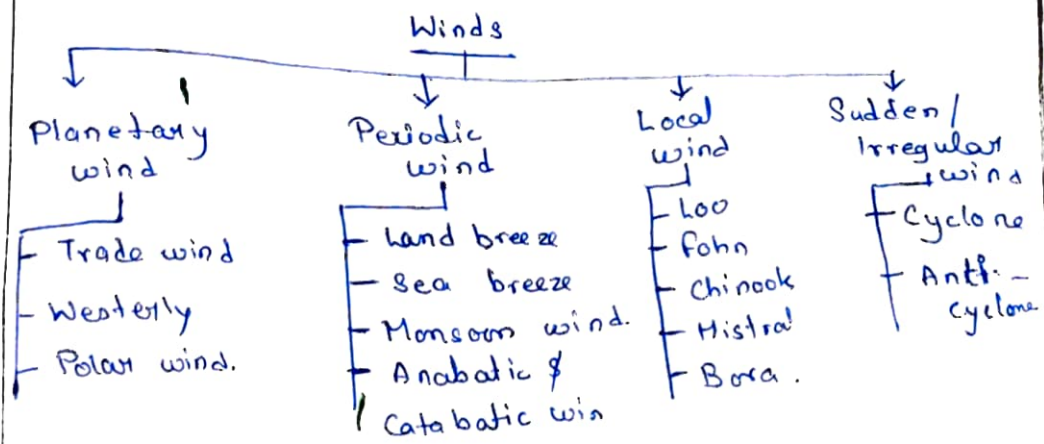
Wind.

What is pressure gradient or barometric slope?

The arrangement of isobar lines create the slope of pressure along which wind blows. If the isobar lines are closely spaced, the speed of wind will be more oppositely if isobar line are widely spaced, the speed of wind will be less this arrangement of isobar line are called pressure gradient or barometric slope

Classify winds with examples. and suitable diagram.



Trade wind - (i) blows from sub-tropical high pressure belt to equatorial low pressure belt.

(ii) trade wind cause rainfall in eastern part thus wester part remain dry

(iii) Blow NE in northern hemisphere and SE in southern hemisphere.

(iv) Helps to determine the location of the place.

Westerly - (i) blow from SW direction in northern hemisphere

(ii) westerly change their direction and velocity in northern hemisphere. Thus they are called variables

(iii) In the southern hemisphere westerly blow uninterruptedly over vast ocean and produce great noise at 40°S latitudes this are called roaring forties. at 50°S latitude they are called furious fifties and at 60°S latitud it is called shrieking Sixties.

(iv) Westerly cause rainfall during winter.

Polar wind - (i) blow NE direction in northern hemisphere and SE direction in southern hemisphere

(ii) Cold and dry winds. These winds causes blizzards

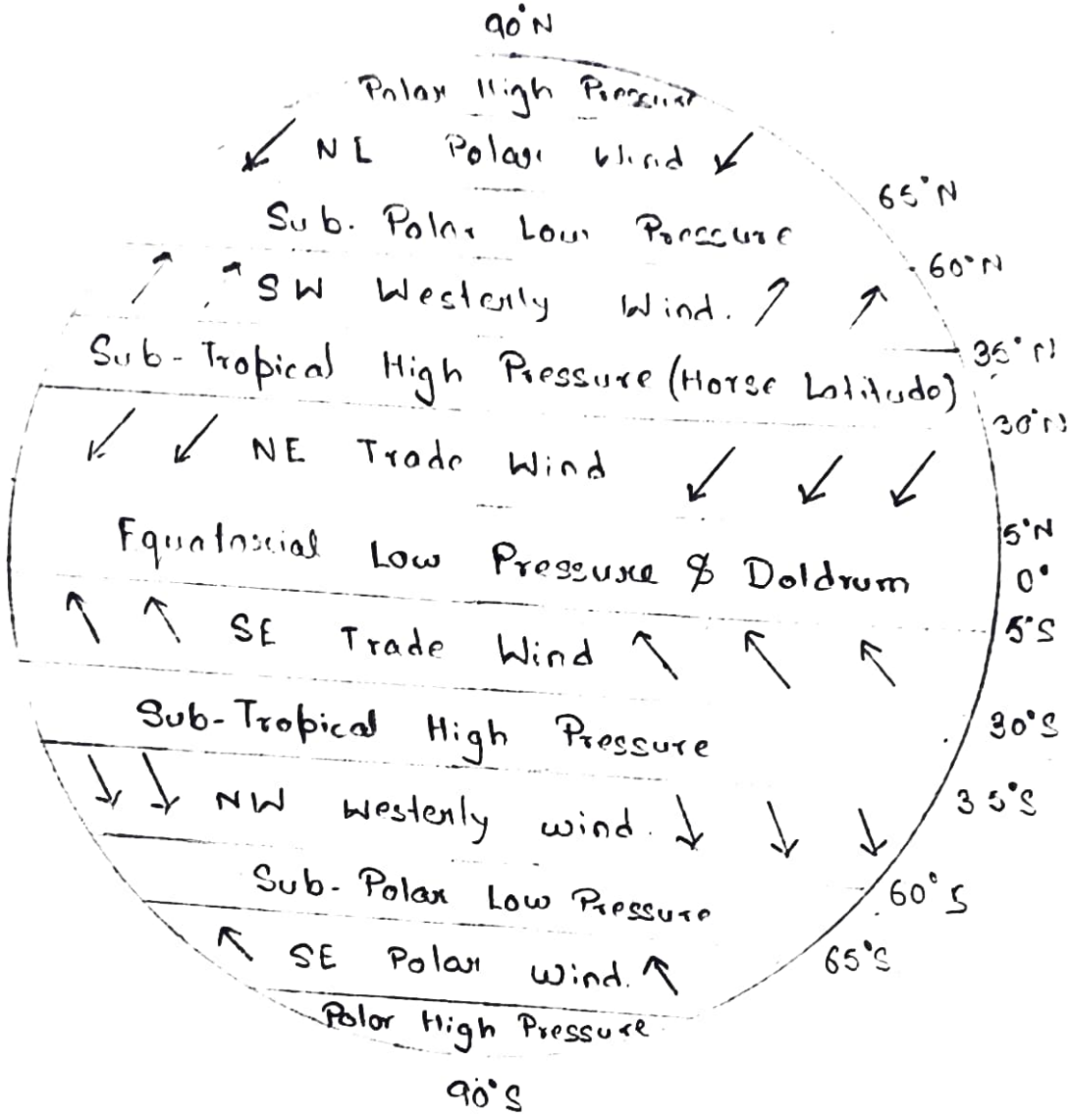
Explain the relationship b/w pressure belts and planetary winds. with suitable diagram.

Air pressure and wind system are closely related with each other. The direction of winds are determined by the arrangement of high pressure region to low pressure region. There are seven pressure belts on Earth which are alternatively arranged. The winds which blow permanently throughout the year in the some direction are called planetary winds. Trade winds, westerlies and Polar winds are the planetary winds.

Trade wind - blow from Sub tropical high pressure belt to Equatorial low pressure belt in NE and SE direction in the norther and southern hemisphere. According to Ferral's Law These wind defled to their right in the norther hemisphere and to their left in the southern hemisphere These are called easterlies.

Westerlies - blow from Sub Tropical High pressure belt to sub Polar low pressure belt in the south west and north west direction in the northern and southern hemisphere respectively - There winds have high velocity in the southern hemisphere. But in the northern hemisphere its velocity is changed.

Polar winds - blow from Polar High Pressure belt to Sub polar low pressure belt in NE and SE direction in the northern and southern hemisphere respectively. So these are called easterlies.



Pressure belts and Planetary Winds

What is the relation b/w RH and air ~~temper~~ temperature.

The relation b/w RH and air temp are inverse to each other.
When the air temp increases the capacity of holding water vapour in the air is also increased thus the ratio decreases. when temp decreases the capacity of holding water vapour in the air is also decreased the the ratio ~~der~~ increases.

What is eye of cyclone?

The centre of severe low pressure at the centre of cyclone where the wind start whirling and move in upward direction

Describe the different pressure belts on Earth's surface with suitable diagram.

A pressure belt is a zone of uniform width, around the earth in an east-west direction parallel to the lines of latitude. On the earth's surface, there are seven pressure belts. They are

Equatorial Low pressure belt - The equatorial belt of low pressure extends from the equator to 5°N and 5°S latitudes. Low pressure prevails here due to.

(a) Vertical rays of sun cause intense heating causing air to expand and rise up as convection current

(b) Presence of vast expance of watermass causes air to pick up water vapour, thus lighter air rises creating low pressure

(c) The deflection of rising air to the north and south of the equator as a result of rotation Horizental movement of air or wind is absent in this belt. So this region remains as a region of calm knows as 'doldrums'

Sub Tropical High pressure belt - The two " " " " " extends between 30° to 35° N & S latitudes. High pressure prevails in this region as -

(a) The ~~rig~~ rising warm and moist air from the equator cools in upper atmosphere, becomes heavy and sinks in this belt.

(b) The rising air moves towards poles and as a result ~~is~~ air ~~p~~ is pilled up in the sub tropics.

(c) The cold winds are formed to descend near 30°-35° latitude creating ~~HP~~ high pressure.

(d) As the air descends, it becomes warm and its capacity to hold water vapour increases as a result there is no condensation or rainfall. For this large deserts like Sahara, Kalahari

Atacama are located in this region.

(e) In colonial days ships laden with horses had to unload cargo in 30°-35° N because of absence of wind. So many horses were thrown in the sea so this latitude is called horse latitude.

Sub polar low pressure belt - The two sub polar low pressure belt are located b/w 60°-65° N & S latitude. Low pressure prevails here because of

(a) The centrifugal force and frictional drag due to Earth's rotation replaces air from 60°-65° latitude and move in towards the poles in either hemisphere.

(b) The some air gets deflected the either way also and sinks in the north and south tropics.

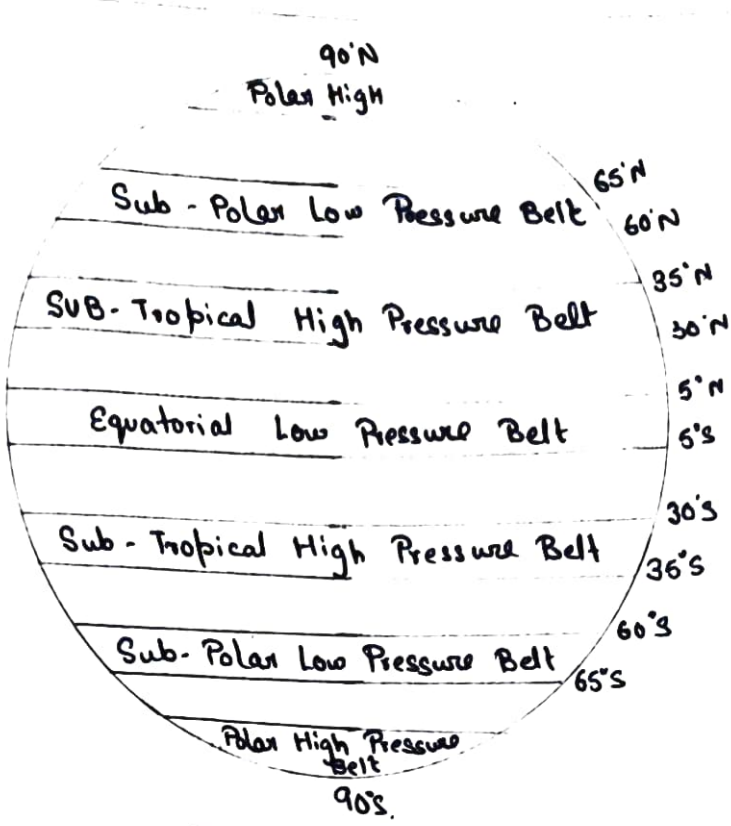
(c) These belts are comparatively warmer than polar belts. so air expands and rises from this belts to both the poles.

Polar high pressure belt - Two high pressure belts are found around the NP and SP because

(a) These regions remains frozen all the year round due to cold dense air and high pressure exists.

b) The amt of water vapour is also very low as cold air has less moisture holding capacity.

c) Air rises from subpolar region descends directly at the poles due to Earth's rotation.



Pressure belt of earth.

Difference b/w.

Trade Wind	Westerly
1) They are permanent in direction and speed.	1) Their direction & speed changes.
2) It bring rain during Summer	2) It brings rain during winter.
3) It blows from sub tropical high to equatorial low pressure belt.	3) It blows from sub-tropical H.P belt to Sub-polar L.P belt.

Difference b/w

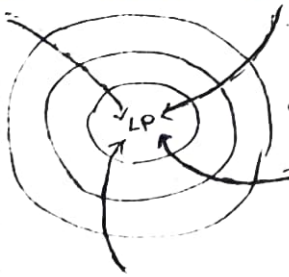
Sea breeze	Land breeze.
1) It blows from sea to land.	1) It blows from land to sea.
2) Low pressure develops at land.	2) Low pressure develops at sea.
3) It occurs during day time.	3) It occurs during night time.
4) It is on shore	4) It is offshore

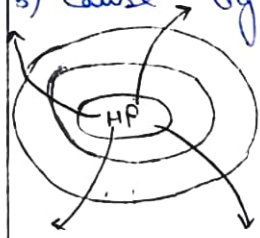
Difference b/w

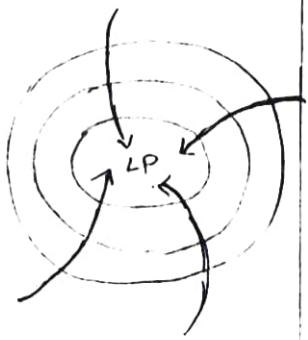
Catabatic wind	Anabatic wind
1) It is cold and dense wind.	1) It is warm and light wind.
2) Blow from mountain top to valley bottom	2) It blows from valley bottom to mountain top
3) It descends along the mountain slope.	3) It ascend along the mountain slope

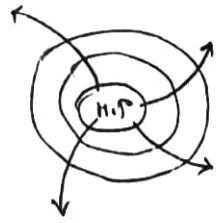
Difference b/w.

Cyclone	Anticyclone
1) Wind blow from outward to inward direction	1) Winds blow from inward to outward direction.
2) Low pressure occurs at centre	2) High pressure occurs at centre
3) Wind is warm and ascending	3) Wind is cold and descending
4) It is anticlockwise in northern hemisphere & clockwise in southern hemisphere	4) It is clockwise in northern and anticlockwise in southern hemisphere
5) Cyclone are destructive and cause heavy rain.	5) Cause light rain.









Describe the formation of Temperate cyclone

Temperate cyclone occurs in 50°-60° N & S latitudes. It is formed by the movement of warm westerlies and cold polar winds towards the sub polar low pressure belt. As the polar wind is dense in nature it pushes the warm winds is known as Front warm wind ascends in higher altitudes and as it is moist causes little rainfall while cold wind blows horizontally

Describe the formation of Tropical cyclone.

Tropical cyclone occurs in 10°-30° N & S latitudes. There are different types of tropical cyclones like Typhoon in South China sea, Hurricane in Carribean Islands, Tornado in Mississippi valley, Nor wester in Indian subcontinent, Willy Willy in Australia Bangaigon in Philippines etc Due to severe low pressure in coastal areas. the cyclones are mainly developed. The low pressure centre in the centre of cyclone is called eye of cyclone

① The winds move from surrounding high pressure toward the eye of cyclone with great velocity.

② In northern hemisphere winds move in anti-clockwise and southern hemisphere it moves in clockwise direction.

③ In the region of eye of cyclone, wind start whirling and moves upward very quickly. Thus heavy rainfall, thunderstorms and lightining occurs in the region.

④ Cyclone duration period is very short for 2-3 hrs.

⑤ They are very much destructive.

* Difference b/w

Absolute Humidity	Relative Humidity
1) Total amt of water vapour present in a definite vol of air at particular temp is called absolute humidity.	1) Ratio of absolute humidity and the maximum amt of water vapour it can hold multiplied with 100 at given temp is called relative humidity
2) It is expressed in g/cc	2) expressed in percentage
3) Indicates total amt of moisture.	3) Indicates chance of rainfall.
4) may remain constant throughout the day.	4) It ~~dam~~ changes with change in temp.

State the relation b/w RH and air temp

The air temp and RH have inverse relation. If the temp increases, the air can hold more moisture. Thus ratio becomes low and RH is obviously reduced. Oppositely, if the temp decreases the air can't hold more moisture thus it RH becomes high.

* **What is saturated air?**

The moisture laden air which can't hold any more moisture at the given temp of the definitive vol is called saturated air for that given temp and volume.

* **What is dew point?**

The temp at which the air becomes saturated it called dew point of that particular volume of air.