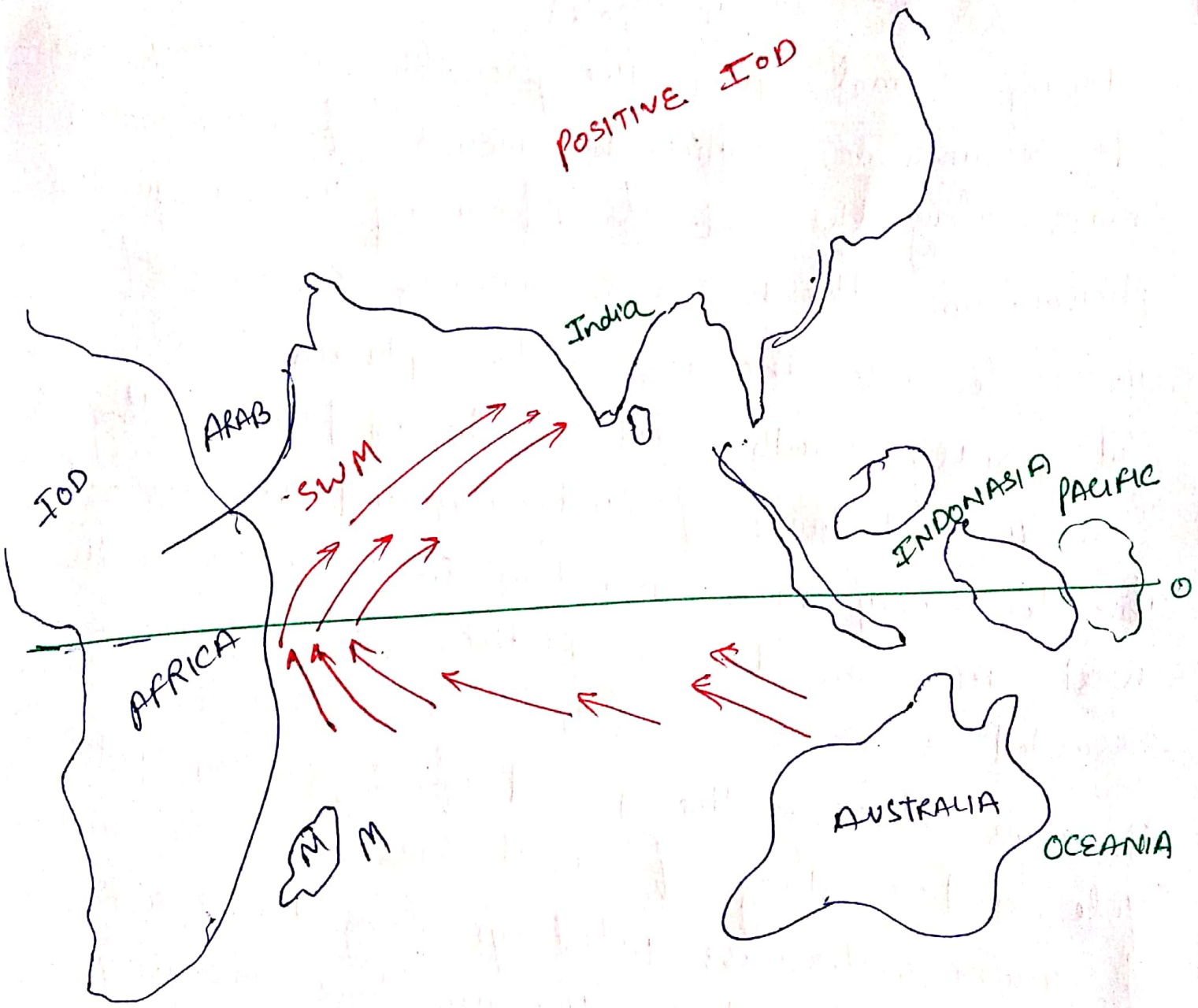
3. IOD (Indian Ocean Dipole)

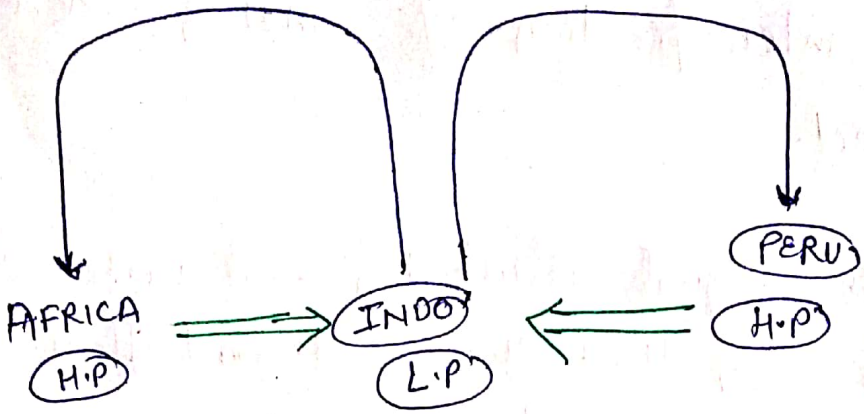
During normal year the prevailing easterlies ~~even~~ able to accumulate sufficient amount of warm water mass along the cost of Africa. by this consequential phenomena the moisture carrying capacity of air parcle also increases upto optimum level. Subsequently south-east trade wind originating from the Islands of ~~Madagascar~~ Madagascar and ~~Mascarine~~ Mascarene able to carry more moisture in India as south-west monsoon. This respective phenomena is regarded as positive Indian ocean Dipole.

However during the period of long sun-spot cycle and weaking of easterlies less amount of warm water mass piled up along the coast of Africa. to reduce the moisture carrying capacity of Prevailing air parcles. subsequently south-east trade winds and south-west monsoon ~~is~~ are not in a position to carry more moisture towards India. This resultant phenomena is regarded as negative IOD.

(2)



Impact of La-Nina



During the period of short sun-spot cycle with the strengthing of Prevailing winds, the formation of a strong cold Peruvian current called as La-Nina takes place along the western margin of south America. During La-Nina years an intense low pressure condition by rapid convection develops over the surface of Indonesia to attract air-masses from the cost of Peru and Africa.

During La-Nina years winds originating from the coast of Africa and advancing toward Indonesian Island not only able to drag ~~or drift suff~~ more branches of south west monsoon towards India but also the prevailing high pressure condition of African Coast

(4)

ridden

increases the volume of moisture laden air parcles. entering in India. This resultant phenomena is regarded as intensification of WALKER Cell or La-Nina effect.

Under climatological illustration and meteorological studies it is clear that the onset and offset of monsoon and amount of precipitation over India, depends on several factors.

① Solar Insolation and Insolational Heating
② Heating of Tibetan Plateau,
③ Generation of Strong/Intense convection Currents from the surface of Tibetan Plateau
④ Displacement of South tropical Jet
⑤ Advancement of ITCZ upto 25° Northern Latitude
⑥ formation of Strong Easterly Jet
⑦ Creation of Strong High Pressure condition over Madagascar Megscarnis Island.
⑧ Pressure Gradient between subtropical High Pressure belt and ITCZ with Tibetan
⑨ Plateau to increase the velocity and intensity of south east trade winds and south-

West monscon.

10: El-Nino

CYCLONES

#TROPICAL CYCLONES

Tropical cyclones are low pressure converging circulatory systems originating in tropical, sub -tropical zone between the latitudenal extent of five to thirty (5°-30°) Northern and southern hemisphere along the eastern coast of continental landmass over an Inland Seas. They are general heat exchange mechanism or heat engine that transform the heat budget of a particular region. Cyclonic air motion is seasonal and regional in their formation subsequently their origin mainly takes place over the surface of Gulf of Mexico, Bay of Bengal and South China Sea. They are also named differently in different parts of the world,

In North and Central America they are regarded as Hurricanes. in China, Japan and Thailand they are called as Typhoons and in Australia they are named as Willi-Willies. It should be noted that the nomenclature of circulatory air motion could change but their mechanism and process of formation remains almost the same over the surface. It is also a well accepted in notion that cyclonic air motion has four basic components.

① There should be a centralised low pressure area surrounded by peripheri high pressure isobar, ② winds always converges towards the same centralised low pressure area by acquiring spiral and circulatory motion.

③ Their formation always takes place over an oceanic surface.

④ The Rotatory air motion remains anticlock-wise in northern and clockwise in southern hemisphere.

Mechanism of Tropical Cyclone

The mechanism of Tropical cyclones also depends on solar Insolation and Insolational heating after march with northward shift of SON when the solar Insolational remain vertical in northen hemisphere, the continental landmass surrounding an inland sea able to absorbed sufficient amount of unit heat in comparison to adjacent water bodies. In the course of time the transfer of heat from land to sea by the subsequential process of conduction heating to increase the sea surface temperature of Inland sea segw gradually. Rise in the sea surface temperature is maintained by the inculcation of warm oceanic water in the basin of the inland seas carried by prevailing easterlies. As soon as the sea surface temperature reach upto the threshold limit of 27°C or more the rate of evaporation also increases to create instability in atmosphere. As a product of evaporation the amount of heat released by the oceanic surface would be gained / absorbed by the air

(8)

parcles prevailing over an inland sea.
By this resultant phenomena warm and moist air parcles rise from the surface of Inland sea to create a low pressure condition, which ultimately transform into a centralised low pressure area surrounded by peripheri High pressure Isobars. Once a centralised low pressure condition develop over an inland sea, it further get intensified by three atmospheric oceanographical factors.

① Presence of ITCZ over the surface of Inland sea.

② Regular supply of latent heat of condensation by saturated air parcles, which make the process of convection rapid and continuous.

③ Presence of Upper tropospheric High pressure condition that diverges the rising convection current horizontally in different direction. by this resultant phenomena and intense low pressure condition develops over the surface of Earth.

Now to fill this centralised low pressure area winds from different direction converges which coming under the influence of ~~coriolis~~ CORIOLIS force deflect from their normal path and acquire circulatory wind such circulatory low pressure wind motion get the ~~alagis~~ designation of tropical cyclone, Typhoons and Willi-Willies. It is also well accepted notion that the velocity of converging air parcle remains very high near the centralised low pressure areas.