GEOGRAPHY

26.09.2020

I. OCEANIC MASS MOVEMENT

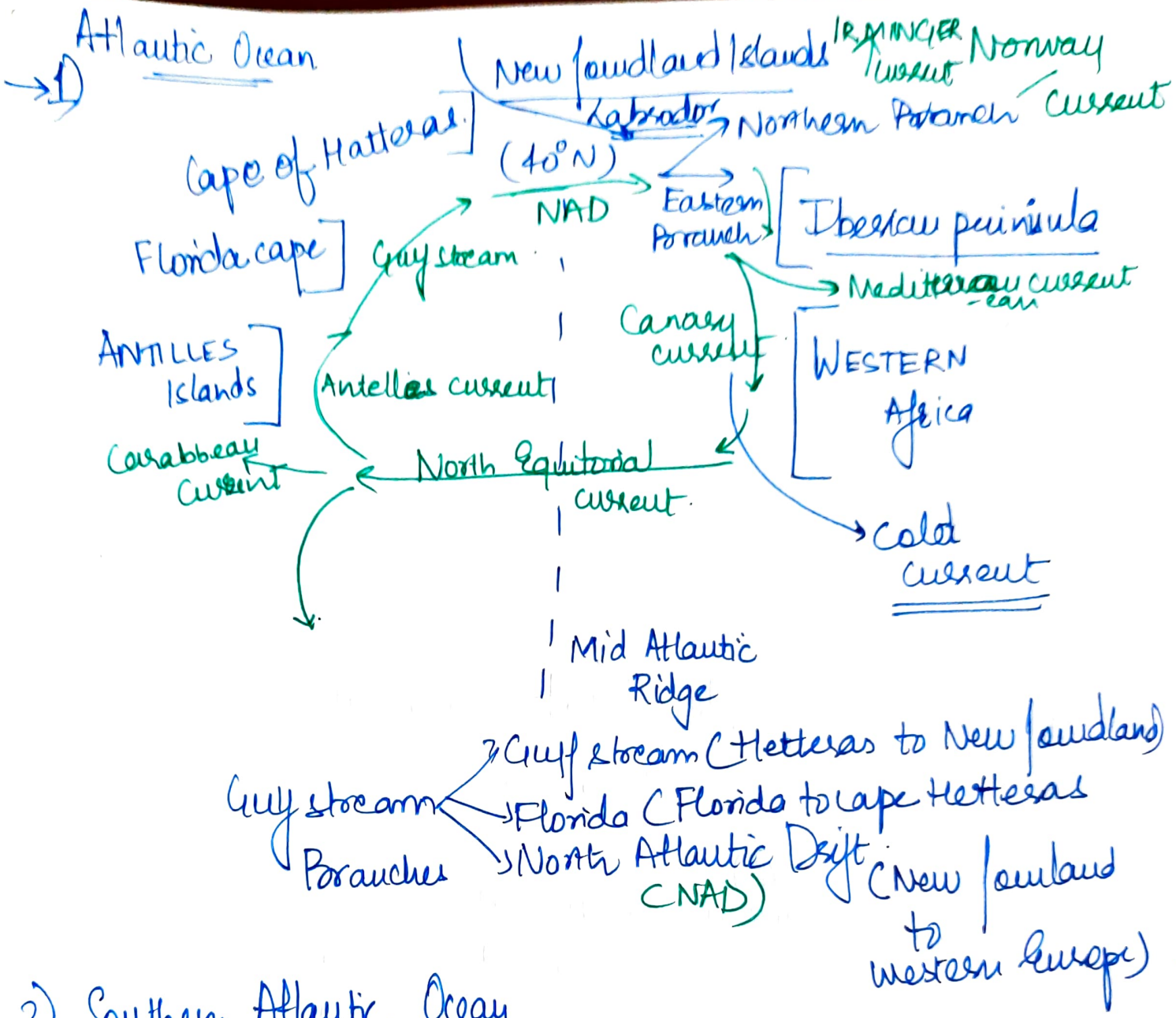
- Currents
- Tides
- Waves

* **CURRENTS** – Surface horizontal movement of water mass upto 400m – propogate horizontally.

- Surface current (10%) → currents on the topmost layers of ocean which have relatively higher speed than the lower layers of ocean
  - wind
  - ~~coriolis~~ coriolis effect
  - temp
  - salinity
- Subsurface current → very slow and in the deeper layers. (90%)

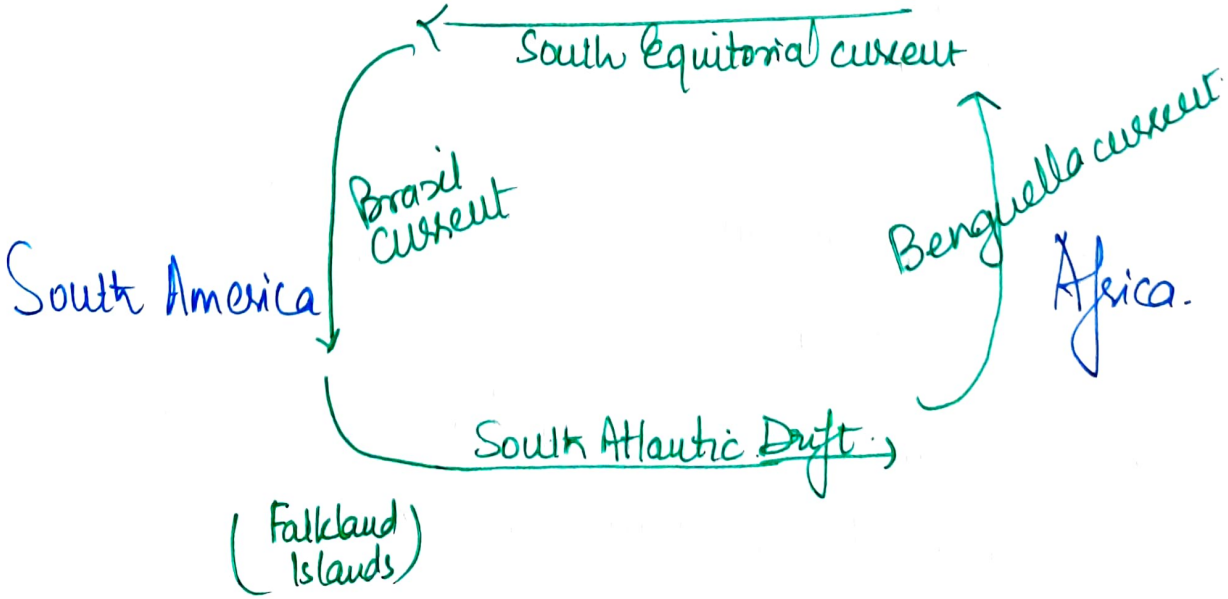
Both produce a circulatory motion in the form of gyre which clockwise in Northern and Anti-clockwise in Southern hemisphere

1) Atlantic Ocean



Gulf stream Branches
- Gulf stream (Hetteras to New foundland)
- Florida (Florida to cape Hetteras)
- North Atlantic Drift (NAD) (New foundland to western Europe).

2) Southern Atlantic Ocean



- Oceanic circulation of N. Atlantic Ocean gets influenced by several climatological and oceanographical factors along celestial factors. like Rotation of Earth, gravity, coriolis impact on prevailing winds, temp, pressure, salinity etc

In the N. Atlantic Ocean, from the western margin of Africa, a warm current propagates in East & West direction as the North Equitorial current is mainly because of Rotation of earth and N.E. Trade winds. Reaching along Coast of South America, it gets bifurcated into Antilles current and western branch of Caribbean current. Warm water is accumulated in the Gulf of Mexico. Piling of waters in Gulf of Mexico develops a slope in South North direction piling eastern coast of N. America which leads to propogation of Gulf stream. The North Atlantic drift comes under of Westerlies, which drives water in West - East direction.

Reaching near 40 - 42°N in central Atlantic ocean, the NAD bifurcates into Northern and Eastern branches, this bifurcation is due to orographic obstacle of Mid-Atlantic ridge. The Northern branch bifurcates into Irminger and Norway current.

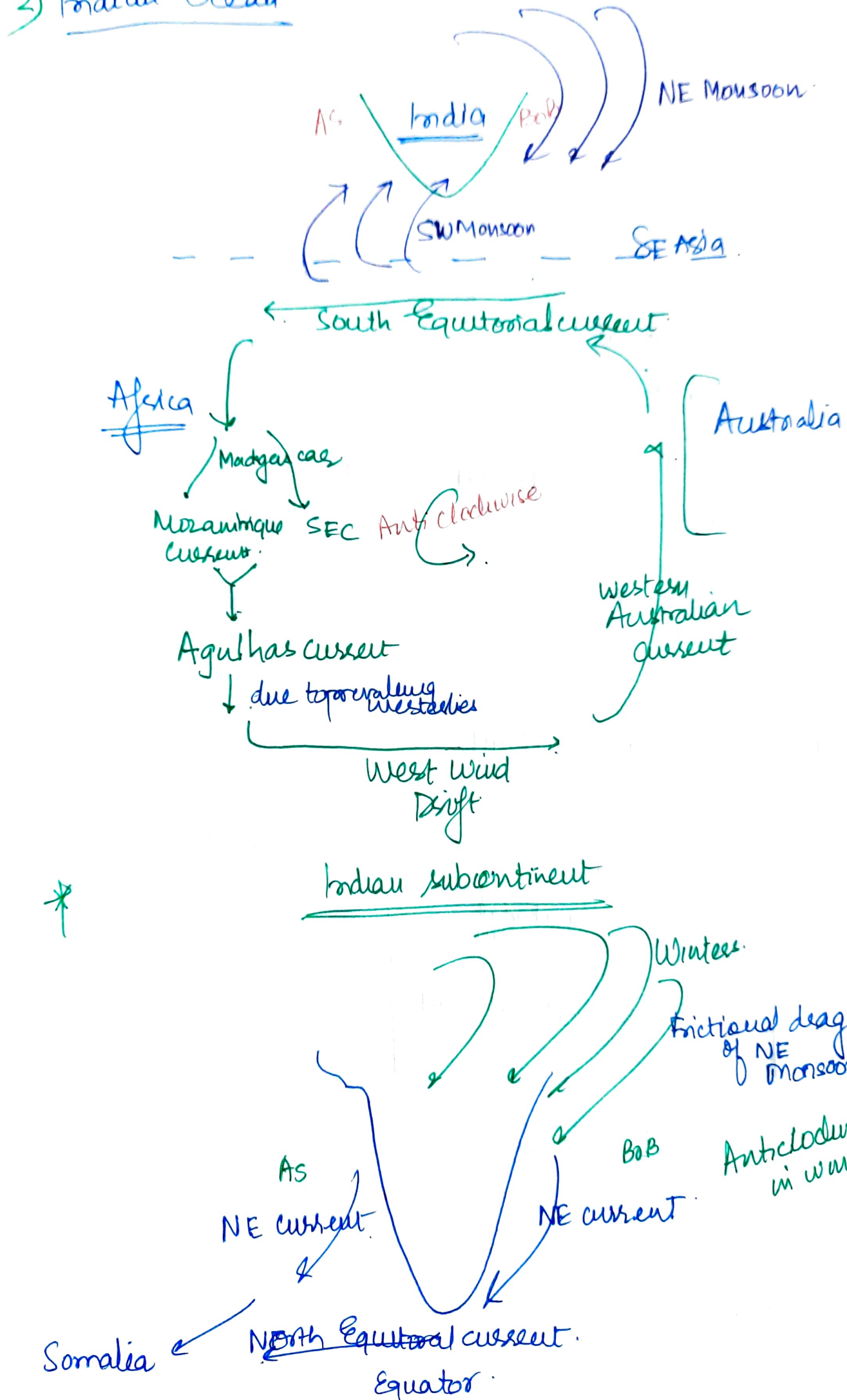
The Eastern branch moves along Iberian peninsula, bifurcates into Rennel and Mediterranean current.
The propogation of oceanic current in tropical climate is able to accumulate warm water along coast of Africa & Europe. Subsequently a slope develops along western coast of Africa with North South slope. A cold eastern boundary current called the Canary current is developed.
The Canary current in the end joins the North Equatorial current.

Names of Currents

- Gulf stream
- Canary current
- Irminger Current
- Norway current
- North Equatorial current

These current complete the whole circulation (Cycle) of North Atlantic ocean.

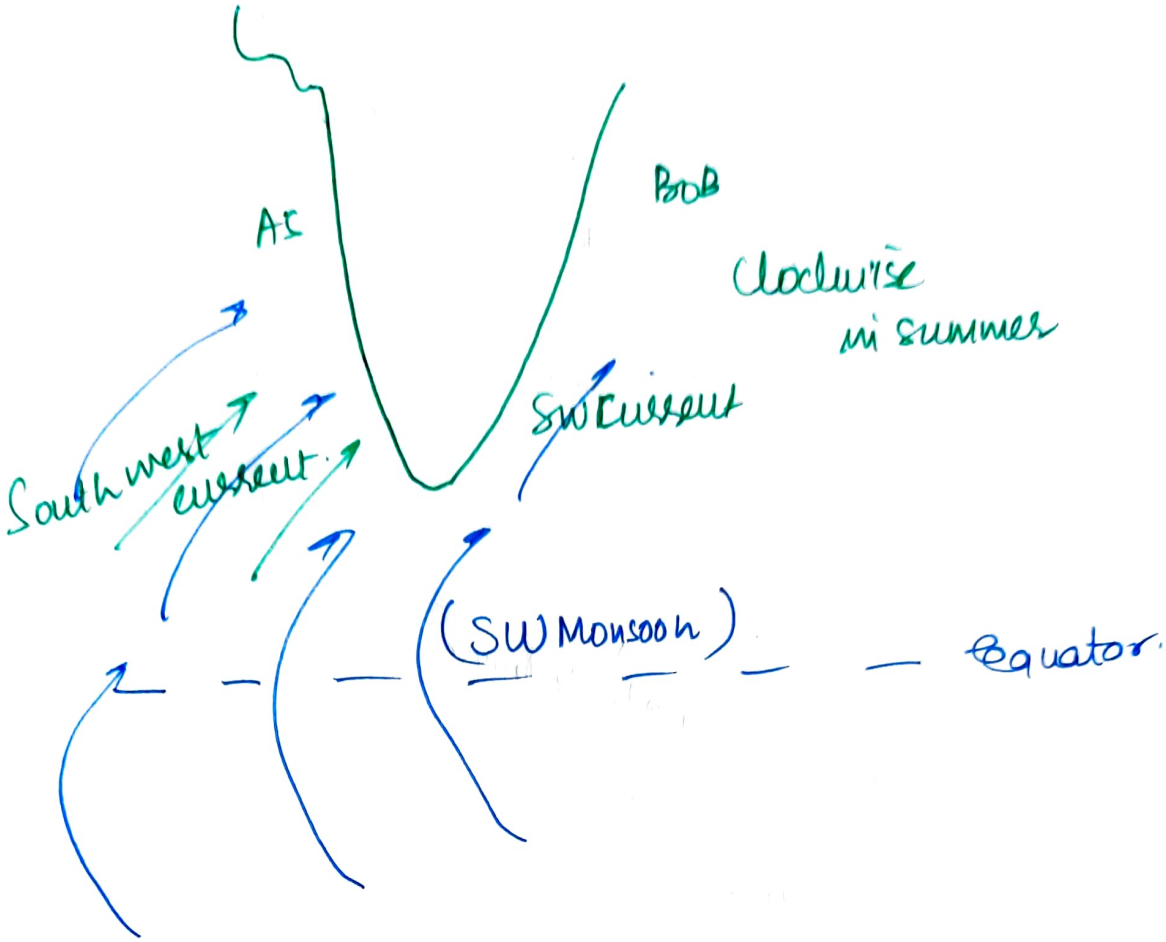
2) Indian Ocean



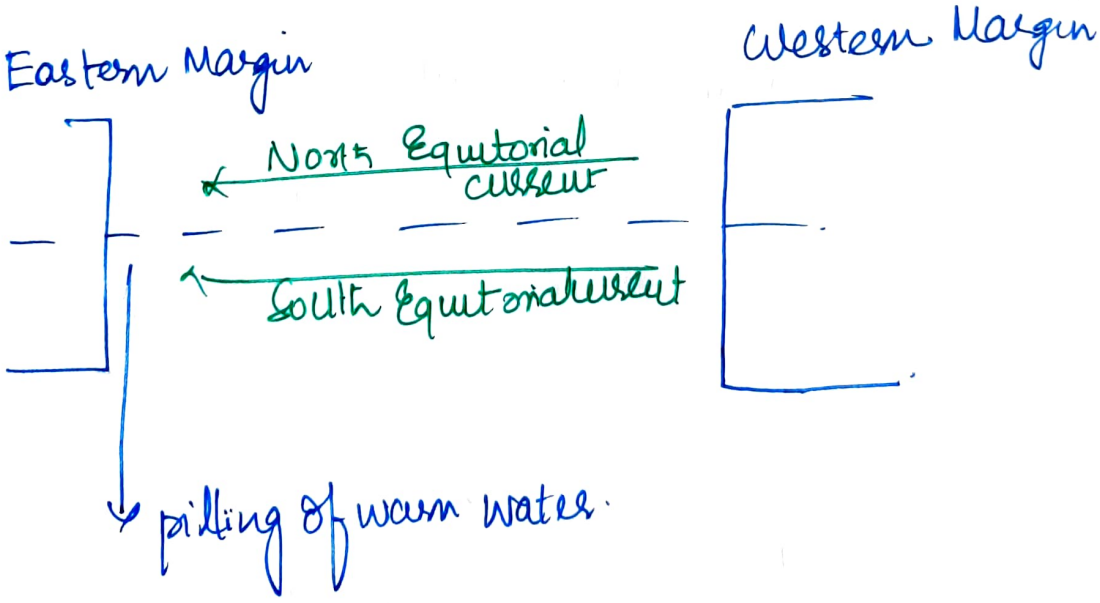
• Currents of Indian Ocean

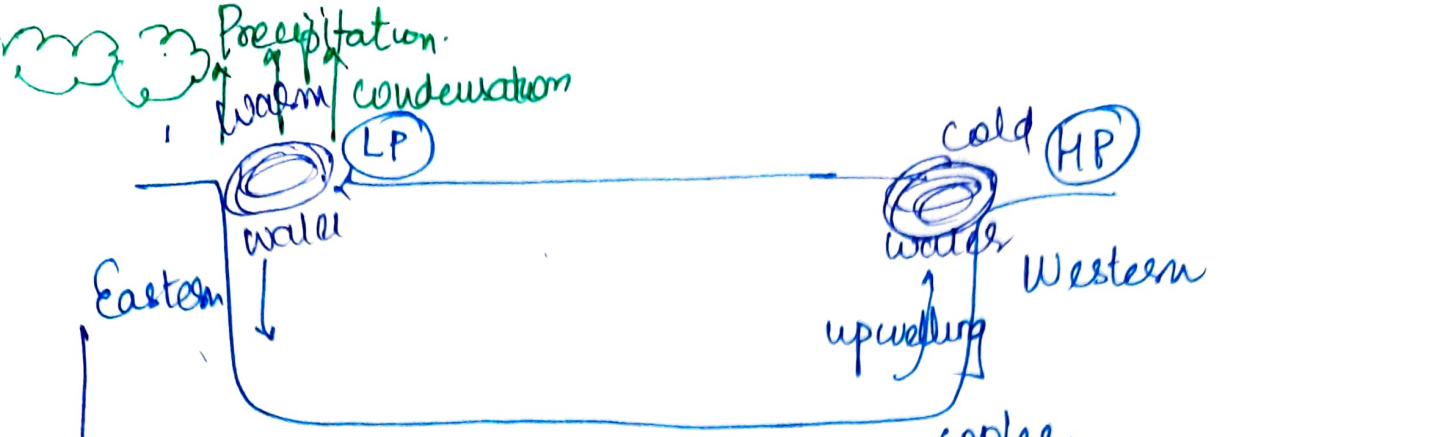
The oceanic circulation of Southern Indian ocean create a proper gyre pattern under the influence several climatological & oceanographic factors. Currents like S. Equatorial current, Mozambique, Agulhas current. West wind Drift and the western Australian current are able to create a proper circulation of oceanic water along both western and eastern continental margins. However, the circulation of N. Indian Ocean is different from other oceanic basins. The longitudinal and latitudinal extent of N. Indian Ocean is different from N. Pacific & Atlantic Ocean. It is not a open Ocean, showing latitudinal extention upto tropical zone. At the same time, the basins of Arabian sea & BoB. (Bay of Bengal) are segregated by Peninsular India. Apart from this, oceanographic & climatological features of N. Indian Ocean, mainly get influenced by secondary seasonal winds that is South west Monsoon and North East Monsoon. These two systems propogate the North Eastern current in Winters and the South western current in the summers.

Summers



Impact of Oceanic Currents





More Clouds
More moisture content
↓
Region is wetter
Cyclonic conditions
High salinity
Warm current
More prone to cyclones

cooler
heavier denser airmass
Anticyclonic
ARID / DESERTS
Salinity is lower
Cold current
Most of the deserts are located.