

## Episode No.- 2

### Weather and climate

**Script: Dr. Kishore Kulkarni**

In this episode the definition of weather and definition of climate, the details about the two natural processes and the difference between the two will be discussed along with various known examples and unknown processes.

Participants:-

**Suvarna – A geography teacher, mother of Gauri & Sharv**

**Gauri- A 9<sup>th</sup> standard student**

**Sharv- 11<sup>th</sup> standard student**

**Anant (Papa)- Father of Gauri and Sharv**

*Announcer-*

**Gauri-** Whether the weather be fine  
Or whether the weather be not,  
Whether the weather be cold  
Or whether the weather be hot,  
We'll weather the weather  
Whatever the weather,  
Whether we like it or not.

**Enters Papa (Anant)**

**Anant-** Gauri it seems that you are singing a poem, what is it all about?

**Gauri-** No papa I was just reading poetic words about weather which were posted on my what's app account.

**Papa-** Gauri it looks like it is a poem on weather. Please read it once again

**Gauri-** yes papa. (reads the poem again )

Whether the weather be fine  
Or whether the weather be not,  
Whether the weather be cold  
Or whether the weather be hot,

We'll weather the weather  
Whatever the weather,  
Whether we like it or not.

**Papa-** But Gauri to talk about the weather is nothing but folly because when it rains on the hill there is Sunshine in the valley.

**Gauri-** No, I did not understand what you said, papa. It is bit confusing.

**Papa-** I will try to clear your confusion in poetic way, listen,

Weather is now hot and later on cold, as the weeks unfold  
Skies are cloudy and fair, skies are changing in the air.  
Earlier it was raining, now it is snowing; later witness breeze blowing  
It was then foggy and now clear, weather is changing through the year.

**Gauri-** Yes papa now I got it.

**Papa-** Gauri weather is the intricate phenomenon which demonstrates changes over very short periods of time, in the atmospheric condition at a given point, place or region. But why are you reading this intricate phenomenon at all?

**Gauri-** Papa, yesterday our Geography mam was teaching us about weather and climate. Today somebody put that poem on my account.

**Papa-** You know Gauri, weather plays a significant role in our lives, as most of our day today activities are planned according to the forecasting made by the meteorological department for the day.

**Gauri-** Papa, If somebody wants to define weather in one/two lines how one can do it?

**Papa-** Yes Gauri that's interesting. Now listen carefully."Weather means the atmospheric conditions of a specific place over a short period of time", usually 24 hours. It expresses the position of the atmosphere at a specified time, in degrees, i.e. hot or cold, clear or cloudy, dry or wet?

**Gauri-** Papa it means the elements responsible for the atmospheric conditions are temperature, moisture, wind velocity, precipitation, cloudiness, air pressure, storms, fog, frost etc.

**Papa-** Absolutely correct. Because of these factors weather constantly changes hour after hour and day after day. You might have observed on a sunny and hot day suddenly heavy rains occur or the sunshine occurs immediately after heavy rains.

**Gauri-** Yes papa I did experience that situation so many times. That's why you were saying "weather is nothing but folly because when it rains on the hill there is Sunshine in the valley".

**Papa-** and that's why weather forecasting is the difficult task.

**Gauri-** Do agree papa! but who is the culprit for this eccentric behavior?

**Papa-** Good question. Instead of saying, 'culprit' we will say the causative agent. You know who it is? It is the Sun. The Sun is the fundamental cause of changes in weather because it is the primary source of energy to earth.

**Gauri-** But papa what actually happens with this energy?

**Papa-** Gauri, you see, the energy absorbed and emitted by the earth's atmosphere, surface and oceans have a great role to play in ascertaining weather of region. If more energy absorbed and less has been given out then weather will be hot, less absorbed and more vented then cold. Add to these, winds and storms also result in the changes in weather.

**(Change over music)**

**Sharv-** laa laa laa;la la re laa ye

if you were asked about your neighbourhood's climate  
 You might have trouble finding words to describe it.  
 If it is usually dry, it is always very hot  
 If it's cold and quite snowy be enough for your permafrost ?

**Mummy-** Sharv what are you doing? studying? Or just doing past time?

**Sharv-** No no mamma these are the starting lines of the subject known as climate?

**Mummy-** Climate? Which climate? What is so important about it?

**Sharv-** Mom you don't know climate? Ha! Ha! Mom doesn't know climate. Mom, the term climate is used to mean weather trends at a specific region, over the course of many years. It is the statistical information of weather which signifies that common atmospheric pattern, in an area over decades.

**Mummy-** Sharv, you are talking about the atmospheric condition that it does not indicate the weather changes occurring daily or weekly. The standard length of time used to ascertain is 30 years. That's climate.

**Sharv-** Yes mom, you are intelligent. For example if the temperature of a country is highest then it means the place is very hot or the climate of the place/region is hot. Mom do you know there are two factors which affect the climate most?

**Mummy-** yes my dear son, I am teaching this subject to matriculation students. The two factors are temperature and precipitation.

- Sharv-** Precipitation? means what?
- Mummy-** Now it is my turn to say, Ha! Ha! Haa! my son Sharv is not aware the term precipitation.
- Sharv-** Mom what I know the dictionary meaning is this. Precipitation has to do with things falling down, or in chemical reactions when a solid settles to the bottom of a solution. Or hard water might find lime deposits — a flaky white crust. The minerals settle out — they precipitate. That's precipitation.
- Mummy-** Sharv that is one meaning but usually precipitation means the falling to earth of any form of water be it rain, snow, hail or sleet or mist. Apart from these two factors, other factors influencing the precipitation are wind velocity, the sunshine, precipitation timing, humidity and so on.
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- Sharv-** So mom, the climate is the general weather at a particular place that is the aggregate of weather components recorded over a long period.
- Mom-** Yes. In other words climate is nothing but weather pattern over a long term. So my boy now you take your words back that I don' t know climate.
- Sharv-** Sorry mom, pardon me for underestimating my dear mom, not only me but many youngsters do this mistake.

### **Change over music**

(Place-Hall, Sharv, Gauri and their Mummy, Papa all are sitting together and reading session is on)

- Sharv-** “When sea birds fly to land there truly is a storm at hand” mom is it a myth or substance of truth?
- Suvarna-** It is not a myth but to certain extent truth. Birds do indicate some of the weather conditions. This expression is based on observation in the past, by our forefathers.
- Gauri-** Likewise I have this “Onion skin is very thin, mild winter is coming in. Onion skin is thick and tough winter will be cold and rough”. Papa, what is the meaning of this statement or phrase whatever you call.
- Papa-** Gauri beta, it is about the nature of winter; mild or very cold. Experience and observation of our ancestors has been correlated with the kind of skin to the winter. They might have seen thick skin during severe cold and thin when mild winter.
- Sharv-** is it true? or just a comic statement?

**Papa-** No sharv, these are some of the accurate observations done when there was no change in climate. Today there are so many factors responsible for the climate change; so there is every possibility that the statement may not hold true.

**Suvarna-** Sharv and Gauri, last two days I witnessed that you both are doing study rounds on weather and climate, today we will have a sort of review to spell out the key differences between weather and climate. Gauri will talk about weather and Sharv on climate. Ok? Let's move on, first Gauri and then Sharv.

**Papa-** But each one will talk one point at a time, ok? Proceed.

### **Change over music interlude**

**Gauri-** Weather is routine atmospheric condition of a specific region, with the elements like temperature, humidity, wind speed, sunshine, rain, hail, snow, sleet, flooding, blizzards, thunderstorms, heat, heat waves and cloud cover, etc.

**Sharv-** The standard pattern of weather of a particular place, taken over 30 years period, is climate. And the factors are Temperature, precipitation, humidity, sunshine, wind velocity, fog, frost and hail storms.

**Gauri-** Weather is the moment-wise state of the atmosphere of a geographical area.

**Sharv-** Climate is average weather in a given region.

**Gauri-** Weather is the condition of the atmosphere in a given region, over a short period.

**Sharv-** Behaviour of atmosphere over a very long period is climate.

**Gauri-** Weather of a place can change in few hours or even in few minutes; it changes frequently in small span of time.

**Sharv-** Climate of a place takes several years to change, no frequent change.

**Gauri-** Weather changes as per the changes in temperature, humidity, air pressure, cloudiness, precipitation etc.

**Sharv-** Temperature and precipitation are the two key factors which actually influences the climate.

**Gauri-** Weather is assessed for a short period of time and space; like for a day, a week or month by meteorological department.

**Sharv-** Climate is assessed over the course of many years say 25-30, by the weather house.

**Gauri-** Study of weather is called Meteorology. It is the interdisciplinary scientific study of the atmosphere that focuses on weather processes and forecasting.

**Sharv-** Science of climate study is called Climatology. Scientifically defined as weather conditions averaged over a period of time and is a branch of the atmospheric sciences.

**Papa-** Good that both of you have done good job. The difference between climate and weather is usually summarized by the popular phrase, “Climate is what you expect, Weather is what you get”.

**Gauri-** Short and sweet. Thanks Papa.

### **Change over music**

**Suvarna-** For your information Gauri and Sharv, there is an Intergovernmental Panel on Climate change (IPCC) which studies the changes in climate world over. It defines climate as, the average weather or more rigorously, over a period ranging from months to thousands or millions of years. The classical period is 30 years as defined by the World Meteorological Organization (WMO) which is the apex body in weather world.

**Papa-** There are a number of variables that are nearly constant and these determine climate, including latitude, altitude, proportion of land to water, and proximity to oceans and mountains.

**Suvarna-** Yes, and based on the variables scientists have classified primary climate zones. They are of 5 types. They are tropical, dry, mild mid-latitude, cold mid-latitude and polar.

**Sharv-** But mom, I have read somewhere as rain forest, tropical savanna, steppe and many more. They are not to be seen in your list of climate zones.

**Papa-** Sharv perfect question and what you read is also correct. Your mummy had already said that five primary types of climate zones. The names you mentioned are also figure in climate zones list but they are secondary climate zones.

**Suvarna-** Actually I was about to tell the secondary classification also but you intervened. Good that you were not only reading but also keeping in your memory.

**Gauri-** Mom, Ok tell us the full list of these secondary climatic zones. Also tell us the examples so that it will be easy for me to understand.

**Suvarna-** Ok my child. Secondary climatic zones are—rain forest, monsoon, tropical savanna, humid subtropical, humid continental, oceanic climate, desert, Mediterranean climate, tundra and polar ice cap.

**Papa-** Sharv and Gauri I have a sound clip on these 12 secondary climatic zones. I am playing back for you, just listen.

**Change over music**

**Announcer-** Let us start with monsoon. A monsoon is a seasonal prevailing wind which lasts for several months, ushering in a region's rainy season. Regions within Australia, East Asia, sub Saharan Africa, North America and South America are monsoon regimes.

**Change over music 5 seconds**

The rainforests are characterized by high rainfall, with minimum 1750mm and maximum 2000mm, while mean monthly temperatures exceed 18 C during all months of the year.

**Change over music 5 seconds**

Tropical savanna is a grassland biome located in semiarid to semi-humid climate. Average temperatures in the region remain at or above 18C round the year. Rainfall between 750mm and 1270mm range a year. Africa, India, Malaysia, Australia and northern parts of South America are regions where this zone is widespread.

**Change over music 5 seconds**

Humid subtropical climates lie on the east side of continents, roughly between latitudes 20 and 40 degrees away from equator, where winter rain fall and sometimes snowfall is associated with large storms that the westerlies steer from west to east. Most summer rainfall occurs during thunderstorms and from occasional tropical cyclones.

**Change over music 5 seconds**

A humid continental climate is marked by variable weather patterns and a large seasonal temperature variance. Places with more than three months of average daily temperatures above 10 C and a coldest month temperature below -3C and which do not meet the criteria for an arid or semi arid climate.

**Change over music 5 seconds**

Oceanic climate is typically found along the west coasts at the middle latitudes of all the world's continents, and in southeastern Australia and is accompanied by plentiful precipitation year-round.

**Change over music 5 seconds**

The Mediterranean climate is characterized by hot, dry summers and cool and wet winters and the regions covered are Mediterranean Basin, parts of Western and South Australia, parts of western North America, South Africa and parts of central Chile.

### **Change over music 5 seconds**

Dry grassland with an annual temperature range in the summer of up to 40C and during the winter down to -40C is Steppe climate.

### **Change over music 5 seconds**

Tundra occurs in the far Northern Hemisphere, north of the taiga belt, including vast areas of northern Russia and Canada.

### **Change over music 5 seconds**

A Desert is a region that receives very little precipitation. Deserts usually have a large diurnal and seasonal temperature range, with high or low, depending on location, day time temperatures and low night time temperature. In summer it is between 45C and 113C and in winter down to 0C due to extremely low humidity. Deserts are also formed by rain shadows situation since mountains block the path of moisture and precipitation to the desert.

### **Change over music 5 seconds**

A subarctic climate has little precipitation and monthly temperatures which are above 10 degrees C for one to six months of the year, with permafrost in large parts of area due to the cold winters. Winters within subarctic climates usually include up to six months of temperatures averaging below 0 degree C .

### **Change over music 5 seconds**

A polar ice cap is a high-altitude region of a planet or moon that is covered in ice. Ice caps form because high-altitude regions receive less energy as solar radiation from the sun than the equatorial regions, resulting in lower surface temperatures. Polar ice caps are also known as polar ice sheets.

That was explanation for 12 secondary climate zones.

### **Change over music 10 seconds**

**Gauri-** Papa we got the information on types of climate but there is no mention of the places or regions on earth under which they come.

**Papa-** Actually both the things have been told in monsoon and savanna in other types they are missing. In a way I feel it has been done deliberately, so that you will find out. So the ball is in your court. You find out on your own. What you suggest Suvarna.

**Suvarna-** I am also of the same opinion, do your home work on the remaining places. To sum up today's session I say,



