Clouds

Clouds are created when water vapor condenses and turns into liquid water droplets. These water droplets form on tiny particles, like dust and smoke, that are floating in the air. When millions of these water droplets gather together clouds are formed.

Clouds form at different heights in the atmosphere.

Stratus clouds - form up to 1981 m or lower

- form in layers and are long and flat
- look grey and can produce rain
- fog you see in the morning is very low clouds

Cumulus clouds - form from over 1981 m to 6096 m (middle)

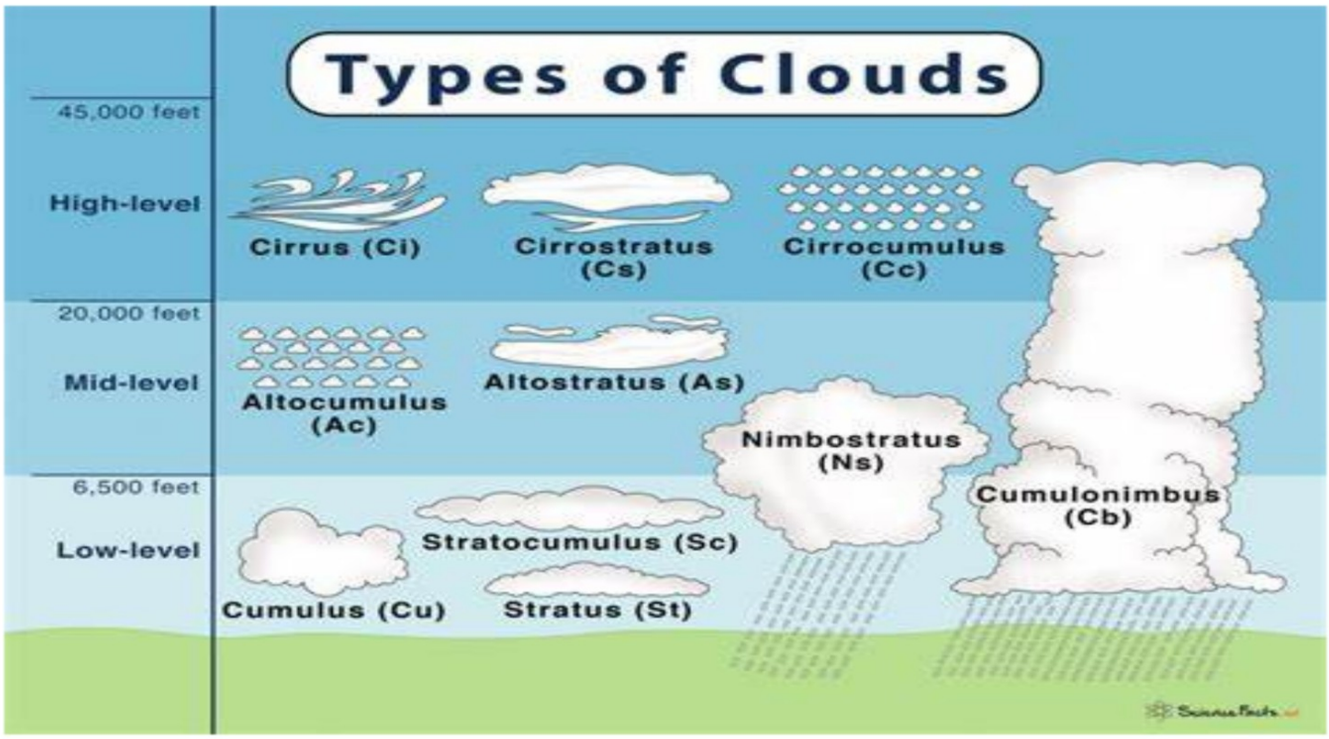
- White & Puffy with flat bottoms
- look like cotton balls
- usually associated with clear sunny days
- Fair weather clouds

Cirrus clouds - above 6096 m (High)

- are thin, wispy (Feather like)
- are white and made from ice c
- You will see these clouds on fair, pleasant day but can indicate a storm may be coming in days ahead

Cumulonimbus clouds - Tall, Vertical clouds, in many layers

- Thunderstorm clouds
- are white and made from ice.
- associated with heavy rain, snow, hail, lightening and even tornados


Types of Clouds
45,000 feet
High-level
Cirrus (Ci)
Cirrostratus (Cs)
Cirrocumulus (Cc)
20,000 feet
Mid-level
Altocumulus (Ac)
Altostratus (As)
Nimbostratus (Ns)
Cumulonimbus (Cb)
6,500 feet
Low-level
Stratocumulus (Sc)
Cumulus (Cu)
Stratus (St)

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Other Clouds

03 of 10 **Stratocumulus**

If you took an imaginary knife and spread cumulus clouds together across the sky but not into a smooth layer (like stratus), you'd get stratocumulus—these are low, puffy, grayish or whitish clouds that occur in patches with blue sky visible in between. When viewed from underneath, stratocumulus have a dark, honeycomb appearance.

When You'll See Them

You're likely to see stratocumulus on mostly cloudy days. They form when there's weak convection in the atmosphere.

04 of 10 **Altocumulus**

Altocumulus clouds are the most common clouds in the middle atmosphere. You'll recognize them as white or gray patches that dot the sky in large, rounded masses or clouds that are aligned in parallel bands. They look like the wool of sheep or scales of mackerel fish—hence their nicknames "sheep backs" and "mackerel skies."

Telling Altocumulus and Stratocumulus Apart

Altocumulus and stratocumulus are often mistaken. Besides altocumulus being higher up in the sky, another way to tell them apart is by the size of their individual cloud mounds. Place your hand up to the sky and in the direction of the cloud; if the mound is the size of your thumb, it's altocumulus. (If it's closer to fist-size, it's probably stratocumulus.)

When You'll See Them

Altocumulus are often spotted on warm and humid mornings, especially during summer. They can signal thunderstorms to come later in the day. You may also see them out ahead of cold fronts, in which case they signal the onset of cooler temperatures.

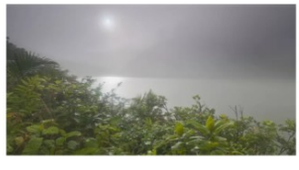
05 of 10 **Nimbostratus**

Nimbostratus clouds cover the sky in a dark gray layer. They can extend from the low and middle layers of the atmosphere and are thick enough to blot out the sun.

When You'll See Them

Nimbostratus are the quintessential rain cloud. You'll see them whenever steady rain or snow is falling (or is forecast to fall) over a widespread area.

06 of 10 **Altostratus**

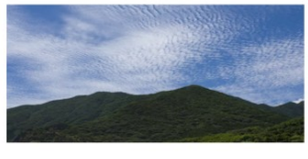


Altostratus appear as gray or bluish-gray sheets of cloud that partially or totally cover the sky at mid-levels. Even though they cover the sky, you can typically still see the sun as a dimly lit disk behind them, but not enough light shines through to cast shadows on the ground.

When You'll See Them

Altostratus tend to form ahead of a warm or occluded front. They can also occur together with cumulus at a cold front.

08 of 10 **Cirrocumulus**

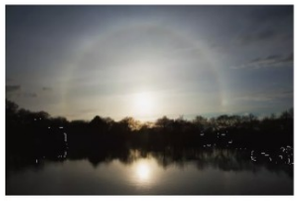


Cirrocumulus clouds are small, white patches of clouds often arranged in rows that live at high altitudes and are made of ice crystals. Called "cloudlets," the individual cloud mounds of cirrocumulus are much smaller than that of altocumulus and stratocumulus and often look like grains.

When You'll See Them

Cirrocumulus clouds are rare and relatively short-lived, but you'll see them in winter or when it's cold but fair.

09 of 10 **Cirrostratus**



Cirrostratus clouds are transparent, whitish clouds that veil or cover nearly the entire sky. A dead giveaway to distinguishing cirrostratus is to look for a "halo" (a ring or circle of light) around the sun or moon. The halo is formed by the refraction of the light on the ice crystals in the clouds, similarly to how sundogs form but in an entire circle rather than just on either side of the sun.

When You'll See Them

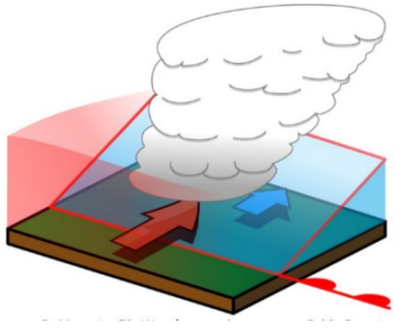
Cirrostratus indicate that a large amount of moisture is present in the upper atmosphere. They're also generally associated with approaching warm fronts.

Fronts

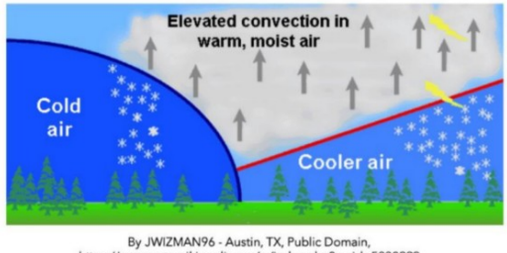
An air mass is a large volume of air with similar temperature and humidity. A front is a transition zone between two different air masses.

A **cold front** is the leading edge of a cooler air mass that is replacing a warmer air mass. It is labeled with a blue line with triangles. The points show the direction the cold air mass is moving.

What exactly is a Cold Front? (youtube.com)



A **warm front** is the leading edge of a warm air mass that is replacing a cooler air mass. Semicircles on a red line show the direction the warm air mass is moving.



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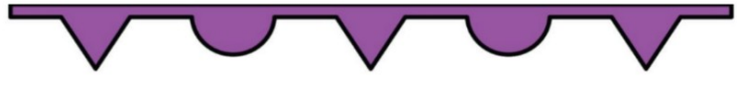

An **occluded front** is labeled with a purple line with alternating cold and warm front symbols.

An occluded front occurs when a warm air mass gets stuck between two cold air masses. As the warm air rises, the cold air masses push to the middle. The word "occluded" is used because the warm air mass has been cut out, or pushed up.

A **stationary front** is labeled with alternating cold and warm front symbols. The cold and warm air masses push toward one another but do not move.

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Weather Fronts Explained - Cold, Warm, Occluded & Stationary - For Student Pilots (youtube.com)

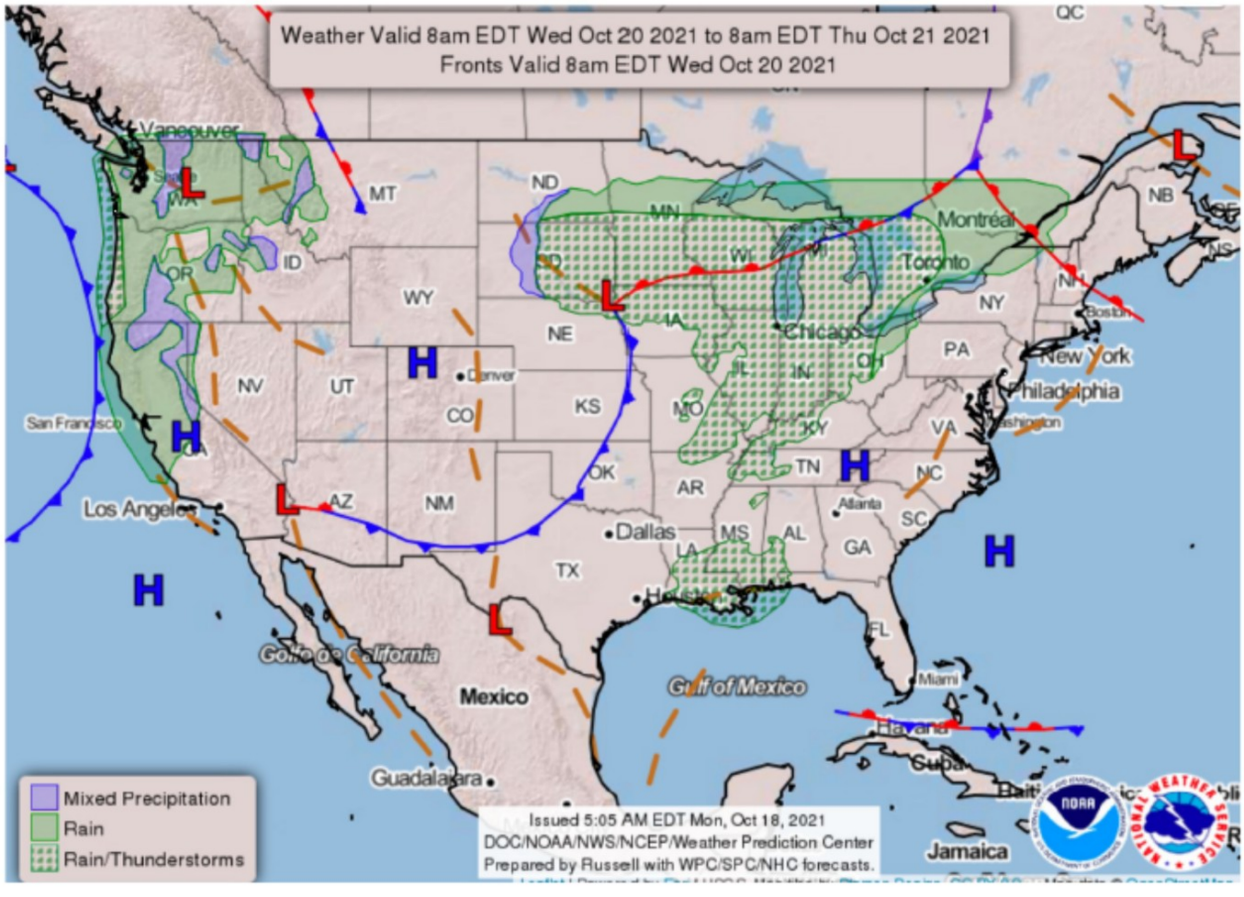
3 min

Air Masses, Fronts, Storms and Pressure Systems, A Full Video Lesson On What Causes Weather 6.E.2B.2 (youtube.com)

7 min

Cold Warm Occluded Stationary-Types of Weather Fronts (youtube.com)

3min



Label the cold fronts with the number 1. Draw arrows to show which way each front is moving.

Label the warm fronts with the number 2. Draw arrows to show which way each front is moving.

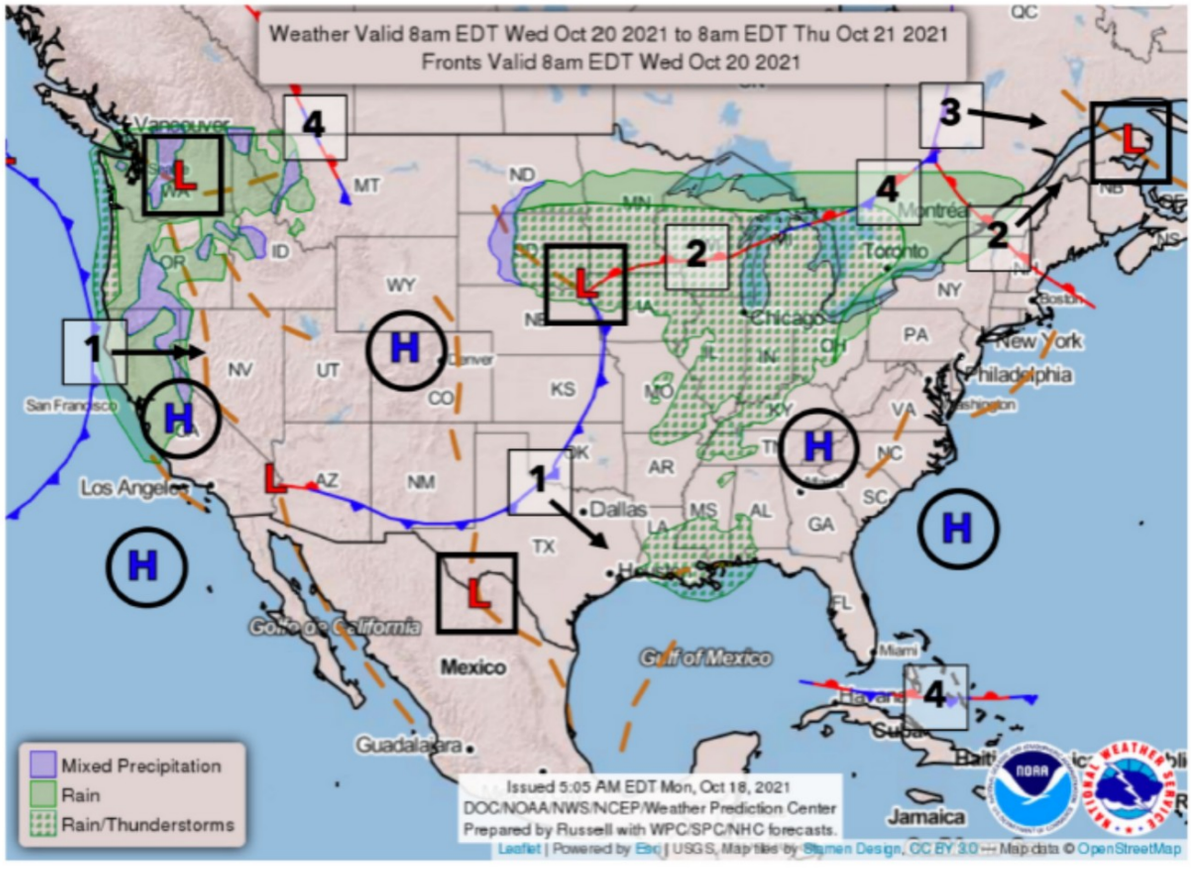
Label the occluded fronts with the number 3. Draw arrows to show which way each front is moving.

Label the stationary fronts with the number 4.

Circle all high pressure areas. Is weather there rainy?

Draw rectangles around all low pressure areas. Is weather there rainy?

ANSWERS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Fronts Valid 8am EDT Wed Oct 20 2021
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Los Angeles
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Guadalajara
Gulf of Mexico
Jamaica
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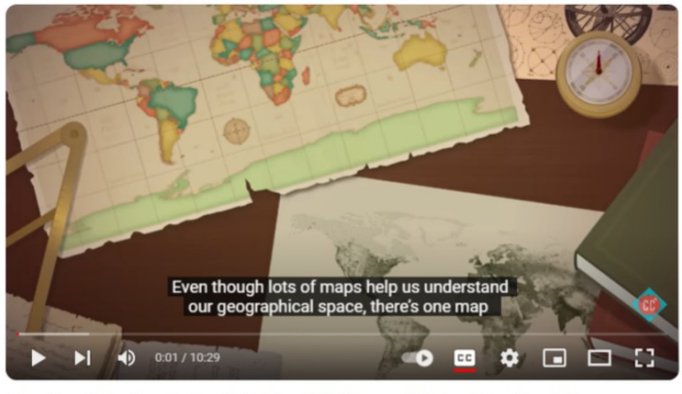
How Can Rain Create Conflict? Precipitation and Water Use: Crash Course Geography #11 (youtube.com)



How Can Rain Create Conflict? Precipitation and Water Use: Crash Course Geography #11

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Precipitation

Precipitation- is rain, snow, sleet, or hail that falls to the ground

All precipitation comes from clouds but not all clouds produce precipitation. For a cloud to produce precipitation, the water droplets must grow heavy enough to fall down.

rain - water that falls from clouds that occurs in warm place and is at least 0.5 mm in diameter

mist/drizzle - raindrops that are smaller than 0.5mm

Sleet - when raindrops fall through the air when it is below freezing. As they fall the rain drop freezes into ice. Size is less than 5mm.

What is sleet? (youtube.com)

Freezing Rain - when raindrops fall through the air BUT does not freeze until it hits the ground.

How does freezing rain form? (youtube.com)

Ice storm blasts Nova Scotia, cutting power to thousands (youtube.com)

Hail - is a round ice pellet of ice that is larger than 5mm.

- formed when ice pellets in a cloud move up and down in a cloud updraft. Each time the hailstone moves up and down, a new layer of ice forms around the hailstone. When itis heavy enough, it'll fall to the ground.

What is hail? How is hail formed and why does it happen? | Weather Wise (youtube.com)

Snow - when the water vapor in the cloud is directly converted into ice crystals.


IMPORTANT WEATHER SIGNS
Sunny
Cloudy
Overcast
Thunder storm
Partly sunny
Fog
Showers
Heavy rain
Rain with sun
Snowy
Partly cloudy night
Unknown data
Rain night
Sleet
Cloudy night
Clear night
Buzzle.com

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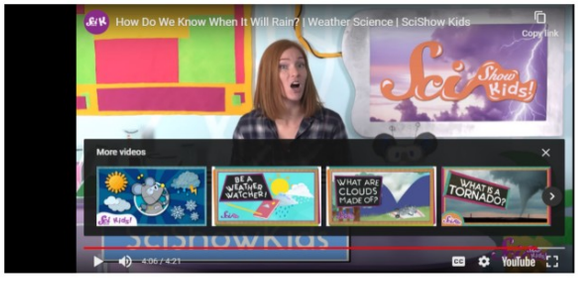
How Do We Know When It Will Rain? | Weather Science | SciShow Kids - YouTube



Weather Forecast | Magic or Science? | Learn With BYJU'S - YouTube

Weather Forecast | Magic or Science? | Learn With BYJU'S

Wind & Moisture

Can cause storms

Hurricane, Tornado, Cyclone – What's the Difference? - YouTube

10 min

Write 5 interesting facts from the video

Hurricane Facts for Kids! (youtube.com)

11 min