



12 August, 2024

## Megaquake

**Context:** After a 7.1-magnitude earthquake hit southern Japan on August 8, the meteorological agency issued its first-ever "megaquake advisory."

### ➤ Megaquake Definition:

- A megaquake is a theoretical type of earthquake with a magnitude greater than 10.
- Such an event is practically impossible on Earth due to the absence of fault lines large enough to produce a megaquake.
- While natural tectonic activity cannot cause a megaquake, an asteroid collision could potentially trigger one.
- Megaquakes could drastically alter the topology of continents.
- They could lead to catastrophic global damage and potentially cause mass extinctions on Earth.

### ➤ Megathrust Faults:

#### • Megathrust Definition:

- A megathrust is an extremely large thrust fault, typically found at the interface between tectonic plates in a subduction zone, such as the Sunda megathrust.
- The term can also apply to large thrust faults in continental collision zones, like the Himalayan megathrust.
- Megathrust faults can extend up to 1,000 kilometers (600 miles) in length.

#### • Thrust Faults:

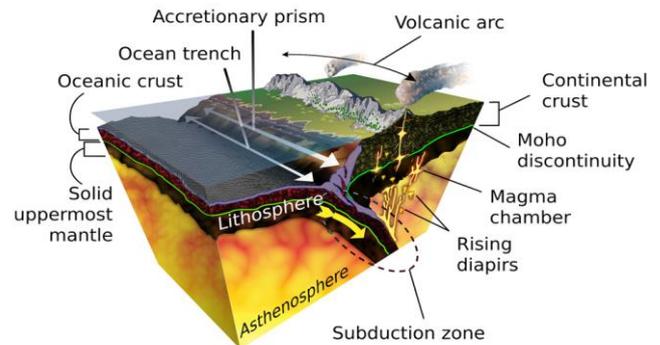
- Thrust faults are a type of reverse fault where the rock above the fault is displaced upwards relative to the rock below.
- This is distinct from normal faults (where the rock above the fault moves downwards) and strike-slip faults (where rocks on either side move horizontally).
- Thrust faults typically dip at a shallow angle, usually less than 45°, and involve large displacements.
- They are characteristic of regions where the Earth's crust is compressed by tectonic forces.

#### • Megathrust Fault Formation:

- Megathrust faults occur where two tectonic plates collide.
- When one plate is composed of oceanic lithosphere, it subducts beneath the overriding plate and sinks into the Earth's mantle as a slab.
- The contact between the colliding plates forms the megathrust fault, with the overriding plate's rock displaced upwards relative to the descending slab.

#### • Megathrust Earthquakes:

- Friction along the megathrust fault can lock the plates together, causing strain to build up in both plates.
- A megathrust earthquake occurs when the fault ruptures, allowing the plates to abruptly move past each other, releasing the accumulated strain energy.



### ➤ Nankai Trough:

- The Nankai Trough is a 900 km long underwater subduction zone.
- It is where the Eurasian Plate collides with the Philippine Sea Plate, forcing the latter into the Earth's mantle.
- This tectonic interaction accumulates stress, potentially leading to a megaquake (magnitude 8+).
- Historically, the Nankai Trough has produced large earthquakes every 100 to 150 years.
- These earthquakes often occur in pairs, with the second tremor usually within two years of the first. The last "twin" earthquakes occurred in 1944 and 1946.

## Sessions of Parliament

**Context:** Both Houses of Parliament were adjourned sine die, following an eventful Budget session.

### ➤ Features of this Budget Session:

- Rajya Sabha functioned for 90 hours and 35 minutes.
- Lok Sabha functioned for around 115 hours with 136% productivity.
- 12 Government Bills were introduced, and 4 Bills were passed.
- 86 starred questions were answered orally.
- 400 matters of urgent public importance were raised during Zero Hour.
- 358 matters were taken up under Rule 377.
- 25 statements were made under Direction 73A.
- 30 additional statements, including three suo motu statements by ministers, were given.
- 1,345 papers were laid on the Table of the House.

## Face to Face Centres





12 August, 2024

### ➤ Meaning of Session of Indian Parliament

- A "Session of Indian Parliament" refers to the period when the Lok Sabha and Rajya Sabha meet to conduct business.
- Sessions allow elected representatives to debate, discuss, and enact laws for the country's governance.
- Governed by the Indian Constitution and Rules of Procedure for Lok Sabha and Rajya Sabha.

### ➤ Types of Sessions of Indian Parliament

- **No Fixed Parliamentary Calendar:**
  - Article 85 of the Constitution stipulates that the President summons each House to meet as necessary.
  - The maximum gap between sessions cannot exceed six months, requiring Parliament to meet at least twice a year.
  - The President can prorogue or dissolve the Lok Sabha.

#### Three Regular Sessions:

- **Budget Session:**
  - Longest and most important session.
  - Focuses on the Union Budget and other legislative business.
  - Typically held from February to May.
- **Monsoon Session:**
  - Held during the monsoon season (July to September).
  - Focuses on legislative business, bill passage, and policy discussions.
- **Winter Session:**
  - Similar focus on legislative business.
  - Generally held from November to December.

### ➤ Components of Sessions of Indian Parliament

- **Meetings:**
  - A session consists of multiple meetings, usually one per day.
  - A session is a broader timeframe encompassing all meetings during a specific period.

#### Sittings:

- Each meeting day has two sittings:
  - Morning Sitting: 11 AM to 1 PM.
  - Post-Lunch Sitting: 2 PM to 6 PM.

### ➤ Procedures Used During Sessions of Parliament

- **Summoning:**
  - The formal process of calling all members to meet for a session.
  - The President of India summons Parliament based on the Cabinet Committee on Parliamentary Affairs' recommendation.
  - The Committee decides session timing and duration, and the President issues the official summon.

- The maximum gap between sessions cannot exceed six months.
- **Adjournment:**
  - Suspension of work in a sitting for a specified time (hours, days, or weeks).
- **Adjournment Sine Die:**
  - Terminating a sitting for an indefinite period, with no set date for reassembly.
  - The power lies with the Presiding Officer (Speaker or Chairman).
  - The Presiding Officer can call a sitting before the scheduled date or after Adjournment Sine Die.
- **Prorogation:**
  - The formal ending of a session by the President.
  - A session is defined as the period between the first sitting and its prorogation (or dissolution for the Lok Sabha).
  - The Presiding Officer adjourns the House Sine Die, after which the President issues a prorogation notification.

## Biofortification

**Context:** Prime Minister Shri Narendra Modi unveiled 109 high-yielding, climate-resilient, and biofortified crop varieties at the Indian Agricultural Research Institute.

### ➤ Biofortification

- **Definition:** Enhancing the nutritional content of food crops through conventional breeding, genetic engineering, or agronomic practices.
- **Goal:** Improve the nutritional quality of staple crops to address micronutrient deficiencies and enhance overall health.

### ➤ Types of Nutrients Targeted

- **Iron:** Address iron-deficiency anemia.
- **Zinc:** Improve health and immune function.
- **Vitamin A:** Increase provitamin A carotenoids to address vitamin A deficiency and support vision and immune function.

### ➤ Methods of Biofortification

- **Conventional Breeding:** Selecting and breeding plants with higher nutrient content.
- **Genetic Engineering:** Introducing or enhancing genes for desired nutrients.
- **Agronomic Practices:** Optimizing soil nutrients or using fertilizers to enhance nutrient uptake.

### ➤ Biofortified Crops

- **Golden Rice:** Genetically engineered for provitamin A (beta-carotene).
- **Iron-Biofortified Beans:** Increased iron content through traditional breeding.
- **Zinc-Biofortified Wheat:** Enhanced zinc levels in wheat varieties.

## Face to Face Centres





12 August, 2024

### ➤ Biofortification in India

- **Government Initiatives:** Endorsement and development of biofortified varieties as a sustainable solution to malnutrition.
- **Key Developments:** Release of 17 biofortified seed varieties of local crops, such as wheat and rice.
- **ICAR Programs:** Nutri-Sensitive Agricultural Resources and Innovations (NARI) and Nutri-smart villages for enhancing nutritional security.
- **National Food Security Mission (NFSM):** Support for farmers through improved practices, seed distribution, and training.

### ➤ Impact on Public Health

- **Micronutrient Deficiencies:** Cost-effective approach to combat hidden hunger.

- **Health Outcomes:** Improved health, reduced risk of chronic diseases, and better cognitive development in children.
- **Healthcare Costs:** Potential reduction in costs associated with treating nutritional deficiencies.
- **Sustainability:** Long-term solution integrated into staple crops.

### ➤ Global Initiatives

- **HarvestPlus:** Global program focusing on biofortified crops like rice, wheat, beans, and cassava; operates in India since 2011.
- **Global Alliance for Improved Nutrition (GAIN):** Promotes biofortification to improve nutritional outcomes, particularly in developing countries.

## NEWS IN BETWEEN THE LINES

### Sardar Sarovar Dam

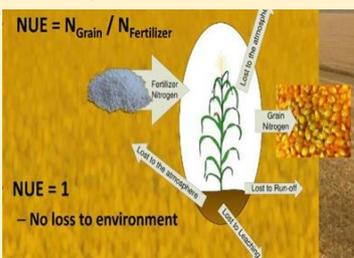


Recently, with rising water levels in the Sardar Sarovar dam due to heavy rain and releases from the Omkareshwar dam, authorities opened nine radial gates by 1.5 meters.

#### About Sardar Sarovar Dam:

- Sardar Sarovar Dam (SSD) is a **concrete gravity dam** built on the **Narmada River** in Gujarat's Narmada district.
- It is the **third-highest concrete dam** (after Bhakra in Himachal Pradesh and Lakhwar in Uttar Pradesh) in India, with a length of 1.2 km and a depth of 163 m.
- It is also the **second largest gravity dam in the world** in terms of the volume of concrete used, after the Grand Coulee Dam in the United States.
- It is **part of the Narmada Valley Project**, a large hydraulic engineering project that involves the construction of a series of dams on the Narmada River.
- The dam was **conceived in 1979** to address agricultural and power crisis issues in the state.

### Nitrogen-Use Efficiency



Recently, biotechnologists at Guru Gobind Singh Indraprastha University found significant variation in nitrogen use efficiency (NUE) among popular rice varieties.

#### About Nitrogen-Use Efficiency:

- Nitrogen-Use Efficiency (NUE) refers to the **yield of a crop** relative to the amount of nitrogen, both **natural** and **artificial**, available to it.
- Nitrogen-use efficiency is the **efficiency with which cultivated rice varieties use nitrogen**.
- It is calculated as the **ratio of nitrogen** used to harvest and a higher number indicates low wastage.
- It could lead to the **development of high-yielding, low-nitrogen rice strains, reducing fertilizer costs and pollution**.
- In India, rice is the crop that uses the most nitrogen, with **37% of nitrogen fertilizer** applied to it.
- However, **only 33% of the nitrogen applied to rice** is taken up by the plants, with the remaining **67% remaining in the soil** and seeping into the surrounding environment.

### Perseid Meteor Shower



On August 12, 2004, Perseid meteors streaked across the night sky near Amman, Jordan, in the early hours.

#### About the Perseid Meteor Shower:

- The Perseid meteor shower is an **annual event** that typically starts in July and lasts until late August, with peak activity between **August 11 and 13**.
- The shower is **caused by Earth passing through a cloud of debris** left behind by Comet Swift-Tuttle, which takes 133 years to orbit the sun.
- The **debris, called the Perseid cloud**, stretches along the comet's orbit and is about 27 km wide.
- The meteors are usually **swift and bright** and they often leave behind trails of light and colour.
- The shower is also **known for its fireballs** (caused by larger pieces of cometary material), which are larger explosions of light and colour that can last longer than a regular meteor.

## Face to Face Centres



12 August, 2024

## Personality in News Vikram Sarabhai



### Vikram Sarabhai (12 August 1919 – 30 December 1971)

- Vikram Ambalal Sarabhai, an Indian physicist and astronomer who initiated space research and helped to develop nuclear power in India, was born in Ahmedabad, **Gujarat**.
- He was also often referred to as the "**Father of the Indian Space Program**".

#### Contributions:

- Vikram Sarabhai **founded the Physical Research Laboratory in Ahmedabad in 1947**, which began its operations at his residence, RETREAT, with **cosmic rays as its first research focus**.
- He **set up India's first rocket launch site at Thumba** near Thiruvananthapuram, Kerala.
- He **started the Fast Breeder Test Reactor (FBTR)** project in Kalpakkam, Tamil Nadu.
- He persuaded the Indian government to establish the **Indian National Committee for Space Research (INCOSPAR)**, in 1962, which he chaired and it was **later renamed ISRO in 1969**.

#### Awards and Honours:

- Vikram Sarabhai was awarded **Shanti Swarup Bhatnagar Award** in 1962, the **Padma Bhushan** in 1966 and the **Padma Vibhushan posthumously in 1972** for his contributions to science and engineering in India.
- In his honour, the **Vikram Sarabhai Space Centre** in Thiruvananthapuram, the **Sarabhai Crater on the Moon** and the **Chandrayaan landers** were named after him.

## Place in News

### Rwanda

*Rwanda President Paul Kagame was sworn in on Sunday for a fourth term after sweeping to victory in elections last month with 99% of the vote.*

#### Rwanda (Capital: Kigali)

**Location:** Rwanda is a **landlocked country** located in East Africa.

**Political Boundaries:** Rwanda shares its borders with **Tanzania** (East), the **Democratic Republic of the Congo** (West), **Uganda** (North) and **Burundi** (South).

#### Physical features:

- The highest point in Rwanda is **Mount Karisimbi**, located in the volcanic Virunga Mountains range.
- The major rivers in Rwanda include the **Nile River** (forming as the Kagera River), **Rusizi River**, **Akagera River** and **Nyabarongo River**.
- Rwanda possesses significant mineral resources, including **tin**, **tantalum**, **tungsten**, and **gold**.
- Rwanda is home to several major lakes, including **Lake Kivu**, **Lake Muhazi** and **Lake Ihema**.



## POINTS TO PONDER

- Which state government recently approved the Logistics Policy 2024 to create five lakh job opportunities? – **Maharashtra**
- Which country recently won the CAVA Women's Volleyball Nations League 2024? – **India**
- In which region did the Indian Army conduct the strategic military exercise 'Parvat Prahaar'? – **Ladakh**
- Shri Baba Buddha Amarnath Temple, recently in the news, is located in which valley of Jammu & Kashmir? – **Loran Valley**
- Lake Turkana, recently in the news, is located in which country? – **Kenya**

## Face to Face Centres

