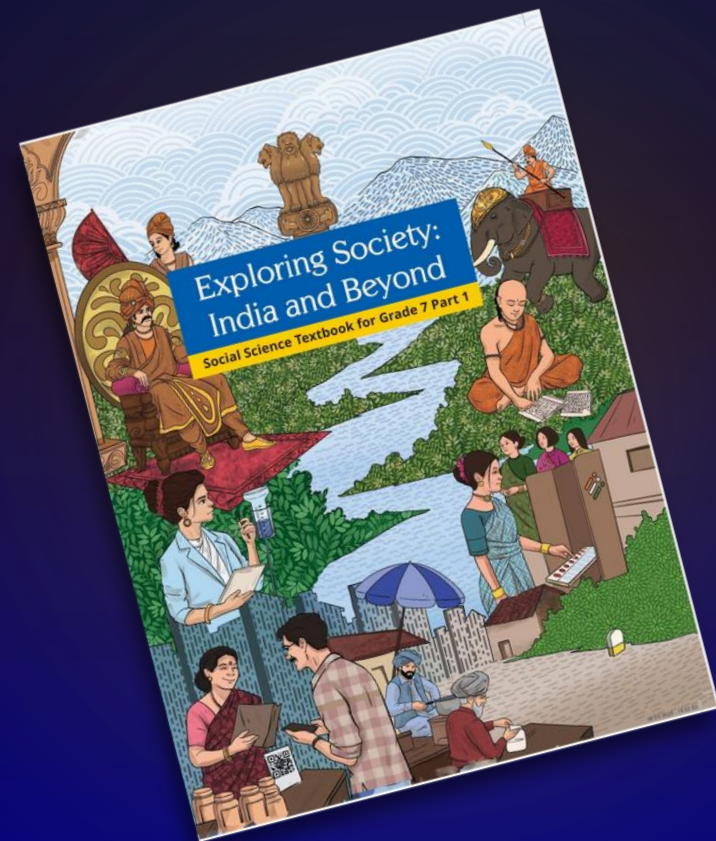


ONESHOT 

Understanding the Weather



CLASS 7th
SST

BY : SRISHTY MA'AM



TOPICS TO BE COVERED

- One Shot





Ahh... Looks like it's going to be a great day!

It's Monday morning—bright sun floods Rohan's room.



Wait—what? Where did this come from? I didn't even bring my umbrella!

By the noon, Rohan caught in a rainstorm without an umbrella.



I can't see anything... Is this even the right street?

And the next day, everything's wrapped in fog, like a dream.



What's up with the sky today?

Why does the sky change its mood every day?

The weather any other time



The weather whenever i'm leaving house to go to work



Weather is a state of the Earth's atmosphere at a particular time and place

Ab ye Sasura atmosphere kya hai?





Atmosphere

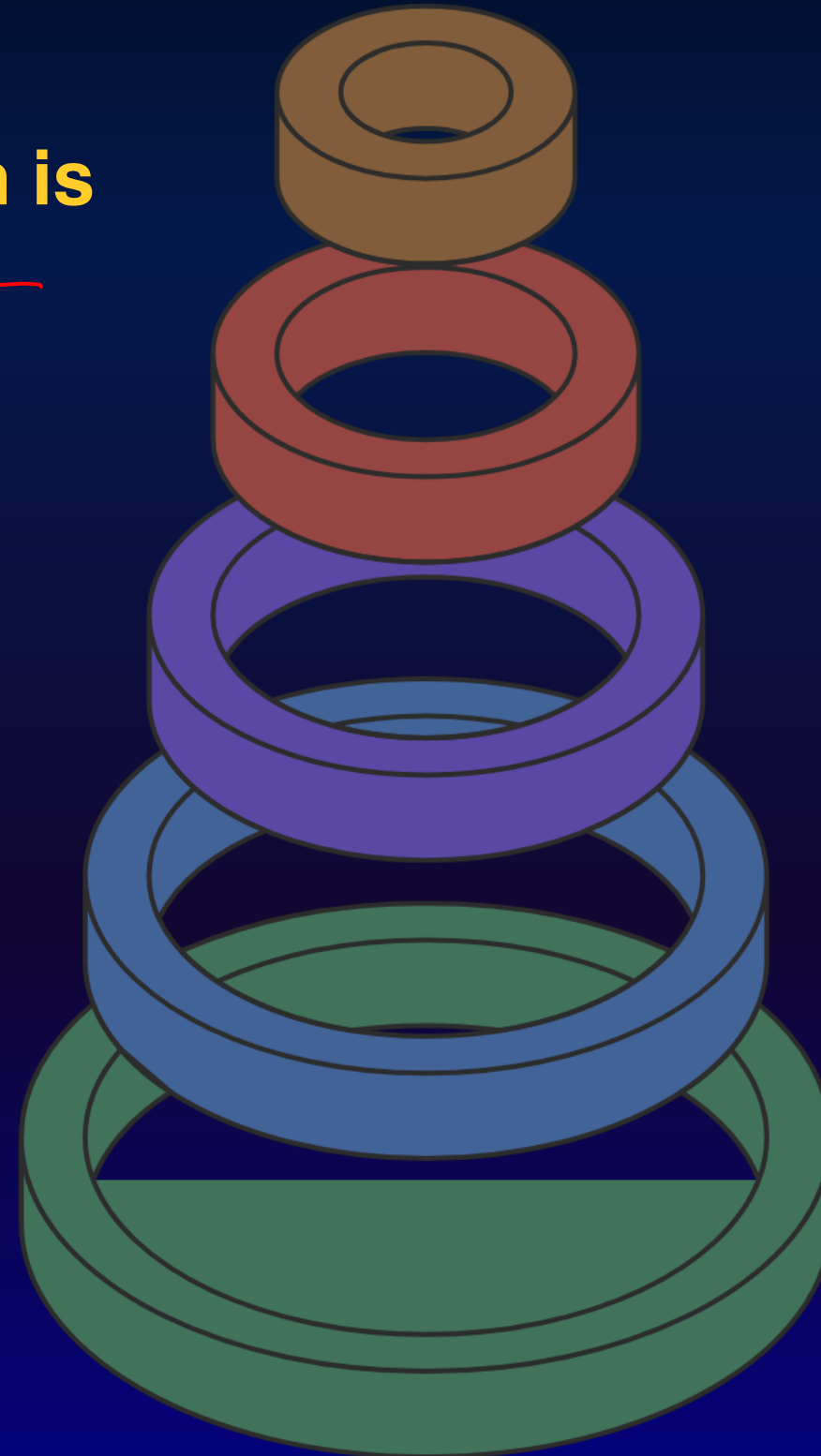
Earth's Atmospheric Layers



The blanket of air that surrounds the earth is called Atmosphere

5 layers

Troposphere → Tod ay
Strato → Strishty
Meso → Ma'am
Thermo → Taught
Exo → Environment



Exosphere

Outermost layer merging into space



Thermosphere

High temperature due to solar radiation



Mesosphere

Protects from meteoroids



Stratosphere

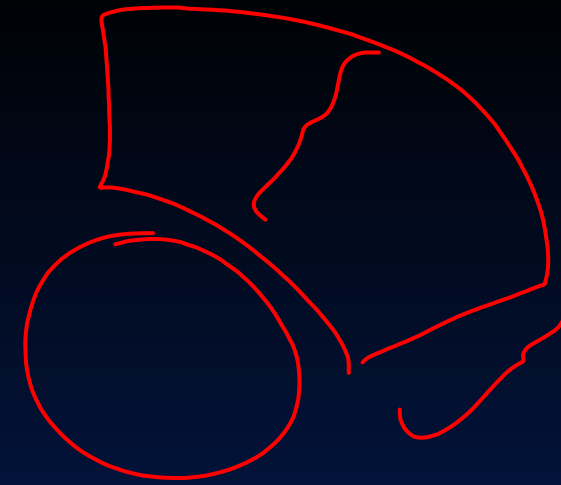
Contains ozone layer



Troposphere

Layer where life and weather exist

The Importance of the Troposphere:



The troposphere is the lowest layer of the atmosphere, directly in contact with Earth's surface.

1

It ranges from 6 to 18 kilometers above sea level (thinner at the poles, thicker at the equator).

2

The troposphere is critically important because all plant and animal life exists within it, and all weather phenomena occur in this layer.

3

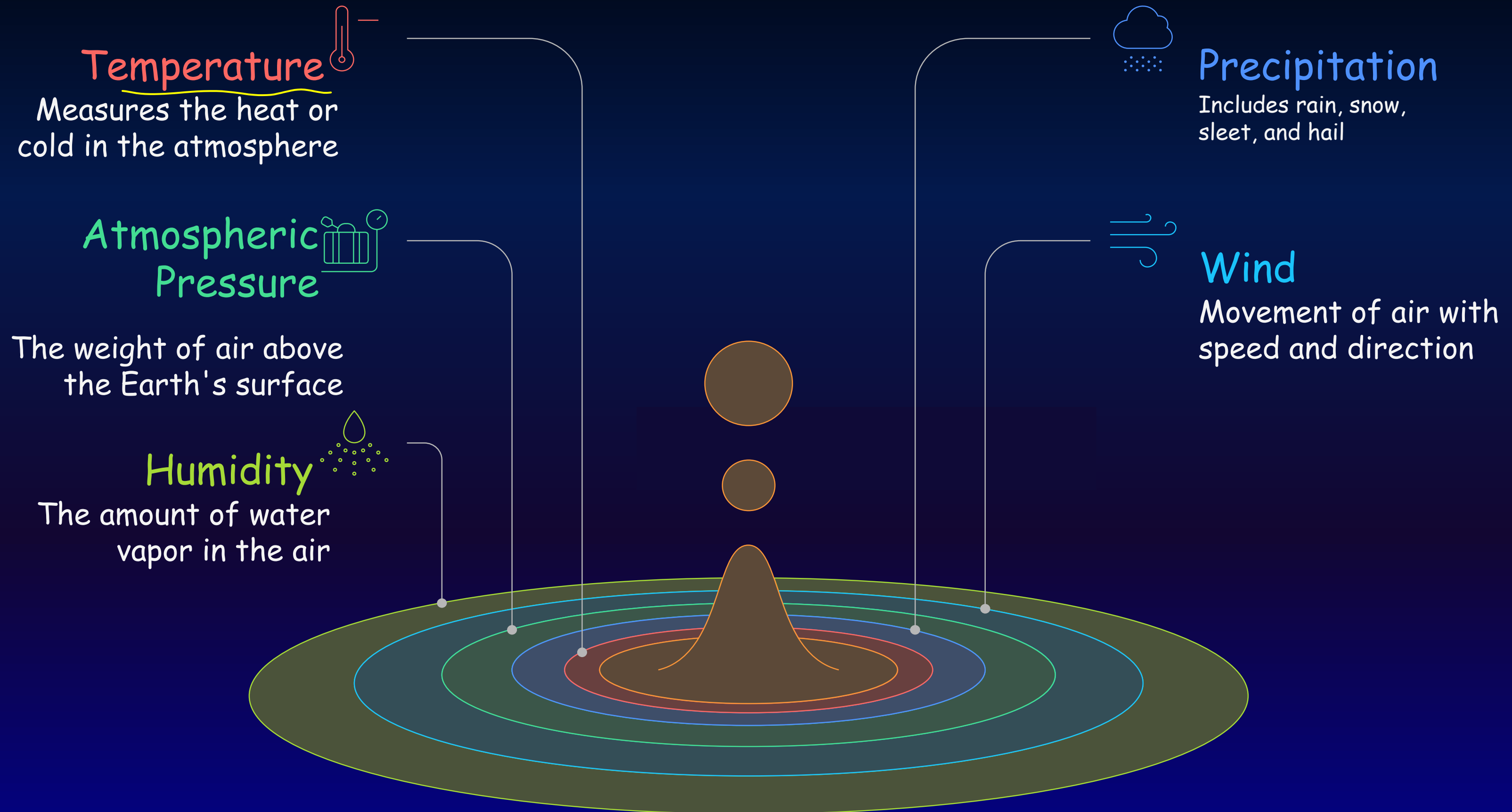
Everything that is seen in the sky (birds, planes, clouds)—all these exist within the troposphere.



Weather



Weather Elements



Now let's talk about the cool gadgets jisse ham ye weather elements ko measure karte hai

Meteorologist





Temperature



Thermometer

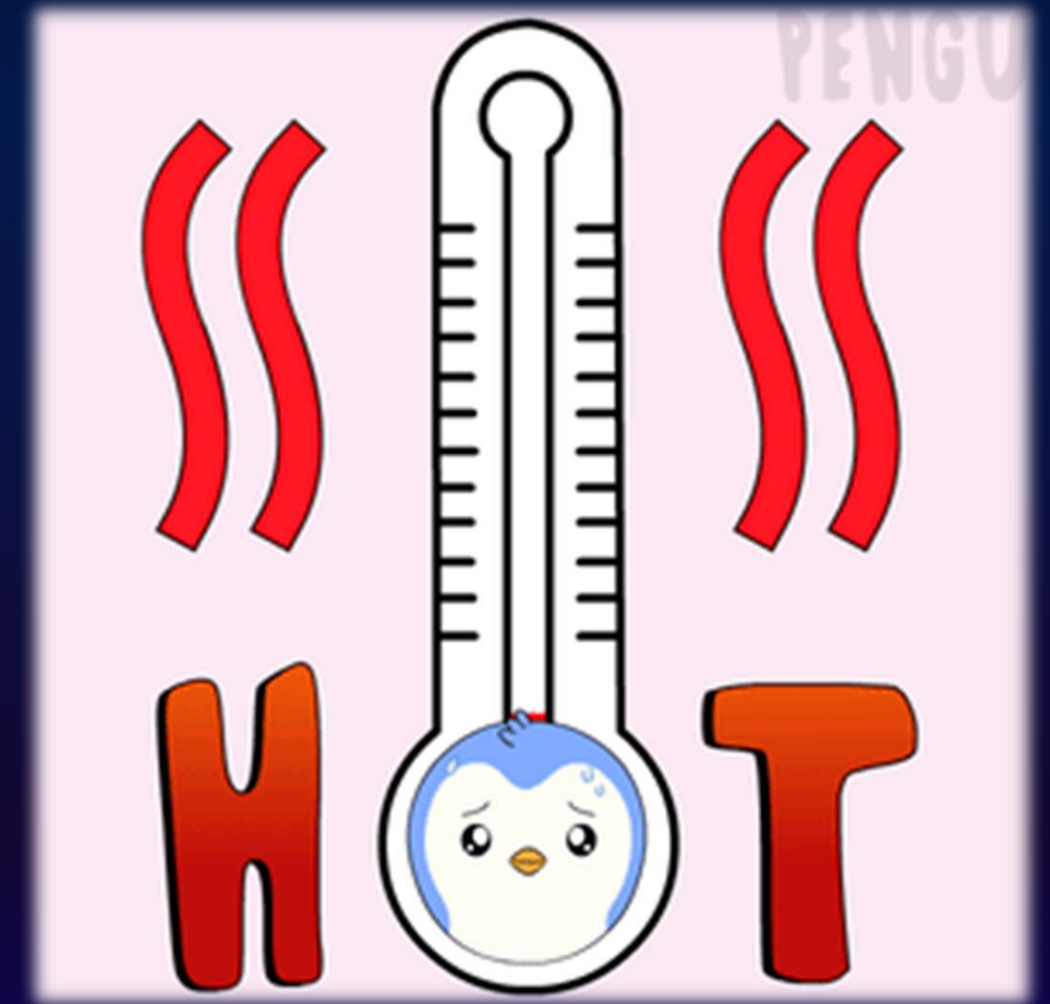




Fig. 2.4.1. Snow melts quickly when it's warm.



Fig. 2.4.2. Cloudy weather—it's getting cold.



Fig. 2.4.3. In winter, coconut oil turns solid.



Fig. 2.4.4. Curd takes longer to set in cold weather.



Temperature



There are several types of thermometers.

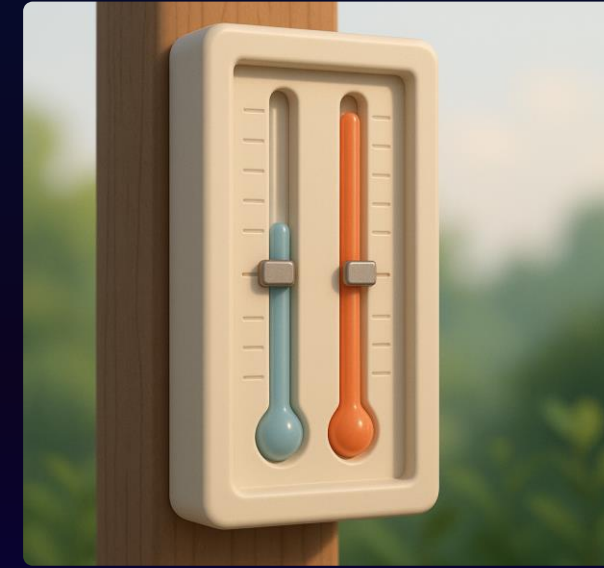
Some simply measure the **Ambient temperature**; others record the **Maximum and Minimum temperatures** during a day.



**Clinical
Thermometer**



**Digital
Thermometer**



**Maximum and
Minimum
Thermometer**



Temperature

Range of temperature – The maximum temperature minus the minimum temperature during a particular period of time (usually 24 hours). ☒

Mean daily temperature – The maximum temperature plus the minimum temperature of the day divided by two

$$\begin{array}{lcl} \text{Indoor} \rightarrow 30^{\circ}\text{C} & \rightarrow & 25^{\circ}\text{C} \\ \downarrow & & \downarrow \\ \text{Max} & & \text{Min} \end{array} \quad \left| \quad \begin{array}{r} \text{Mean daily} \\ 30 + 25 \\ \hline 2 \end{array} \quad \begin{array}{r} 27 \\ 55 \\ \hline 2 \end{array}$$



FUN FACT

The India Meteorological Department was set up in 1875. Its motto is adityat jayate vrishti, which means, "From the sun arises rain." The phrase comes from the ancient text Manusmṛiti, and the complete sentence reads, "From the sun arises rain, from rain comes food, and from food, living beings originate."



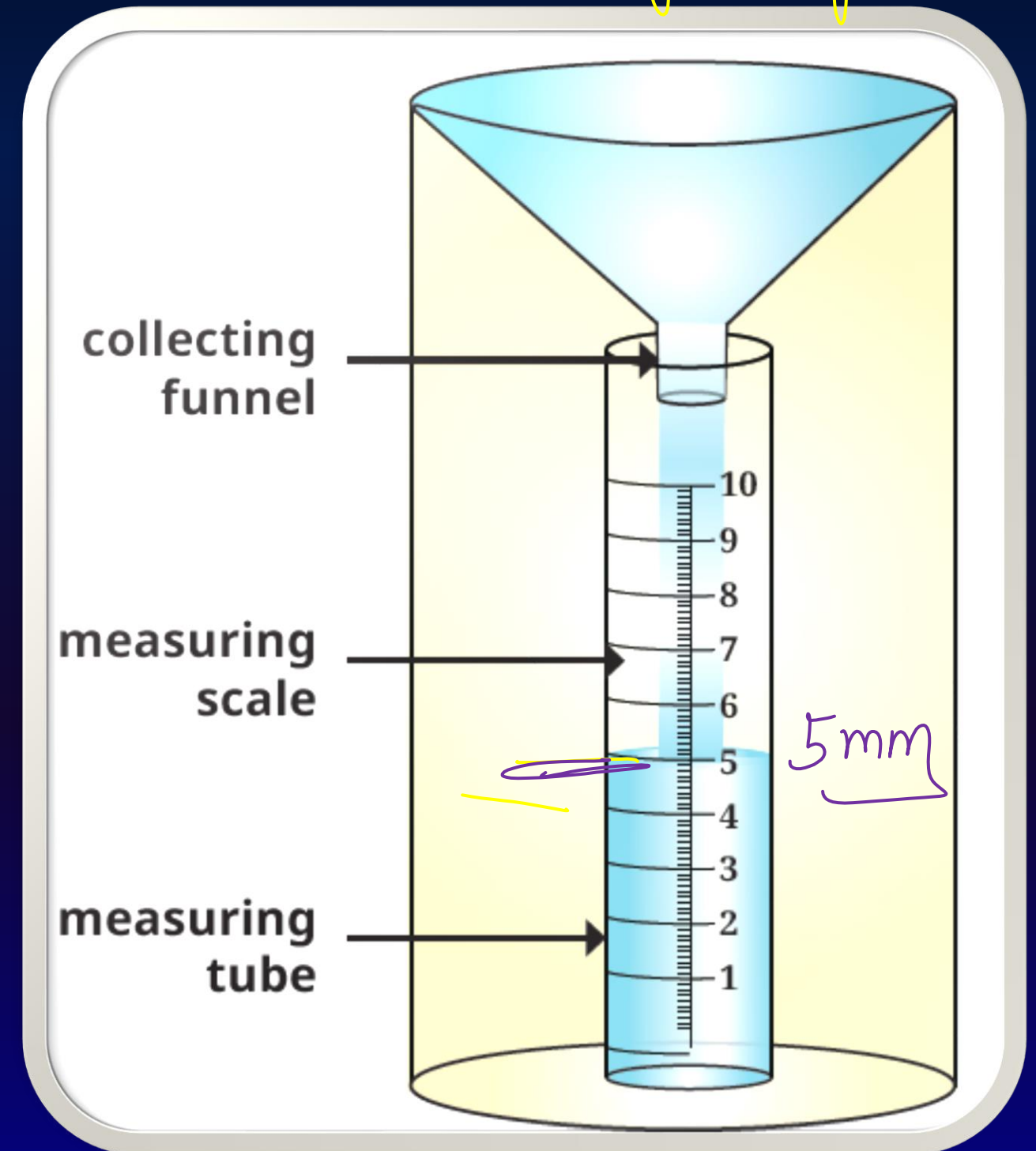
Precipitation



Rainfall, snow, sleet, hail

Measure = mm

Rain Gauge

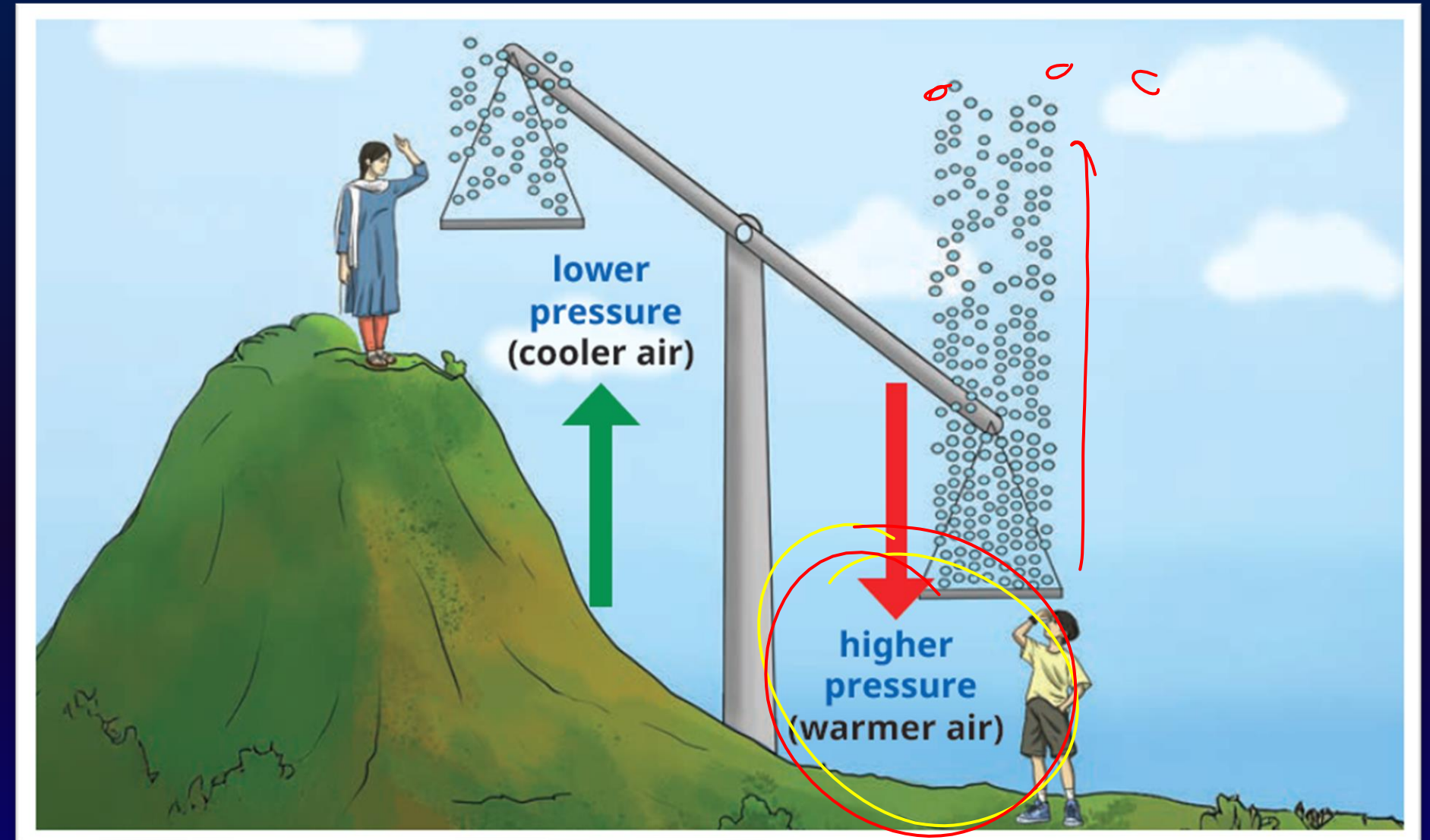




Atmospheric Pressure



Barometer
mb



**FUN****FACT***Low*

Normally, atmospheric pressure is higher in the plains and along the coast. However, this is not always the case. Pressure can sometimes fall sharply, creating what meteorologists call a 'depression' or 'low-pressure system'. This can grow into a storm or even a cyclone.



Measuring Atmospheric Pressure

How to Measure Atmospheric Pressure:

- A barometer is used to measure air pressure.
- It works like a thermometer but measures pressure in millibars (mb).
- **Key Values:**
 - Normal sea level pressure = 1013 mb
 - Below 1000 mb suggests a depression (potential storm or cyclone)





Atmospheric Pressure



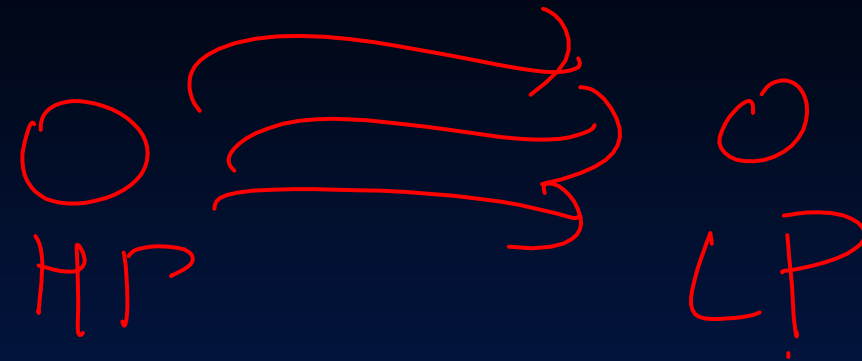
✓ 650mb



Khardungla Top in Ladakh



Wind



Wind is the movement of air from areas of high pressure to areas of low pressure. Speed and direction are

Two important factors when we describe the wind.

SPEED

WIND

Direction



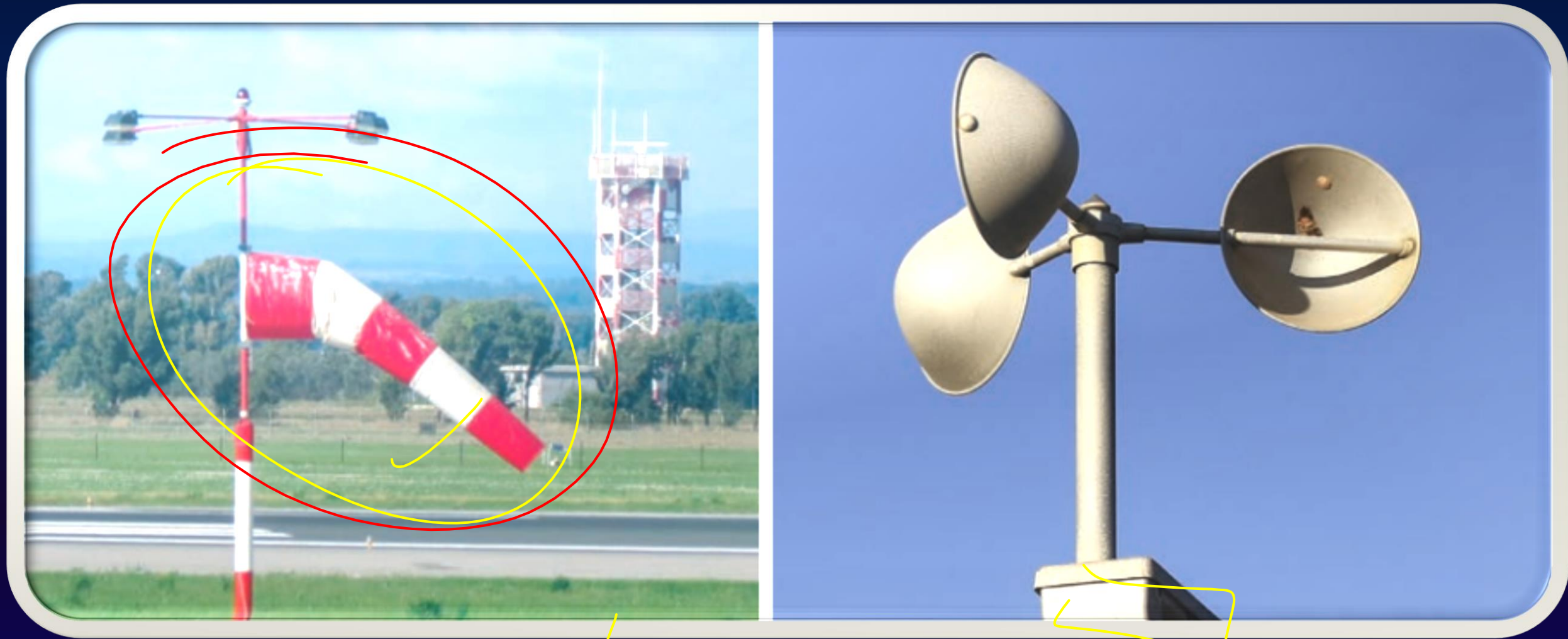


Wind



Direction

Speed



Wind Vane /
Wind Sock

Anemometer



Humidity



- Humidity is the last element of the weather on our list.
- It refers to the amount of water vapour present in the air.
- It also depends on factors like temperature, wind, pressure and location.





Humidity



Relative Humidity

No water
vapor



0%

✓ Dry
weather



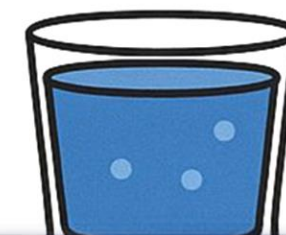
20-%

✓ Humid
weathox



60-%

✓ Saturated
air

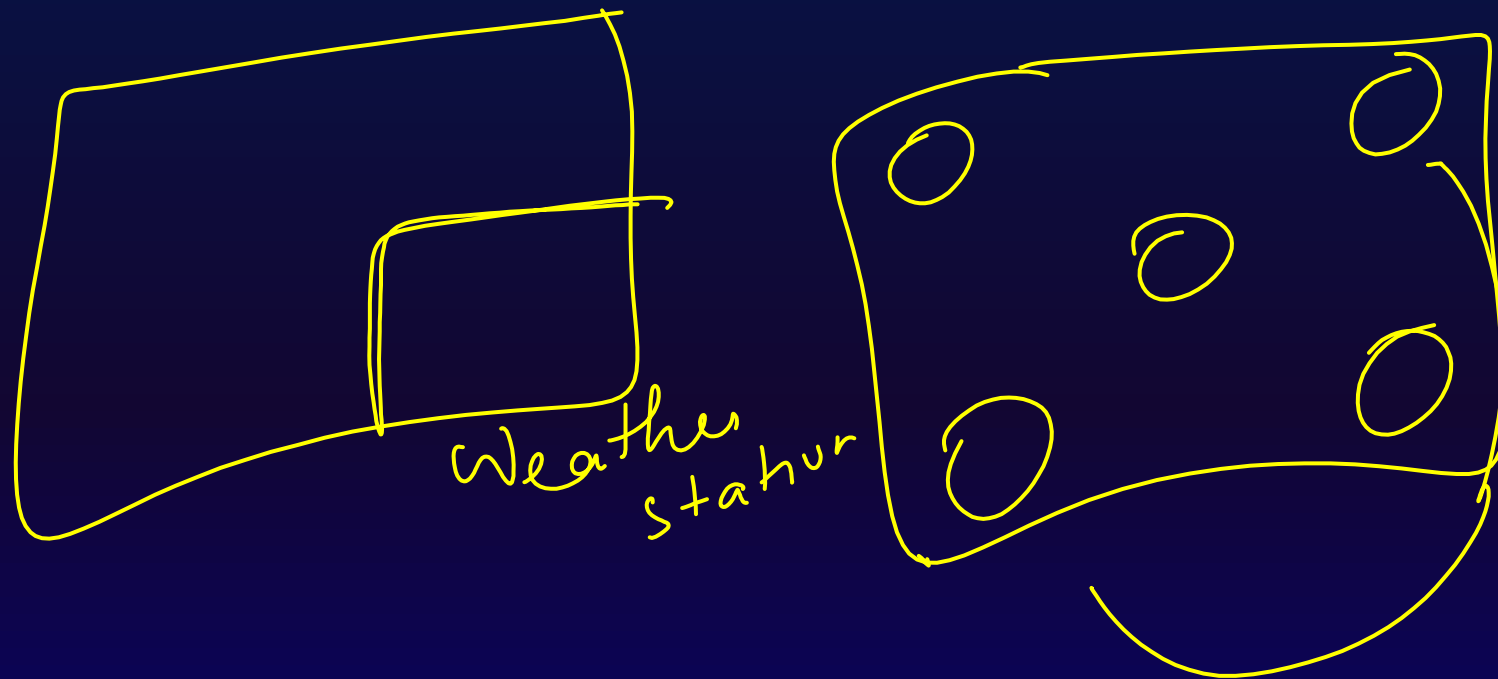


100%



How to Measure Humidity

- A Hygrometer is used to measure air pressure.





Weather Stations





AWS



An automated weather station An Automated Weather Station (AWS) is a self-operating system that uses various sensors to measure and record weather data, such as temperature, humidity, wind speed and direction, precipitation, and atmospheric pressure.



AWS



DON'T MISS OUT

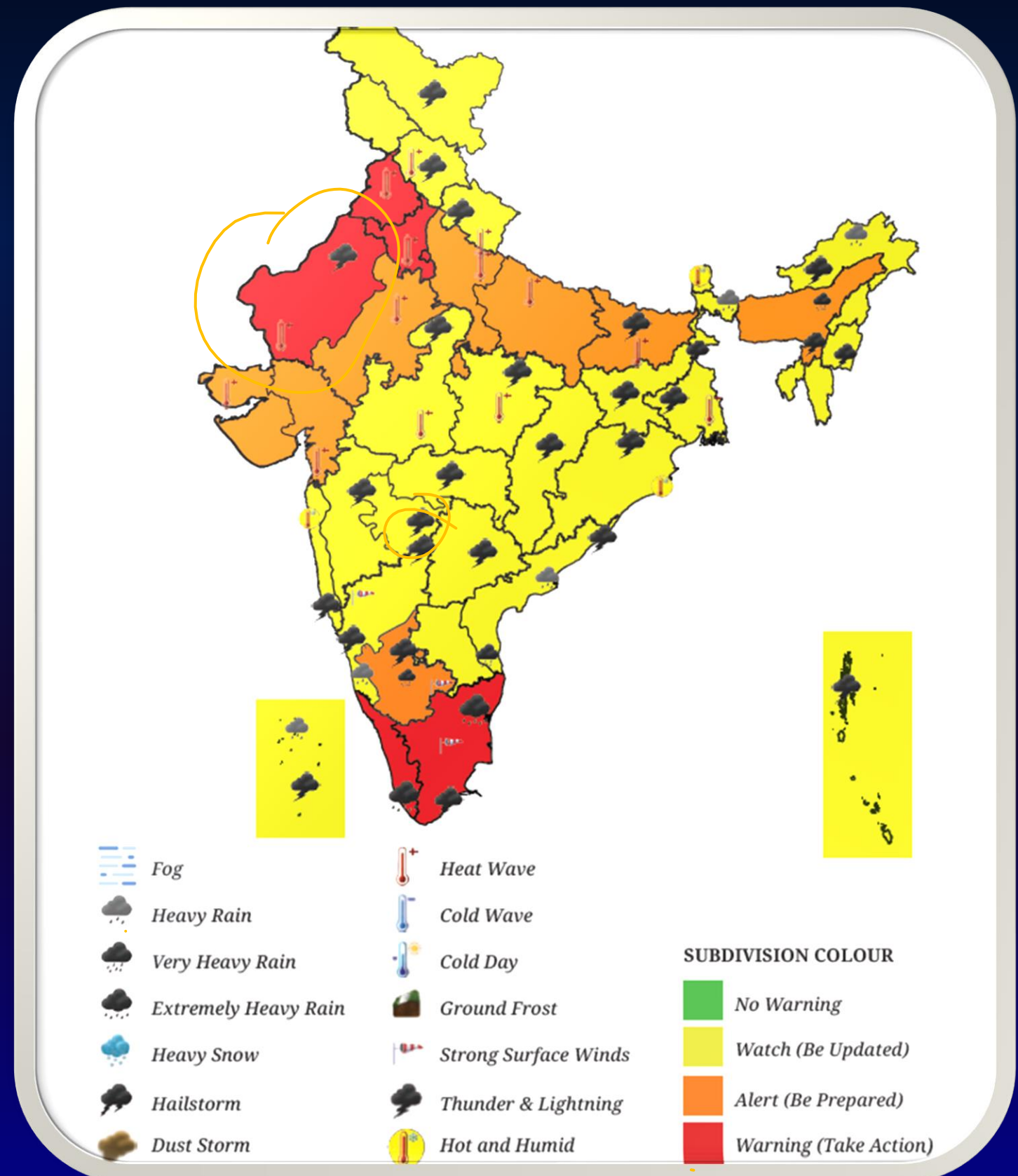


In 2023, the National Disaster Management Authority set up an AWS at a glacial lake of Sikkim at an altitude of more than 4800 metres above sea level. The AWS provides early information about upcoming weather conditions.



Meteorologists collect data using these instruments over long periods of time and predict the weather, which is very useful

- To predict disaster ✓
- Help farmers ✓
- Help fisherman ✓
- Predict climate change etc. ✓



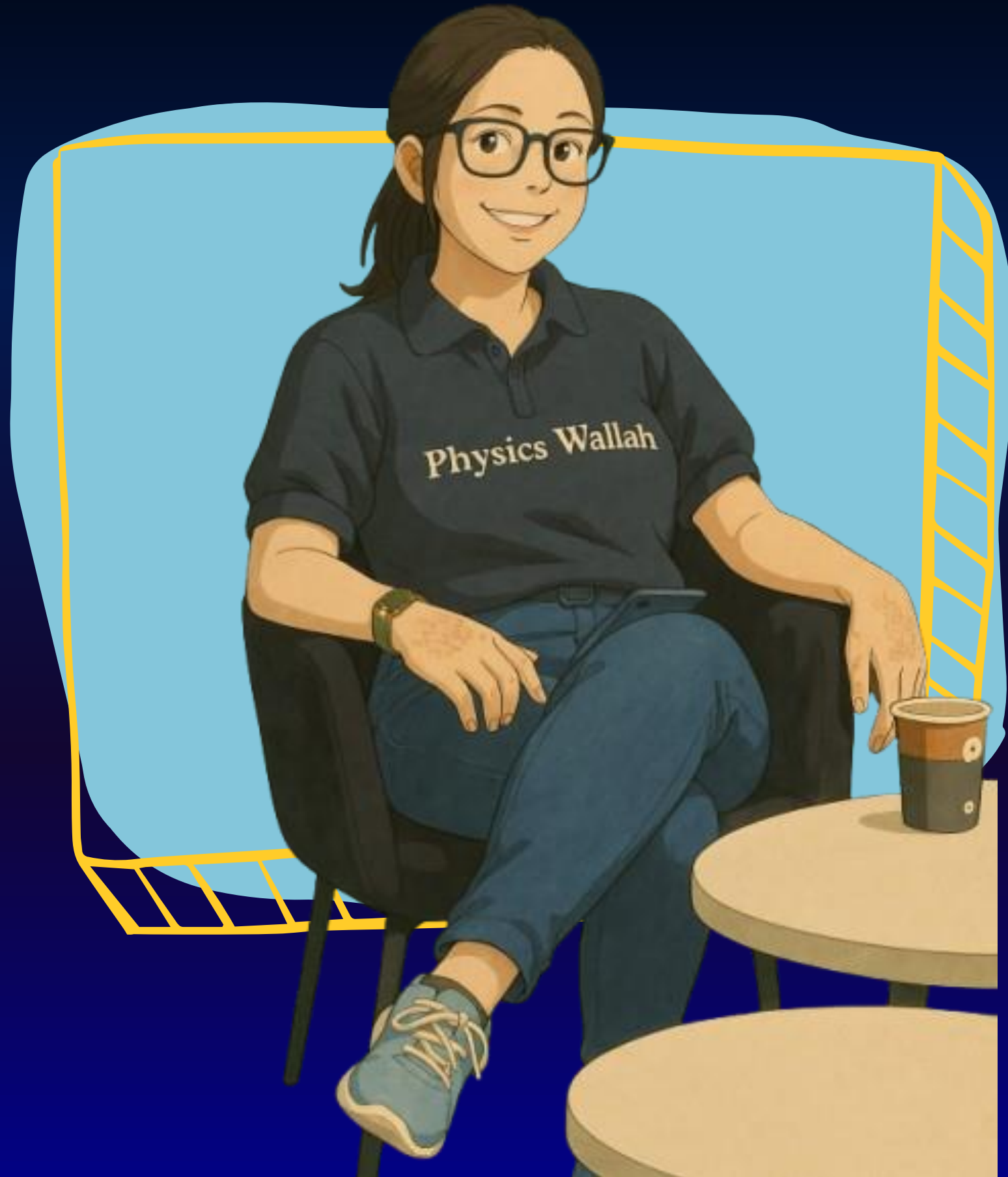


Homework



Match the instrument with the weather element it measures.

Instrument used	Elements of Weather
(1) Hygrometer	a) Precipitation
(2) Anemometer	(b) Atmospheric pressure
(3) Barometer	(c) Wind direction and speed
(4) Thermometer	(d) Humidity
(5) Rain gauge	(e) Temperature



**THANK
YOU**