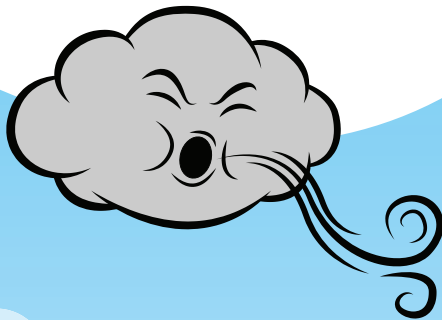
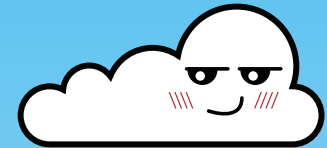




# The Science of Weather



Brought to you by:



## WEATHER SCIENTISTS!

What's the weather today? To find out, we turn to Meteorologists—the Weather Scientists. They are able to forecast if it's going to be sunny, warm, windy or rainy today, and even several days from now. There's a lot of science that goes into forecasting the weather—let's learn more about it!

Meteorology is the study of the Earth's atmosphere—the layer of gases that surround the earth. Meteorologists, like CBC's Ryan Snoddon, use science to study the Earth's atmosphere and predict what the weather will be like today, tomorrow, or even next week. That's called "forecasting."

In order to forecast the weather accurately, Ryan looks at things like a **ridge of high pressure** and a **trough of low pressure**, and the boundaries between them. Those boundaries are called "weather fronts."

"Hi! I'm Ryan. I'm a Meteorologist at CBC Nova Scotia. Let's explore weather together."



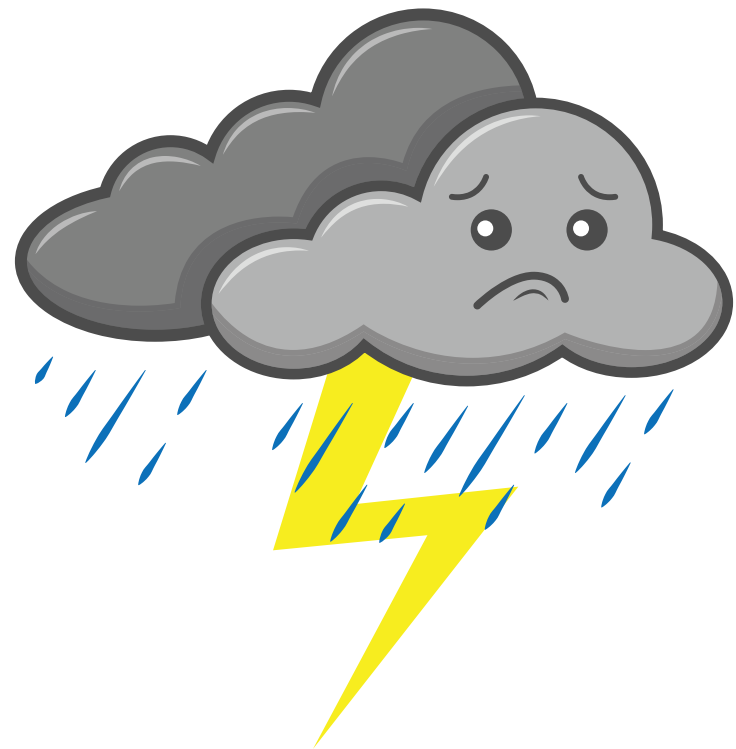
## WELCOME TO THE WATER CYCLE



The water cycle is how water moves from the air to the ground and back again. It has one of the biggest effects on the weather we see and experience!

During this adventure, it will change from a **liquid** to a **gas** to a **solid** at different times and in different places.

Spring and Summer is thunderstorm season here—and for a Meteorologist, it's an amazing thing to study. This is one event where we see the water cycle in action!



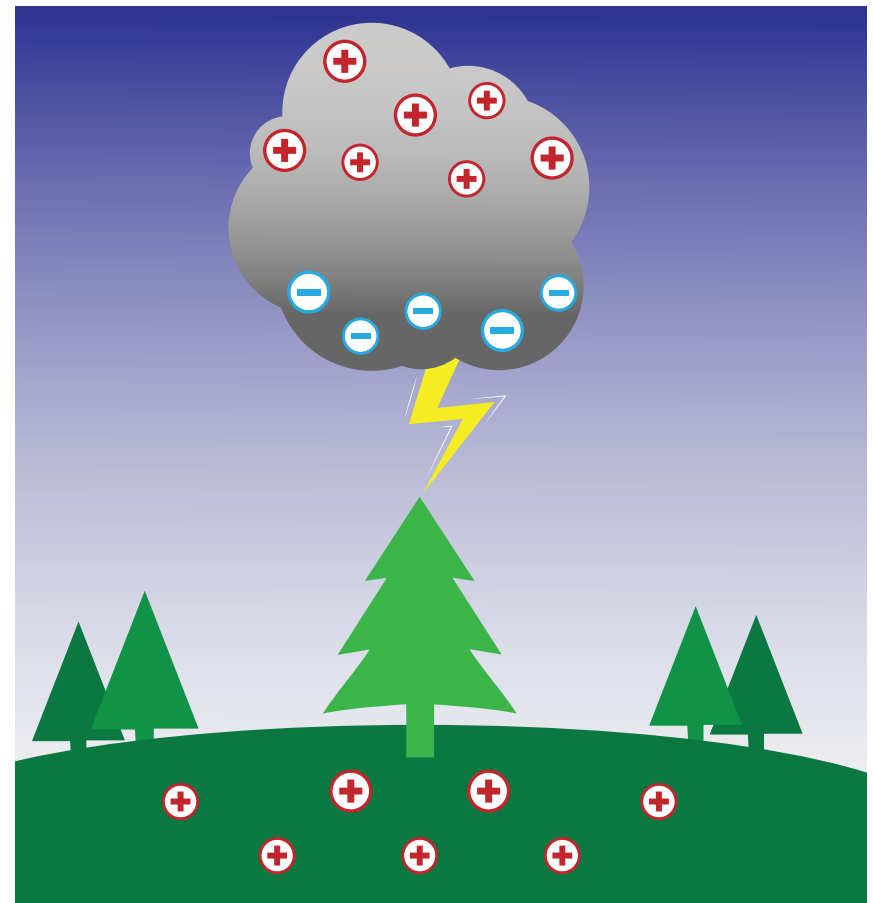
Have you ever seen a puddle get smaller during a sunny day? It's evaporating!

Water evaporates from our lakes, rivers, and the ocean, and goes up into the atmosphere. This water ends up in the clouds in the sky.

In the spring, the water vapour (microscopically small droplets of water) freezes and creates pellets of ice in the clouds. These pellets crash into each other and build up an **electric charge**, like when you scuff your feet on carpet and touch something metal.

Eventually, the whole cloud fills up with electrical charges. When those charges connect with the earth—through things like trees and buildings—we get a current of electricity, and **ZAP!** you get a bolt of lightning!

The sound of thunder that follows is the result of all of that electricity travelling through our atmosphere. That energy causes the air to expand and then collapse in on itself, creating a wave of sound that you can hear from many kilometres away.



## CAN YOU NAME THAT CLOUD?

We see clouds nearly every day. They float in the sky above us, sometimes wispy, sometimes like fluffy cartoons, sometimes dark and angry looking. The type of cloud we see in the sky can tell us a lot about the weather now, and the weather on the way.

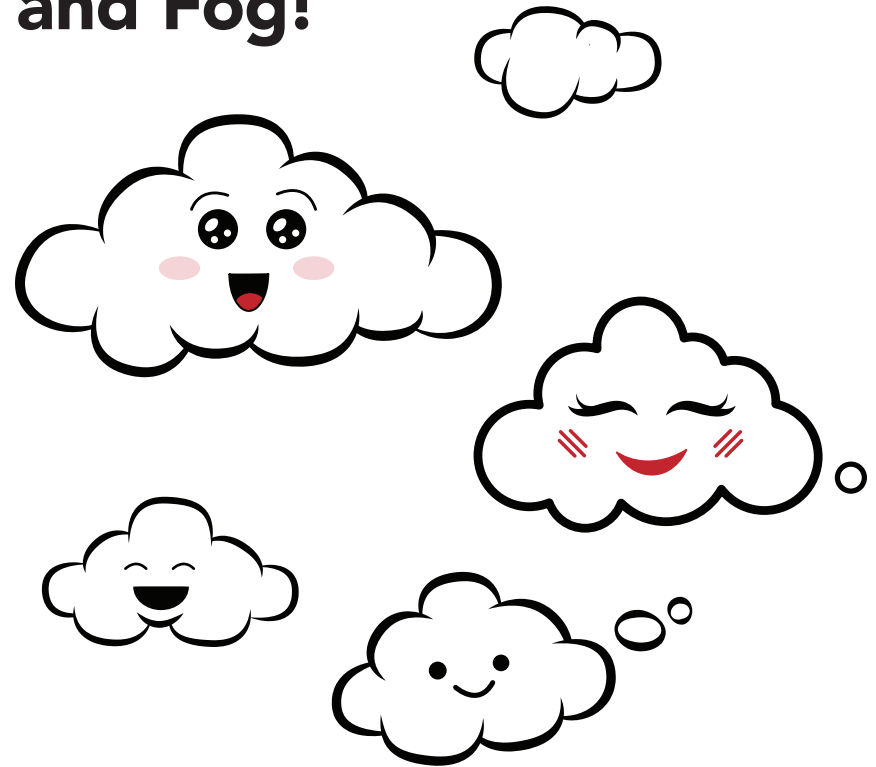
What are clouds, exactly? They're tiny drops of water, so small and light that they float in the air!

Going back to our water cycle: water evaporates from the land and goes up into the atmosphere. When it cools, it condenses into tiny water droplets, and all those droplets together form a cloud.



## THERE ARE FOUR MAIN TYPES OF CLOUDS:

### Cumulus, Cirrus, Stratus, and Fog!



**Cumulus:** These are the big fluffy ones. They look like cartoon clouds. These sky puffs usually mean good weather—unless they grow so big they transform into Cumulonimbus Clouds, which are the ones that mean thunderstorms.



**Cirrus:** These are the wispy clouds that are almost see-through. They are found high up in the atmosphere (higher than Cumulus clouds) and they're made up of ice crystals. They're usually a sign that the weather is about to change!



**Stratus:** These are the low, flat, blanket-like clouds you see often in the Spring. They look like a grey blanket is being laid across the sky—and you'll hear people say the day is overcast. This means anything from a light drizzle to rain is on the way.



**Fog:** We get this a lot! Fog is like a land cloud that we can walk through. It happens when water in the air (vapour) changes into a liquid because the conditions are just right. We get Fog when warm and cool air meet near the water, or on a chilly clear night when temperatures are cool enough for condensation to occur.

**FUN FACT!** The Grand Banks off the coast of NL is the foggiest place in the world!

## LET'S BUILD A RAIN GAUGE!

You can use science at home to understand and measure the weather! A **rain gauge** is a helpful tool to measure the amount of rainfall in a period of time. That could be from one big storm or small showers throughout the week. Let's build one together!

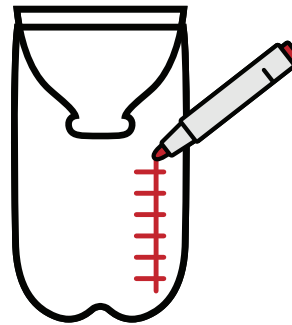
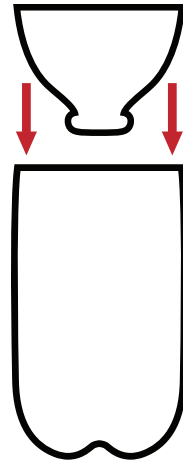
### Materials List:

- Empty clear plastic bottle (reuse one from your recycling bin!)
- Permanent marker
- Tape (optional)
- Ruler
- Scissors



### Step-by-Step Guide:

1. Carefully, cut the top 1/3rd of the bottle off.

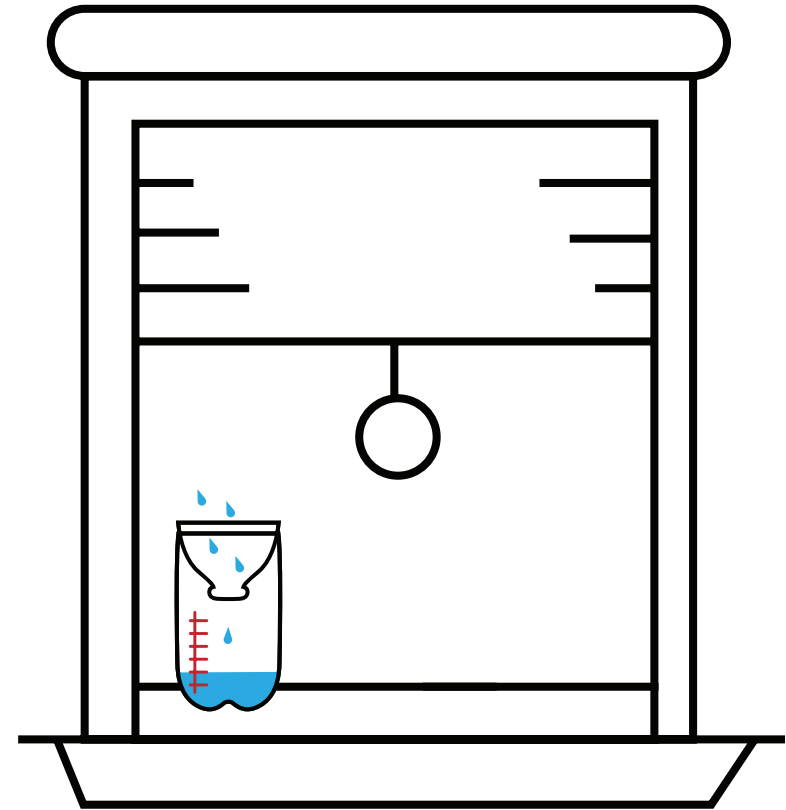
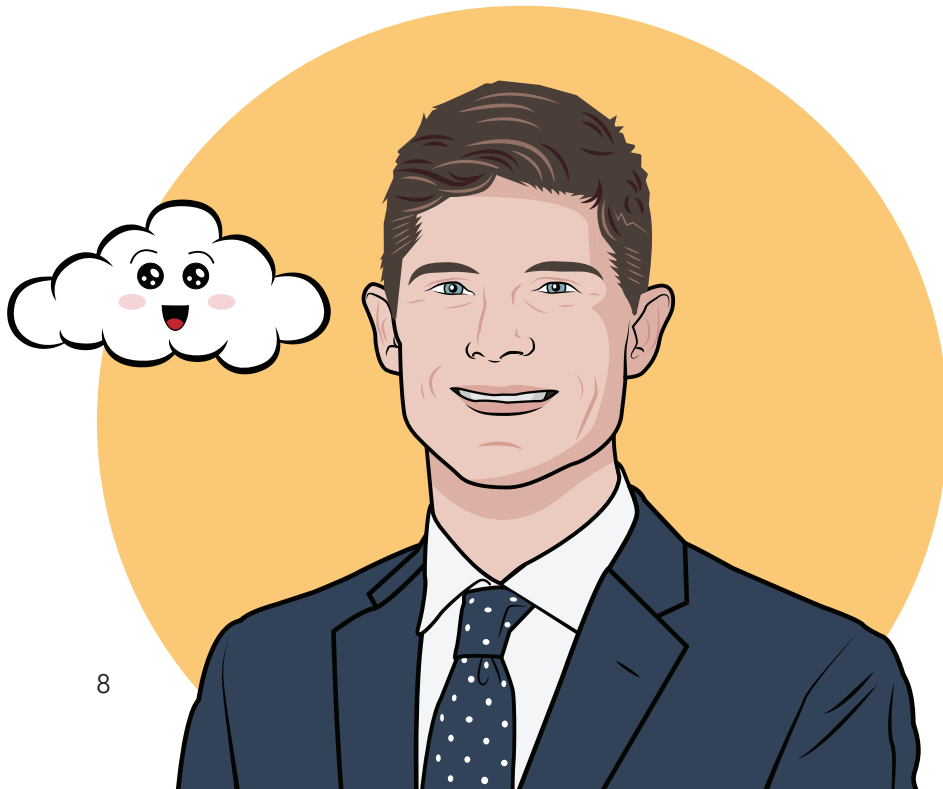


2. Take the top part, turn it upside-down, and place it inside the bottom part of the bottle (you can tape it in place for extra stability).
3. Measurement time. Take your ruler and measure 5 centimetres from the bottom of the bottle upwards. Mark each centimetre with the permanent marker, and then mark the half-way point between each centimetre.


**FUN FACT!** Precipitation is measured in millimetres. By marking the halfway point between centimetres your rain gauge will show 5mm increments!

## READY, SET, GO!

With your rain gauge ready, put it outside and wait for rain to fall. When the rain is over, go check on your gauge! You should be able to see how much precipitation has fallen by how high the water is in your rain gauge. Don't forget to empty it after you measure so you can start fresh on the next rainy day!



Share your barometer and weather questions with Ryan on Facebook and Instagram! You could be featured on CBC Nova Scotia's evening news or on Ryan's social media channels!

 [facebook.com/ryan.snoddon](https://facebook.com/ryan.snoddon)

 [instagram.com/ryansnoddon](https://instagram.com/ryansnoddon)