EDITORIAL: THE HINDU

GENERAL STUDIES 3: DISASTER MANAGEMENT **DATE: 03.04.2025**
TOPIC: EARTHQUAKE

How did the Myanmar earthquake occur?

1. Context

- On **March 28, 2025**, a **powerful 7.7-magnitude earthquake** struck **central Myanmar**, approximately **20 km from Mandalay**, a major city in the region.
- The event was one of the most powerful earthquakes in Southeast Asia in recent years.

2. Origin of the Earthquake

- The earthquake originated along the **Sagaing Fault**, one of the most **seismically active faults in Southeast Asia**.
- This fault is responsible for **numerous historical earthquakes** and plays a major role in Myanmar's tectonic activity.

3. Aftershocks and Seismic Activity

- Several **aftershocks** were recorded within minutes of the main tremor.
- One notable aftershock had a magnitude of **6.4**, adding to the destruction and panic.
- The region remains vulnerable to further tremors, indicating ongoing seismic instability.

4. Impact of the Earthquake

- The quake caused **widespread destruction** across central Myanmar.
- **Thousands of deaths** were reported, with the **U.S. Geological Survey estimating over 10,000 fatalities**.
- **Infrastructure collapse** included homes, religious structures like **pagodas and mosques**, and key transport infrastructure like **bridges**.
- The city of **Mandalay**, with a population of around **1.5 million**, was the **hardest hit**.

5. Why Some Areas Were More Affected

- The **southern part of the Sagaing Fault** experienced higher destruction due to **thicker alluvial soil**, which **amplifies seismic energy**.

- **China's Yunnan Province** and **eastern India** were spared from major damage due to **different geological formations** and the **north-south energy dispersal pattern** of the quake.

6. Earthquake Activity in South Asia

- South Asia is among the **most earthquake-prone regions** globally due to several **tectonic features**, including:
    - The **Himalayas**
    - The **Shillong Plateau**
    - The **Indo-Burman Range**
    - The **Andaman-Nicobar subduction zone**
- The **collision between the Indian and Eurasian Plates** for the past **40 million years** continues to produce stress and seismic activity.
- Historical examples include:
    - **1792 Arakan Earthquake** (Magnitude 8.5): Triggered a tsunami in the Bay of Bengal.
    - **2004 Sumatra Earthquake** (Magnitude 9.2): Led to one of the deadliest tsunamis in recorded history.

7. The Sagaing Fault and Its Characteristics

- The **Sagaing Fault** is a **1,400 km long strike-slip fault**, where tectonic plates **slide past each other horizontally**.
- It accommodates approximately **50–55% of plate motion** in the region.
- The **slip rate** is estimated at **15–25 mm per year**, indicating high stress accumulation.
- It is geodynamically similar to the **San Andreas Fault** in California, USA.

8. Historical Earthquakes on the Sagaing Fault

- The region has a **long history of significant seismic events**, including:
    - **1839 Ava Earthquake** (Magnitude 7.8): Over 500 deaths.
    - **1927 Earthquake**: Strong tremors were felt north of Yangon.
    - **1946 Earthquake** (Magnitude 7.7): Comparable in strength to the 2025 quake.

- **2016 Bagan Earthquake**: Severely damaged ancient religious monuments and heritage sites.

9. Lessons for India

- The 2025 Myanmar earthquake serves as a **warning for India**, which is highly vulnerable to similar seismic risks.
- Major Indian cities, especially in the **Himalayan belt, Northeast, and parts of Delhi and Gujarat**, fall in **high-risk seismic zones**.
- India must focus on:
  - **Implementing earthquake-resistant construction norms**
  - **Urban planning that incorporates seismic risk assessments**
  - **Public awareness campaigns and preparedness drills**
  - **Investing in early warning systems and emergency response frameworks**

10. Conclusion

- The Myanmar earthquake demonstrates the **destructive potential of active fault zones** and the **urgent need for preparedness in neighboring countries like India**.
- With increasing urbanization and population density, **earthquake resilience** must become a **national priority** to protect lives, property, and cultural heritage.

Source: https://www.thehindu.com/sci-tech/science/how-did-the-myanmar-earthquake-occur-explained/article69403721.ece