



KAMARAJ IAS ACADEMY
Only IAS Academy by Grandson of "Per. unthalaivar Kamarajar"

FUJIWHARA EFFECT

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Two potential cyclonic storms are forming in the Bay of Bengal with global forecast models indicating a possible Fujiwhara interaction between them.

What is the Fujiwhara Effect?

- A rare meteorological phenomenon where two nearby cyclonic systems begin to rotate around a common centre due to interaction of their wind circulations.
- Identified by Sakuhei Fujiwhara (1921), it occurs mostly in the tropical cyclone belt when storms are within ~1,400 km of each other.

Factors Aiding Its Occurrence:

- Proximity of two cyclones within a threshold distance (typically <1400 km in the Indian Ocean).
- Similar rotational direction (counter-clockwise in the Northern Hemisphere).
- Favourable sea surface temperatures >26°C supporting sustained convection.
- Low vertical wind shear allowing stable cyclone structure.

How it forms?

- **Close Formation:** Two cyclones forming within ~1400 km begin influencing each other's wind fields and natural movement patterns due to proximity.
- **Wind Interaction:** Their outer rainbands and upper-level winds overlap, creating deformation zones that gradually pull the systems toward each other.
- **Coupled Circulation:** The interacting winds generate a shared pivot point, forcing both cyclones to rotate in curved, mutually influenced paths.
- **Orbiting:** If one storm is stronger, the weaker one revolves around it and may eventually be absorbed due to energy imbalance.
- **Merger:** When centres move very close, the vortices fuse into a single, larger cyclone with enhanced convection and stronger winds.
- **Weakening:** Competition for heat and moisture can deprive the weaker cyclone of inflow, triggering rapid weakening or dissipation.
- **Deflection:** If interaction is weak, storms may push each other onto diverging paths, adding significant uncertainty to forecasts.

Kamaraj IAS Academy

Plot A P.127, AF block, 6 th street, 11th Main Rd, Shanthy Colony, Anna Nagar, Chennai, Tamil Nadu 600040

Phone: **044 4353 9988 / 98403 94477 / Whatsapp : 09710729833**