troposphere.

Alto translates to “high.” Confusingly, this doesn’t mean the cloud is in the highest part of the atmosphere, just that the cloud

is higher relative to others of its type.

But wait, there’s more.

Remember, we said clouds are grouped into 10 different genera? Here’s the dirt (er, water and ice) to help you get a handle on it, looking at clouds based on shape. Which will come in handy the next time you’re supposed to be making complex calculations and instead, staring out the window.

Layer Clouds: Stratus, altostratus, and cirrostratus

All three of these clouds form blanket-like layers in the sky. Each one can be found at a different altitude.

Stratus clouds are nondescript, thick, blanket-like clouds that form low in the sky. Think of the last gray, overcast day when it didn’t rain. Those were probably stratus clouds. (BTW, fog is just a ground-level stratus cloud.)

Altostratus clouds are mid-level, gray, blanket-like clouds. These clouds are uniform and featureless, and can sometimes produce rain.

Cirrostratus clouds are thinner, transparent, and found at high altitudes. Think of hazy, veil-like clouds found high in the sky. They’re also whiter than the other layer clouds and can produce sun halos.

Heap clouds: Cumulus, altocumulus, and cirrocumulus

One word here: PUFFY. Again, each is found at a different level of the atmosphere.

Cumulus clouds are the archetypal poofy, white, cotton-ball clouds that we all drew as kids. (No surprise, they’re the easiest to identify.) They’re lower in the atmosphere, white to light grey in color, and are often found in mostly sunny skies.

Altocumulus clouds are found in the mid-

“Taking a dog named shark to the beach is a bad idea.”



Summer

A perfect summer day is when the sun is shining, the breeze is blowing, the birds are singing, and the lawnmower is broken.

It’s a sure sign of summer if the chair gets up when you do.

Summer is like the ultimate one-night stand....hot as hell, totally thrilling, and gone before you know it.

Summer: Hair gets lighter. Skin gets darker. Water gets warmer. Drinks get colder. Music gets louder. Nights get longer. Life gets better.

During this heatwave, please remember to dress for the body you have, not the body you want.

God, it was hot! Forget about frying an egg on the sidewalk; this kind of heat would fry an egg inside the chicken.

Summer = The time when parents realize how underpaid teachers actually are.

Summer Expectation = Going to the beach every day, water fights, parties, road trips, and BBQs. Summer Reality = Trying to find the right position to hold your phone so the sun doesn’t blackout the screen.



levels of the troposphere. Whereas cumulus clouds remind us of cotton balls or marshmallows, altocumulus clouds are more like popcorn, because they're often found bunched together in heaps or rolls. They're also one of the most variable cloud types.

Cirrocumulus clouds are high, thin, white clouds – like wave patterns on shallow water or feather down. Cirrocumulus and altocumulus clouds are sometimes called a “mackerel sky” because their pattern resembles fish scales. They're one of the least-spotted cloud genera, and they create fantastic sunsets.

Layer-heap cloud: Stratocumulus

Stratocumulus clouds look like a thick, low-level layer of puffy clouds, all joined up together. I find these clouds hard to identify, because they're variable and retain features of both stratus and cumulus clouds. If you see what looks like an altocumulus cloud that's close to the ground, it might be a stratocumulus.

Wispy clouds: Cirrus

Cirrus clouds are pretty easy to identify. If you see delicate, feathery streaks high in the sky, it's a cirrus cloud. These clouds are made of ice crystals instead of water vapor and often have a fibrous appearance.

Rain clouds: Cumulonimbus and nimbostratus

Is it raining? Then you're probably looking at one of these two cloud types.

Cumulonimbus are more often associated with storms. They're dark, towering and the only type that can extend through all three levels of the troposphere.

Nimbostratus clouds are dark, featureless layers that create those drizzly days where you stay indoors and curl up with a good book by the fire.

You'll notice we haven't even begun to get into the idea of rare cloud formations (remember the “mammatus cloud” that set us off on this tangent?) Well, it turns out, there's a lot more to Nephology (the science of clouds) than we really thought and before we dive into the advanced stuff, we must get back to clouds that are neither cumulonimbus nor cirrostratus.

Your data is in the cloud

This doesn't mean your lab results are actually in heaven or in the wind. Your data does have a terrestrial home. It's stored somewhere – lots of somewheres – and a network of servers allows us to access it.

This cloud refers to software and services that run on the Internet, instead of locally on your computer. Most cloud services can be accessed through a Web browser like Firefox or Google Chrome, and some companies offer dedicated mobile apps.

Some examples of cloud services include Google Drive, Apple iCloud, Netflix, Yahoo Mail, Dropbox and Microsoft OneDrive. (There are also many, many others, but we don't have enough space for yet another tangent.)

The advantage of the cloud is that you can access your information on any device with an Internet connection. It's what allows you to make edits to a file in Google Docs on your home computer, and then pick up where you left off when you get to the office. Or when you get back into the lab after a particularly eventful cloudspotting adventure.

We are fully energized.

Here at Geotechnics, we've been humming away on a wide range of projects for the energy industry, including wind, nuclear and coal throughout the United States and beyond. Whether you are generating energy with coal, shale drilling, windmills, atoms or Wheaties, we can probably lend some expertise. To apply some Geotechnics energy to your next project, call Randy O'Rourke at 412.823.7600.



Our four facilities serve projects across the country.	Pittsburgh – 544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • nmelaro@geotechnics.net or jpkline@geotechnics.net
	Raleigh – 2200 Westinghouse Boulevard • Raleigh, NC 27604 • Phone (919) 876-0405 • msmith@geotechnics.net
	Nashville – 13 Industrial Park Drive, Suite 500 • Hendersonville, TN 37075 • Phone (615) 590-7695 • dsmith@geotechnics.net
	St. Louis – 550 Axminister Drive • Fenton, MO 63026 • Phone (636) 600-0440 • dsmith@geotechnics.net