



# CLIMATE OF INDIA

Subject: Geography

For Class: IX

# Objectives:

- ▶ Familiarize students with the terms, key concepts and basic principles associated with the climate of India.
- ▶ Provide them idea about the mechanism of Indian monsoon.
- ▶ Study the climate of India through the understanding and analysis of local climate.
- ▶ Explore the causative factor of the spatial variations in the climate of the country.
- ▶ Understand and analyze the variation of climatic phenomenon in the cycle of seasons.
- ▶ Make students aware of the change in climate (global warming) at local level to understand it at national and global level.





# CONTENTS OF THE LESSON

# CLIMATE OF INDIA



Part-I

**Climatic Diversity of India**

Part-II

**Factors Affecting Climate of India**

Part-III

**Rhythm of Seasons**

Part-IV

**Distribution of Rainfall**

Part-V

**Change of Climate**

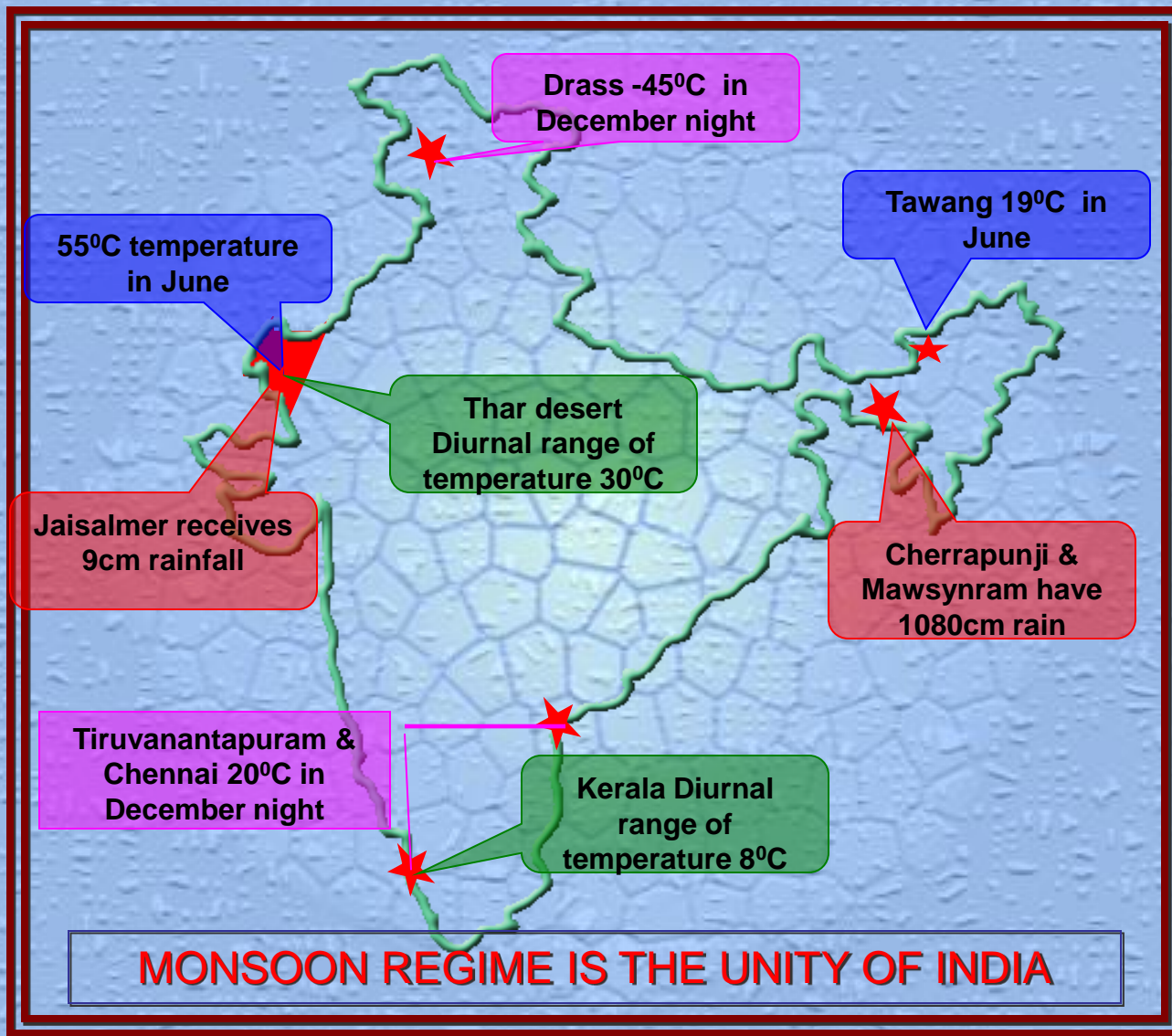




**Why does weather change spatially & temporally ?**

*Let us examine...*







## MORE DIVERSITIES.....

- ✓ Churu in Rajasthan records a temperature of  $50^{\circ}\text{C}$  or more on a June day.
- ✓ Snow fall over the Himalayas.
- ✓ Most parts of India receives rainfall during June to September.
- ✓ Tura of Meghalaya receives rainfall in a single day is equal to the total rainfall of Ten years in Jaisalmer of Rajasthan.

- ✓ It is  $19^{\circ}\text{C}$  in Tawang (Arunachal Pradesh) on the same day.
- ✓ Only rainfall over rest of India.
- ✓ Tamilnadu coast remains dry during these months.
- ✓ Very low rainfall in North west Himalayas and western Rajasthan which is equal to 10cm per year.

**MONSOON REGIME IS THE UNITY OF INDIA**





## FACTORS AFFECTING INDIAN CLIMATE

### RELATED TO LOCATION & RELIEF

- Latitude
- Altitude
- Relief
- Distance from Sea
- The Himalayan Mt.
- Distribution of Land & water

### RELATED TO AIR PRESSURE & WIND

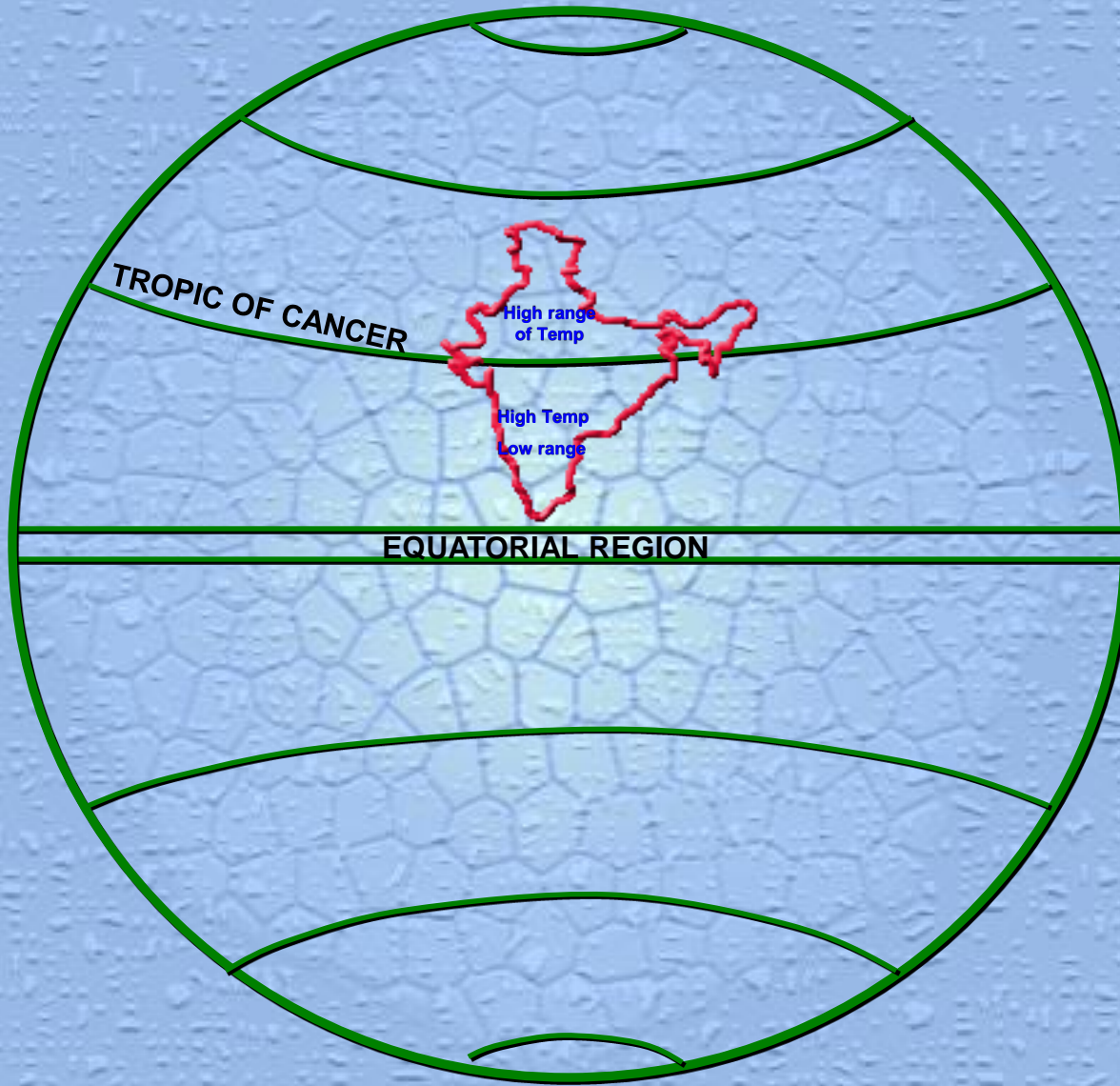
- Surface pressure & wind
- Upper air circulation
- Western cyclones



# LATITUDE

# CLIMATE OF INDIA

FAQ

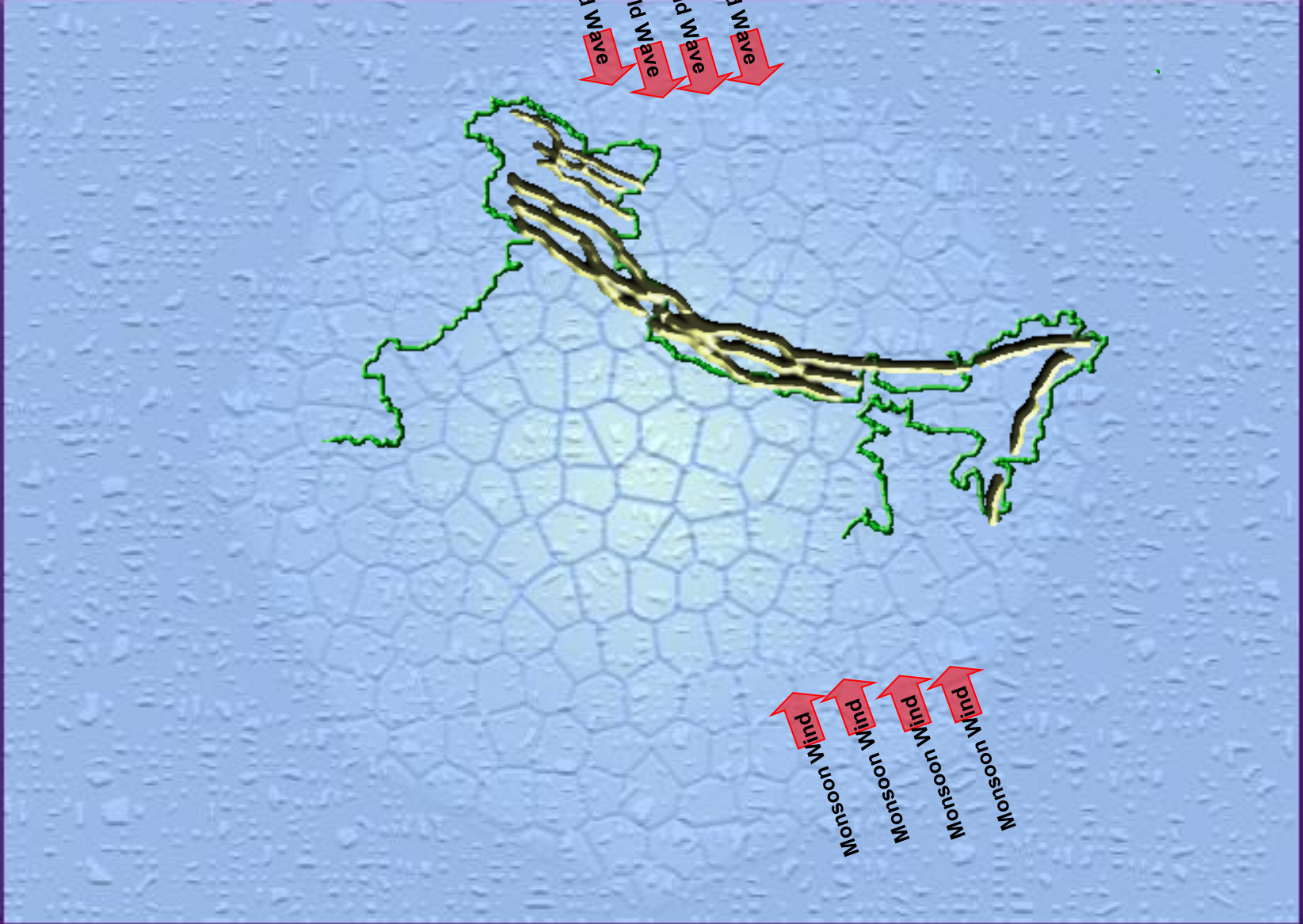




# THE HIMALAYAS- CLIMATIC BARRIER



# CLIMATE OF INDIA



# DISTRIBUTION OF LAND & WATER

# CLIMATE OF INDIA

FAQ





# DISTANCE FROM SEA

# CLIMATE OF INDIA



Coastal areas have equable climate where as Interior parts have extreme climate.

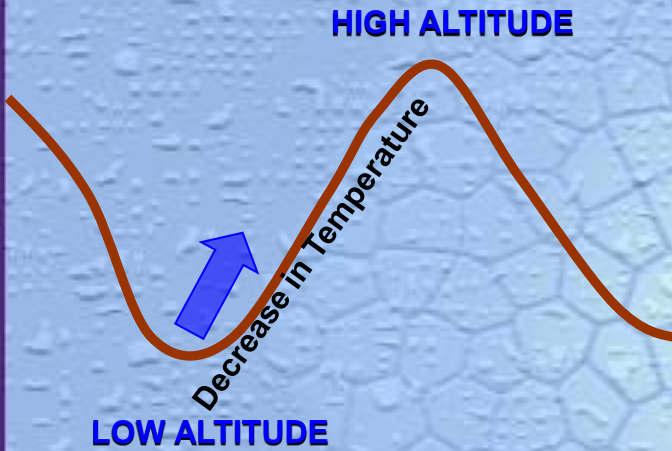


# ALTITUDE



FAQ

Temperature decreased from low to high altitude



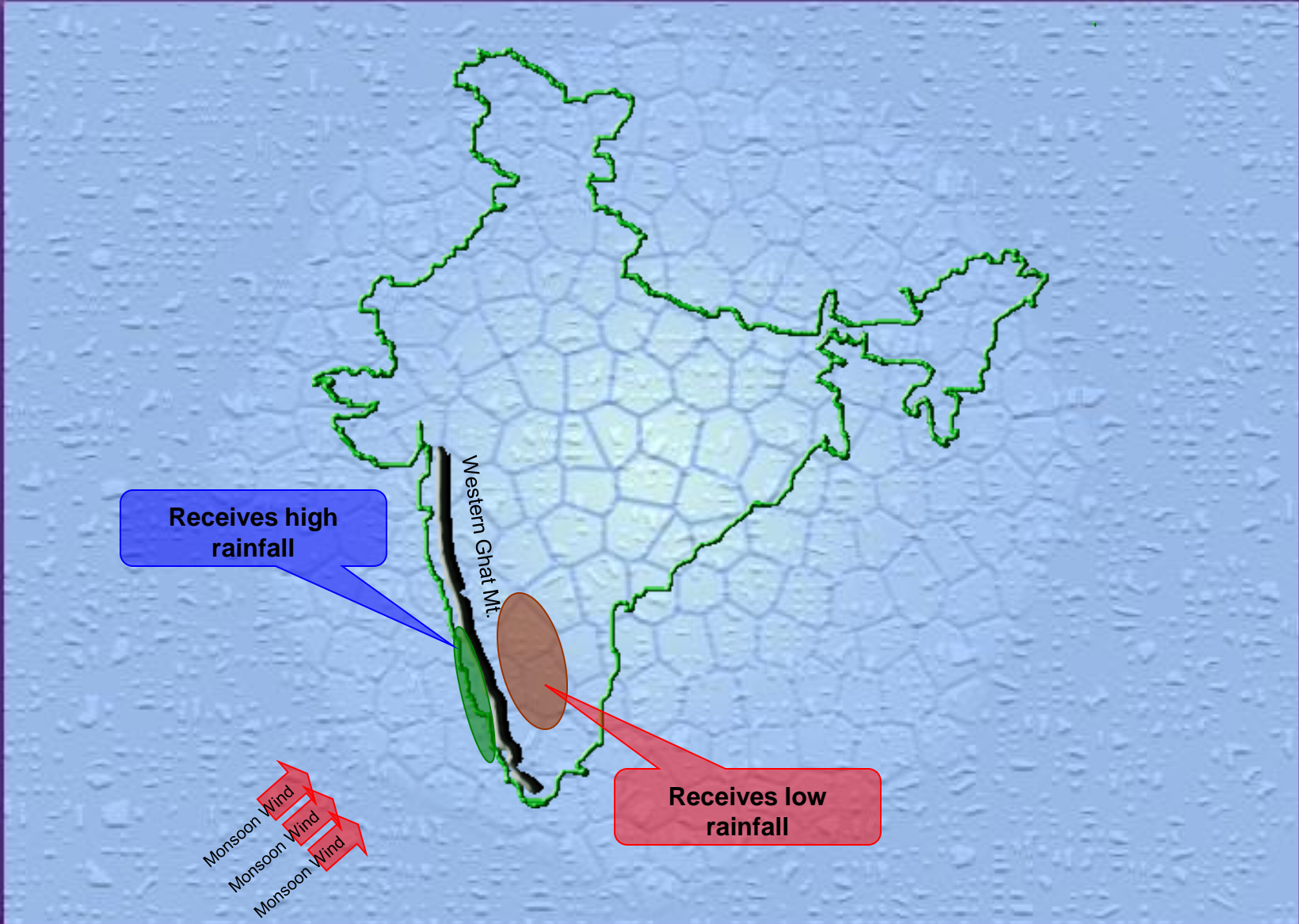


# RELIEF



# CLIMATE OF INDIA

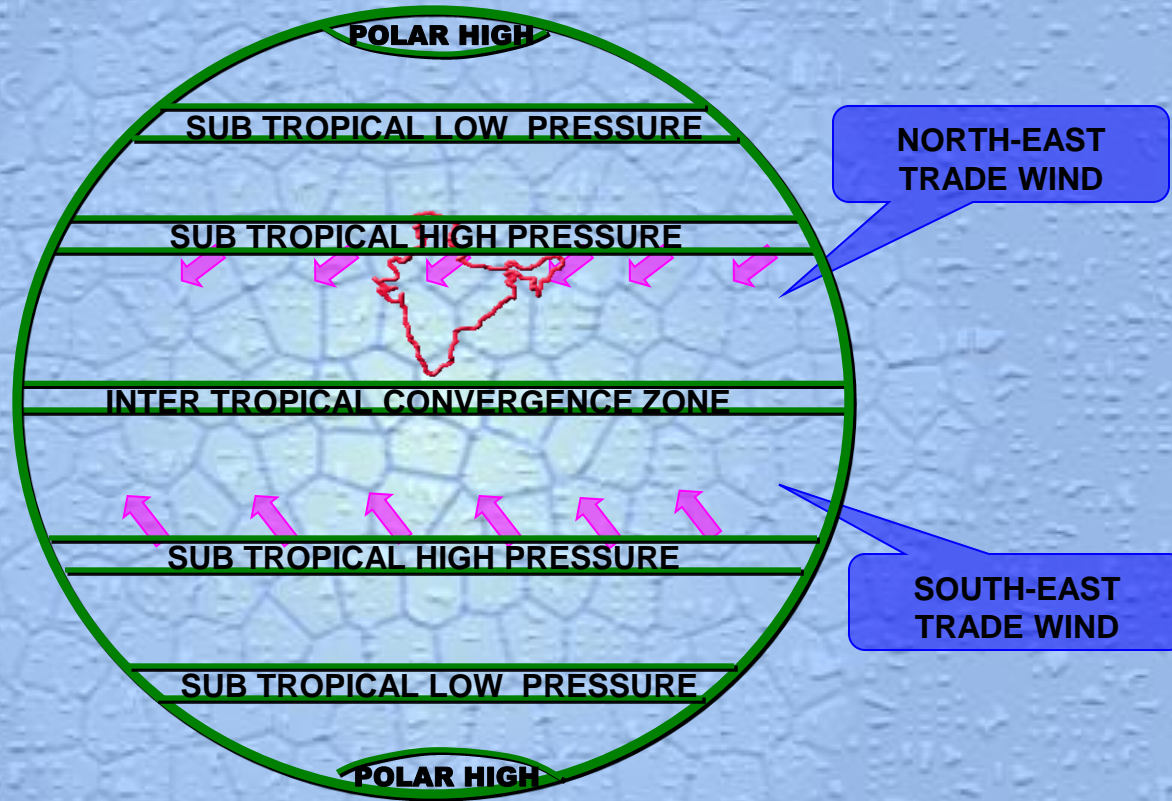
FAQ



# SURFACE WIND



# CLIMATE OF INDIA





# JET STREAM IN WINTER

CLIMATE OF INDIA



# JET STREAM IN SUMMER

CLIMATE OF INDIA



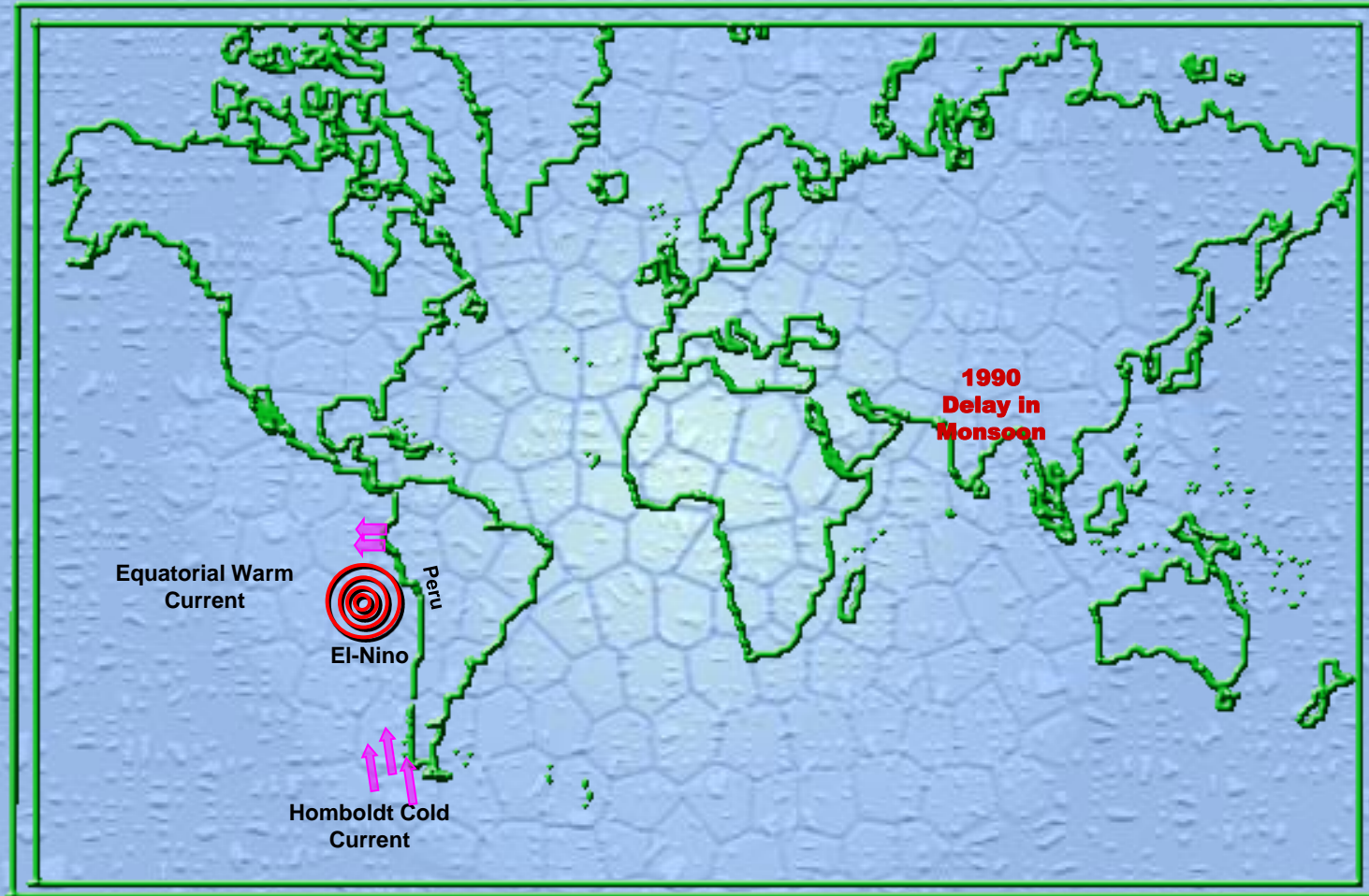


# WESTERN DISTURBANCE

CLIMATE OF INDIA

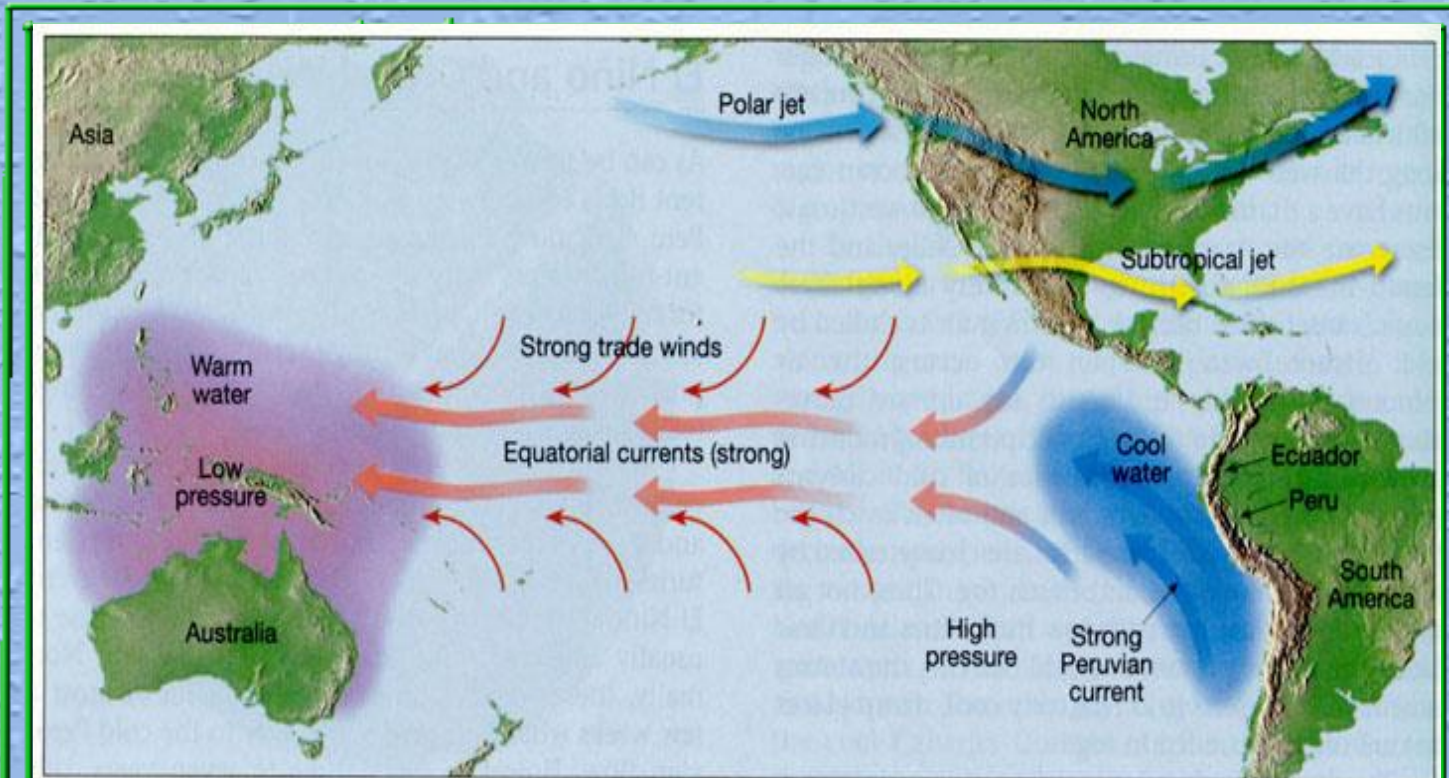


# EL-NINO EFFECTS





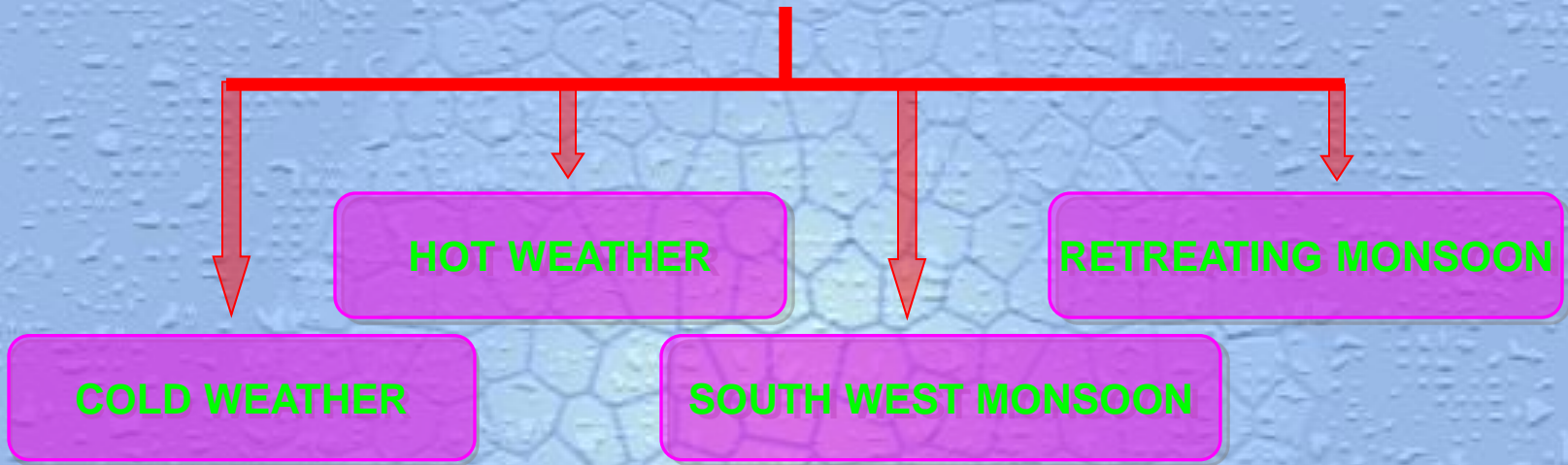
# SOUTHERN OSCILLATION



**Fig.6 Normally, the trade winds and strong equatorial currents flow toward the west. At the same time, an intense Peruvian current causes upwelling of cold water along the west coast of South America.**



## RHYTHM OF SEASONS



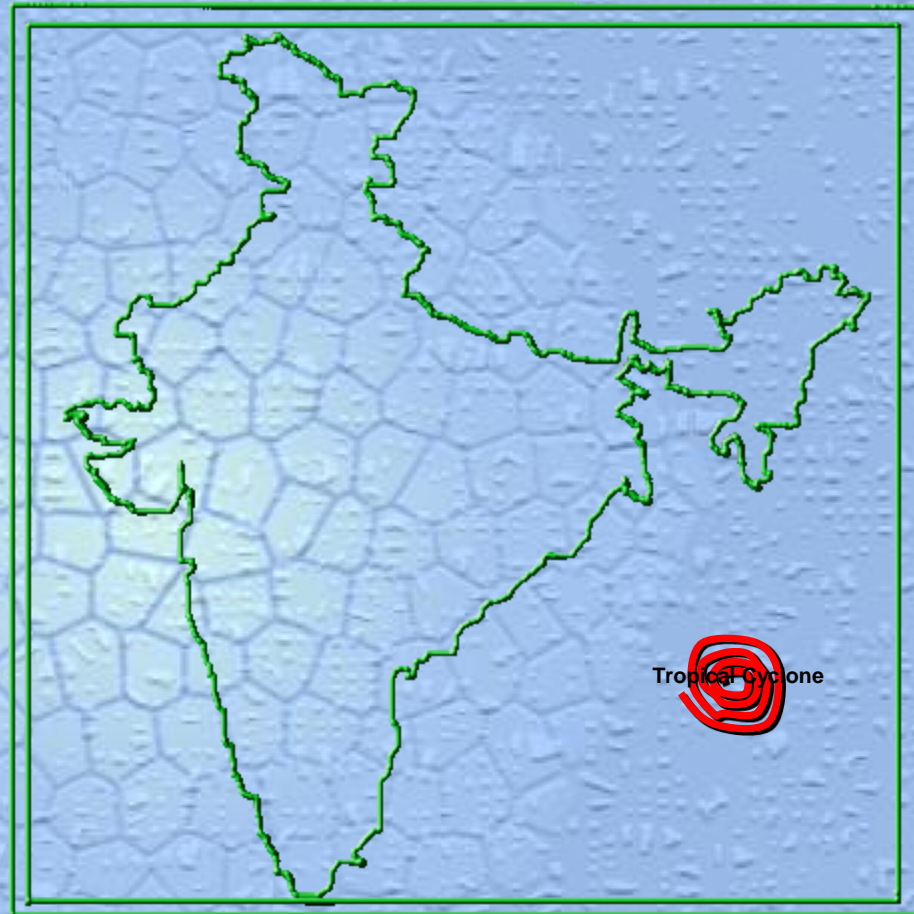
Let us discuss each of them individually





# COLD WEATHER SEASON

- ▶ It extends from December to February.
- ▶ Vertical sun rays shift towards southern hemisphere.
- ▶ North India experiences intense cold where as this season is not well defined in south India.
- ▶ Light wind blow makes this season pleasant in south India.
- ▶ Occasional tropical cyclone visit eastern coast in this season.

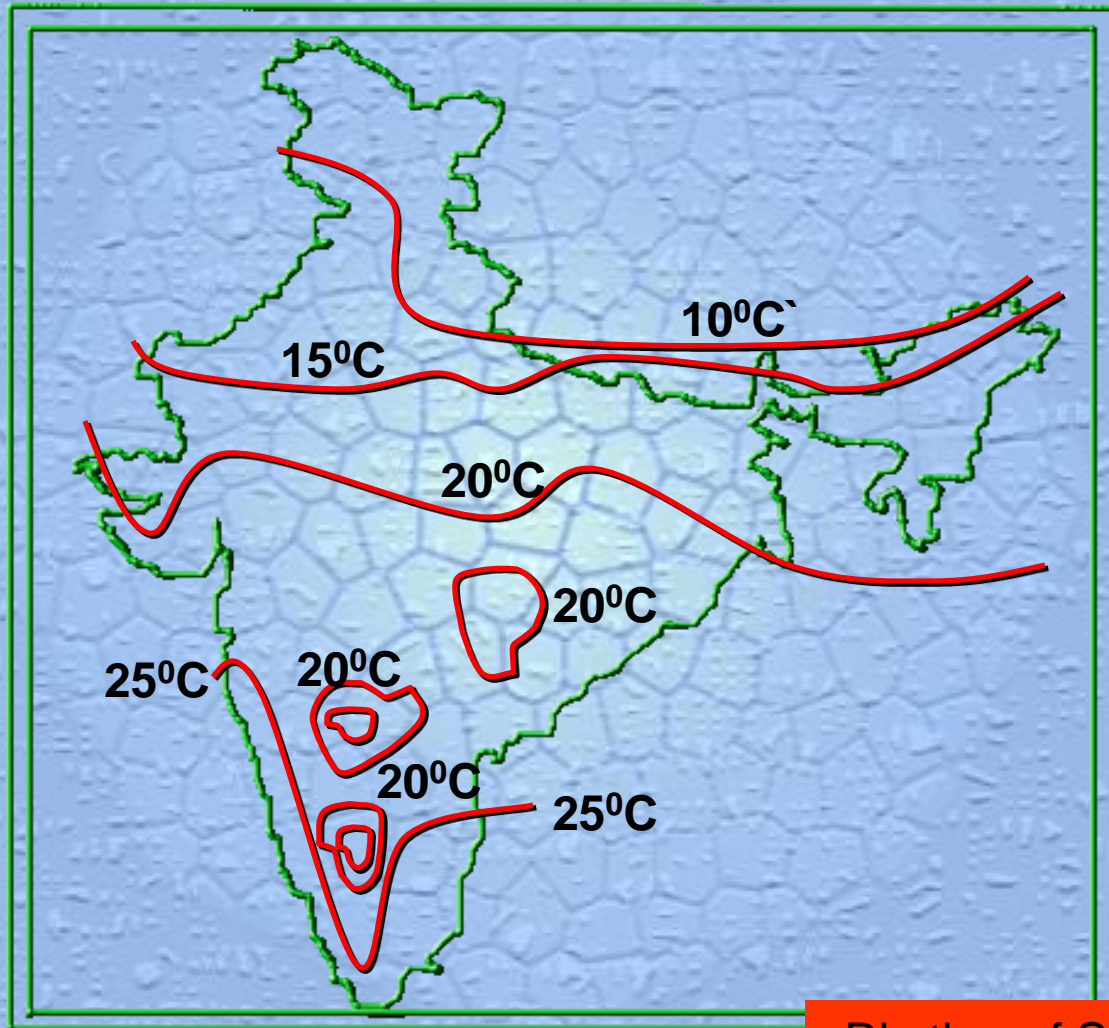


Rhythm of Seasons



# TEMPERATURE- JANUARY

CLIMATE OF INDIA

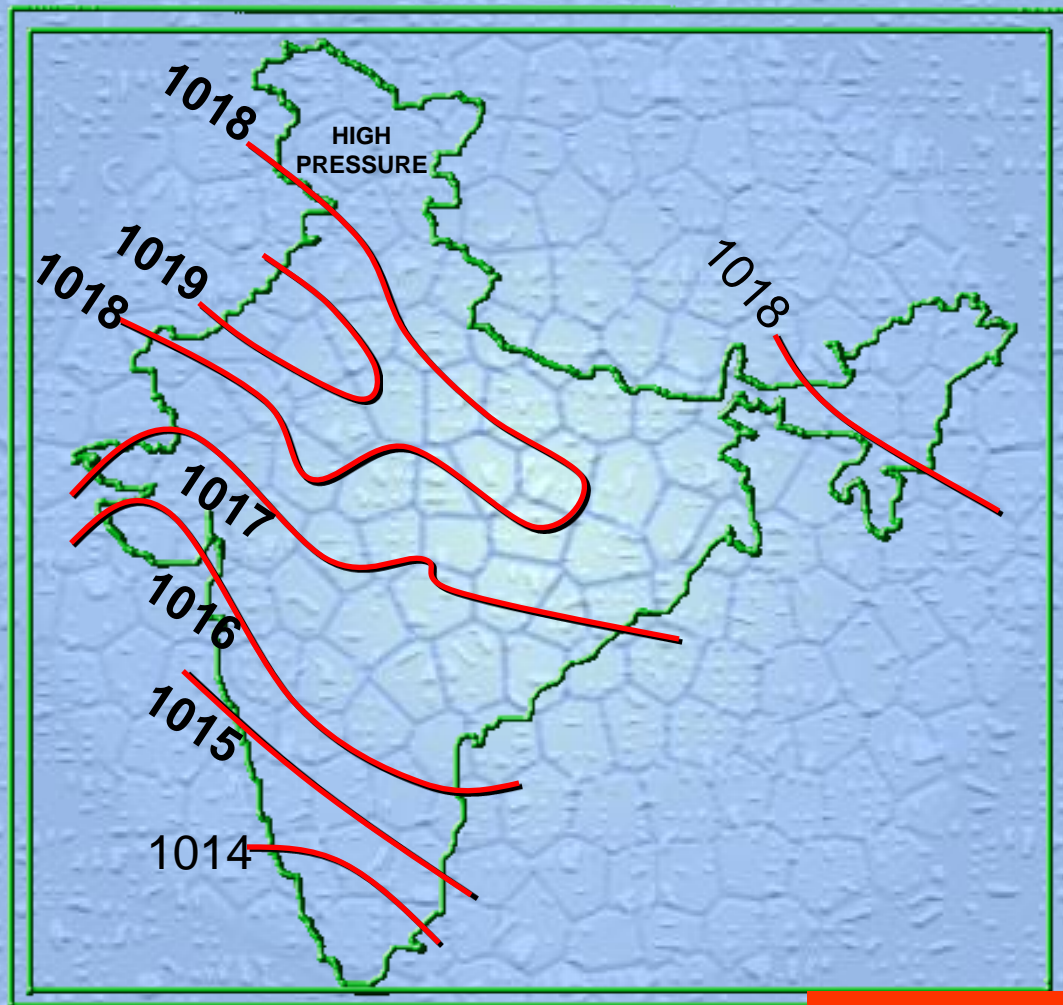


Rhythm of Seasons





# PRESSURE- JANUARY



Rhythm of Seasons



# WIND DIRECTION- WINTER

## CLIMATE OF INDIA

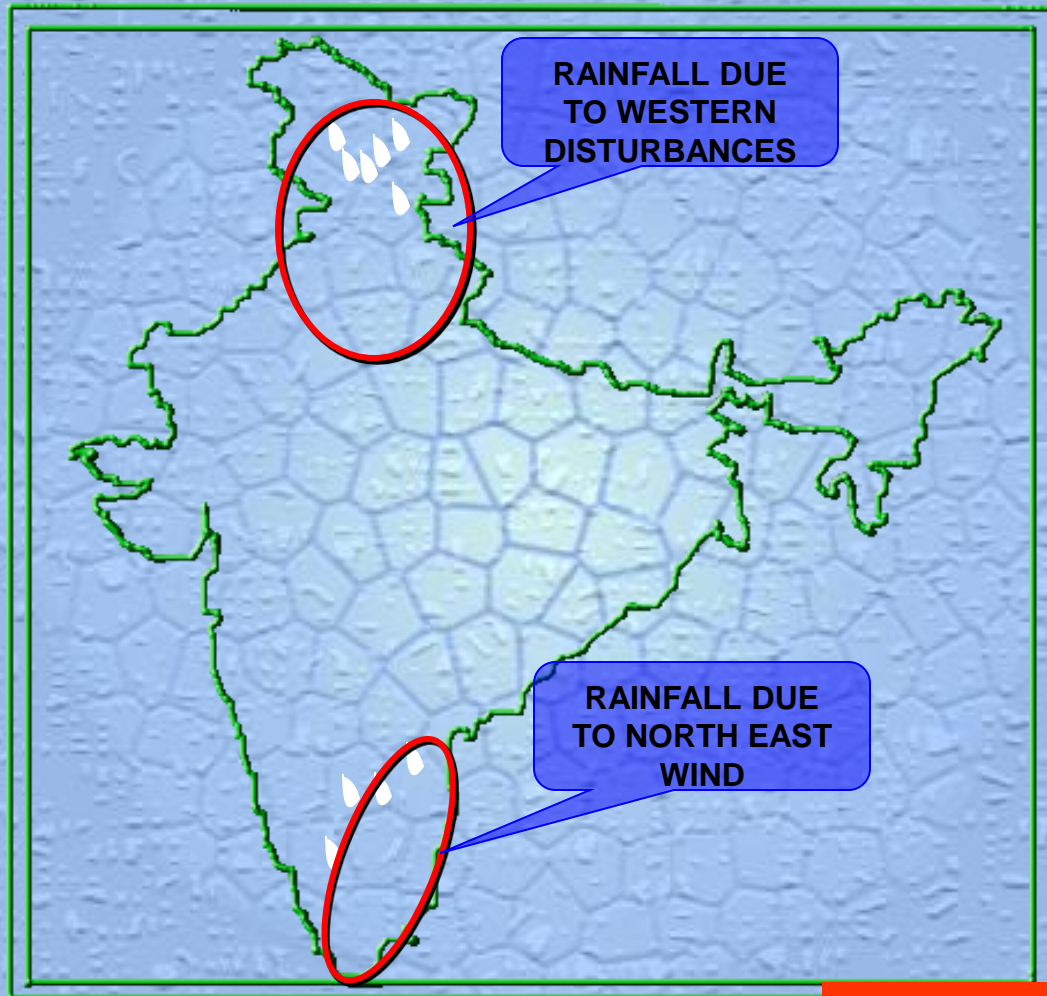


Rhythm of Seasons





# WINTER RAINFALL



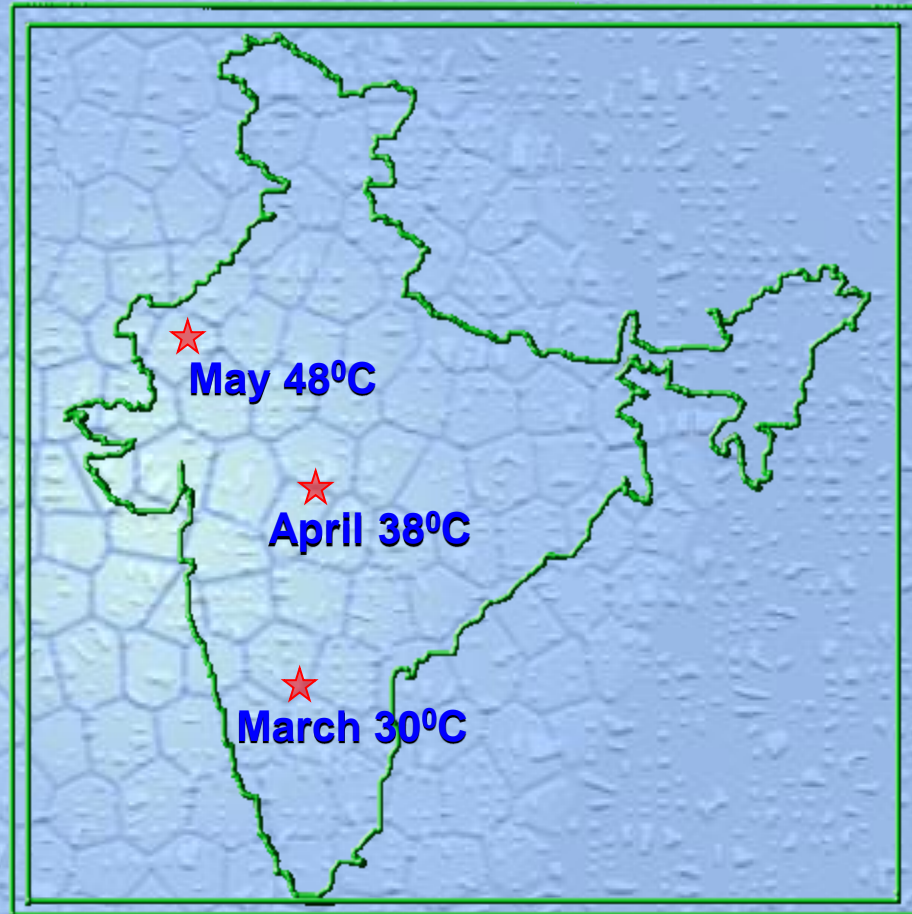
Rhythm of Seasons



# HOT WEATHER SEASON



- ▶ It extends from March to May.
- ▶ Vertical sun rays shift towards Northern hemisphere.
- ▶ Temperature rises gradually from south to north.
- ▶ Highest Temperature experiences in Karnataka in March, Madhya Pradesh in April and Rajasthan in May.



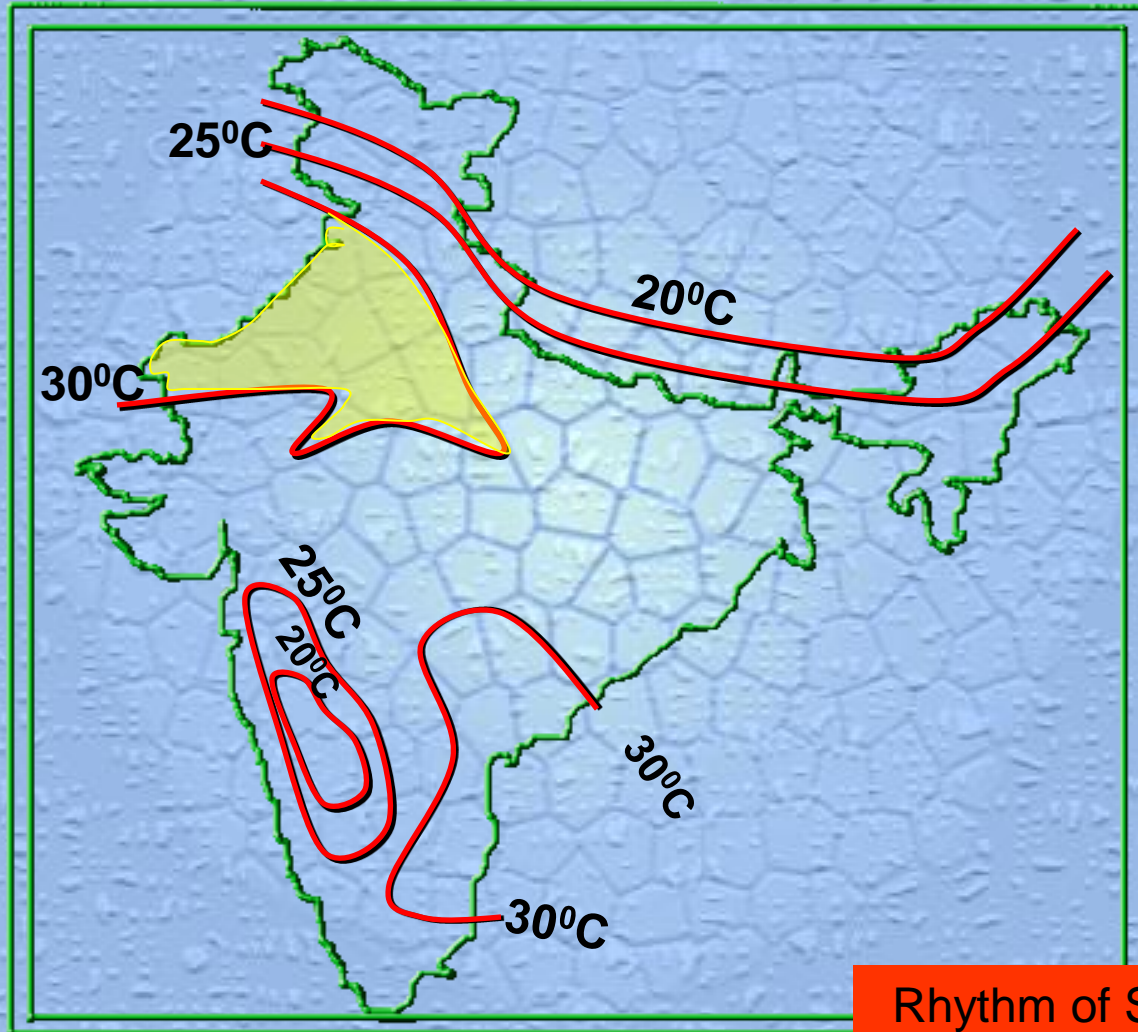
Rhythm of Seasons





# TEMPERATURE- JULY

CLIMATE OF INDIA

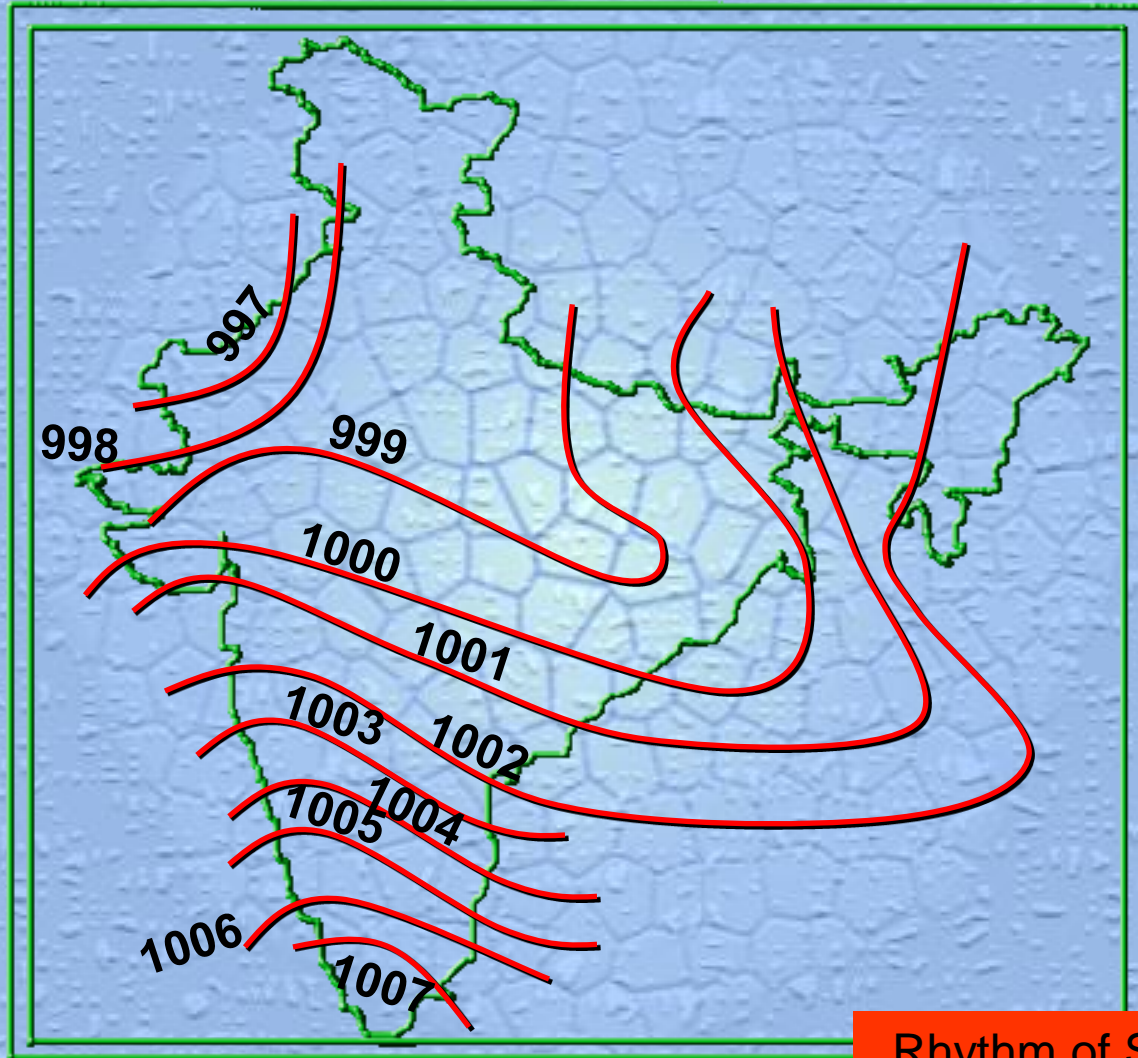


Rhythm of Seasons



# PRESSURE- JULY

# CLIMATE OF INDIA



Rhythm of Seasons





# STORMS IN HOT WEATHER SEASON

CLIMATE OF INDIA

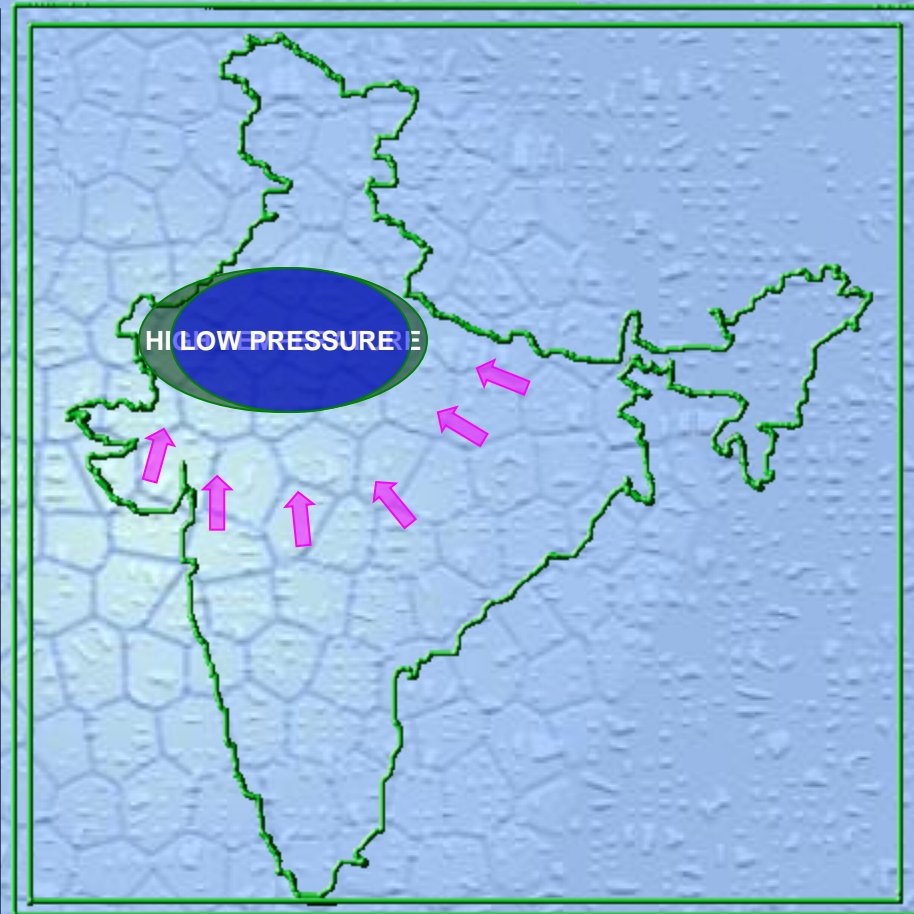
FAQ



# SOUTH WEST MONSOON SEASON



- ▶ It extends from June to September.
- ▶ Intense heating in north west India creates low pressure region.
- ▶ Low pressure attract the wind from the surrounding region.
- ▶ After having rains for a few days sometime monsoon fails to occur for one or more weeks is known as break in the monsoon.



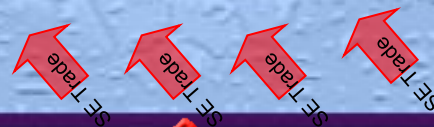
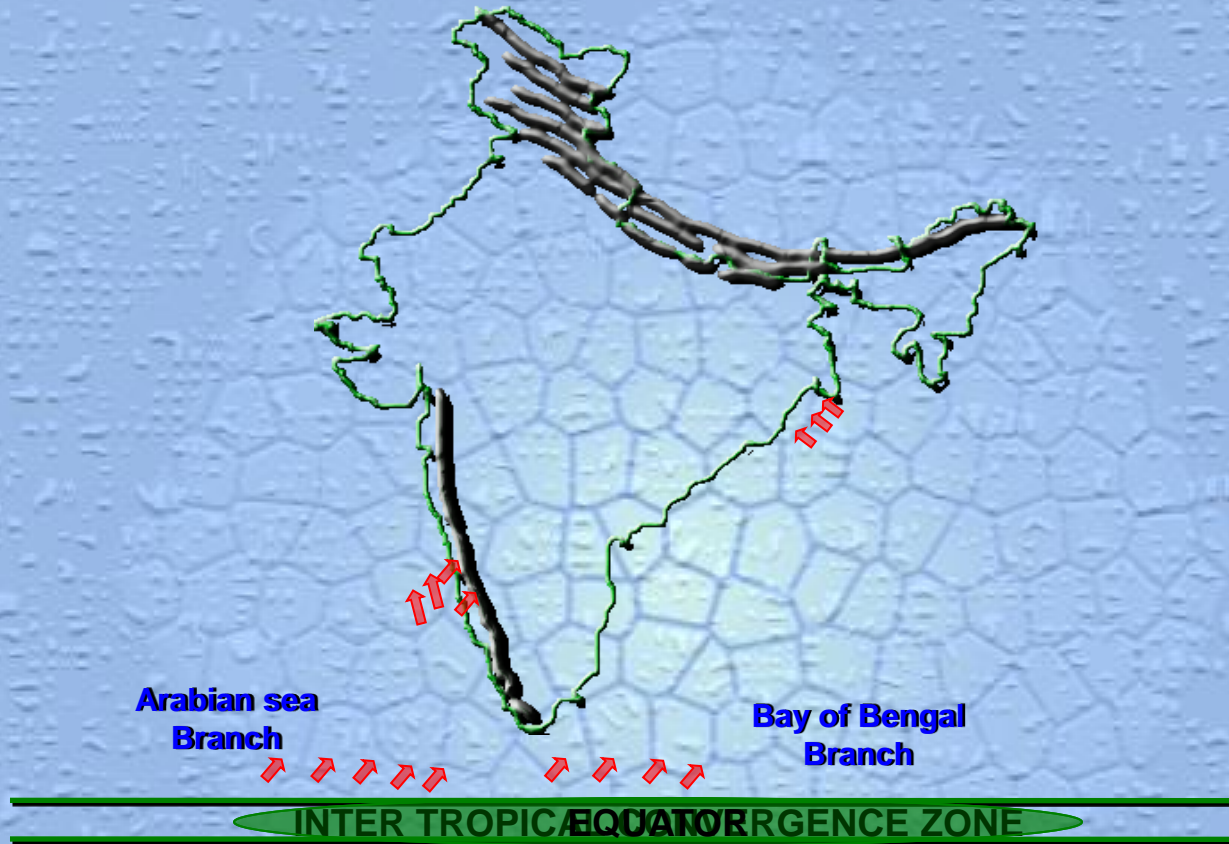
Rhythm of Seasons





# MONSOON WIND

# CLIMATE OF INDIA



Rhythm of Seasons



# ONSET OF SW MONSOON



Rhythm of Seasons





# RETREATING MONSOON SEASON

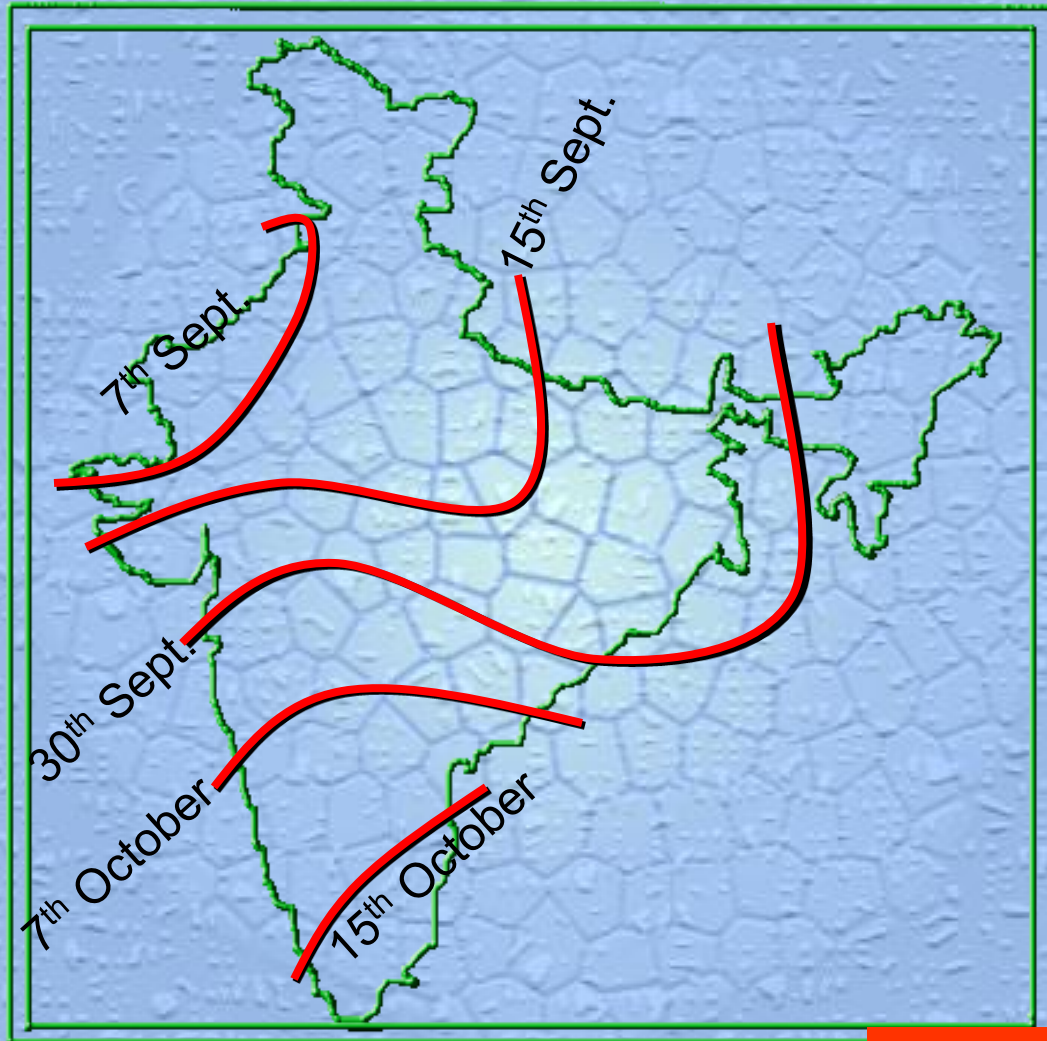
- ▶ It extends from October to November
- ▶ Vertical sun rays start shifting towards Northern hemisphere.
- ▶ Low pressure region shift from northern parts of India towards south.
- ▶ Owing to the conditions of high temperature and humidity, the weather becomes rather oppressive. This is commonly known as the 'October heat'



Rhythm of Seasons



# WITHDRAWAL OF MONSOON



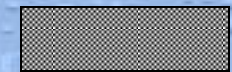
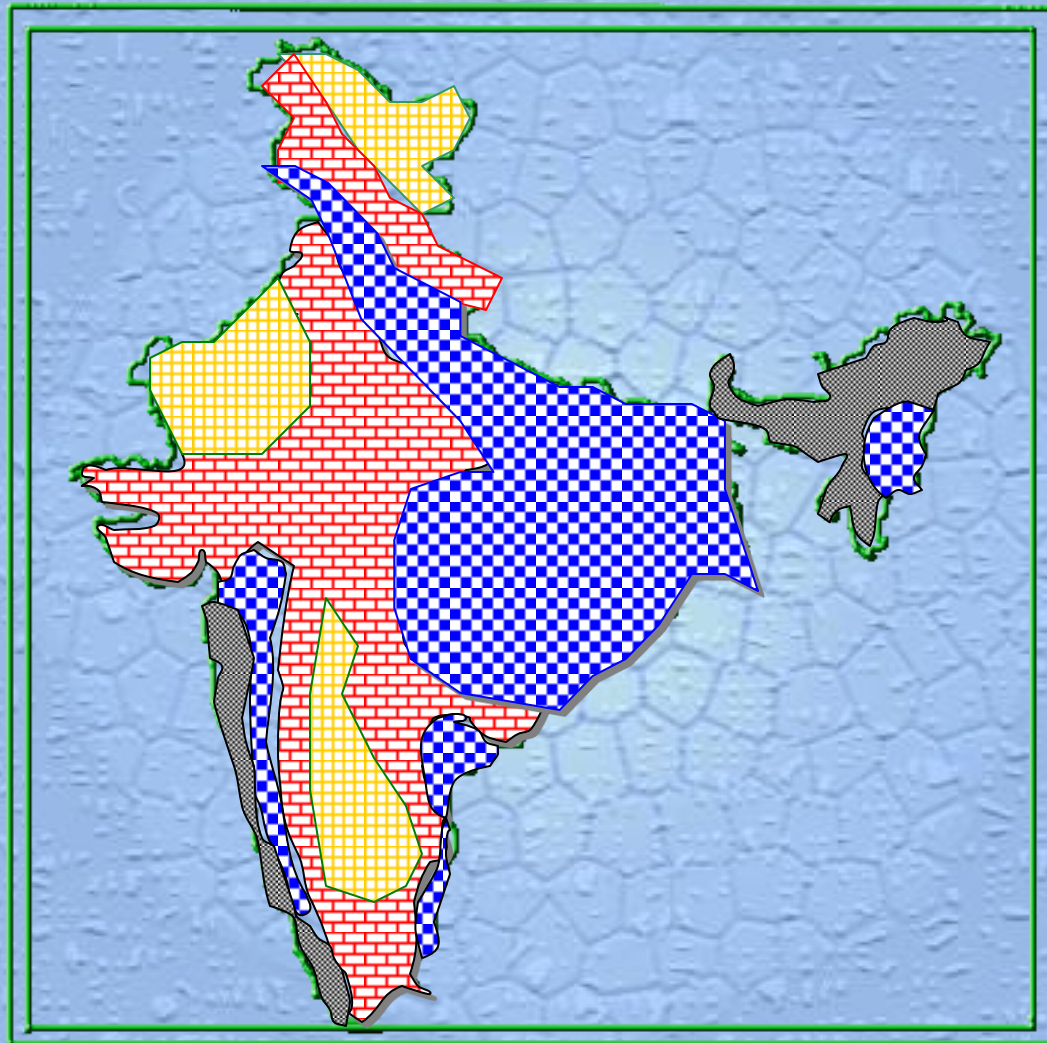
Rhythm of Seasons





# DISTRIBUTION OF RAINFALL

## CLIMATE OF INDIA



> 200cm



100-200cm



50-100 cm

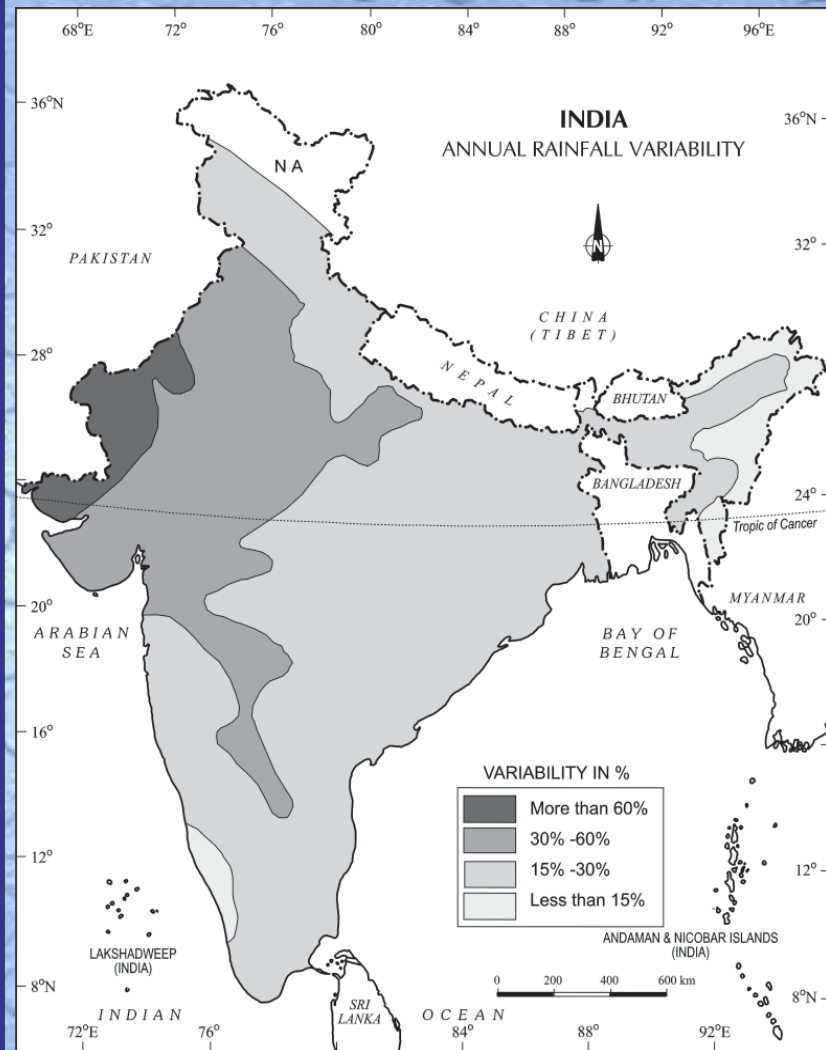


< 50cm



# VARIABILITY OF RAINFALL

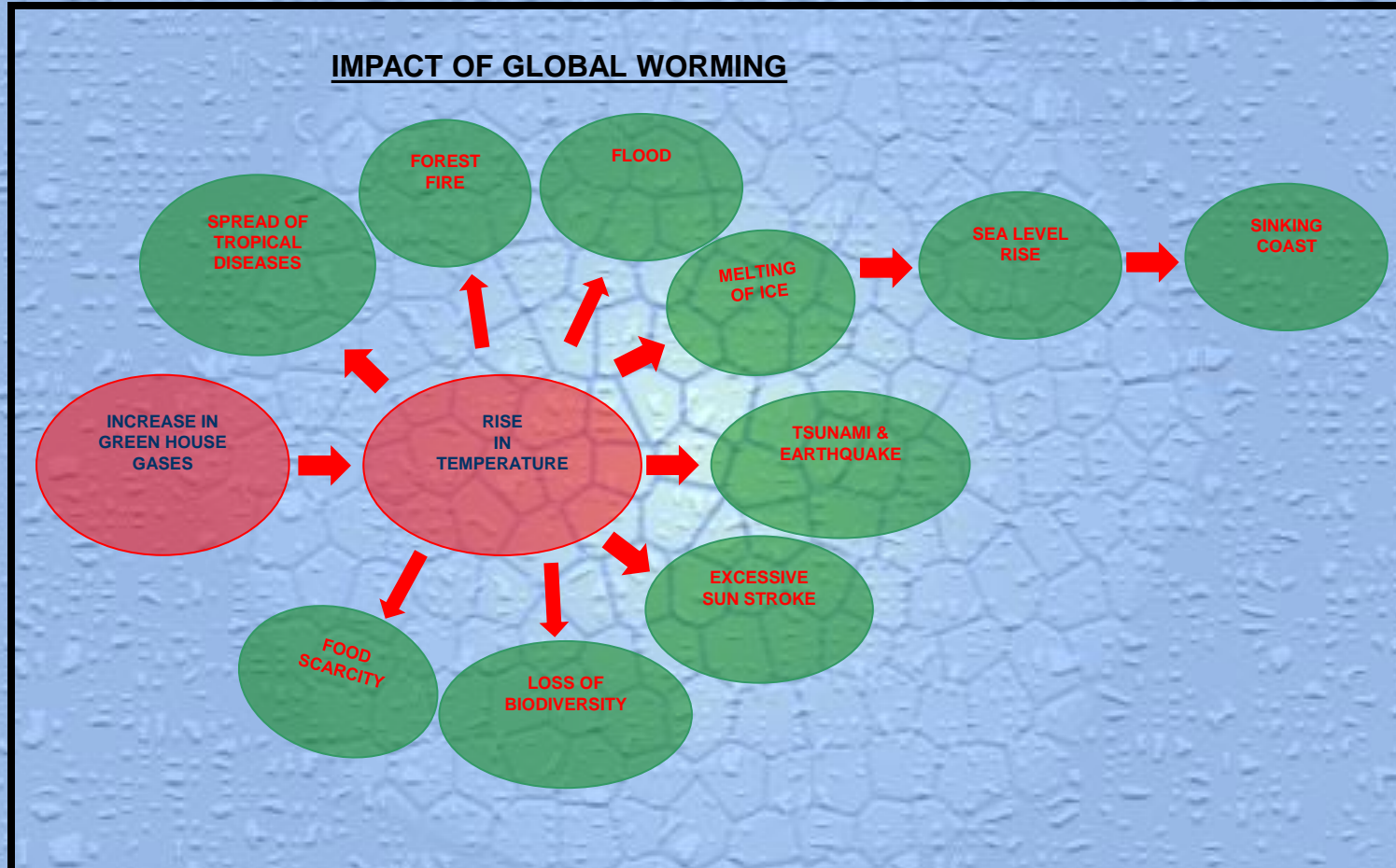
- ▶ The variability of rainfall is computed with the help of the following formula:  
$$C.V. = \frac{\text{Standard Deviation}}{\text{Mean}} * 100$$
- ▶ Variability of less than 25% exist in Western coasts, Western Ghats, northeastern peninsula, eastern plain of the Ganga, northern India, Uttaranchal, SW J & K & HP.
- ▶ Variability of more then 50% found in Western Rajasthan, J & K and interior parts of Deccan.
- ▶ Region with high rainfall has less variability.







## IMPACT OF GLOBAL WARMING



# SOME INTERESTING FACTS

- ▶ Temperature increased by  $0.6^{\circ}\text{C}$  in 20<sup>th</sup> century.
- ▶ Eleven out of twelve hottest years are within 1995 to 2006.
- ▶ Annual rate of increase of  $\text{CO}_2$  is 1.9ppm after 1995.
- ▶ Concentration of methane increased from 700ppb in 1750 to 1745ppb at present and Nitrous Oxide from 270ppb to 314ppb where as CFC increased from zero to 533ppb.
- ▶ Rising of temperature to  $3^{\circ}\text{C}$  will lead to melting of all ice on earth surface and sea level rise upto 15 feet.
- ▶ Existence of large cities like Venis, Bangkok, Sanghai, Kolkota and Dhaka will be in danger.





# CLIMATE CHANGE & INDIA

CLIMATE OF INDIA



- ▶ India has long coast line and rise of sea level will submerge large area.
- ▶ A population of 7.1 million living in coastal areas will be affected.
- ▶ Production of crops like wheat, rice etc will decrease.
- ▶ The natural disasters like cyclone, floods and drought will increase in frequency as well as intensity.



# WHAT CAN BE DONE???



- ▶ Switch off the light, fan, TV and other energy using gadgets when they are not in use.
- ▶ Do not use those equipments that pollute or consume more energy.
- ▶ create public awareness.
- ▶ use renewable energy resources like solar, wind, biomass etc.
- ▶ International conferences like Earth Summit, 1992, Kyoto protocol, Copenhagen summit, 2009 are some steps to bring consensus for crusade against Climate Change.





# TEST YOUR KNOWLEDGE

## CLIMATE OF INDIA



1. Name the factors affecting climate of India .

Answer

2. What is meant by El-nino?

Answer

3. Why the south western part of peninsular India receives high rainfall?

Answer

4. Name the important green house gases.

Answer

5. How altitude affects climate?

Answer

6. How distance from sea affect climate?

Answer

7. What is meant by mango shower?

Answer

8. What is meant by Inter Tropical Convergence Zone?

Answer



# EVALUATION RUBRIC

## CLIMATE OF INDIA



Sl No.	Evaluation points	Excellent	Very Good	Good
1	Participation of all members of the group	All the members have participated (5 Marks)	Some Members have participated. (3 Marks)	Few members have participated. (2 Marks)
2	Efficient use of technology in self-learning	Technology used for presentation, collection of information and understanding. (5 Marks)	Technology used for presentation and collection of information. (3 Marks)	Technology used for presentation only. (2 Marks)
3	Collection of new information	Information collected are new, relevant and latest. (5 Marks)	Information collected are new and relevant. (3 Marks)	Information collected are new only. (2 Marks)
4	Presentation of Topic in the classroom	Presentation of topic was clear, able to clarify doubts and with proper flow of topic. (5 Marks)	Presentation of topic was clear and able to clarify doubts. (3 Marks)	Presentation of topic was clear only. (2 Marks)
5	Development of Innovative Thinking	Innovation in presentation, collection of new information and use of technology. (5 Marks)	Innovation in presentation and collection of new information. (3 Marks)	Innovation in presentation only. (2 Marks)
	Total	25	15	10
	Mark Obtained			

Evaluate the classroom presentation of other groups and assign marks.





# CITATION

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**Prepared by:**  
**Faizan Mir**  
**9<sup>th</sup>**  
**Roll no.08**

