



DAILY CURRENT AFFAIRS 06-04-2024

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Earthquake

Syllabus: GS-1; Physical Geography- Earthquake

Context

1. *Three days after **Taiwan experienced a 7.4-magnitude earthquake**, the most powerful in the island country in 25 years, rescue operations are still ongoing as over 600 people, including about 450 at a hotel in the Taroko park, remained stranded in various locations cut off by rockslides and other damage.*
2. *An **earthquake shook the densely populated New York City metropolitan area** on 05 April 2024, the U.S. Geological Survey said, with residents across the Northeast reporting rumbling in a region where people are unaccustomed to feeling the ground move.*

Taiwan earthquake

- **Taiwan is in a seismically active zone, on the Pacific Ring of Fire, and at the western edge of the Philippine Sea Plate.**
- *Geologists have identified 42 active faults on the island, but most of the earthquakes detected in Taiwan are due to the convergence of the Philippine Sea plate and the Eurasian Plate to the east of the island.*

What is called earthquake?

- *An earthquake is the **sudden release of strain energy in the Earth's crust**, resulting in waves of shaking that radiate outwards from the earthquake source.*
- *When stresses in the crust exceed the strength of the rock, it breaks along lines of weakness, either a pre-existing or new fault plane.*

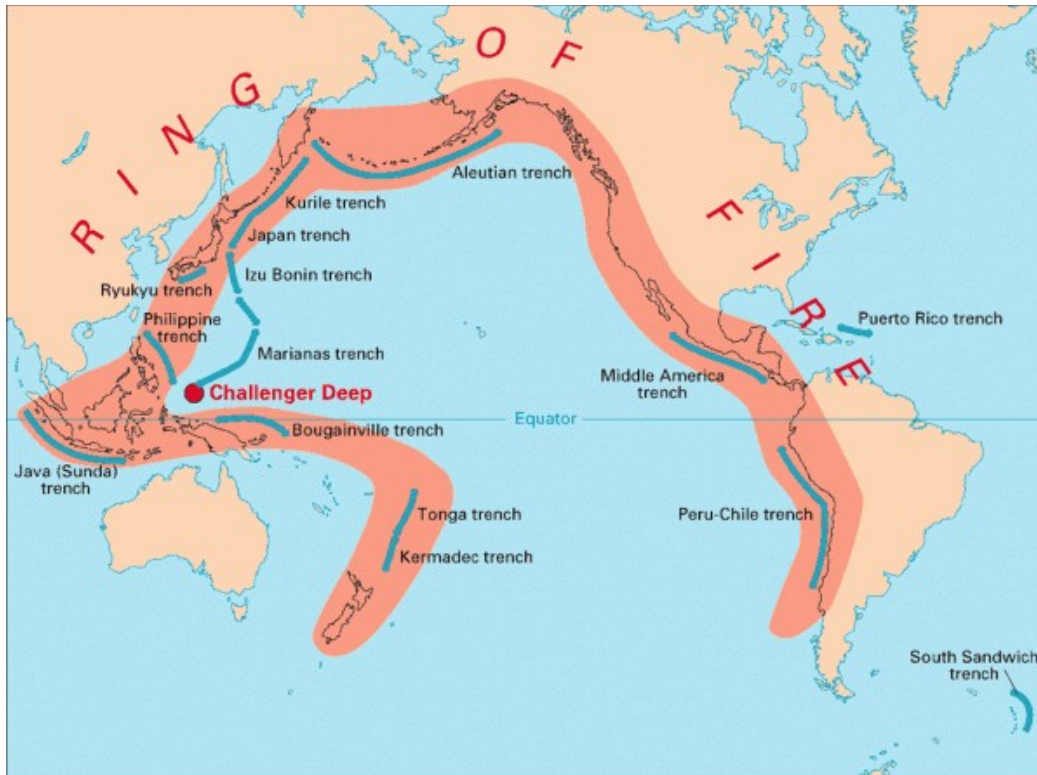
What are the main causes of earthquakes?

- *The Main Causes of Earthquakes are the Movement of Tectonic Plates, Volcanic Eruptions, Underground Explosions, Induced Quaking (Human Activities), etc.*
- *Apart from these, earthquakes can be caused by a number of geological factors, natural phenomena, and human activity.*

What is the Ring of Fire?

- *The Ring of Fire is essentially a **string of hundreds of volcanoes and earthquake-sites which runs along the Pacific Ocean.***
- *It is a semicircle or horse shoe in shape and stretches nearly 40,250 kilometres.*

- *The Ring of Fire traces the meeting points of numerous tectonic plates, including the **Eurasian, North American, Juan de Fuca, Cocos, Caribbean, Nazca, Antarctic, Indian, Australian, Philippine, and other smaller plates**, which all encircle the large Pacific Plate, according to a report by National Geographic.*
- *It runs through 15 more countries including the USA, Indonesia, Mexico, Japan, Canada, Guatemala, Russia, Chile, Peru, and the Philippines.*



Why is the Ring of Fire vulnerable to earthquakes?

- *The Ring of Fire witnesses so many earthquakes due to **constant sliding past, colliding into, or moving above or below each other of the tectonic plates.***
- *As the edges of these plates are quite rough, they get stuck with one another while the rest of the plate keeps moving.*
- *An earthquake occurs when the plate has moved far enough and the edges unstick on one of the faults.*

Why are there so many volcanoes in the Ring of Fire?

- *The existence of volcanoes in the Ring of Fire is also due to the movement of tectonic plates.*
- *Many of the volcanoes have been formed through a process known as **subduction.***
- *It takes place when two plates collide with each other and the heavier plate is shoved under another, creating a deep trench.*

- *“Basically, when a ‘downgoing’ oceanic plate [like the Pacific Plate] is shoved into a hotter mantle plate, it heats up, volatile elements mix, and this produces the magma.*
- *The magma then rises up through the overlying plate and spurts out at the surface,” which leads to the formation of volcanoes, according to a report by DW.*
- *Most of the subduction zones on the planet are located in the Ring of Fire and that’s why it hosts a large number of volcanoes.*

RBI defers exchange traded currency derivatives norms

Syllabus: GS-3: Indian Economy – Stock Market.

Context:

- *The Reserve Bank of India (RBI) postponed the implementation of new norms for exchange traded currency derivatives (ETCD) market from April 5 to May 3 due to concerns raised by market participants.*

More about developments:

- *The RBI stated that the **regulatory framework for ETCs** has remained consistent and there has been no change in policy approach.*
- *In January, the **RBI introduced a new framework** for hedging foreign exchange risks, scheduled to be implemented from April 5, 2024.*
- ***The new norm allowed users to take positions** in the foreign exchange derivatives market up to a limit of \$100 million **without needing to establish underlying exposure.***
- ***Stock exchanges were instructed to inform users** that while they aren't required to establish underlying exposure, they must ensure the existence of a valid underlying contracted exposure.*
- *The **regulatory framework for participation in ETCs** involving the rupee is guided by the provisions of the **Foreign Exchange Management Act (FEMA), 1999**, which mandates ETCD contracts for hedging exposure to foreign exchange rate risks.*

What are Exchange Traded Derivatives (ETD)

- ***Exchange Traded Derivatives (ETD)** are standardized financial contracts traded on stock exchanges, regulated by market authorities like the Securities and Exchange Board of India (SEBI).*
- *These contracts **derive value from underlying assets** like stocks, bonds, commodities, or currencies.*

Examples

Futures Contracts

- *Agreements to buy or sell assets (e.g., wheat, oil) at a set price on a future date.*
- *Example: Farmers use futures contracts to secure prices for crops before harvesting.*

Options Contracts

- *Grants the right, not obligation, to buy or sell assets at a specific price within a timeframe.*
- *Example: Investors buy call options on stocks for future purchase at a predetermined price.*

Exchange-Traded Funds (ETFs)

- *Investment funds traded on stock exchanges, holding portfolios of assets.*
- *ETFs' value is derived from the assets they hold.*

Types

Stock ETDs

- *Offered exclusively by exchanges like the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE).*
- *Include Stock Forwards and Stock Options.*

Index ETDs

- *Trade on major stock indices with options for index forwards and options.*
- *Settlement in cash for index options, unlike stock options.*

Currency ETDs

- *Trade based on currency price movements in stock exchanges.*
- *Standardized contracts for specified currency pairs.*
- *Example: INR fluctuates compared to USD; currency contracts bought in pairs.*

Commodity ETDs

- *Trade on price fluctuations of various commodities.*
- *Available at exchanges like the Multi Commodity Exchange of India Ltd (MCX).*
- *Examples: gold, crude oil, silver, natural gas, copper, zinc, etc.*

Bond ETDs

- *Involve trading in bonds, facilitated by platforms like the NSE.*
- *Specialized products for bond derivatives trading.*

Kodaikanal Solar Observatory (KSO)

Syllabus: GS-3: Science and Technology – Astrophysics.

Context:

- *The 125th anniversary of Kodaikanal Solar Observatory (KSO) was celebrated on April 1, 2024, by Indian Institute of Astrophysics (IIA).*

What is Kodaikanal Solar Observatory (KoSO)?

- *Owned and operated by the Indian Institute of Astrophysics.*
- *Established in 1899 in Kodaikanal, Tamil Nadu.*
- *Focuses on solar studies.*

Need for such an observatory

- *The Great Drought of 1875-1877 highlighted the necessity for solar studies to understand weather patterns.*
- *India's geographical significance underscores the importance of such research due to its impact on global weather.*

Origin

- *Concept originated in the late 19th century.*
- *Solar Physics Observatory was approved in August 1893.*
- *Foundation stone laid by Lord Wenlock in 1895.*
- *Systematic observations began on March 14, 1901.*

Location

- *Situated in the Palani Hills of Tamil Nadu.*
- *Chosen for its favorable atmospheric conditions and high-altitude, dust-free environment.*
- *Provides clear and stable viewing conditions for solar observations.*

Instruments at KoSO

- *Initially focused on sunspots, prominences, and solar radiation.*
- *Advanced instruments include the H-alpha telescope and the White Light Active Region Monitor (WARM).*

Significant achievements of KoSO

- *Identified the Evershed Effect, a phenomenon observed in sunspots.*
- *Expanded research scope to cosmic rays, radio astronomy, ionospheric physics, and stellar physics.*

About the Indian Institute of Astrophysics

- *Founded in 1971, headquartered in Bengaluru.*
- *Autonomous research institute wholly funded by the Department of Science and Technology.*
- *Conducts research primarily in astronomy, astrophysics, and related fields.*

Akashteer system

Syllabus: GS-3; Indigenous Technology

Context

- *The Indian Army has begun the induction of the indigenous Akashteer system to boost its air defence capabilities.*



What is it?

- *Akashteer system will enable the army to **monitor low-level airspace** over battle areas and effectively control the ground-based air defence weapon systems.*

- *By integrating radar and communication systems at all levels into a unified network, Akashteer aims to*
 - *deliver an unprecedented level of **situational awareness and control**;*
 - *enabling swift engagement of **hostile targets**,*
 - *significantly **reduce the risk of fratricide**, and*
 - *ensuring the safety of friendly aircraft in contested airspace*
- *The system's control centres, which are vehicle-based, can maintain operational capabilities even in challenging communication environments.*
- *The system will facilitate the complete automation of air defence operations and significantly enhance the air defence posture of India*

Developed by

- *Developed by **Bharat Electronics Limited (BEL)***

Significance

- *It will **enhance the operational efficiency and integration of the army's air defence mechanisms by digitising the entire process***

Pelagia noctiluca

Syllabus: GS-3; Environment and Ecology- Invasive Species

Context

- *Venomous jellyfish blooms spotted along Visakhapatnam coast in Andhra Pradesh*

About

- *Pelagia noctiluca, also known as the **mauve stinger**, purple-striped jellyfish, or oceanic jelly, is a **jellyfish that can glow in the dark**.*
- *The name Pelagia noctiluca comes from Latin, where pelagia means "of the sea", nocti means "night", and luca means "light".*
- *In German, the name translates to "night light", referring to the jellyfish's reddish color and bioluminescence.*
- *When disturbed, the jellyfish can phosphoresce and leave a trail of glowing mucous behind.*
- *The Pelagia noctiluca is found worldwide in **tropical and warm-temperature seas**.*
- *Unlike other jellyfish species, it has stingers not just on the tentacles, but on the bell too.*



Venomous

- *These sticky and tenacious marine creatures are as beautiful as deadly.*
- *This particular species of jellyfish called **Pelagia noctiluca** is venomous and **causes varying degrees of illness** such as diarrhoea, extreme pain, vomiting and anaphylactic shock (a severe allergic reaction that can develop quickly and be life-threatening).*
- *Scars can remain for years too*

Impact

- *Venomous jellyfish blooms have in the past been known to have **caused massive damage to the fishing industry and impacted tourism.***
- *In January 2024, the **Pelagia noctiluca** bloom was spotted in Phuket in Thailand, following which a safety warning was issued.*
- *In the past, a bloom of **Pelagia noctiluca** had damaged penned salmon at a fish farm in Ireland.*

Jellyfish bloom

- *A jellyfish bloom is when the population of the species increases dramatically within a short period of time, usually due to a higher reproduction rate.*
- *According to marine biologists, jellyfish blooms are reported frequently as a result of rising ocean temperatures, one of the main causes of substantial population growths.*