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HISTORIC FLOODING SWAMPS SOMALIA

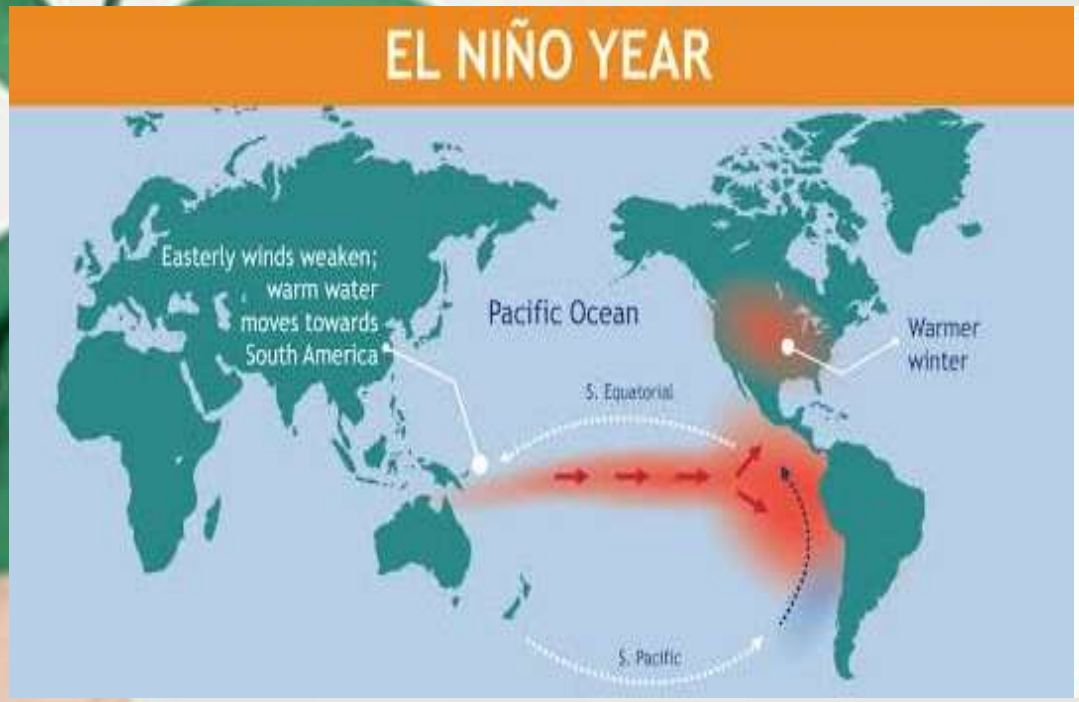
Key Facts About Somalia

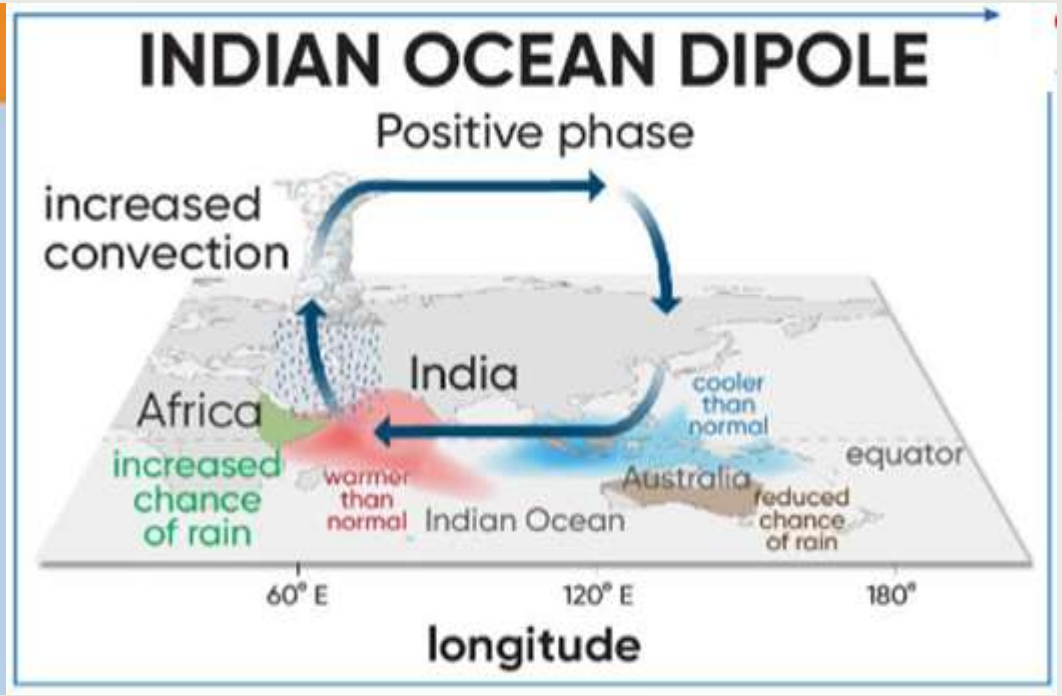
- **Location:**
  - **Somalia is situated in the Horn of Africa, bordered by the Gulf of Aden to the north, the Indian Ocean to the east, Kenya and Ethiopia to the west**

- **Climate:**
  - **Somalia experiences a predominantly arid to semi-arid climate with hot temperatures and limited rainfall.**

- **Once in a century flooding swamped Somalia after historic drought**
- **The heavy seasonal rainfall has been worsened due to the combined impact of two climate phenomenon, El Niño and the Indian Ocean Dipole (IOD), as per UNOCHA.**

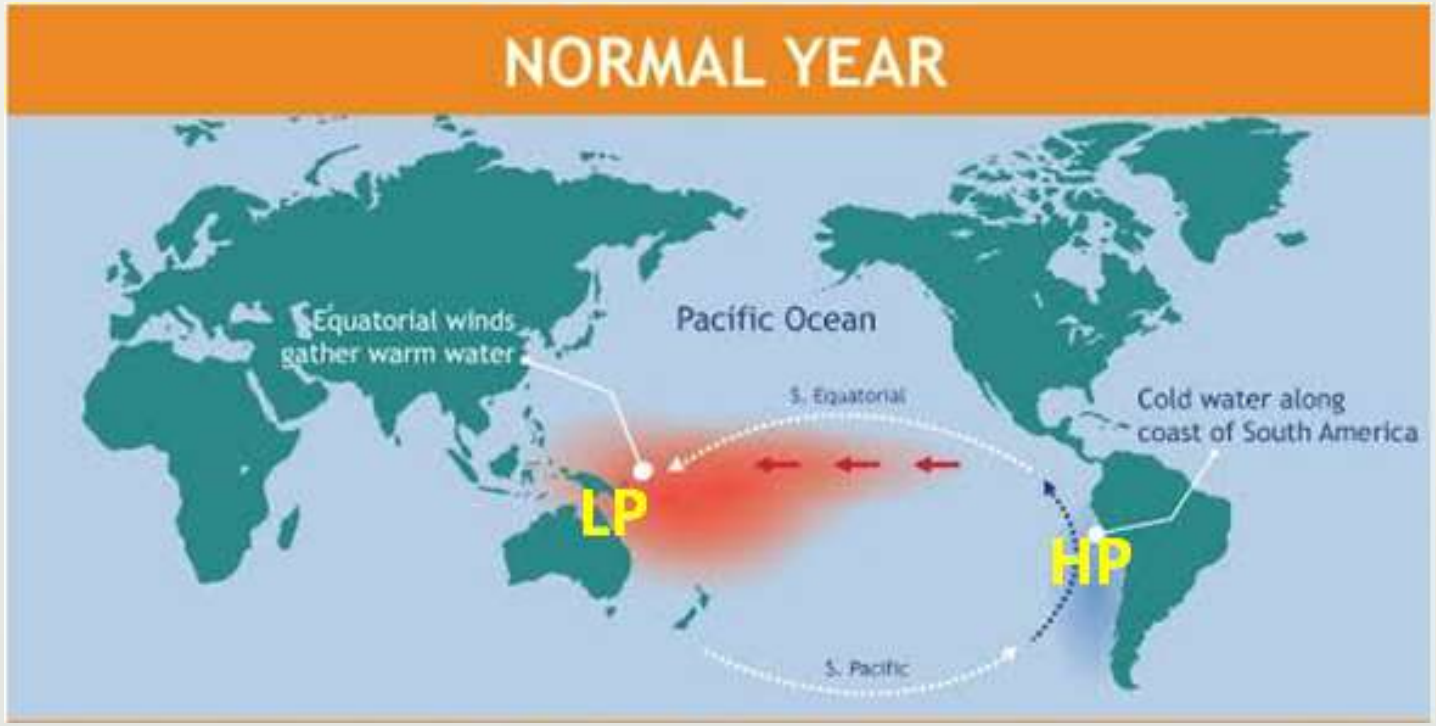
El Niño & Indian Ocean Dipole





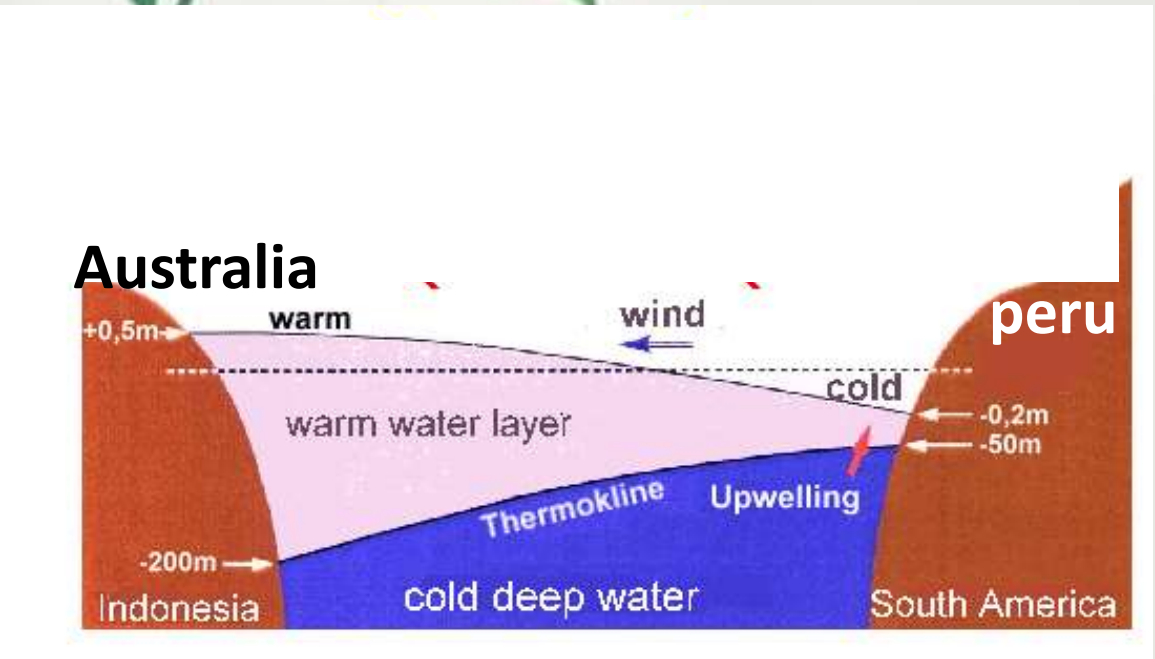
Normal Conditions

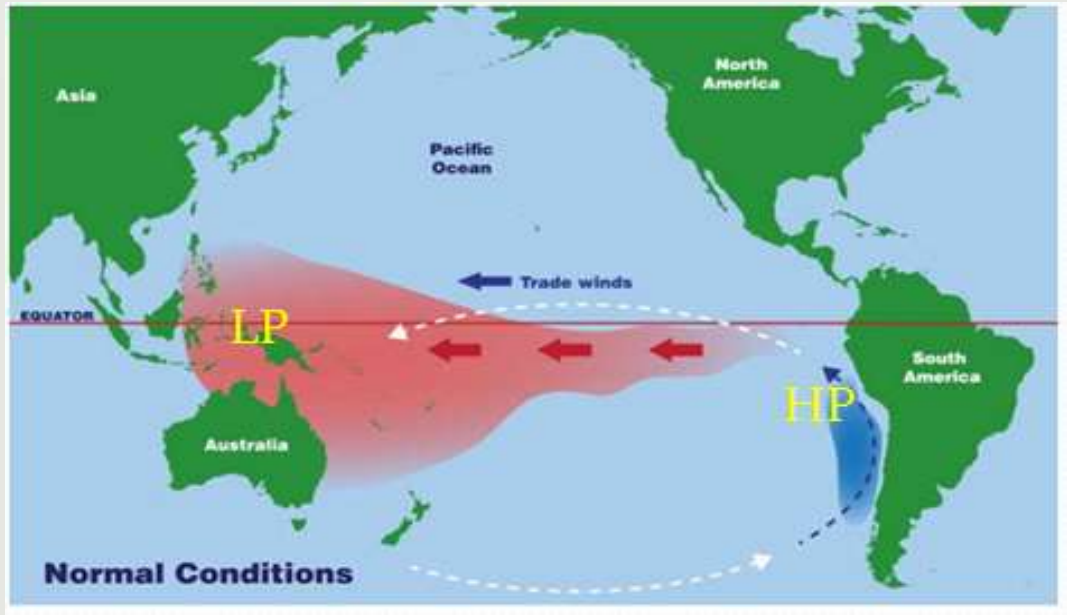
- In a normal year, a surface low pressure develops in the region of northern Australia and Indonesia and
- high pressure system over the coast of Peru.
- As a result, the trade winds over the Pacific Ocean move strongly from east to west.

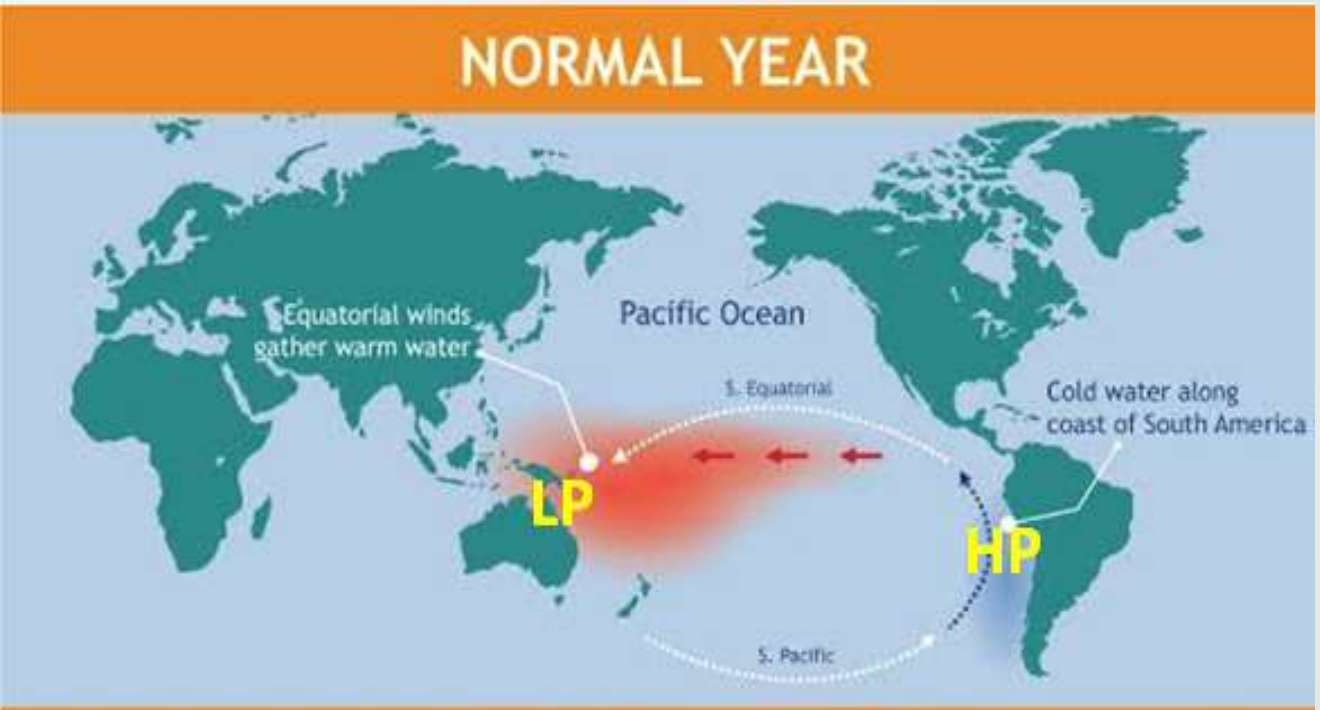


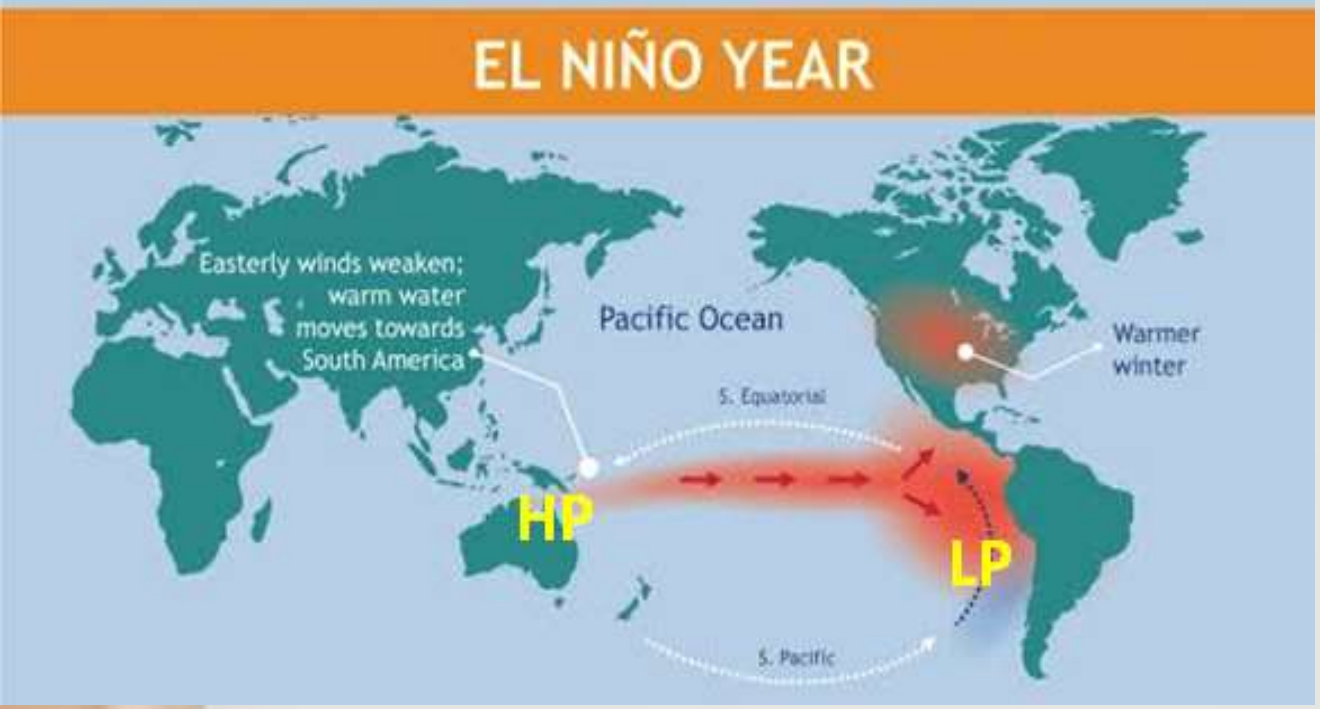
- The west flow of the trade winds carries warm surface waters westward, bringing convective storms (thunderstorms) to Indonesia and coastal Australia.

- Along the coast of Peru, cold bottom cold nutrient rich water wells up to the surface to replace the warm water that is pulled to the west.









During El Nino year

In an El Niño year, air pressure drops over large areas of the central Pacific and along the coast of South America.

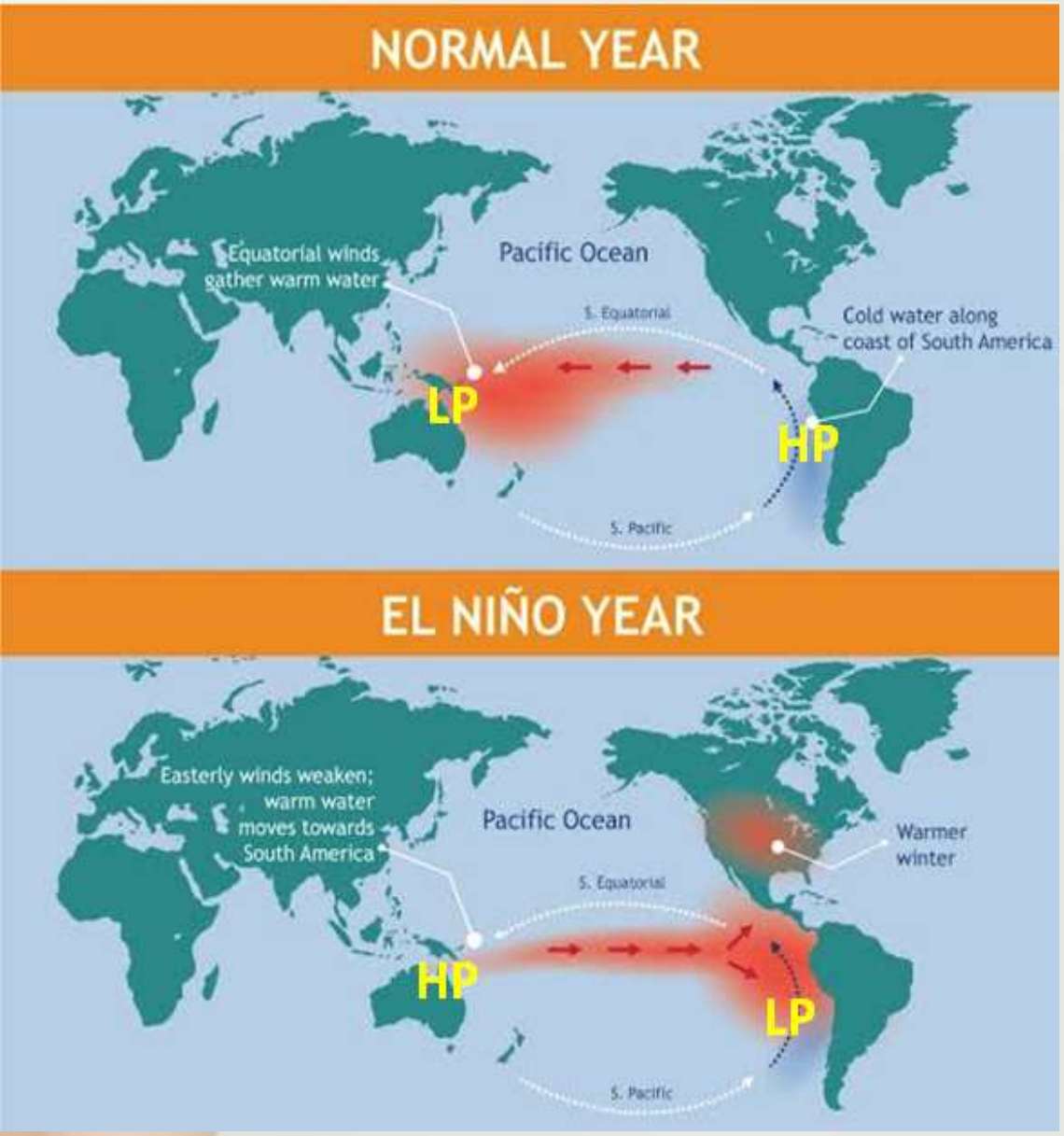
The normal low pressure system is replaced by a weak high in the western Pacific (the southern oscillation).

This change in pressure pattern causes the trade winds to be reduced == Weak Walker Cell. Sometimes Walker Cell might even get reversed.

This allows accumulate warm ocean water along the coastlines of Peru and Ecuador.

It causes the thermocline to drop in the eastern part of Pacific Ocean which cuts off the upwelling of cold deep ocean water along the coast of Peru.

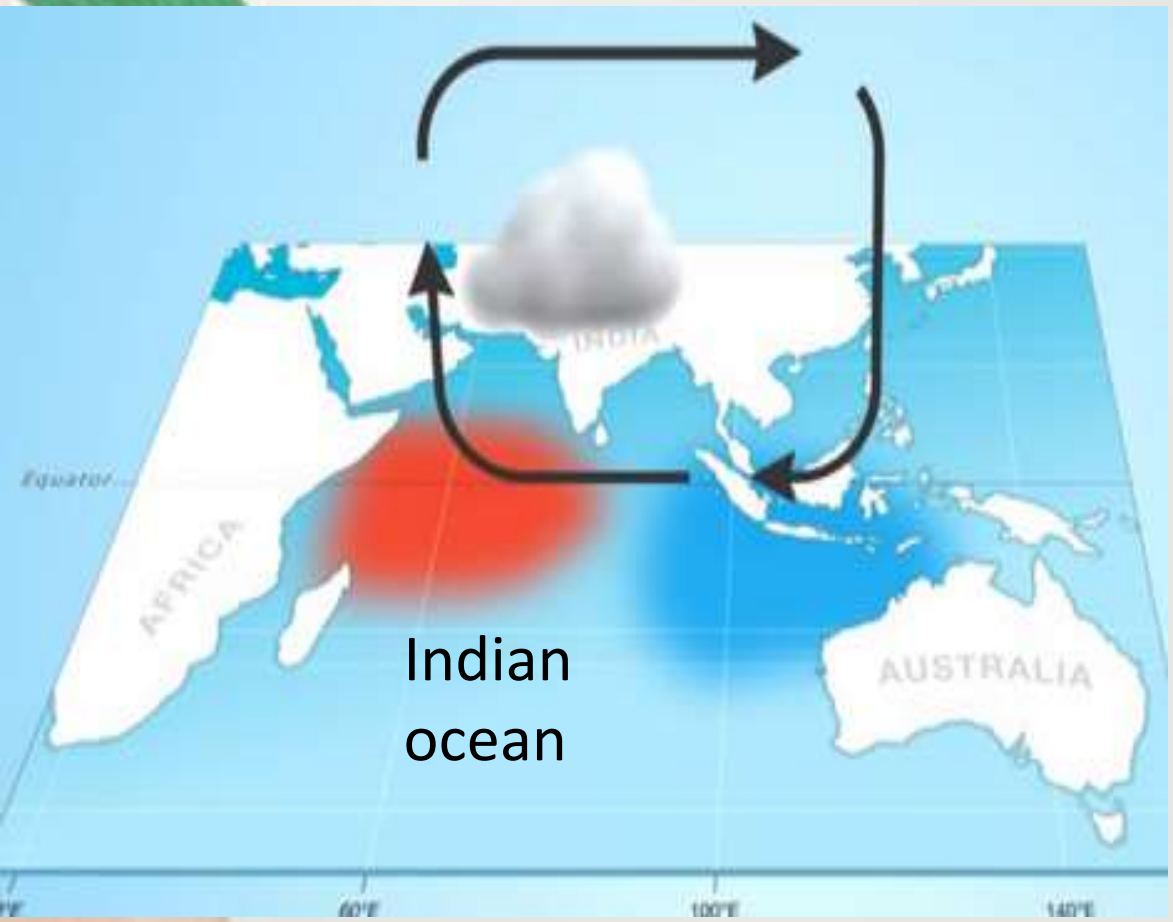
Climatically, the development of an El Niño brings drought to the western Pacific, rains to the equatorial coast of South America, and convective storms and hurricanes to the central Pacific.



Effects of El Nino

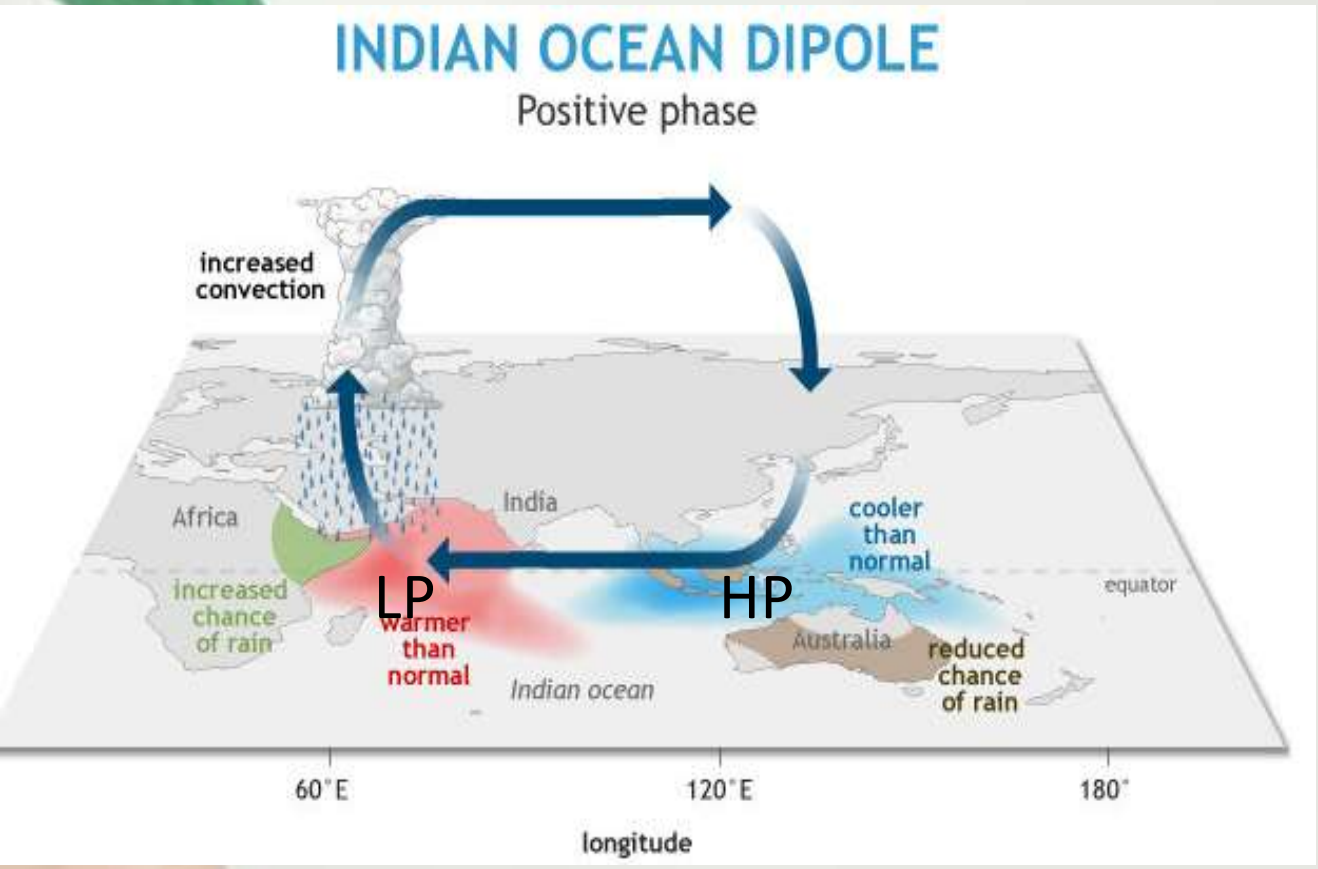
- The warmer waters had a devastating effect on marine life existing off the coast of Peru and Ecuador.
- Fish catches off the coast of South America were lower than in the normal year (Because there is no upwelling).
- Severe droughts occur in Australia, Indonesia, India and southern Africa.
- Heavy rains in California, Ecuador, and the Gulf of Mexico.

Indian Ocean Dipole



- The Indian Ocean Dipole (IOD) is defined by the difference in sea surface temperature between two areas (or poles, hence a dipole) –
- a western pole in the Arabian Sea (western Indian Ocean) and an eastern pole in the eastern Indian Ocean south of Indonesia.
- IOD develops in the equatorial region of Indian Ocean from April to May peaking in October.

Positive Indian Ocean Dipole



positive phase of the Indian Ocean Dipole typically peaks in September–November,

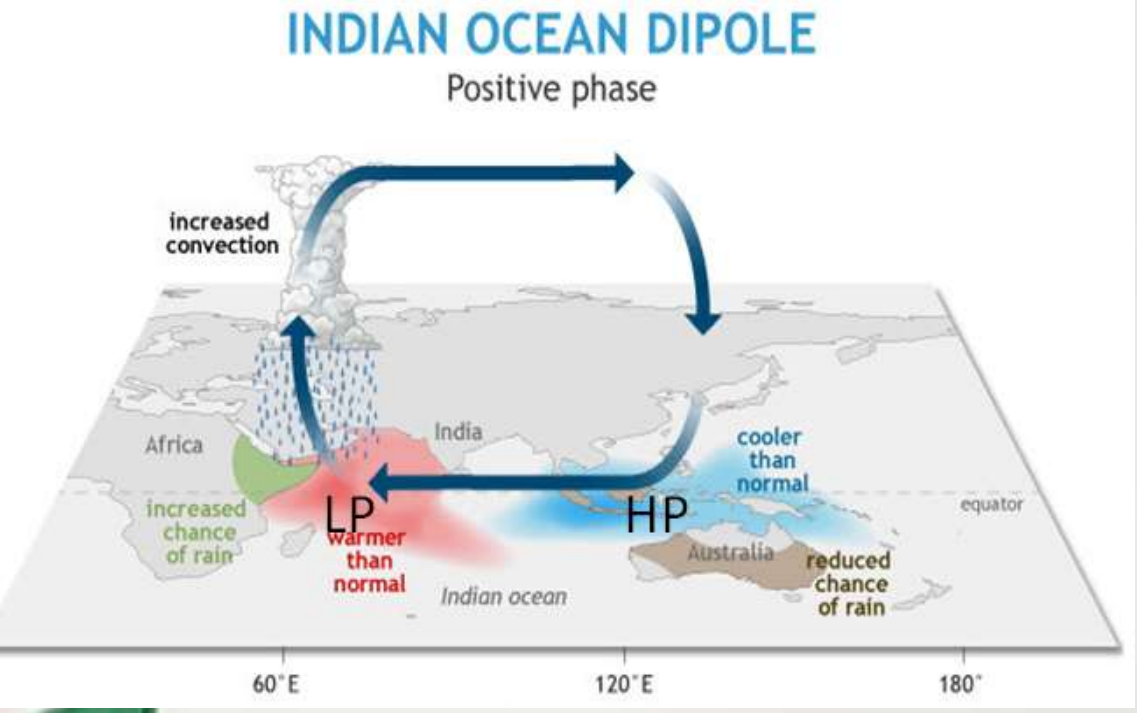
During this, cooler-than-normal sea surface conditions west of Indonesia and

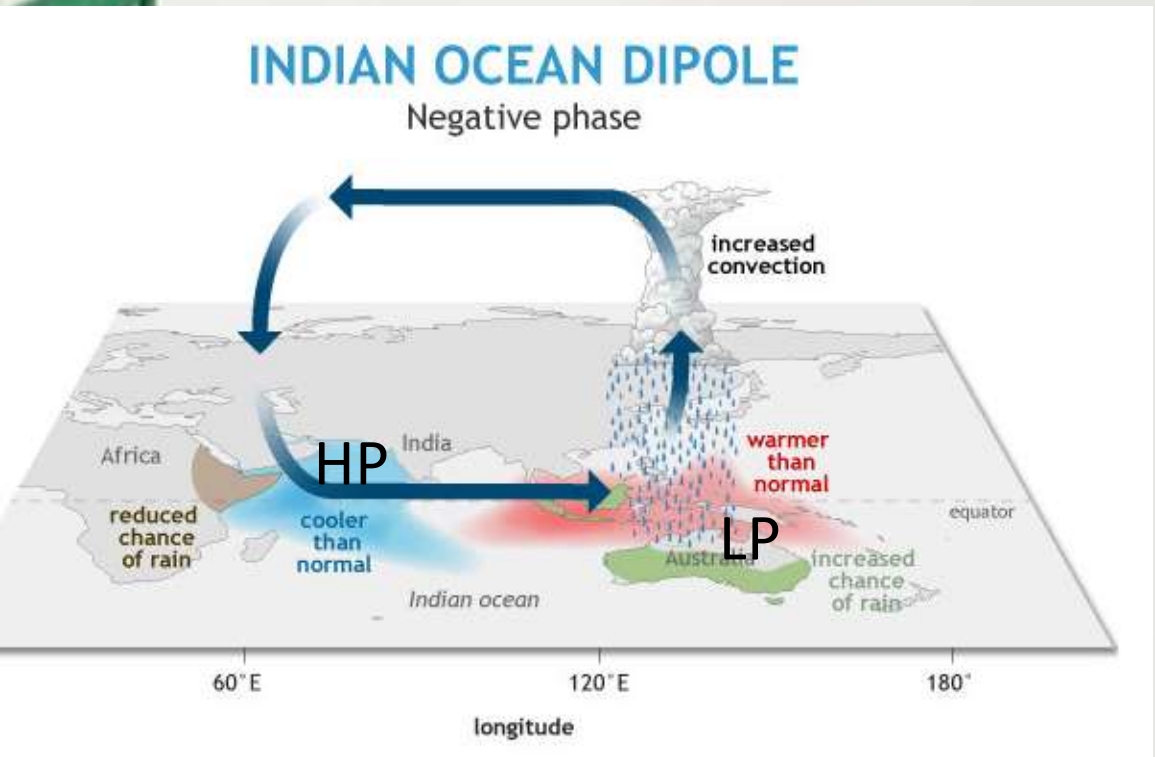
warmer-than-normal conditions in the western Indian Ocean

alter the atmospheric circulation in the Indian Ocean region.

Indonesia and Australia tend to be drier than normal, which increases the chances of bushfires, while

eastern Africa tends to be wetter than normal, increasing the likelihood of floods

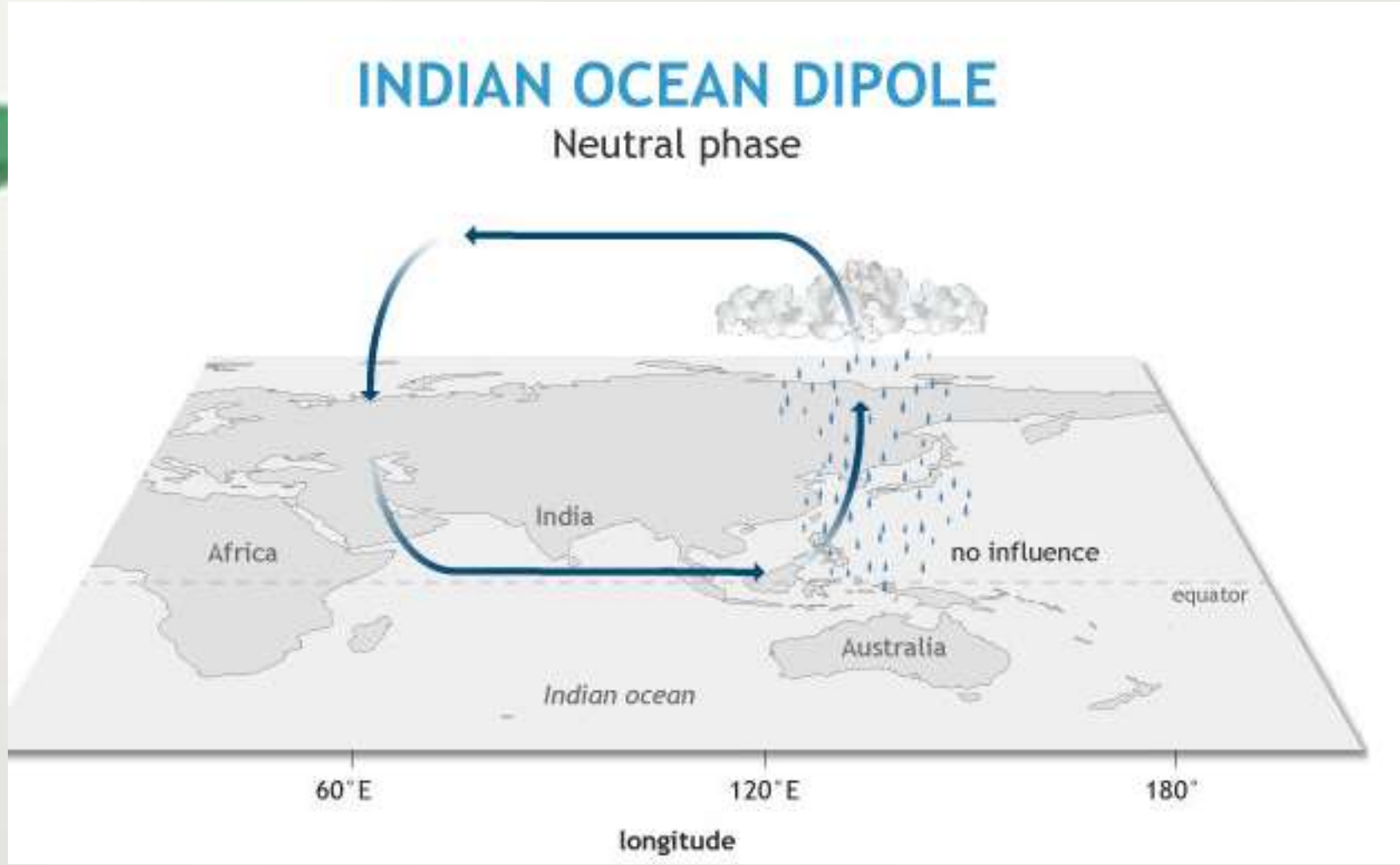




Negative Indian Ocean Dipole

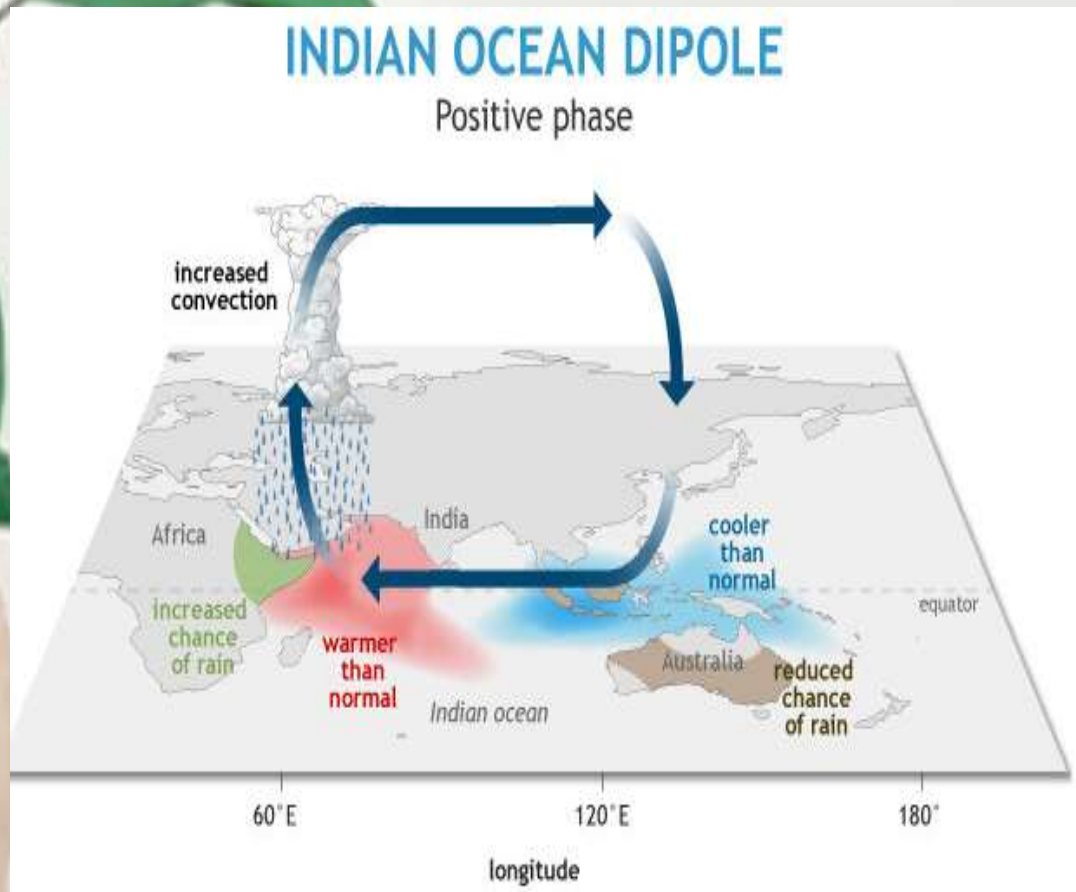
- warmer-than-normal sea surface conditions west of Indonesia and
- cooler-than-normal conditions in the western Indian Ocean
- alter the atmospheric circulation in the Indian Ocean region.
- Indonesia and Australia tend to be wetter than normal,
- while eastern Africa tends to be drier than normal.

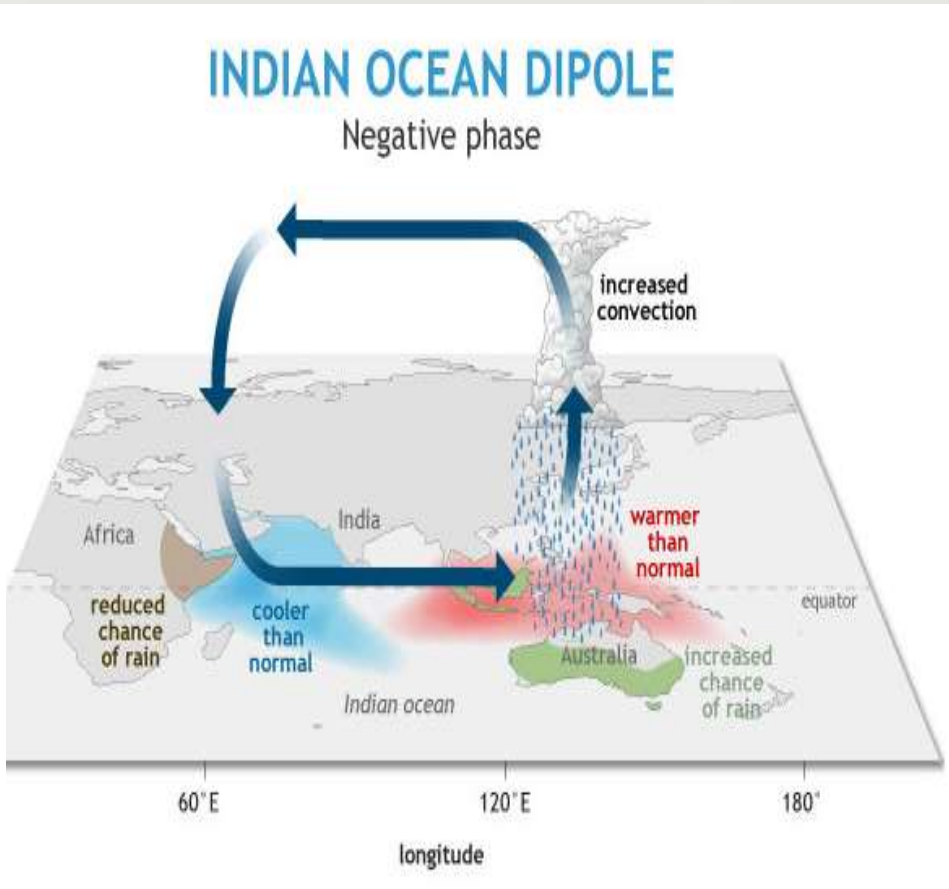
The neutral phase of the Indian Ocean Dipole shows neither positive nor negative features



Impact on IOD on Cyclonogeneis in Indian Ocean

- **Positive IOD (Arabian Sea warmer than Bay of Bengal) results in more cyclones than usual in Arabian Sea.**
- **Negative IOD results in stronger than usual cyclonogenesis in Bay of Bengal. Cyclonogenesis in Arabian Sea is suppressed.**





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