# **13. WIND**

### Defination

- Due to horizontal abnormalities, air moves from the areas of high pressure to the areas of low pressure.
- This horizontally moving air is called wind.

## Movement of the wind

(a) Because of Coriolis force all winds are deflected to the right clockwise in the Northern Hemisphere.



Movement of the wind

- (b) While they are deflected to the left anticlock wise in the Southern Hemisphere with respect to the rotating earth.
- Coriolis force also increases with the increasing wind velocity.
- Since this phenomenon was firstly proved by a Frence scientist Ferrel, it is called Ferrel's Law

# Types of winds



# **Prevailing wind**

- It's other name is planetary wind
- It's also known as permanent wind
- The winds blowing almost in the same direction throughout the year are called pervailing winds.
- Prevailing wind are three types
  (a) Trade winds

## (b) Westerlines winds

## (c) Polar winds

## (a) Trade winds-

- These are the permanent winds blowing in both the hemispheres.
- Trade winds are the winds having fixed paths.
- Trade winds converge and rise causing convectional rainfall in the equatorial region near the equator.

## (b) Westerlies winds-

- These winds are best developed in the 40°–65° latitudes.
- Westerlis wind known as veries name due to its nature.
  - (a) On 40° SLatitudes- These wind known as Roaring forties.
  - (b) On 50°S Latitudes- These wind known as Furious Fifties.
  - (c) On 60° SLatitudes- These wind known as Shrieking Sixties.
  - These names are given by the sailors who wer being effected by those westerlies.

# (c) Polar winds–

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- Polar wind blows from the polar high-perssure belts to the sub-polar low pressure belts.
- These wind have very low temperature.

# 2. Seasonal winds -

- Seasonal winds change their direction of blowing with the changing seasons.
- These are also calee as Periodic winds.
- Seasonal winds are of three types-
  - (a) Monsoon winds.
  - (b) Land and Sea Breezes.
  - (c) Mountain and Valley Breezes.
- 3. Local winds -
- This winds blow due to local variation in the tem perature and pressure.
- These wind influence a very small area.
- Hot local winds raise the temperature of the blowing area



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- Cold local winds sometimes bring the temperature of the affected area below the freezing points.
- These local winds blow in the lower layers of the Troposphere.

## Some important local winds are -

# Chinook-

- Chinook means the 'snow-eater' (adoped from the language of Red Indians).
- This is the hot and dry wind blowing along the eastern slope of the Rockies
- Chinook covers an area from the southern part of Colorado in the south to British Columbia in Canada in the North.
- Due to its effect, the snow melts and green grass sprouts even in the winter.
- This wind is helpful for the animal rearing as it makes the grasslands snow free.

## Foehn-

- This is similar to Chinook and blows along the northern slope of the Alps.
- It affects the Switzerland most.
- It melts the snow, makes the weather pleasant and helps in early ripening of the grapes.

# Sirocco-

- This is a Warm, dry and dusty wind.
- It is blows in northerly direction from the Sahara Desert.
- It's crossing over the Mediterranean Sea reaches Italy, Spain etc.
- It is also known as **Blood rain** because of its redish sand brought alongwith it from Sahara desert.
- It is very much destructive to agricultural and fruit crops.
- There are different local names for Sirocco in Africa e.g.
  - (a) Khamsin in Egypt
  - (b) Gibli in Libya
  - (c) Chilli in Tunisia.
  - (d) Levanter in Spain
  - (e) Leste in Maderia island

# Black Roller—

These are the warm and dry dusty winds, blowing in the great plains of North America.

#### Yoma-



This is the warm and dry wind like 'Santa Ana', blowing in Japan.

### Temporal-

• This is the monsoon wind blowing in the Central America.

# Simoom-

- This is the warm and dry wind blowing in the Arabian Desert.
- It causes dust storms and obstructs visibility.

## Samoon-

- This is the wind blowing in the Kurdistan region of Iran and Iraq.
- It has the characteristics similar to Foehn.

## Shamal–

This is the warm, dry and sandy wind, blowing in the deserts of Iran, Iraq and UAE.

### Seistan-

This is the high velocity northerly wind blowing in the eastern parts of Iran in summer.

## Haboob-

- This is the fast blowing wind full of dust and sand.
- It is blowing in the northern parts of Sudan, especially near Khartoum.
- It obstructs visibility.
- It is Causes rain with thunder storm.

### Karaburan–

- These are the dust laden fast blowing winds in the Tarim Basin in the Central Asia.
- These winds blow towards the North-East.

# Koimbang-

- These are winds similar to Foehn.
- It is blowing in Java (Indonesia).
- It is harmful to the tobacco crop.

# Harmattan–

- This is the warm and dry wind blowing from northeast and east to the west in the Sahara desert.
- The weather becomes suddenly dry and pleasant in the western coast of Africa, at the arrival of Harmattan.
- Therefore, it is called **'Doctor'** in the Guinea coastal area.

# Brick Fielder–

• This is the warm and dry wind blowing in the Victoria province of Australia.

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### Norwester-

• This is the warm, dry and gusty wind blowing in northern New Zealand.

#### L00-

- This is a hot and dry wind blowing in the northern India from the north west and west to the east.
- It is sometimes called 'heat wave'.

## Santa Ana-

• This is the warm and dry wind blowing in California (USA).

### Mistral–

- This is the cold local wind blowing in Spain and France from north-west to south-east direction.
- While blowing through the narrow valley of the Rhone River, they become stormy northerly cold winds.
- The arrival of Mistral causes sudden drop in air temperature to below freezing point.

### Bora-

- It is an extremely cold and dry north-easterly Sea.
- It is similar to mistral and affects Italy and Yugoslavia.

#### Blizzard-

- It is a violent stormy cold polar wind laden with dry snow.
- It is prevalent in north and south Polar Regions.
- These winds affect Canada and USA.
- On the arrival of Blizzards, the air temperature drops below the freezing point.
- In the Tundra and Siberian regions of Russia, it is known as **Purga** and **Burran**, respectively.

## Pampero-

• These are the cold polar winds blowing very fast in the pampas region of South America.

#### Juran–

- These are the cold and dry winds.
- It is blowing from the Jura Mountains (Switzerland) to the Geneva Lake (Italy), in night.

#### Southern Burster –

• This is a fast blowing cold and dry wind in New South Wales (Australia).

#### JET STREAM

- These are the winds blowing with great velocity near the Tropopause.
- The jet streams are active in 150 km wide and 2-3 km thick transition belt.
- The general velocity of these winds is about 150-200 km/hour.
- But sometime the velocity at the core of the jet stream is found to be 325 km/hour.
- Jet streams are generally found in the North Hemisphere only.
- They are found over the South Pole In the South Hemisphere.
- They are found in the form of light **Rossby Waves** over other latitudes also.
- The reason behind the origin of these jet streams is the difference in surface temperature and pressure gradient.
- North- east Jetstream is responsible for rain is summer in India.



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