

CLASS -2



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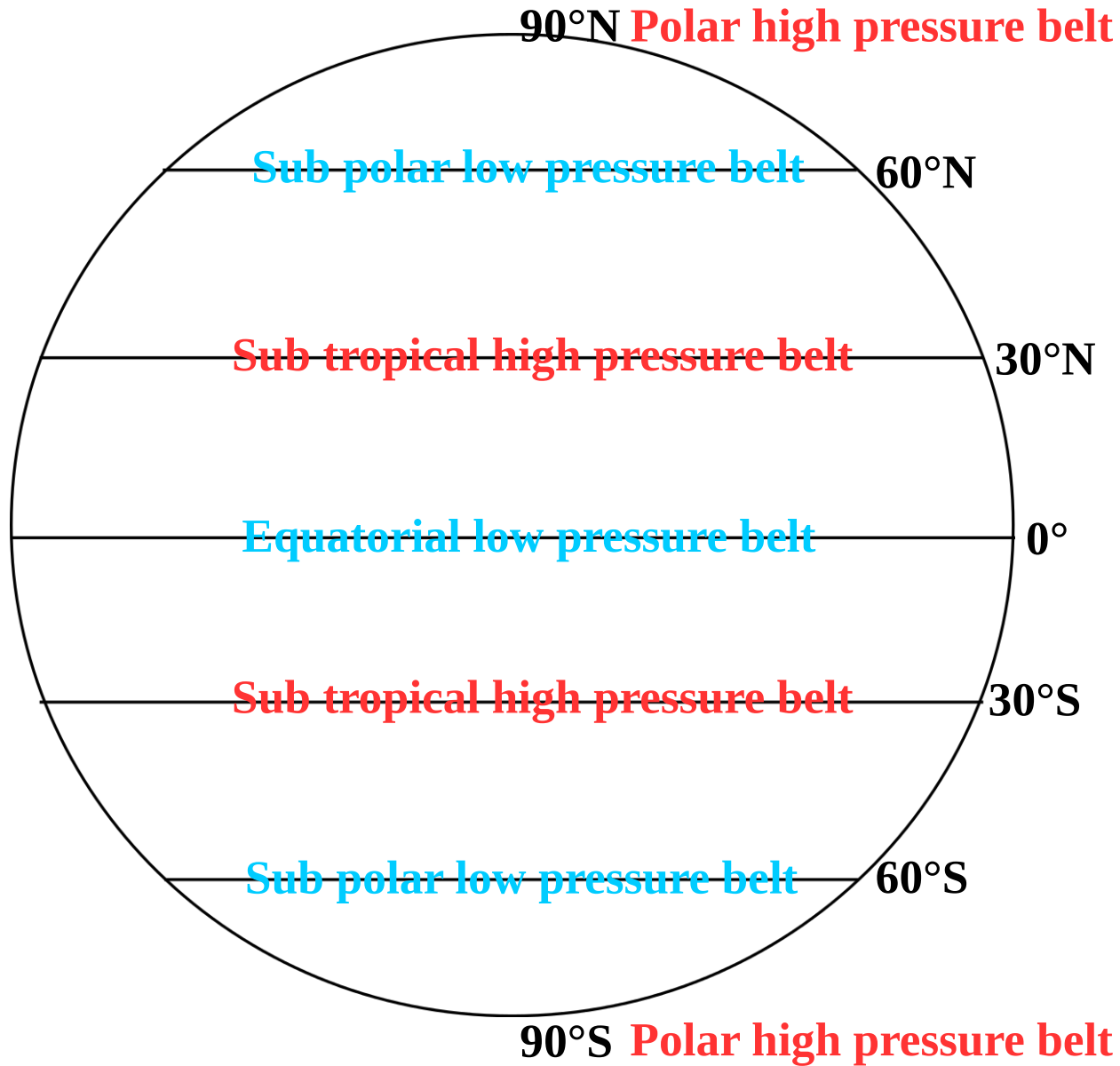
In Search of the Source of Wind

PLAY

Global pressure belts

- At certain latitudes the atmospheric pressure is almost the same.
- Based on this, the earth's surface is divided into different pressure belts.

Global pressure belts

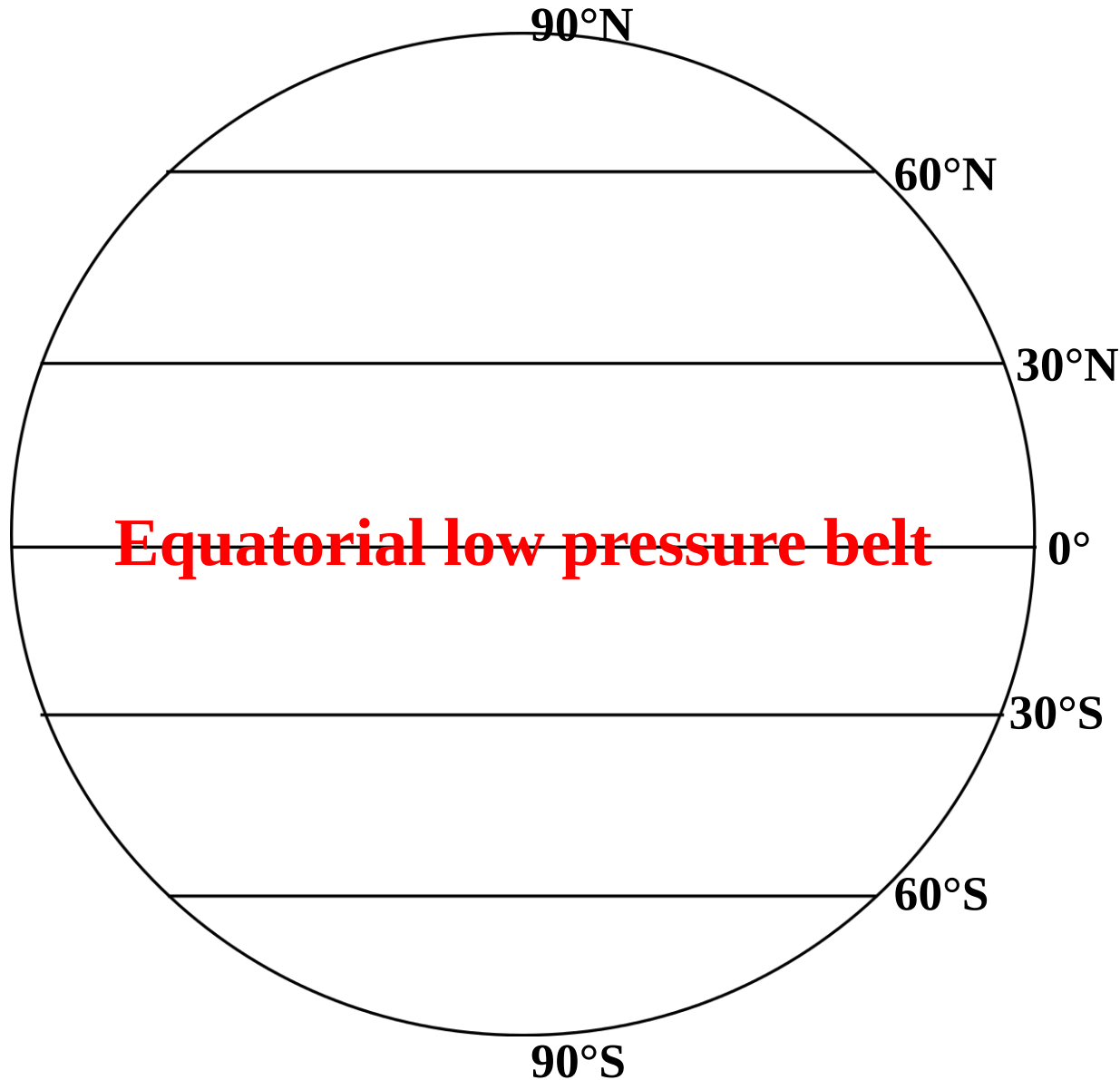


Global pressure belts

- Equatorial low pressure belt 0°
- Sub tropical high pressure belt 30°N , 30°S
- Sub polar low pressure belt 60°N , 60°S
- Polar high pressure belt 90°N , 90°S

These are known as the global pressure belts.

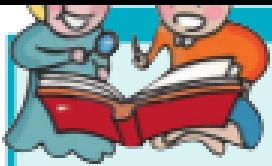
Equatorial low pressure belt(0°latitude)



Equatorial low pressure belt 0°

- **The area where the sun rays are perpendicular throughout the year.**
- **The air expands due to sun's heat and rises up on a massive scale in this area.**
- **This is the reason for the low pressure Experienced throughout this zone.**

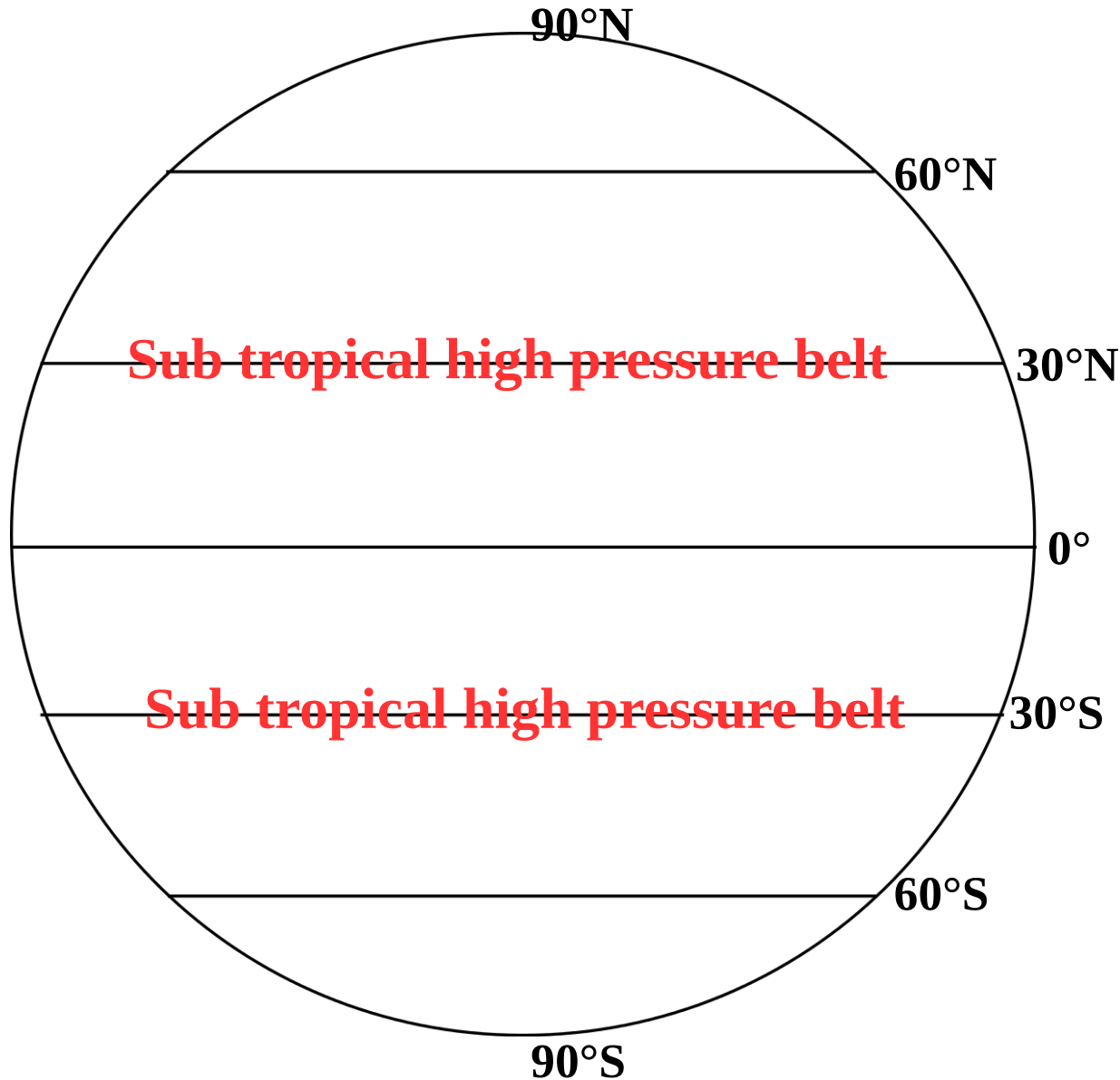
- **The equatorial low pressure belt is situated between 5° North and South latitudes.**
- **As the air in this zone ascends on a large scale, winds are very feeble here.**
- **This pressure belt is also known as 'doldrum', meaning 'the zone with no winds'.**
- **The region was a nightmare for the ancient mariners.**



Horse latitude

Superior breeds of horses were once a major export from Europe to America and Cargo ships were used to carry them across. As the winds are feeble in the subtropical regions, it was difficult for these ships to sail smoothly. In order to make the ship lighter to facilitate easy voyage, they used to throw many of these horses into the sea. Thus the zone acquired the name 'horse latitude'.

Sub tropical high pressure belt (30°N & 30°S latitudes)

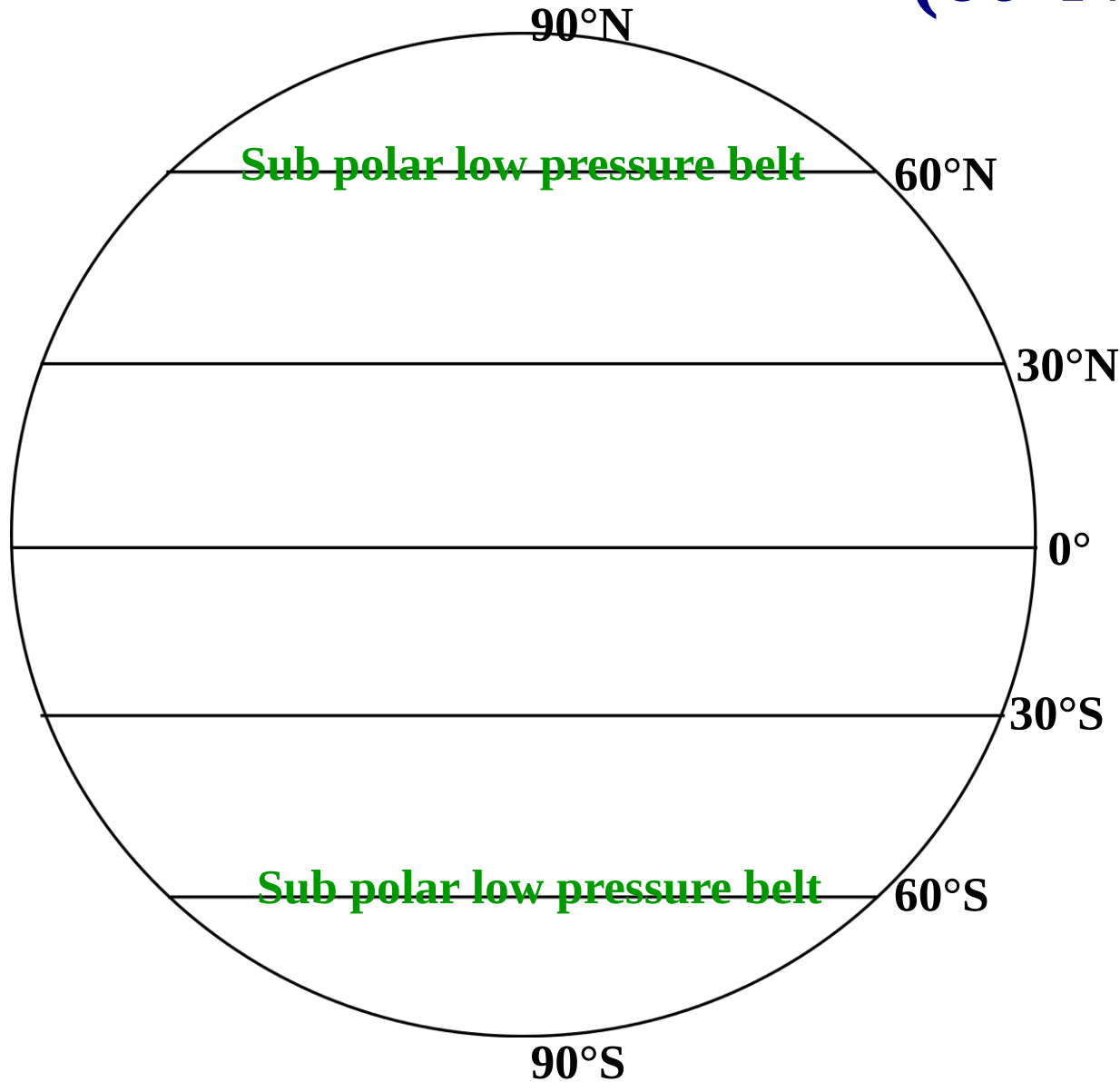


Sub tropical high pressure belt

- This pressure belt is located at 30° latitude in both hemispheres.
- The warm air rising from the equatorial low pressure belt (0°) gradually cools and drops to 30° latitudes under the influence of the Earth's rotation.
- And there it becomes high pressure belt.

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Sub polar low pressure belt (60°N & 60°S latitudes)

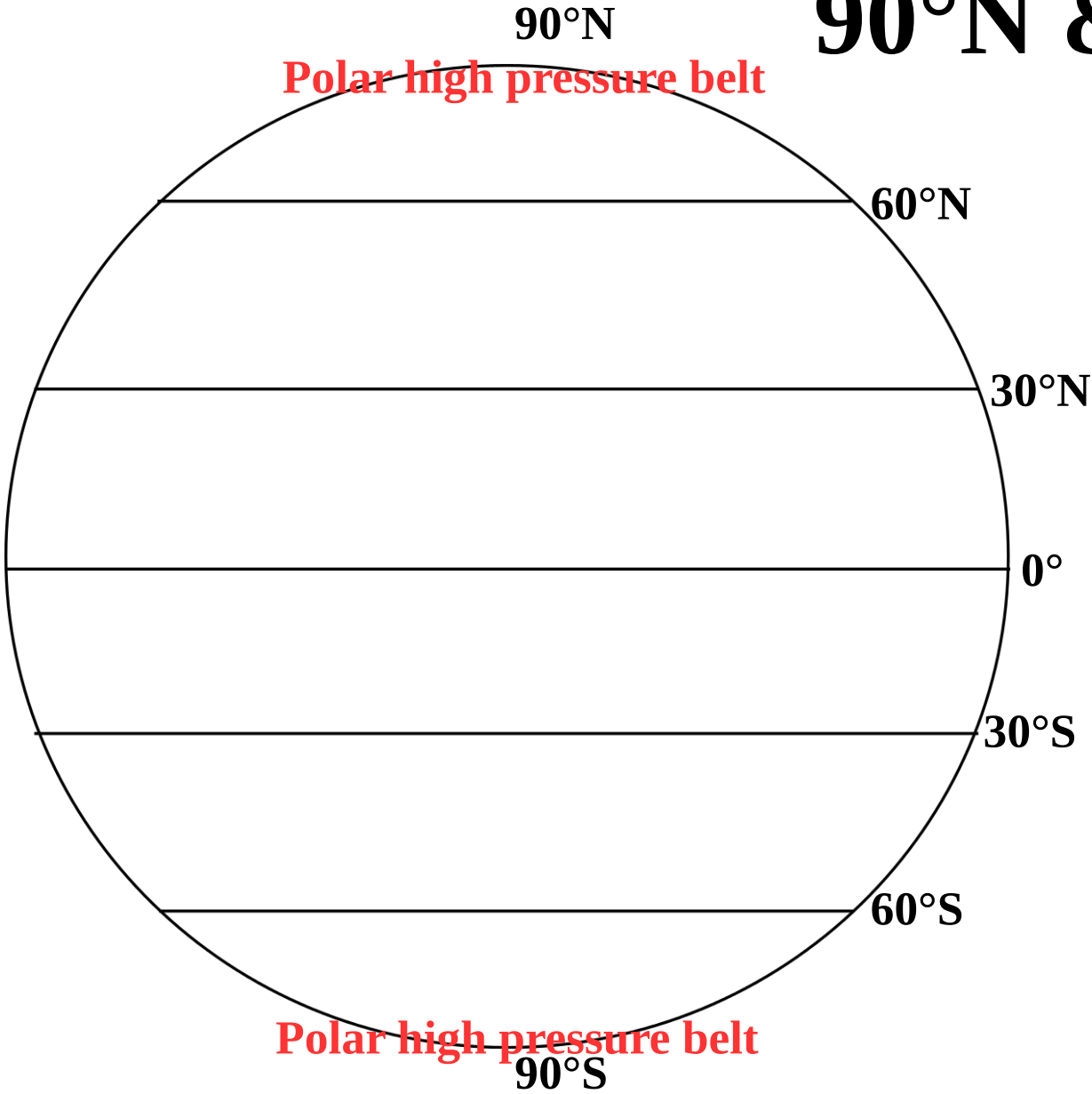


Sub polar low pressure belt (60°N & 60°S latitudes)

- As this zone is close to the Pole, the air is colder here.**
- The air in this zone thrown away due to the rotation of the earth.**
- As a result, low pressure is experienced all along the sub polar region.**

Polar high pressure belt

90°N & 90°S latitudes



Polar high pressure belt

- **This zone experiences severe cold throughout the year.**
- **As a result, the air remains chilled under the extreme cold that prevails over the Poles, and this contributes to the steady high pressure experienced here.**

- **Variations in the amount of solar energy received and the rotation of the earth contribute to the formation of different pressure belts.**
- **The pressure belts shift according to the apparent movement of the Sun.**
- **The pressure belts shift 5° northward during the period of Sun's northward progression and towards the south 5° during the period of its southward progression.**

Atmospheric pressure and winds

- The horizontal movement of air from a high pressure zone to a low pressure zone is called wind.
- Global variations in the atmospheric pressure lead to the formation of winds.
- There are different types of winds on the earth's surface.
- They are wind like Light breeze that makes the leaves flutter and cyclones that cause widespread damage.

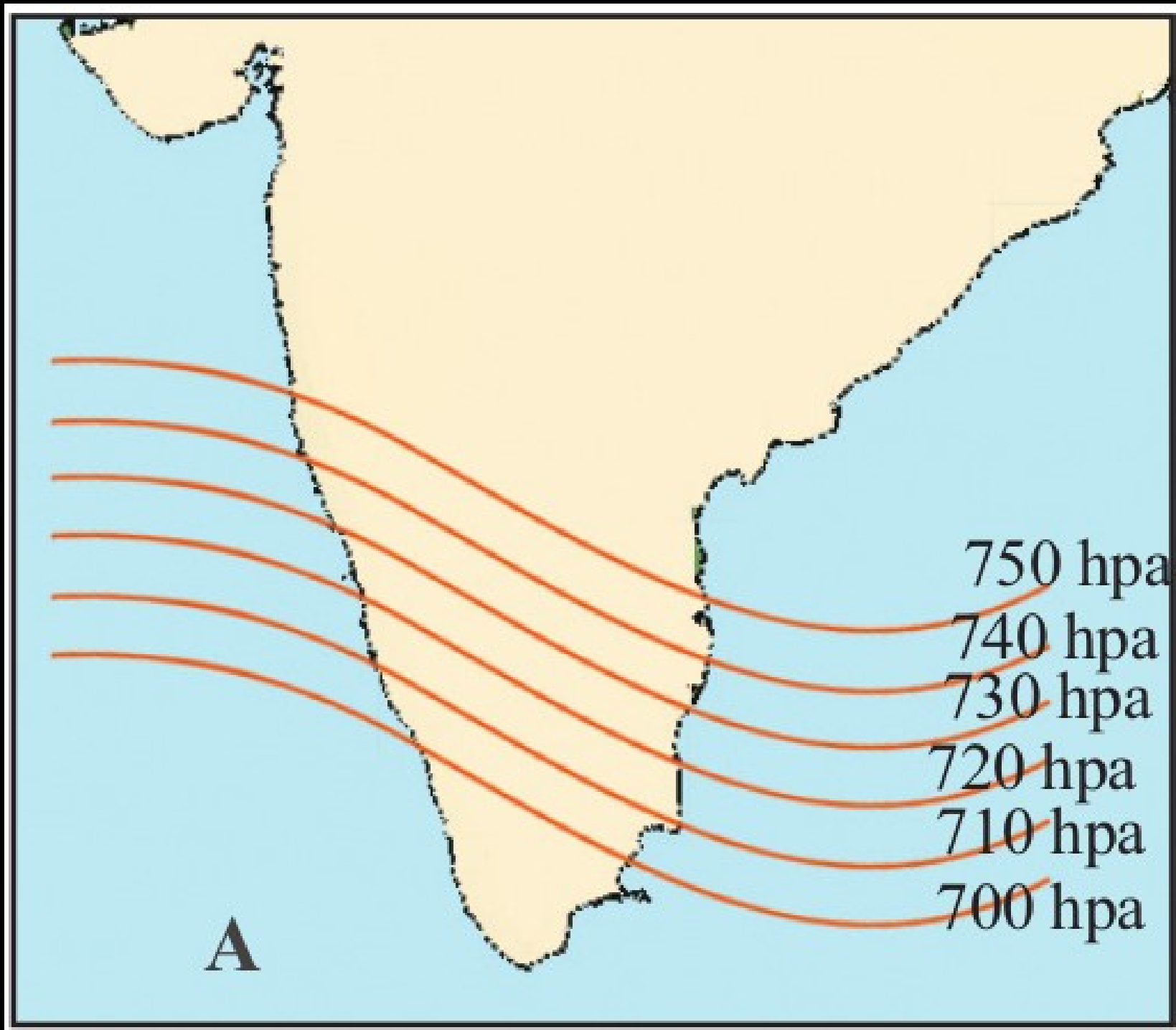
- **Winds are named on the basis of the direction from which they blow.**
- **For example the south wind, Westerlies, sea breeze, Mountain breeze**
- **The peculiarities of the source regions influence the nature of the wind.**
- **Winds blowing from the sea will be saturated with moisture whereas the moisture content will be less in winds blowing from drier regions.**

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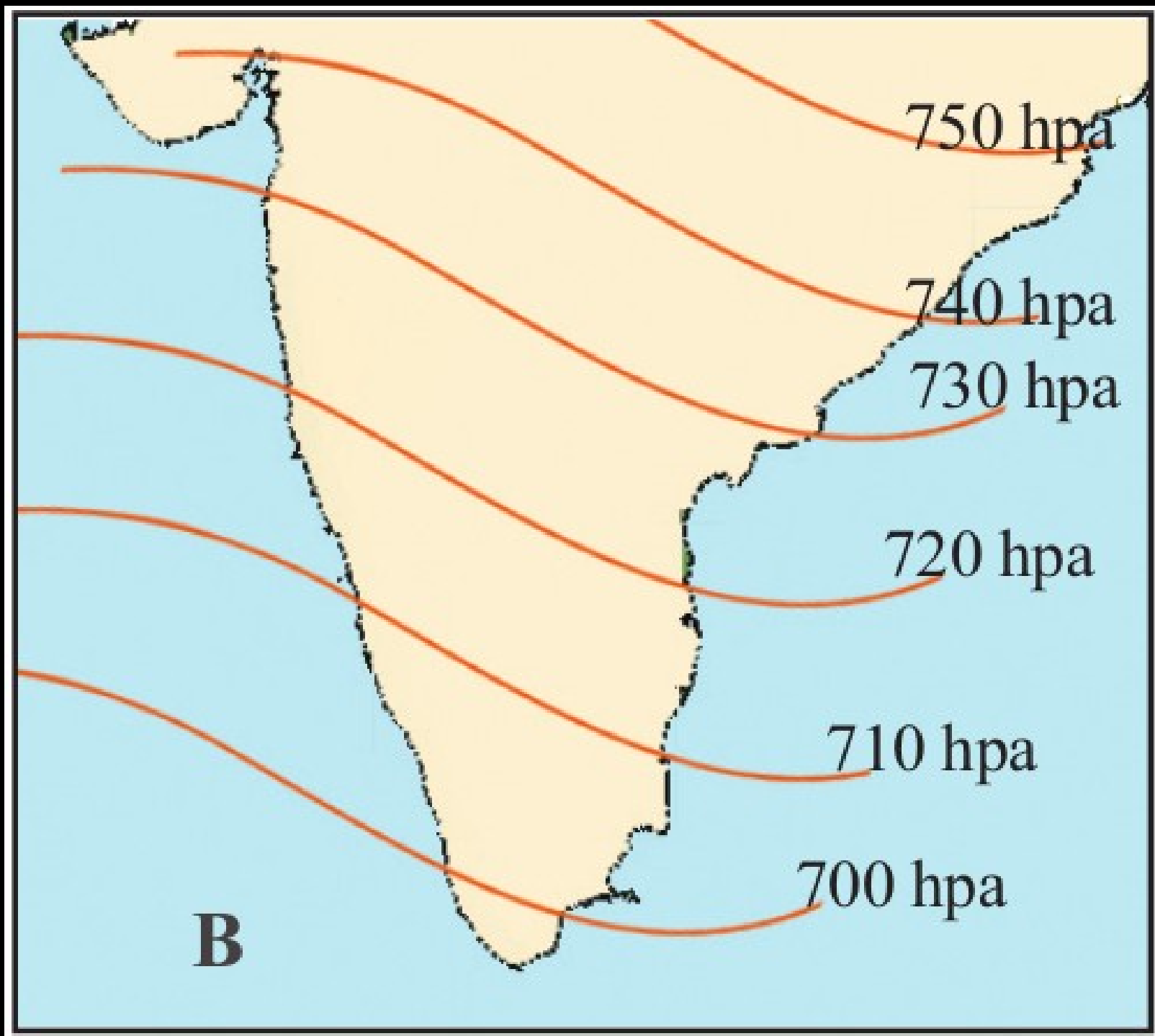
Factors that control speed and direction of the winds.

- **Pressure gradient**
- **Coriolis force**
- **Friction**

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-Mark the direction of winds in both the diagrams, using arrow marks.

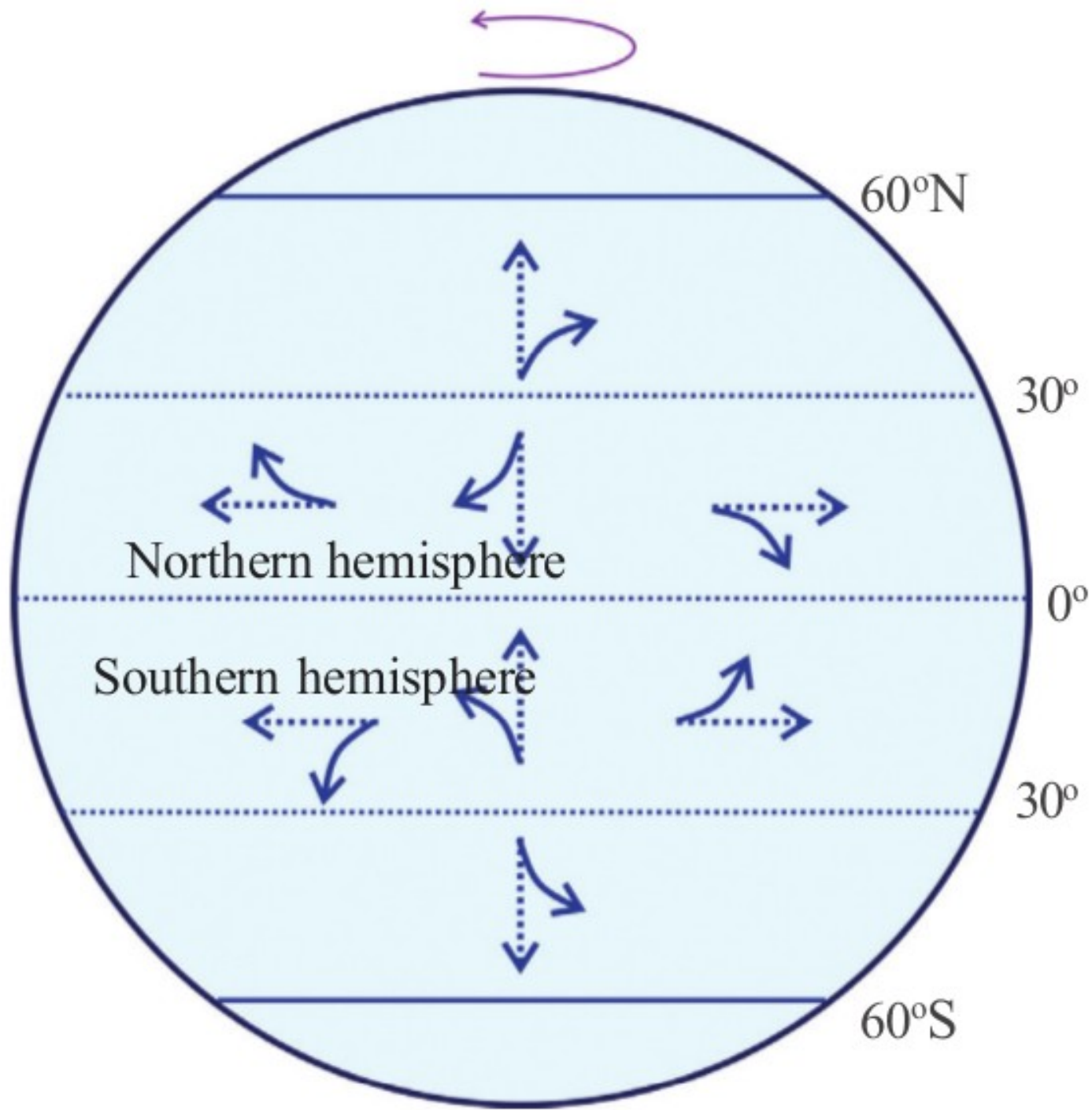
-In which of these situations will the speed of the wind be higher? Why?

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Pressure gradient

- The change in pressure with horizontal distance is termed as pressure gradient.
- The pressure gradient is said to be steeper when the pressure difference is more.
- The wind speed will be higher there.

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Coriolis Force

-Freely moving bodies get deflected to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.

-This is due to the force generated as a result of Earth's rotation which is known as the Coriolis force.

-This force increases as it moves towards the Poles from the Equator.

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Ferrel's law.

-Admiral Ferrel found out that the winds in the Northern Hemisphere deflect towards their right and those in the Southern Hemisphere deflect towards their left due to the Coriolis Effect.

-The law put forward by him on the basis of this is known as Ferrel's law.

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Friction

-Wind obstructions cause friction in the wind.

-The speed of wind will be high over ocean surfaces and plains as the friction is less.

-On the other hand, the friction being more along difficult terrains and places with dense forest cover, the speed of wind will be less in those places.

ALL THE BEST

BIJU KK

GHSS TUVVUR MALAPPURAM

8075512478