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TODAY'S ANALYSIS

(04 April 2024)

TOPICS TO BE COVERED

- EARTHQUAKE IN TAIWAN.
- SC TO HEAR PETITION ON MANDATORY VVPAT.
- GLACIAL LAKE OUTBURST FLOODS.



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EARTHQUAKE IN TAIWAN

Nine people died and more than 800 got injured in Taiwan after the island was hit by its **biggest earthquake** in at least 25 years on Wednesday (April 4) morning. While Taiwan's **earthquake monitoring agency** said the quake was **7.2 magnitude**, the **US Geological Survey (USGS)** put it at **7.4**.

THE EPICENTER:

The **epicentre** of the quake was located just **18 kilometres south-southwest of Hualien County**, which is situated in eastern Taiwan.

AFTERSHOCKS:

Multiple aftershocks were experienced, and one of them was 6.5 magnitude, according to USGS.

IS TAIWAN PRONE TO EARTHQUAKES?

Notably, Taiwan is prone to earthquakes as **it lies along the "Pacific Ring of Fire"** — where 90% of the world's earthquakes take place.

The **island and its surrounding waters** have registered about **2,000 earthquakes** with a **magnitude of 4.0 or greater** since **1980**, and **more than 100 earthquakes** with a **magnitude above 5.5**.

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WHAT IS PACIFIC RIM 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**.



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WHY IS PACIFIC RING OF FIRE PRONE 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.

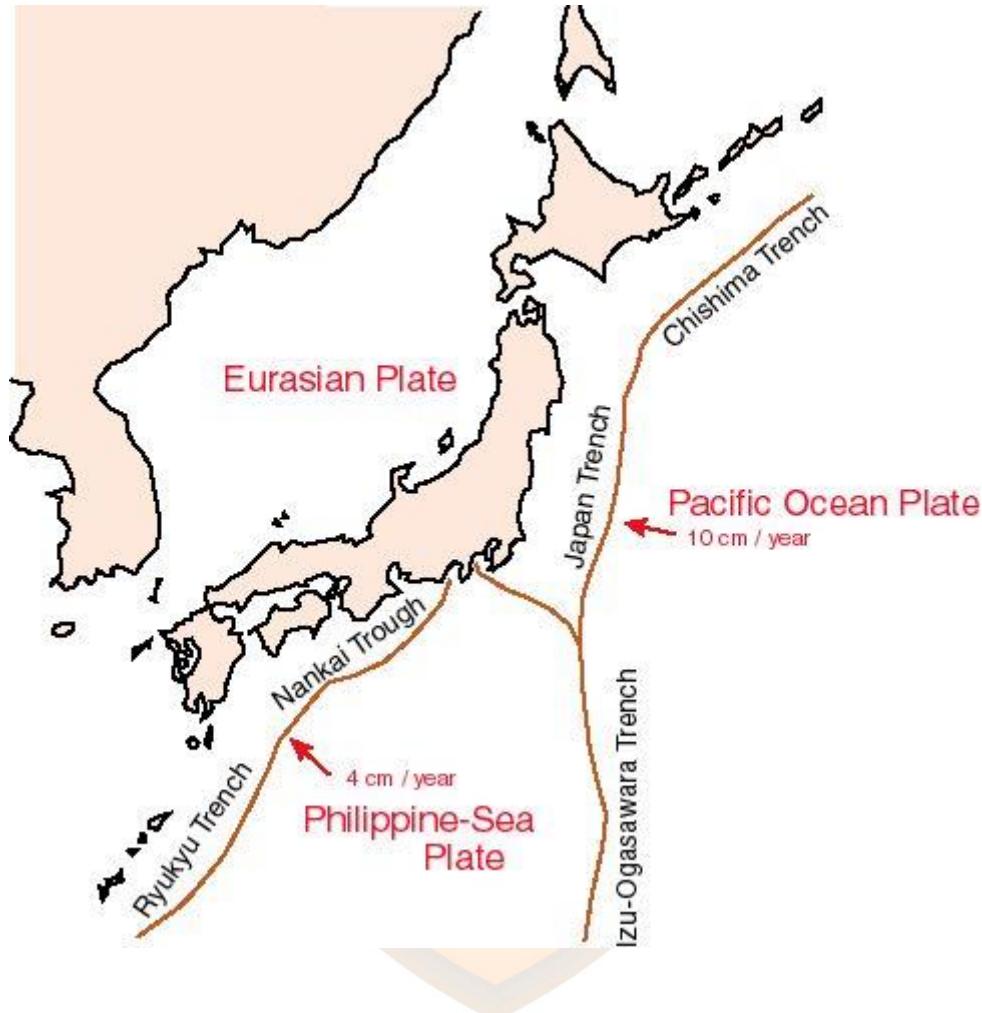
An **earthquake** occurs *when the plate has moved far enough and the edges unstick on one of the faults.*

WHICH PLATES ARE THERE IN OR NEAR TAIWAN?

Taiwan experiences earthquakes due to the interactions of two tectonic plates — **the Philippine Sea Plate** and the **Eurasian Plate**.

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WHY SO MANY VOLCANOES IN RING OF FIRE?

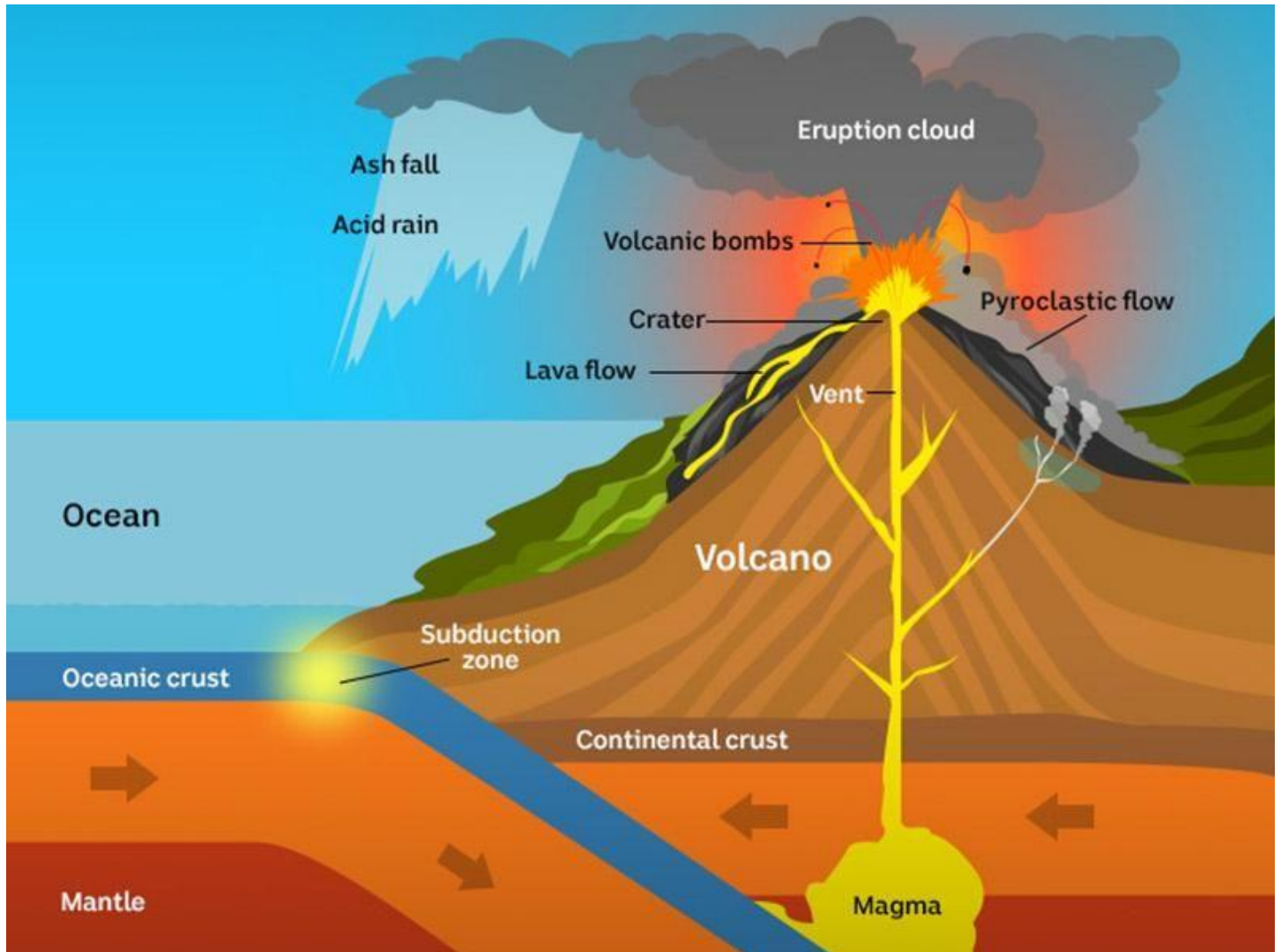
The existence of volcanoes in the Ring of Fire is also **due to the movement of tectonic plates.**

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.

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“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,”

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.

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SC TO HEAR PETITIONS ON MANDATORY VVPAT

A series of petitions have sought a **complete count of VVPAT slips** as opposed to the current practice of verification of votes in only a few EVMs in each Assembly segment through the slips.

SC to list before polls pleas to verify count in all EVMs

A series of petitions have sought a complete count of VVPAT slips as opposed to the current practice of verification of votes in only a few EVMs in each Assembly segment through the slips

THE CASE

Ballot tally

Voter Verifiable Paper Audit Trail (VVPAT) is an independent system attached with the Electronic Voting Machines that allows the voters to verify that their votes are cast as intended.



- Petitioners have moved top court, seeking that the EC be directed to count all VVPAT slips. They also propose simultaneous VVPAT verification

- On July 17, 2023, the top court had sought the response of the EC on a plea filed

by the Association for Democratic Reforms

- EC had said counting of 100% VVPAT slips would pose a great difficulty due to the amount of time it would take

- Court to hear petitioners before first phase of election

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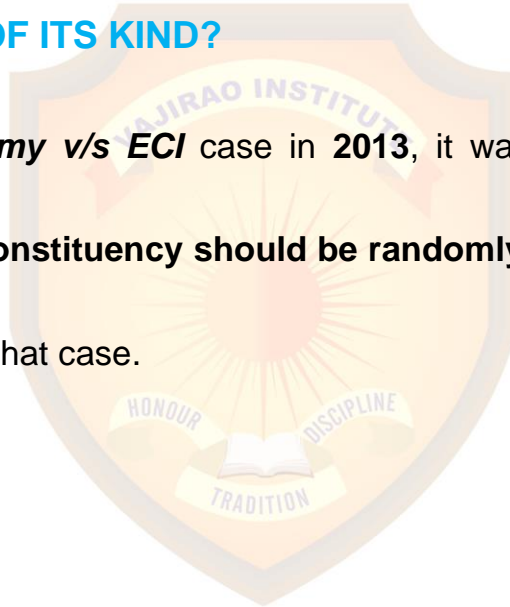
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WHAT IS THE CURRENT PRACTICE?

The current practice is verification of votes cast in **only 5 polling stations of each assembly constituency** through the slips. Making it universal will definitely increase difficulties for the Election Commission of India. (ECI)

IS THIS DEMAND FIRST OF ITS KIND?

No. In ***Subramaniam Swamy v/s ECI*** case in **2013**, it was petitioned **that 50% of the VVPAT machines in each constituency should be randomly verified**. Petitioners this time also have taken reference of that case.



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GLACIAL LAKE OUTBURSTS FLOODS

The **Uttarakhand government** has constituted **two teams of experts** to evaluate the risk posed by five potentially hazardous glacial lakes in the region.

These lakes are prone to **Glacial Lake Outburst Floods (GLOFs)**, the kind of events that have resulted in several disasters in the Himalayan states in recent years.

The goal of the risk assessment exercise is to **minimise the possibility of a GLOF** incident and provide more time for relief and evacuation in case of a breach.

WHAT IS GLOF?

GLOFs are disaster events caused by the **abrupt discharge of water** from glacial lakes — large bodies of water that sit in front of, on top of, or beneath a melting glacier. **As a glacier withdraws**, it leaves behind a depression that gets filled with meltwater, thereby forming a lake.

The **more the glacier recedes**, the **bigger and more dangerous the lake becomes**. Such lakes are mostly **dammed by unstable ice or sediment composed of loose rock and debris**. In case the boundary around them breaks, huge amounts of water rush down the side of the mountains, **which could cause flooding** in the downstream areas — this is referred to as a GLOF event.

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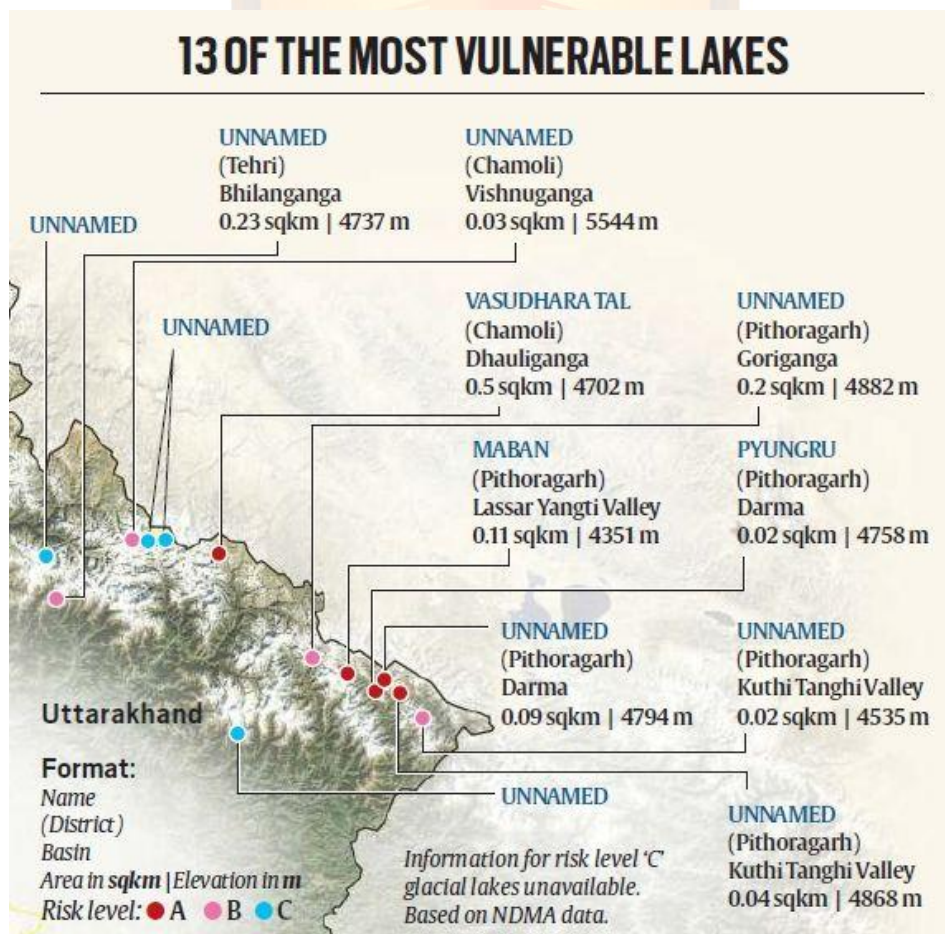


WHO IS CONDUCTING THIS EXERCISE?

The **National Disaster Management Authority (NDMA)**, which operates under the **Union Ministry of Home Affairs**, has identified **188 glacial lakes** in the Himalayan states that can potentially be breached because of heavy rainfall. Thirteen of them are in Uttarakhand.

WHICH FACTOR HAS INCREASED THE RISK OF GLACIAL OUTBURST?

Rising surface temperatures across the globe, including India, have increased the risk of GLOFs. Studies have shown that around **15 million people** face the risk of sudden and deadly flooding from glacial lakes, which are expanding and rising in numbers due to global warming.





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THE SITUATION IN UTTARAKHAND

Uttarakhand has witnessed **two major GLOF events** in the past few years. The first took place in **June 2013**, which affected large parts of the state — Kedarnath valley was the worst hit, where thousands of people died. The second occurred in **February 2021, when Chamoli district** was hit by flash floods due to the bursting of a glacier lake.

As mentioned earlier, Uttarakhand has **13 glacial lakes** which are prone to GLOF. Based on the analysis of available data and research from various technical institutions, these lakes have **been categorised into three risk levels: 'A', 'B', and 'C'**.

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MCQs

1. Consider the following statements and mark the correct one:
1. Pacific Ring of fire is prone to Earthquakes & Volcanoes.
 2. India is part of Pacific Ring of fire.
- (A) Only 1
(B) Only 2
(C) Both 1 & 2
(D) Neither 1 nor 2



Ans. (A)

2. Taiwan is located on the confluence of which of the tectonic plates?
- (A) Eurasian & India plate.
(B) Eurasian & Pacific plate.
(C) Chinese & Nazca plate.
(D) Philippines & Eurasian plate

Ans. (D)

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3. How many statement/s is/are correct?

1. Complete count of VVPAT paper slips is mandated for 50% of polling stations in a constituency.
 2. ECI is aiming to count VVPAT slips on 100% of the polling booths in 2024 elections.
 3. VVPAT is aimed at increasing confidence among the voter.
- (A) Only 1 statement is correct
(B) Only 2 statements are correct
(C) All 3 statements are correct
(D) None of the statements are correct

Ans. (A)

4. Consider the following statements:

- A. Glacial Lake outbursts Floods (GLOF) can be categorised as a climate induced disaster.
- R. GLOF causes flooding due to climate change.
- (A) Both A & R are true & R is the correct reason of A.
(B) Both A & R are true & R is not the correct reason of A.
(C) A is true & R is false.
(D) A is false & R is true.

Ans. (A)

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5. Which of these glacial lakes are in Uttarakhand?

1. Maban
2. Vasundhara Tal
3. South Lhonak

- (A) Only 1
- (B) Only 2 & 3
- (C) Only 1 & 2
- (D) Only 1 & 3

Ans. (C)



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