Date
24/Aug/2020

Geography

Topic - Temperate Cyclone

Primary Atmospheric Circulation

It is a global persistence perennial type of air circulation, where the vertical and horizontal moment of air parcles takes place between some global designated pressure belt. winds like Easterlies, Westerlies, polar wind and Jet stream are coming under the ambit of primary atmospheric Circulation. The prevailing Easterly wind Motion propagate between Subtropcial H.P Belt and Equatorial low pressure belt. Its normal direction in Northern Hemisphere is from North-East to South-west and in Southern Hemisphere from South-east to North west. Subsequently these winds are also regarded as North-East and South East trade winds.

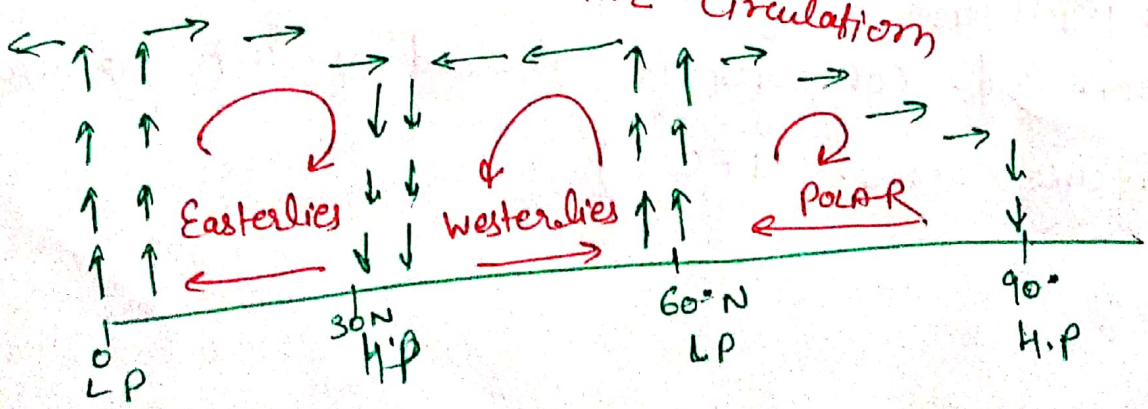
The Region that circles the Earth, near Equator, where the trade winds of the Northern and Southern Hemispheres come together.

This zone of convergence is regarded as Inter tropical convergence zone. (ITCZ).

The prevailing westerlies propagate between subtropical High Pressure belt and sub polar low pressure belt. Its normal direction in Northern Hemisphere from North east to South west and in Souther Hemisphere from North west to South East. Polar winds on the other hand prevails between the polar HP Belt and Sub-polar low pressure belt. It secure the same direction acquired by Easterlies, and regarded as Polar Easterlies.

It is a well established Notion that the vertical and horizontal movement of air parcle over the surface of Earth from Equator toward Poles, takes place in the form of a circulation. HADLEY, FERRAL and Polar are very well demarcated between the global and designated pressure belts. All together these circulations are coming under the ~~ambit~~ ambit of tri meridional Circulation.

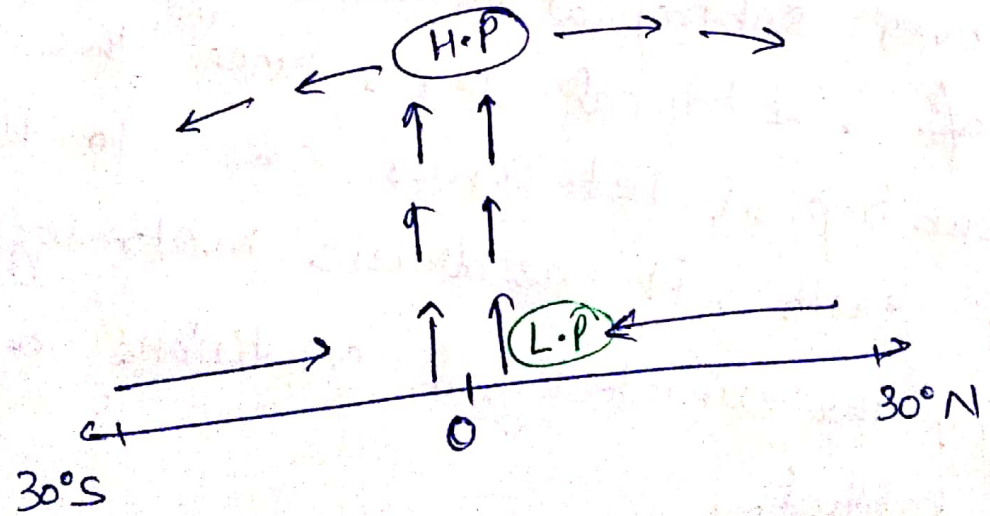
TRI MERIDIONAL Circulation



Jet Stream

Jet stream is an upper tropospheric primary air circulation propagating in west-east direction at the height of 7-12 Km from the surface.
This upper tropospheric motion not only influence the local weather condition but also regulates the climatology of particular region. The mechanism of Jet stream depends on thermal and pressure variation between equator and poles and also between surface of earth and upper troposphere.
Two global Jet streams that is subtropical Jet and polar Jet propagating over different range of latitudes and originating by several atmospheric variables, have the capacity to drastically influence regional climatological condition.

Subtropical Jetstream



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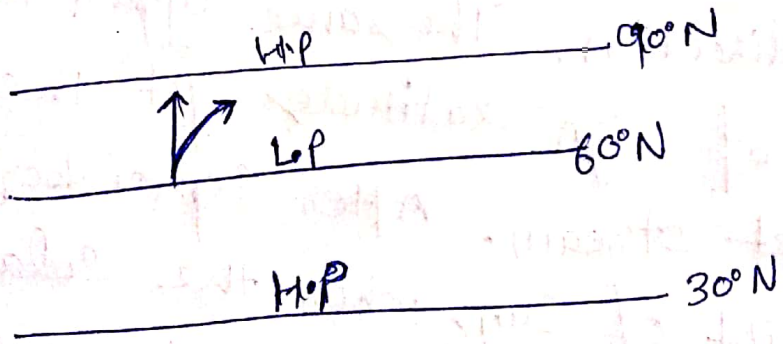
Subtropical Jets are propagating air motion of upper troposphere between equator and subtropical high pressure latitude. Their origin and mechanism depends on thermal and pressure variations between equator and subtropics. Convection currents originating from the surface of equator and diverging horizontally in upper troposphere get attracted by the prevailing low pressure condition over subtropical latitudes. The same upper tropospheric wind motion further comes under the influence of CORIOLIS force deflects to its right hand side and acquires west-east direction. This upper tropospheric west-east wind motion shows the tendency of subsidence reaching over subtropical latitudes. it should be noted that the subsiding branches of upper tropospheric wind motion, propagating over subtropical latitudes get the designation of subtropical Jet. Since the prevailing subtropical Jet comes closer to the surface of earth, it has drastic metrological impact over the climatological conditions of subtropical latitude.

The prevailing upper ~~troposheperic~~ tropospheric Jet stream never flow in a linear manner and always acquires meandering path. It is because pressure conditions of upper troposphere also depends on thermal and pressure variations taking place over the surface of Earth. Since temperature pressure system over the surface is not uniform, the winds propagating in upper troposphere also get influenced by such pressure anomalies or changes subsequently. it propagates in meandering manner by acquiring west-east direction.



Polar Jet stream is also an upper tropospheric wind motion propagating b/w sub polar and polar latitude with a vibrant velocity, have a drastic meteorological impact over regional climatology. The mechanism of polar Jet depends on the convergence of contrasting air masses and formation of fronts over subpolar latitudes. Air parcles rising from the boundary of front and diverging in upper troposphere also get influenced by CORIOLIS force. One of the diverging limb propogating between subpolar and polar latitudes deflects to its right hand side and acquires west-east direction. The same upper tropospheric wind motion of high latitudes get the designation of polar Jet stream. After september with the southward shift of sun, when the solar insolation remain vertical in southern and much more tilted in northen hemisphere, the impact of Insolation heating would be negligible over north pole. (6 month of darkness) in this change atmospheric Senario a very strong high pressure system develops over the surface of poles

supplemented by an intense low pressure system of upper troposphere. By this resultant phenomena pressure gradient between polar and subpolar latitudes also increases upto optimum level by which upper tropospheric wind motion of polar Jet able to propagate with a very high velocity. At this time the polar Jet stream are regarded as Polar night Jet.

SECONDARY WINDS CIRCULATION

1. MONSOON
2. CYCLONES
3. ANTI REGIONAL
4. AIRMASSES