

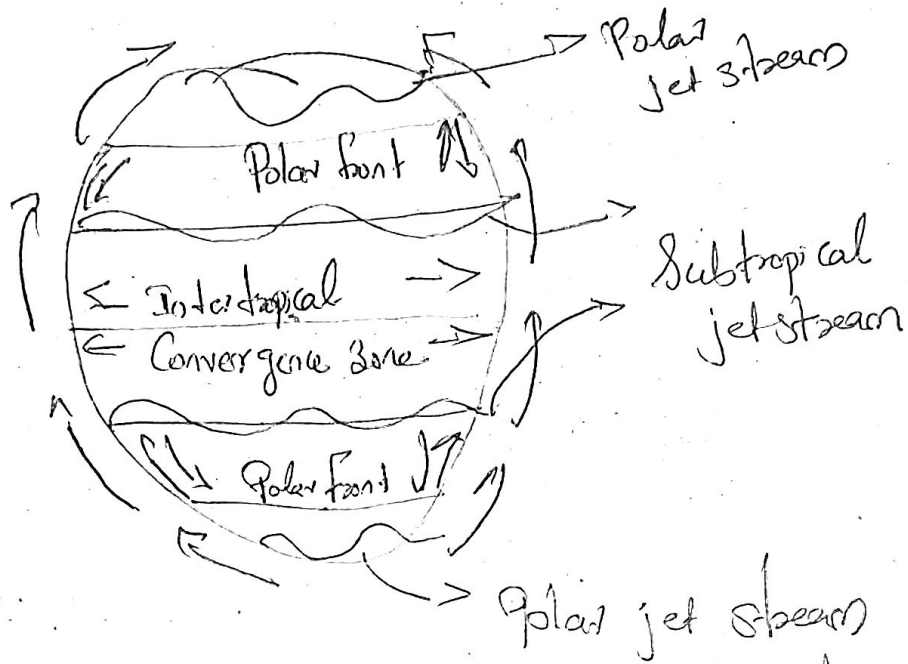
Q. What are jet streams? Discuss major jet streams which play crucial role in influencing the climate of India.

Ans:- Jet streams is a geostrophic wind blowing horizontally through the upper layers of the troposphere, generally from west to east at an altitude of 20,000 - 50,000 feet. Jet streams develop where air crosses a different temperature crest, greater the difference in temperature, faster is wind velocity inside the jet stream. Jet streams extend from 20 degrees latitude to the poles of both hemisphere.

Types of jet streams

- i) Subtropical jet streams
- ii) Tropical easterly jet streams
- iii) Polar-Night jet streams.

generally classified as temporary jet streams and Permanent jet streams (Polar, Subtropical)



Temporary jet streams $\Rightarrow$ Somali jet stream,
Tropical Easterly jet stream.

Role of jet streams

- 1) Help in heat balance by cross exchange of air
- 2) Influence the weather of circul latitudes by influencing the path of temperate cyclones.
- 3) Impact of air masses, which may cause prolonged drought & flood conditions

E:- Polar vortex Cold wave over North
America in 2014

Role in India

1) Winter Rainfall

Subtropical westerly jet streams transport the Western disturbances (temperate cyclones) originating over Mediterranean Sea and bring rain to north western regions of India, Punjab, Haryana, Himachal Pradesh

2) Southwest monsoon

Subtropical jet stream and Equatorial jet stream play role in monsoon system of India

2.1) Subtropical jet stream withdrawal from the South of Himalayas gives the way for the onset of monsoon

2.2) Equatorial jet stream steers the tropical depressions in India, they play significant role in the distribution of rainfall during the South west monsoon and also play role in transport cyclones from Pacific Ocean towards Indian Ocean

eg:- Cyclone Mora, 2017.

Jet streams, an important geographic feature all over world, in western world its help for reducing travel time of Airways, In India it influences the formation and duration of Summer monsoon.