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**RaRe Series - Current Affairs Notes**

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**Geography**



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MAY 2024

## GEOGRAPHY



## AJRAKH



➤ Indian textiles with GI tag	➤ State/ origin
➤ Banarasi Silk	➤ Varanasi in Uttar Pradesh
➤ Chanderi Fabric	➤ Madhya Pradesh
➤ Kanjeevaram Silk	➤ Tamil Nadu
➤ Kota Doria	➤ Mau in Uttar Pradesh and Kota, Rajasthan
➤ Odisha Ikat	➤ Odisha

➤ **Ajrakh** from Kutch gets GI tag.

○ Ajrakh is a traditional **hand-block printing** technique from **Kutch, Gujarat**.

▪ It uses **natural dyes** and **intricate geometric patterns** to create beautiful textiles.

▪ **The unique feature** of Ajrakh is its use of rich earthy colours like **indigo, madder, and mustard**.

➤ **Geographical Indication:**

○ A **Geographical Indication (GI) tag** is a sign used on products from a specific geographical origin with unique qualities or reputation.

▪ In India, GI tags are **issued by the Geographical Indication Registry**.

• **Department:** Industry Promotion and Internal Trade

• **Ministry:** Commerce and Industry.

▪ It ensures that only authorized users can use the product name.

## BLACK SEA



○ The black sea also known as the **Euxine Sea**, is an **inland sea**.

▪ It is **situated between Eastern Europe and Western Asia**.

▪ It serves as **Eastern Europe's gateway to the Mediterranean**

○ **It is bordered by six countries:**

➤ Romania	➤ Ukraine
➤ Bulgaria	➤ Russia,
➤ Turkey	➤ Georgia



### SHINKU LA TUNNEL

- The **Border Roads Organisation** will construct the **world's highest tunnel** at **Shinku La Pass** at **16,580 feet** to connect *Himachal* to Zaskar valley in *Ladakh*.



- Aims at enhancing **all-weather connectivity** in the border areas of Ladakh.
  - It is **situated on the Nimu-Padam-Darcha Road link**, which connects **Ladakh and Himachal Pradesh**.
  - The construction of this tunnel is expected to be completed by 2025.
  - **Upon completion**, the Shinku La tunnel will **become the longest high-altitude highway tunnel in the world**.

### GULF OF ADEN

- The Gulf of Aden is a deepwater gulf of the **Indian Ocean** between
  - Yemen to the north,
  - The Arabian Sea to the east,
  - Djibouti to the west,
  - The Guardafui Channel, Socotra and Somalia to the south.
- In the northwest, it **connects with the Red Sea through the Bab-el-Mandeb strait**, and it connects with the Arabian Sea to the east.
- To the west, it narrows into **the Gulf of Tadjoura in Djibouti**.
  - The Aden Ridge lies along the middle of the Gulf and is causing it to widen about 15mm per year.
- Important cities along the Gulf of Aden include Aden and Mukalla in Yemen, and Djibouti City in Djibouti.

### SEA OF JAPAN



- North Korea recently fired a ballistic missile into the **Sea of Japan**, also known as the East Sea.
- The Sea of Japan is a **marginal sea** located between the Japanese archipelago, Sakhalin, the Korean Peninsula, and the mainland of the Russian Far East.
  - The **Japanese archipelago separates the Sea of Japan from the Pacific Ocean**.
  - The **Sea of Japan is bordered by Japan, Russia, North Korea, South Korea**

### TORNADO



- A **tornado** is a **violently rotating column of air that extends from a cumulonimbus cloud to the Earth's surface**.
  - Unlike cyclones (which are large-scale weather systems), **tornadoes are local and short-lived**.



- The formation of a tornado involves a complex interaction between a supercell (a long-lived severe thunderstorm with a deep, persistently rotating updraft) and the environment.
- **Wind shear** (changes in wind speed and direction with height) plays a crucial role in creating the necessary conditions for tornado development.
  - **Tornadoes are more likely to occur in regions where warm, moist air near the surface interacts with cooler, drier air aloft.**

➤ **Composition and Impact:**

- **Tornadoes consist of air, water droplets, dust, and debris.** The visible funnel is primarily made of water droplets formed from condensation, along with dust and debris picked up from the ground.
- The core of the storm contains the **lowest pressure and highest wind speeds**, causing the most significant damage.
- Tornadoes can destroy buildings, homes, bridges, vehicles, uproot trees, and alter landscapes.
- **The Enhanced Fujita Scale (EF Scale)** rates tornado intensity based on the damage they cause, ranging from EF0 (weakest) to EF5 (strongest).

### SOLOMON ISLANDS

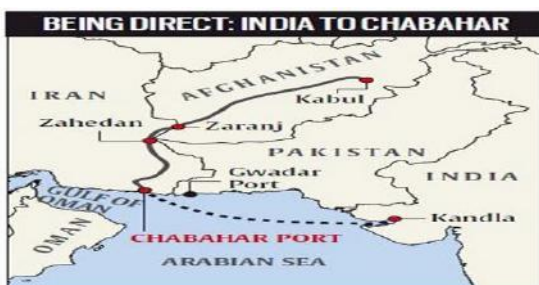
- Jeremiah Manele, a China-friendly former foreign minister, has been elected as the Prime Minister of the **Solomon Islands**.

- The **Solomon Islands**, are an **island country in the South Pacific Ocean**.

- These islands lie **northeast of Australia, bordering** Papua New Guinea, New Caledonia, Vanuatu, Fiji, Wallis and Futuna, Tuvalu, Nauru, and the Federated States of Micronesia.
- The capital, Honiara, is located on the largest island, Guadalcanal.
- The Solomon Islands are part of a volcanic arc, boasting a tropical oceanic climate with hot, humid conditions, cool winds, and abundant rainfall.
- The archipelago's population is primarily Melanesian (95.3%), with smaller Polynesian and Micronesian communities.



### CHABAHAR PORT



- India and Iran signed a 10-year contract for the operation of a terminal at the strategically important Chabahar port in Iran.
- Chabahar is a deepwater port in Iran's Sistan-Baluchistan province.

- India and Iran began a strategic partnership in **2003**, with a key focus on the Chabahar Port project, aiming to connect South Asia with the Persian Gulf, Afghanistan, Central Asia, and Europe.
- India also spent about \$100 million to construct a 218-km road from **Delaram in western Afghanistan to Zaranj** on the Iran-Afghan border to link with Chabahar.
- **IPGL (India Ports Global Ltd)** has been operating Chabahar port through its wholly owned subsidiary, India Ports Global Chabahar Free Zone (IPGCFZ), since 2018.

#### ➤ **Chabahar and INSTC**

- The INSTC, which was **initiated by Russia, India, and Iran**, is a **multi-modal transportation route** envisaged to link the Indian Ocean and Persian Gulf to the Caspian Sea via Iran, and to Europe via St Petersburg in Russia.

### VENEZUELA

- Venezuela, located on **South America's** northern coast, comprises a mainland and numerous islands in the Caribbean Sea. **Its capital and largest city is Caracas.**
- Venezuela shares borders with Colombia to the west, Brazil to the south, Guyana to the east, and is bathed by the Caribbean Sea and the Atlantic Ocean to the north.
- **The Venezuela-Guyana dispute** is over the **Essequibo region**. The region is administered by Guyana but is claimed by Venezuela.
  - The Essequibo region, resource-rich territory comprises two-thirds of Guyana.

### SLOVAKIA

- Slovakia is a **landlocked** Central European country bordered by Poland, Ukraine, Hungary, Austria, and the Czech Republic.
- The capital and largest city is **Bratislava**.
- Slovakia became an independent on 1 January 1993. Slovakia is a **member of the European Union**, the Eurozone, the Schengen Area, the United Nations, **NATO**.

### STRAIT OF GIBRALTAR



- The Strait of Gibraltar **connects the Atlantic Ocean to the Mediterranean Sea**. The two continents **Europe from Africa are separated** by 13 kilometers of ocean at the Strait's narrowest point between Punta de Tarifa in Spain and Point Cires in Morocco.
- Due to its location, it is commonly used for **illegal immigration** from Africa to Europe.
- The strait lies in the territorial waters of **Morocco, Spain, and the British overseas territory of Gibraltar**.

➤ According to the **UN Convention on the Law of the Sea**, foreign vessels and aircraft can transit the Strait of Gibraltar freely.

## 12. RUSSIA



- Russia is a country spanning Eastern Europe and North Asia.
- It is the **largest country** in the world by area, extending across **11 time zones** and sharing land borders with fourteen countries.
- 
- Russia borders the Arctic and Pacific Oceans, as well as several countries including North Korea, China, Mongolia, Kazakhstan, Azerbaijan, Georgia, Ukraine, Belarus, Latvia, Estonia, Finland, Norway, Poland, and

Lithuania.

- It is the world's **ninth-most** populous country and Europe's most populous country.
- Russia has engaged in military conflicts with several former Soviet states, including **Georgia in 2008** and Ukraine, where it **annexed Crimea in 2014** and four more regions in 2022.
- Russia contains **Europe's longest river, the Volga, and its largest lake, Ladoga**. Russia also is home to the **world's deepest lake, Baikal**.

## 13. CHAR DHAM YATRA

- The Chota Char Dham Yatra is a pilgrimage in Uttarakhand, India, encompassing four holy sites: **Yamunotri, Gangotri, Kedarnath, and Badrinath**.
- While **Kedarnath** is the highest at around **11,700 ft**, **Gangotri** is the lowest at around **10,200 ft**.
- **Yamunotri**: Dedicated to Goddess Yamuna, near the river's source in Uttarkashi district.
- **Gangotri**: Dedicated to Goddess Ganga, in Uttarkashi district.
- **Kedarnath**: Dedicated to Lord Shiva, in Rudrapur district.
- **Badrinath**: Dedicated to Lord Vishnu, in Chamoli district.
- Yatra is traditionally completed in a **clockwise direction**, starting from Yamunotri and ending at Badrinath. The high-altitude shrines remain closed for about six months each year during the winter.
- Additional Information:
- The Char Dham Yatra in India comprises Chota Char Dham and the Bada Char Dham. **The Bada Char Dham** consists of **Badrinath, Rameswaram, Puri, and Dwarka**.

## 14. NORWESTERS

- Nor'westers, also known as Kalboishakhi in Bengali or Bordoisila in Assam, are type of thunderstorm that occurs predominantly in the pre-monsoon season (March-May) in the eastern and northeastern states of India like West Bengal, Assam, parts of Orissa, Jharkhand, and Bihar.
- These thunderstorms originate from the north-west direction, hence the name Nor'westers.
- Nor'westers are formed by the collision of dry and moist air masses.
- Intense heating in central India during March-April triggers thunderstorms in West Bengal and Bangladesh, fueled by moist air from the Bay of Bengal and local topography.
- They are associated with thunder, squall lines, lightning, torrential rain, and hail.
- The rainfall is extremely helpful for the pre-kharif crops like jute, paddy, till, and a large number of vegetation and fruits.
- In India, 72% of tornadoes are associated with Nor'westers.

### 15.AMBAJI WHITE MARBLE

- The Ambaji White Marble (AWM) has got **geographical indications (GI) tag**.
- It is named after the town of Ambaji in the state of **Gujarat**.
- AWM can be polished to high gloss, and is relatively hard. It is used in temple architecture.

### 16.KYRGYZSTAN

- Kyrgyzstan, is a **landlocked** country in Central Asia, lying in the Tian Shan and Pamir Mountain ranges.
- **Bishkek** is the capital and largest city of the country.
- Kyrgyzstan is **bordered by Kazakhstan, Uzbekistan, Tajikistan, and China**.
- On 31 August **1991**, Kyrgyzstan declared independence from the USSR and a democratic government was established.
- It is a developing country and is the **second** poorest country in Central Asia after Tajikistan.
- The country's economy is dependent on **deposits of gold, coal and uranium**.



### 17.DEDA METHOD

- The Deda Method is a **traditional seed preservation technique** practiced by the **Muria tribal** farmers.
- To preserve seeds, they are first wrapped in leaves to resemble boulders, then encased in Siali leaves (locally known as 'addakulu'). Each deda, a seed package, has **three layers**: wood ash, lemon leaves, and the seeds. This method, ensures the preservation of up to **5kg** of seeds per deda.

### 18.NEW CALEDONIA

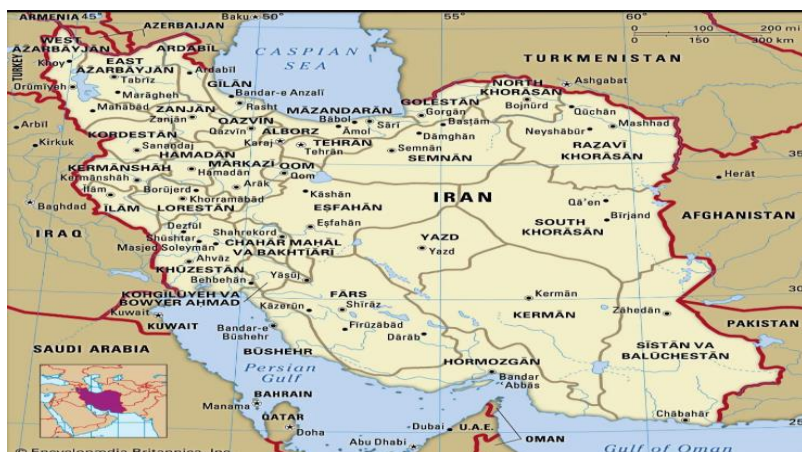


- New Caledonia, also known as Nouvelle-Calédonie in French and Kanaky in Kanak languages, is a collectivity of overseas France located in the **southwest Pacific Ocean**.
- The capital and largest city is **Nouméa**. The official language is **French**, but there are also recognized regional languages Nengone, Paicî, Ajië, Drehu, and 35 other native languages.
- New Caledonia's lagoons were designated a **UNESCO World Heritage site in 2008**.
- New Caledonia has seen divisions between its

**indigenous Kanak population** and Europeans.



## 19. IRAN



- Iran is a country located in **West Asia**.
- Iran shares **borders** with Iraq, Turkey, Azerbaijan, Armenia, Turkmenistan, Afghanistan, Pakistan, the Persian Gulf, and the Gulf of Oman.
- Iran is **founding member** of the United Nations, the NAM, the ECO, the OIC and the OPEC. It is a **full member** of both the Shanghai Cooperation Organisation and BRICS.

## 19. TAIWAN



- Taiwan (also known as Republic of China, ROC) is a country in East Asia. Taiwan is located in the northwestern Pacific Ocean, near **China, Japan, and the Philippines**.
- The capital, **Taipei**, forms along with New Taipei City and **Keelung** the largest metropolitan area.
- Taiwan was colonized by the Netherlands (17th century) and ruled by China and Japan (19th-20th centuries).

- After World War II, the Nationalist government fled to Taiwan in 1949, leading to its separation from mainland China.
- The **People's Republic of China (mainland China)** claims **sovereignty over Taiwan**, while Taiwan maintains its own government and considers itself independent.

## 20. BALTIC SEA



- The Baltic Sea is a northern **extension of the Atlantic Ocean**, separating Scandinavia from continental Europe.
- The Baltic Sea is

**enclosed by** Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden, and the North and Central European Plain.

- The Baltic Sea is a shallow **inland sea** drains through the **Danish Straits**. It includes the Gulf of Bothnia, Gulf of Finland, Gulf of Riga, and the Bay of Gdansk.

- The Baltic states or the Baltic countries are **Estonia, Latvia, and Lithuania**. All three countries are members of NATO, the European Union, the Eurozone, and the OECD.

### 21.Aravalli Range

- The Aravalli Range is a mountain range in Northern-Western India, running approximately **670 km** in a south-west direction, starting near **Delhi**, passing through **Haryana, Rajasthan**, and ending in **Ahmedabad Gujarat**.
- The **highest peak is Guru Shikhar** on Mount Abu at 1,722 m .
- The Aravalli Range is an **eroded, fold mountain** range, one of the oldest on Earth.
- Rivers like **Banas and Sahibi** which are tributaries of Yamuna, **Luni River** which flows into the Rann of Kutch flow from the Aravalli.
- **Sabarmati River**, originates on the western slopes of Aravalli range of the Udaipur district, end into the Gulf of Khambhat of the Arabian Sea.
- It acts as a **barrier** between the fertile plains in the east and the Thar desert in the west.
- It acts as a climatic barrier, influencing the monsoon winds and protecting the Gangetic plains from cold, dry winds. It plays a crucial role in groundwater recharge.

### 22.MUNDRA PORT

- Mundra Port is **India's first private port, largest container port and largest commercial port**, located on the **Gulf of Kutch** near Mundra, Kutch district, Gujarat.
- Formerly operated by Mundra Port and Special Economic Zone Limited (MPSEZ) owned by Adani Group, it was later expanded into Adani Ports & SEZ Limited (APSEZ) managing several ports.
- The port currently handles over 155 MT (highest in India), which constitutes nearly **11 per cent** of India's maritime cargo. The port also handles nearly **33 per cent** of India's container traffic.



### 23.PERIYAR RIVER

- A mass fish kill was reported in the Periyar river following suspected release of effluents from industries in Ernakulam district of Kerala.
- Periyar is the **longest river** of Kerala. The source of the Periyar lies high in the Western Ghats. It flows through both Kerala and Tamil Nadu.
- The river is a **perennial water source**, providing drinking water, irrigation, and supporting fisheries. Thus named the "**Lifeline of Kerala**".
- 25% percent of Kerala's industries are along the banks of the Periyar.
- The **Mullaperiyar dam** is constructed at the confluence of the Periyar and Mullayar (tributary of periyar).

## 24.PAPUA NEW GUINEA

- Papua New Guinea is a **country in Oceania**, occupying the eastern half of New Guinea island and its offshore islands in Melanesia.
- It shares its only **land border with Indonesia** and it is directly adjacent to Australia and the Solomon Islands.
- Its capital is **Port Moresby**. The country is the world's **third largest** island country.
- Papua New Guinea stretches from just south of the Equator to the **Torres Strait**, separating it from Australia.
- Additional Information:
- Oceania, collective name for the islands scattered throughout most of **the Pacific Ocean**.
- Oceania is traditionally divided into four regions: Australasia, Melanesia, Micronesia, and Polynesia.

## 25.SUDAN

- Sudan, is a country in Northeast Africa. Sudan **borders** the Central African Republic, Chad, Egypt, Eritrea, Ethiopia, Libya, South Sudan, and the Red Sea.
- It is **Africa's third-largest** country by area and the third-largest by area in the Arab League.
- Its capital and most populous city is **Khartoum**.
- The **Nile River**, formed by the confluence of the White Nile and Blue Nile at Khartoum, flows northward through Sudan.

## 26.TROPICAL CYCLONES

- Tropical cyclones are formed in the region between the Tropics of Capricorn and Cancer.
- They're large-scale weather systems that form over warm oceans and are one of the world's most destructive natural disasters.
- **Favourable Conditions for the Formation of Tropical Cyclone**
- A large area of water surface with a temperature **above 27° C**
- The **Coriolis force** is strong enough to form a cyclonic vortex.
- Variations in the **vertical wind speed** are minor. This allows the storm clouds to rise vertically to high levels.
- A **weak low-pressure** area or low-level cyclonic circulation already exists.
- Above the sea level system, there should be a higher divergence.



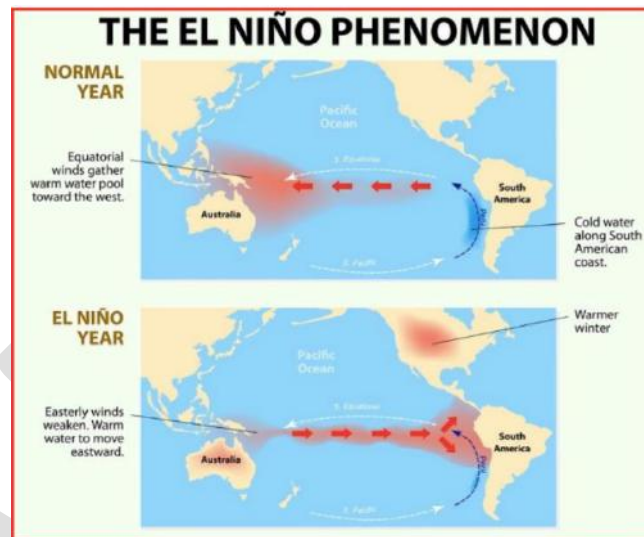
## 27.GHUGHUA FOSSIL PARK

- Ghughua Fossil Park is a National Park, located in Madhya Pradesh, in which plant fossils belonging to **31 genera of 18 families** have been identified.
- It is a **man-made park** with priceless treasure of plant fossils, collected from a 100 km radius. It was established in the 1970s by **Dr. Dharmendra Prasad**. It was **declared a National Park in 1983**.



## 28. ENSO

- The El Niño-Southern Oscillation (ENSO) is a recurring climate pattern involving changes in the temperature of waters in **the central and eastern tropical Pacific Ocean**. On periods ranging from about three to seven years, the surface waters across a large swath of the tropical Pacific Ocean warm or cool by anywhere from 1°C to 3°C, compared to normal.
- This oscillating warming and cooling pattern, referred to as the ENSO cycle, directly affects rainfall distribution in the tropics and can have a strong influence on weather.
- El Niño and La Niña are the extreme phases of the ENSO cycle; between these two phases is a third phase called ENSO-neutral. The two opposite phases, “El Niño” and “La Niña,” require certain changes in both the ocean and the atmosphere because ENSO is a coupled climate phenomenon.
- **El Niño:** A warming of the ocean surface, or above-average sea surface temperatures in the central and eastern tropical Pacific Ocean. The low-level surface winds, which normally blow from east to west along the equator (“easterly winds”), instead weaken or, in some cases, start blowing the other direction (from west to east or “westerly winds”). In general, the warmer the ocean temperature anomalies, the stronger the El Niño (and vice-versa).
- **La Niña:** A cooling of the ocean surface, or below-average sea surface temperatures in the central and eastern tropical Pacific Ocean. The normal easterly winds along the equator become even stronger. In general, the cooler the ocean temperature anomalies, the stronger the La Niña (and vice-versa).
- Climatologically, **La Nina is known to favour the Indian monsoons**. Except the east and northeast India regions, rainfall over remaining parts of the country, during a La Nina year, ends up either being normal or above.
- At the same time, **the cyclone potential during La Nina years is higher than normal**, hence could act conducive for cyclogenesis. La Nina conditions enhance the ocean heat content in the North Indian Ocean comprising the Bay of Bengal and the Arabian Sea.
- **Neutral:** Neither El Niño or La Niña. Often tropical Pacific Sea surface temperatures are generally close to average. However, there are some instances when the ocean can look like it is in an El Niño or La Niña state, but the atmosphere is not playing along (or vice versa).



## 29. ALASKAN RIVERS TURN ORANGE



➤ Rivers and streams in Alaska are changing color – from a clean, clear blue to a rusty orange – because of the toxic metals such as iron, zinc, copper, nickel and lead released by thawing permafrost.

➤ Permafrost:

➤ Permafrost is soil or underwater sediment which continuously remains below 0 °C (32 °F) for two years or more.

➤ Around 15% of the Northern

Hemisphere or 11% of the global surface is underlain by permafrost. This includes large areas of Alaska, Canada, Greenland, and Siberia. It is also located in high mountain regions, with the Tibetan Plateau a prominent example.

- Only a minority of permafrost exists in the Southern Hemisphere, where it is consigned to mountain slopes like in the Andes of Patagonia, the Southern Alps of New Zealand, or the highest mountains of Antarctica
- Alaska
- Alaska, constituent state of the United States of America.
- Alaska **spans both the Eastern and Western Hemispheres** due to the 180th meridian passing through its Aleutian Islands.
- Alaska **borders** the the Beaufort Sea and Arctic Ocean, Canada, the Pacific Ocean, the Bering Sea, and the Chukchi Sea.

## 30. SHARAVATHI RIVER

- The National Green Tribunal (NGT) has directed Karnataka government to stop any unlawful/illegal sand mining in Sharavathi river.
- Sharavathi is westward flowing a river which originates at Ambuthirtha in the Shimoga district and flows within the state of **Karnataka**.
- It **joins the Arabian Sea** at Honnavar, Karnataka.
- The Sharavathi River forms **the Jog Falls**, India's **highest waterfall** by single drop and volume.
- Otherwise, it is the **third highest** waterfall in India (after Kunchikal Falls and Barkana Falls); all three are located in Shivamogga district.

JUNE 2024

## 1.MALDOVA

- Moldova is a landlocked country in Eastern Europe, on the northeastern corner of the Balkans.
- Moldova is **bordered by Romania** to the west and **Ukraine** to the north, east, and south.
- The unrecognized breakaway state of Transnistria lies across the **Dniester River** on the country's eastern border with Ukraine.
- Its capital in Chişinău, the country's largest city and main cultural and commercial Centre.
- Moldova is a member state of the United Nations, the Council of Europe, the World Trade Organization, the Organization for Security and Cooperation in Europe, the GUAM Organization for Democracy and Economic Development, the Organization of the Black Sea Economic Cooperation, and the Association Trio.



## 2.SAHEL REGION

- The Sahel is a transitional zone in Africa between the Sahara Desert to the north and the Sudanian savannas to the south. Its name comes from the Arabic word for "coast" or "shore."
- The Sahel is a vast, 5,900 km-long transitional in Africa between the Sahara and Sudanian savannas, covering ~3,053,200 sq km.
- The region includes several countries such as Senegal, Mauritania, Mali, Burkina Faso, Niger, Nigeria, Chad, and Sudan.
- The Sahel has a **hot semi-arid climate**. Despite being located in the tropics, it does not have a tropical climate.
- The Sahel, a hot, semi-desert and steppe transition zone, is also known as the Sahelian Acacia savanna due to the prevalence of drought-tolerant acacia trees.
- The region experiences frequent shortages of food and water due to high government corruption and the semi arid climate. This is exacerbated by very high birthrates across the region, resulting in a rapid increase in population.
- In **recent times**, various coups, insurgencies, terrorism, and foreign interventions have taken place in many Sahel countries.
- The region is increasingly afflicted by soil erosion and desertification.



zone

## 3.RIVERS OF INDIA

- **Ganges River** (2525 kilometers): Flowing through the Gangetic plains, it passes through states like Uttarakhand, Uttar Pradesh, Bihar, and West Bengal, before merging into the Bay of Bengal.
- **Godavari River** (1465 kilometers): Godavari River is also famous as Dakshin Ganga or the Ganges of the South. It rises in the Western Ghats of Maharashtra and flows across central India, through states

including Telangana, Andhra Pradesh, and Odisha. It eventually meets the Bay of Bengal, supporting diverse flora and fauna along its course.

- **Krishna River** (1400 km): Originating from the Western Ghats near Mahabaleshwar in Maharashtra, the Krishna River flows through the states of Maharashtra, Karnataka, Telangana, and Andhra Pradesh before draining into the Bay of Bengal.
- **Yamuna River** (1376 kilometers): Yamuna River originates from the Yamunotri Glacier in Uttarakhand. It is the largest tributary of the Ganges and flows through the states of Uttarakhand, Himachal Pradesh, Haryana, Delhi, and Uttar Pradesh, before meeting the Ganges at Prayagraj (formerly Allahabad).
- **Narmada River** (1312 kilometers): Rising in the Amarkantak Plateau of Madhya Pradesh, the Narmada flows westward through the states of Madhya Pradesh, Maharashtra, and Gujarat before emptying into the Arabian Sea. Flowing in a rift valley between the Satpura in the south and the Vindhyan range in the north, it forms a picturesque gorge in marble rocks and Dhuandhar waterfall near Jabalpur.
- **Indus River** (1114 kilometers in India): Originating in the Tibetan Plateau, the Indus enters India in the Ladakh region. In Tibet, it is known as 'Singi Khamban; or Lion's mouth. The total length of Indus from origin to its outfall in Arabian Sea is 2,880 km, out of which 1,114 km flows through India. Its principal tributaries in India are the Jhelum, the Chenab, the Ravi, the Beas and the Satluj, all joining from left.
- **Brahmaputra River** (916 kilometers in India): Flowing through the northeastern states of Arunachal Pradesh and Assam, the Brahmaputra originates in Tibet as the Yarlung Tsangpo River. It enters India near the town of Tuting in Arunachal Pradesh and traverses the Assam Valley before crossing into Bangladesh. The Brahmaputra's fertile plains support agriculture and sustain diverse wildlife in the region.

- **Learning Assessment:**

#### 4.COAL

- **Coal Classification:**
  - Quality Relativity: Depends on usage and processing.
  - Gradation by GCV: Higher carbon = higher grade.
  - Grades: 17 grades; Grade 1 (>7,000 kcal/kg), Lowest (2,200–2,500 kcal/kg).
- **Types:**
  - Coking Coal: Low ash; used in steel production.
  - Non-Coking Coal: High ash; used in power generation.
- **Characteristics of Indian Coal:**
  - High ash (~40%), low GCV (3,500–4,000 kcal/kg).
  - Compared to imported coal: Low ash (<10%), higher GCV (>6,000 kcal/kg).
  - Environmental impact: Burning high-ash coal emits more particulate matter and gases.
- **Clean Coal Technologies:**
  - Washing Plants: Reduce ash; increases cost.
  - Coal Gasification: Converts coal into syngas; improves efficiency with IGCC systems.
- **Coal in India's Energy Mix:**
  - 2023-24: Produced 997 MT, mainly by Coal India Ltd.
  - Coal still dominates energy, but renewables are rising.



## 5. IRAQ

The UNSC unanimously ended the UN's 2003 political mission in Iraq, established post-US invasion to aid reconstruction and governance.

Iraq, officially the Republic of Iraq, is a country in West Asia and in the geopolitical region known as the Middle East.



- Iraq is **bordered by** Turkey to the north, Iran to the east, the Persian Gulf and Kuwait to the southeast, Saudi Arabia to the south, Jordan to the southwest, and Syria to the west.
- The capital and largest city is **Baghdad**.
- Iraq's diverse population includes Arabs, Kurds, and others, with Islam as the majority religion and minority faiths like Christianity, Yazidism, and Zoroastrianism, reflecting its rich cultural and geographic diversity.
- The official languages of Iraq are **Arabic and Kurdish**;
- It is a founding member of the United Nations, the OPEC as well as of the Arab League, the Organization of Islamic Cooperation, Non-Aligned Movement, and the International Monetary Fund.
- The country has the **third largest oil reserves** in the world after Venezuela and Saudi Arabia and is a leading center of oil and gas industry.

## 6. SUBANSIRI LOWER HYDRO ELECTRIC PROJECT (SLP)

- The Subansiri Lower Hydro Electric Project (SLHEP) is an under-construction gravity dam on the Subansiri River, **located on the borders of Arunachal Pradesh and Assam in north-eastern India**.
- The project has a capacity of 2000 MW (8x250 MW), making it the single **largest** hydroelectric plant in India upon completion.
- The project is being **developed by the state-run National Hydro Power Corporation (NHPC)**.

**Subansiri River:**

- **The Subansiri River**, also known as Chayul Chu in Tibet, **originates from the Tibetan Plateau** in the western part of Mount Porom.
- The river then **flows through** Tibet's Lhuntse County in the Shannan Prefecture, and the Indian states of **Arunachal Pradesh and Assam**, before joining the Brahmaputra River.
- **It is the largest tributary of the Brahmaputra**, contributing 7.92% of the Brahmaputra's total flow.
- The major **tributaries** of the Subansiri River are the Kamla and Kurung Rivers.

## 7. YEMEN

Yemen's Houthi rebels have detained at least nine employees of United Nations agencies.



➤ **Yemen is situated in West Asia**, at the southern end of the Arabian Peninsula, bordered by **Saudi Arabia to the north, Oman to the northeast**, and the **Arabian Sea to the south**.

- The country features a diverse landscape with coastal plains, mountain ranges like the **Sarawat Mountains**, and **desert areas** such as the **Rub al Khali** (Empty Quarter).
- The country is rich in oil and natural gas, along with other minerals like rock salt and marble.

**Strategic Location:**

- **Yemen controls the Bab-el-Mandeb Strait**, a crucial maritime chokepoint **connecting the Red Sea with the Gulf of Aden and the Indian Ocean.**

#### The Houthis:



- The Houthis, officially known as Ansar Allah (Supporters of God), are a **Shia Islamist political and military organization** that emerged from Yemen in the 1990s.
- They champion Yemen's Shia Muslim minority, the Zaidis.
- The group controls most parts of Yemen, including the capital, Sanaa, and some of the western and northern areas close to Saudi Arabia.
- The Houthis have been engaged in an ongoing conflict with the Yemeni government, leading to a humanitarian crisis.
- Their actions, including attacks on maritime routes and detentions of UN staff, have significant implications for regional stability.

### 8.KOREAN PENINSULA

Tensions on the Korean Peninsula escalated as North Korea sent balloons carrying trash into South Korea, retaliating against activists who sent K-pop and K-drama-filled USBs into the North.



- The **Korean Peninsula is located in East Asia**, extending southwards from the Asian continent for about 1,100 km.
- It is **bordered by China to the northwest and Russia to the northeast.**
- The Korean Peninsula is divided into North and South Korea along the 38th parallel north, a latitude 38 degrees north of the equator.

#### Demilitarized Zone (DMZ):

- The DMZ is a strip of land running across the Korean Peninsula that serves as a buffer zone between North Korea and South Korea.
- It is one of the most heavily militarized borders in the world.

#### Major Cities:

- **Seoul**, the capital of South Korea, is located in the northwest part of the country, near the border with North Korea.
- **Pyongyang**, the capital of North Korea, is located southwest of the Taebaek Mountains.

#### Natural Resources:

- North Korea has significant reserves of coal, iron ore, limestone, and magnesite.
- South Korea has limited natural resources and relies on imports.

### 9. CASCADIA SUBDUCTION ZONE

Recent studies have brought new insights into **Cascadia Subduction Zone** structure and potential impact.



- A **subduction zone** is a geological region where **two of Earth's tectonic plates collide, and one plate is forced to dive, or subduct, beneath the other**. This process has significant implications for seismic activity, including earthquakes, tsunamis, and volcanic eruptions.
- The **Cascadia Subduction Zone (CSZ)** is a major geological feature **located off the west coast of North America**, stretching from northern California to southern British Columbia.

- It is an **active convergent boundary where the Juan de Fuca Plate subducts beneath the North American Plate**.
- This subduction process has significant implications for seismic activity in the region.

### 10. TEESTA RIVER

- **Teesta River originates from the Tso Lhamo Lake in North Sikkim district** at an elevation of about 5280 m.
- It is a **major right-bank tributary of the Brahmaputra River system**.
- The river **flows through the Indian states of Sikkim and West Bengal** before entering Bangladesh, where it eventually empties into the Bay of Bengal.
- **The Teesta is a glacier-fed river**, like many other major Himalayan rivers of India, such as the Ganga.
- It plays a crucial role in the hydrology and ecology of the regions it flows through and is also a **source of dispute between India and Bangladesh regarding water sharing**.
- **The Teesta water conflict between India and Bangladesh** revolves around equitable sharing; the river is vital for irrigation, being the largest in Sikkim and merging with the Brahmaputra in Bangladesh.

**The major tributaries of Teesta River:**

1. **Left-bank Tributaries:** Lachung Chhu, Chakung Chhu, Dik Chhu, Rani Khola, Rangpo Chhu.
2. **Right-bank Tributaries** - Zemu Chhu, Rangyang Chhu, Rangit River.

### 11. SOUTH CHINA SEA

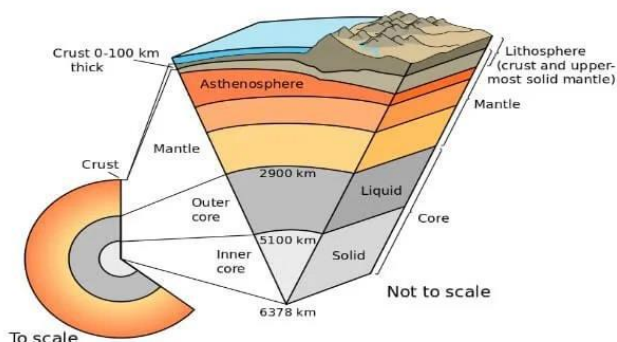
New rules by the Chinese coast guard took effect recently, allowing for the detention of foreigners suspected of trespassing in the disputed **South China Sea**.

- The South China Sea is a **marginal sea of the Western Pacific Ocean**.
- It **connects** the Indian and Pacific Oceans, facilitating global trade and commerce.
- The South China Sea is **bordered by** China and Taiwan (north), the Indo-Chinese peninsula (west), Indonesia and Brunei (south), and the Philippines (east).
- It is **connected by the Taiwan Strait with the East China Sea** and by the **Luzon Strait with the Philippine Sea** (both marginal seas of the Pacific Ocean).
- It is a home to complex disputes affecting regional and Indo-Pacific tensions.



## 12. LAYERS OF THE EARTH

Scientists from the University of Southern California (USC) have confirmed that the Earth's inner core is rotating more slowly than the planet's surface.



➤ The Earth is composed of several layers, each with distinct characteristics:

- **Crust:** The thin, rocky outer layer of the Earth.
- **Mantle:** The thick, semi-solid layer beneath the crust.
- **Core:** The innermost layer, divided into:
  - **Outer Core:** A liquid layer that generates the Earth's magnetic field.
  - **Inner Core:** A solid, hot centre made primarily of iron and nickel.

➤ Additionally, based on mechanical properties, there are:

- **Lithosphere:** The rigid outer part, including the crust and upper mantle.
- **Asthenosphere:** A semi-fluid layer upon which tectonic plates move.
- **Mesosphere:** The strong, lower part of the mantle beneath the asthenosphere.

➤ These layers vary in composition, temperature, and physical state, from solid to semi-solid to liquid.

## 13. HINDU KUSH HIMALAYA (HKH)

A recent report by the International Centre for Integrated Mountain Development (ICIMOD) found snow persistence in the Hindu Kush Himalaya (2003–2024) significantly lower than normal this year.

The Hindu Kush Himalaya Region



➤ The Hindu Kush Himalaya (HKH) region is often referred to as the **Third Pole** due to its extensive snow and ice cover.

➤ It spans across **eight** countries: **Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.**

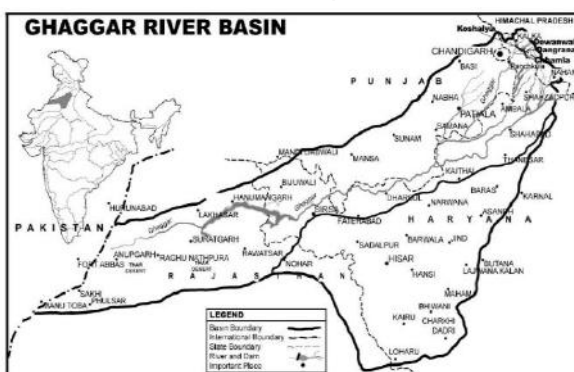
➤ It stretches over 3,500 kilometers.

➤ The HKH range is known for its rugged terrain

and towering peaks, including several of the world's highest mountains, such as **Mount Everest and K2.**

➤ **It is the source of ten large Asian river systems** – the Amu Darya, Indus, Ganges, Brahmaputra (Yarlungtsanpo), Irrawaddy, Salween (Nu), Mekong (Lancang), Yangtse (Jinsha), Yellow River (Huanghe), and Tarim (Dayan).

## 14. GHAGGAR RIVER



➤ The Ghaggar river rises from the **Shivalik Range** in **northwestern Himachal Pradesh.**

➤ It is a **seasonal river** that flows only during the monsoon season.

➤ The Ghaggar River flows through **four** states in India: **Himachal Pradesh, Punjab, Haryana, and Rajasthan**

➤ The Hakra, which flows in Pakistan, is the continuation of the Ghaggar River in India, and they are together called the Ghaggar - Hakra River.

- Before reaching the Ottu barrage, it is known as the Ghaggar.
- Downstream of the barrage, it becomes the Hakra and flows through the Thar Desert in Pakistan.
- It dries up in the Great Indian (Thar) Desert.

#### Historical Significance:

- In pre-Harappan times, the Ghaggar was a tributary of the Sutlej River.
- The Sutlej changed its course around 8,000-10,000 years ago, leaving the Ghaggar-Hakra as a system of monsoon-fed rivers terminating in the Thar Desert.
- The Indus Valley Civilization thrived along the dried-up Hakra riverbed in Pakistan.

#### Sarasvati River Connection:

- Scholars have suggested that the Ghaggar-Hakra might be the defunct remains of the **Sarasvati River mentioned in the Rig Veda**.
- Despite drying up, it still holds historical and cultural significance.

**Tributaries:** Kaushalya River, Markanda, Sarsuti, Tangri, and Chautang.

### 15. RED SEA

A Merchant Ship sank in the **Red Sea** days after an attack by Yemen's Houthi rebels.



- The Red Sea is a **semi-enclosed inlet of the Indian Ocean** located between the continents of **Africa and Asia**.
- The Red Sea extends from **the Bab el-Mandeb Strait** in the south to **the Gulf of Suez** in the north.
- It lies between the **Sinai Peninsula (northern boundary)** and **the Gulf of Aqaba**.
- **It is underlain by the Red Sea Rift, which is part of the Great Rift Valley.**
- The Red Sea is one of the saltiest seas globally, with an average salinity of about 40%.

- Factors contributing to this high salinity include intense evaporation due to the region's **hot climate**, **minimal rainfall**, and the **absence of freshwater rivers**.
- **Countries Bordering the Red Sea:** Egypt, Saudi Arabia, Yemen, Sudan, Eritrea, and Djibouti are the six countries that share coastlines with the Red Sea.
- The Red Sea serves as a crucial **maritime corridor connecting the Mediterranean Sea to the Indian Ocean via the Suez Canal**.
- It facilitates the flow of goods and resources between Europe and Asia.

### 16. CHENAB RIVER

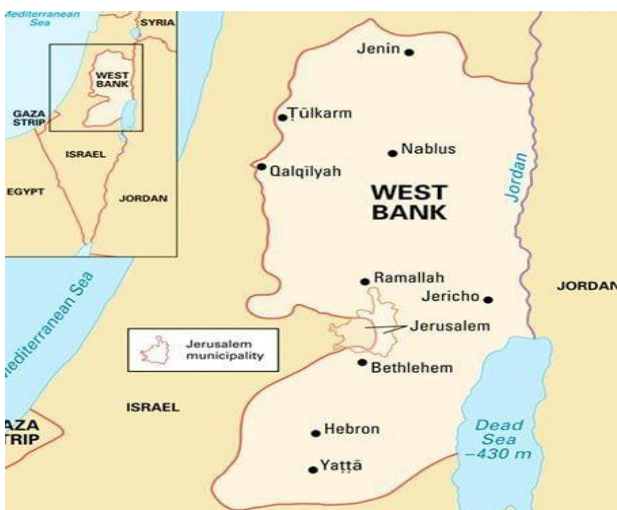


Indian Railways achieved a historic milestone by conducting a successful trial run on the Chenab Rail Bridge.

- The Chenab River is formed by the **confluence of two rivers: the Chandra and Bhaga rivers at Tandi**, in the Lahaul and Spiti district of the Indian state of Himachal Pradesh
- In its upper reaches, it is also known as the Chandrabhaga.
- **The Bhaga river** originates from Surya taal lake, which is situated a few kilometers west of the Bara-lacha la pass in Himachal Pradesh.

- **The Chandra river** originates from glaciers east of the same pass (near Chandra Taal). This pass also acts as a water-divide between these two rivers.
- **The Chenab flows through the Jammu region of Jammu and Kashmir before ultimately joining the Indus River from Pakistan's Punjab plains.**
- After receiving the Jhelum River near Trimmu, the **Chenab empties into the Sutlej River, a tributary of the Indus River.**
- **According to the Indus Water Treaty, Pakistan is entitled to the Chenab's waters.** India is allowed non-consumptive uses such as power generation.
- The **tributaries** of the Chenab River include Miyar Nalla, Sohal, Thiroth, Bhut Nalla, Marusudar, and Lidrari.
- Notably, the **world's highest railway bridge, the Chenab Bridge, spans this river in Jammu and Kashmir.**
- The bridge is part of the Udhampur-Srinagar-Baramulla rail link project and stands at an impressive 1,315 meters long and 359 meters above the riverbed level, making it the world's highest railway bridge.
- The Chenab Bridge was designed with innovative features, including blast resistance and reduced maintenance efforts, reflecting engineering excellence in challenging terrain.

## 17.WEST BANK



- The West Bank is a **landlocked territory in the Levant region of West Asia.**
- It is the larger of the two Palestinian territories, the other being the Gaza Strip.
- Bordered by **Jordan** and the **Dead Sea** to the east.
- Bordered by **Israel** (via the Green Line) to the south, west, and north.
- The **Mediterranean Sea lies to the west.**
- The territory has been under Israeli occupation since 1967.

### History:

- Emerged after the 1948 Arab–Israeli War as a region occupied and subsequently annexed by Jordan.
- Occupied by Israel during the 1967 Six-Day War.

- Administered by Israel as the Judea and Samaria Area.
- Mid-1990s Oslo Accords divided the West Bank into three regional levels of Palestinian sovereignty: Area A (PNA), Area B (PNA and Israel), and Area C (Israel).

### Significance:

- Palestinians consider it the heart of their envisioned state, along with the Gaza Strip.
- Israelis view it as their ancestral homeland, with numerous biblical sites.
- Area C contains Israeli settlements, which the international community considers illegal under international law.



## 18.CRIMEA

Russia recently said the United States had responsibility for a Ukrainian missile attack on Russian-annexed Crimea.



- **Crimea is situated on the northern part of the Black Sea and the western part of the Sea of Azov.**
- **It shares a border with Ukraine's Kherson Oblast.**
- **The Crimean Peninsula is separated from Ukraine by the Sivash system of shallow lagoons.**
- **The climate is temperate continental, characterized by hot summers and cold winters.**

### Strategic Importance:

- **Crimea's strategic location allows it to connect with the rest of the world via sea routes.**

- **Russia's annexation of Crimea in 2014** provided them access to the Mediterranean Sea through the Strait of Kerch.
- **The peninsula's control significantly altered the balance of power in the region.**

## 19.NORD STREAM PIPELINES

### Nord Stream pipelines from Russia



- **Nord Stream** is a network of offshore **natural gas pipelines** that run under the **Baltic Sea from Russia to Germany**, providing Western Europe with natural gas.

### The Nord Stream project includes:

- **Nord Stream 1 (NS1):** Operational since 2011, it delivers Russian gas to Western Europe, bypassing Ukraine and Poland.
- **Nord Stream 2 (NS2):** Completed in 2021 but not operational due to geopolitical tensions and sanctions.

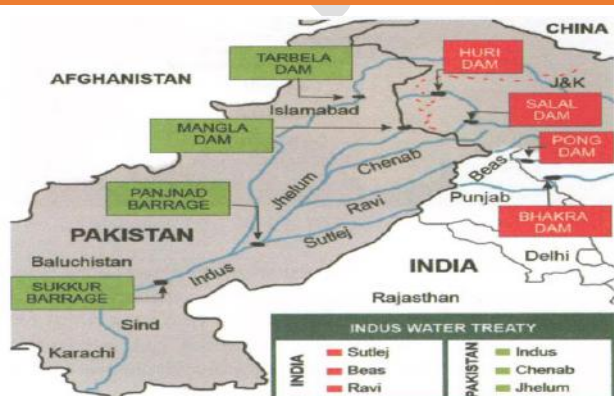
### Significance:

- **For Europe:** Nord Stream provides a reliable and cost-effective natural gas source, crucial for many European countries. Reducing gas supply from Russia could impact

domestic gas prices.

- **For Russia:** Around 40% of Russia's budget comes from gas and oil sales. Nord Stream also enhances Russia's influence over Europe's energy markets.

## 20.INDUS WATER TREATY 1960



A Pakistani delegation recently arrived in Jammu to discuss the **1960 Indus Water Treaty**.

- The Indus Waters Treaty is a treaty signed on September 19, 1960, **between India and Pakistan and brokered by the World Bank.**
- The Indus Waters Treaty allocates **the eastern rivers (Beas, Ravi, Sutlej) to India and the western rivers (Indus, Jhelum, Chenab) to Pakistan**, allowing limited Indian use

of western rivers; it mandates a Permanent Indus Commission for water-related cooperation.

#### Indus River

- The Indus River, **also known as Sindhu**, is one of the world's largest river basins.
- **It flows through China (Tibet region), India, and Pakistan.**
- It **originates from mountain springs northeast of Mount Kailash in Western Tibet.**
- Flowing northwest, it passes through the disputed region of Kashmir and bends sharply after the Nanga Parbat massif.
- Eventually, it flows south-by-southwest through Pakistan before emptying into the Arabian Sea near the port city of Karachi.

#### Tributaries:

- The **Zaskar River serves as its left-bank tributary in Ladakh.**
- In the plains, the Panjnad River forms its left bank, resulting from the **confluence of the five Punjab rivers: Chenab, Jhelum, Ravi, Beas, and Sutlej.**
- On the right bank, it receives contributions from the **Shyok, Gilgit, Kabul, Kurram, and Gomal rivers.**

### 21.LEBANON



- **Lebanon is a small Middle Eastern nation situated on the eastern coast of the Mediterranean Sea in Western Asia.**
- It **shares land borders** with two countries: **Syria** to the north and east, and **Israel** to the south.
- The western part of **Lebanon is bounded by the Mediterranean Sea**, and it also shares **maritime borders with Cyprus.**
- The Israel-Lebanon conflict involves a disputed border, including tensions over the UN-drawn Blue Line and the 2006 Israel-Hezbollah war in southern Lebanon.

### 22.BOLIVIA

**Bolivian** general arrested after failed coup attempt.

- Bolivia, officially known as the Plurinational State of Bolivia, is a **landlocked country located in western-central South America.**
- It is named after the independence fighter Simon Bolivar.
- The country features rugged Andes Mountains, a highland plateau, and lowland plains in the **Amazon basin.**
- Approximately **one-third of Bolivia lies within the Andean Mountain range.**
- **Bolivia shares borders with Argentina, Brazil, Chile, Paraguay, and Peru.**
- The constitutional capital is Sucre, while the seat of government and executive capital is La Paz.
- **Bolivia shares control of Lago Titicaca**, the **world's highest lake navigable to large vessels**, situated at an impressive 12,500 feet above sea level.
- **Economic Crisis:** Bolivia's economy has declined sharply due to reduced hydrocarbon export income and falling Net International Reserves (NIR).
- **Political Turmoil:** Bolivia's ruling MAS party faces internal division, with a power struggle between President Luis Arce and former President Evo Morales, hampering efforts to address economic and social crises.

### 23. GULF OF ADEN

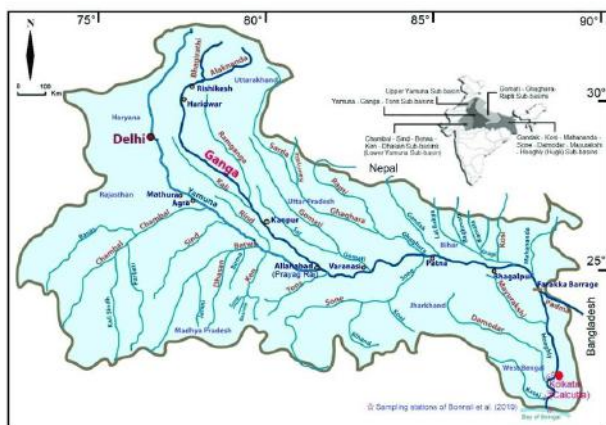
Houthi rebels targeted a ship in the **Gulf of Aden**.

- **The Gulf of Aden is an extension of the Indian Ocean, situated between the Arabian Peninsula and the African continent.**
- It connects the **Red Sea to the Arabian Sea** and ultimately to the Indian Ocean.
- The gulf is named after “Aden,” a port city on Yemen’s coast.
- The **Gulf of Aden is bounded by Somalia and the Socotra Islands** (part of Yemen) to the south, **Yemen** to the north, the **Arabian Sea** to the east, and **Djibouti** to the west.
- Notable cities near the gulf include Aden, Mukalla, Ahnwar, Balhaf, Berbera, Bosaso, and Djibouti City.
- **Major ports in the region include Aden (Yemen), Berbera, and Bosaso (both in Somalia).**
- **It plays a critical role in the Suez Canal shipping route**, connecting the Red Sea and the Mediterranean Sea.



### 24. GANGA WATER TREATY

India Prepares for **Ganga Water Treaty** Renewal with Bangladesh.



- The **Ganga Water Sharing Treaty**, signed in **1996**, governs the sharing of Ganga River waters at the Farakka Barrage in West Bengal between India and Bangladesh.
- This comprehensive bilateral treaty established a **30-year water-sharing arrangement between the two countries**.
- The treaty is valid until the end of 2026, with a clause allowing renewal every 10 years by mutual consent.
- **It specifically outlines the minimum level of water flow that India must share with its downstream neighbour, Bangladesh, during the dry season—from January to**

**May.**

- The Ganges Water Treaty acknowledges Bangladesh's lower riparian rights and addresses water-sharing disputes, with the Farakka Barrage managing Ganges flow for Hooghly River navigability.

**Ganga River System:**

- It rises in the **Gangotri glacier near Gaumukh in Uttarakhand** where it is known as **Bhagirathi**.
- **At Devprayag, the Bhagirathi meets the Alaknanda; hereafter, it is known as the Ganga.**
- The Ganga enters the Northern plains at **Haridwar**.
- Ganga flows through the states of **Uttarakhand, Uttar Pradesh, Bihar and West Bengal**.
- **Yamuna, Son and Damodar** are the major right bank tributary and the important left bank tributaries are **Ramganga, Gomati, Ghaghara, Gandak, Kosi and Mahananda**.
- Ganga flows into the **Bay of Bengal near the Sagar Island**.

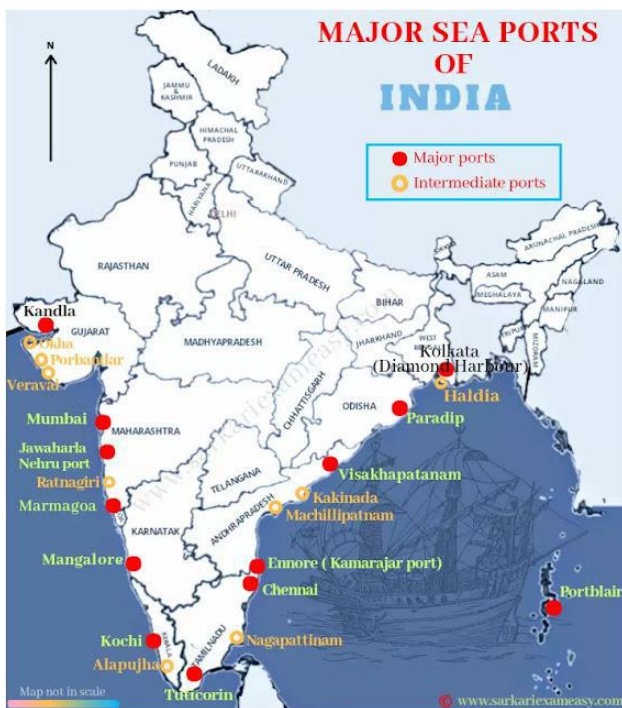
### 25. COTTON CULTIVATION IN INDIA

- **India is believed to be the original home of the cotton plant.**
- Although a significant portion of cotton-growing areas was lost to Pakistan during partition, India's acreage has increased considerably over the last 50 years.



- Cotton occupies about 4.7% of the total cropped area in the country.
- Cotton is a tropical or sub-tropical crop primarily grown in semi-arid regions, especially on the Deccan Plateau.
- Cotton is a Kharif crop, taking 6 to 8 months to mature.
- It requires at least 210 frost-free days and prefers light rainfall (50 to 100 centimeters).
- Bright sunshine during growth and a clear sky during flowering are essential.
- Ideal soil for cotton cultivation is well-drained and capable of retaining moisture. Black cotton soil is preferred.
- There are four cultivated species of cotton viz. *Gossypium arboreum*, *G. herbaceum*, *G. hirsutum* and *G. barbadense*. Perhaps, India is the only country in the world where all the four cultivated species are grown on commercial scale.
- India's major cotton-producing regions include Punjab, Haryana, northern Rajasthan, Gujarat, Maharashtra, Telangana, Andhra Pradesh, Karnataka, Tamil Nadu, Madhya Pradesh, and Uttar Pradesh.

## 26.VADHAVAN PORT



The Union Cabinet, chaired by Prime Minister Shri Narendra Modi, has approved construction of a major deep-sea port at **Vadhavan** near Dahanu in Maharashtra, India.



- The Vadhavan Port will be developed as an all-weather Greenfield deep draft major port in Vadhavan, Palghar District, Maharashtra.
- It complements the existing Jawaharlal Nehru Port (JN Port), which is India's largest state-owned container gateway.
- The port will be developed as a joint venture between the Jawaharlal Nehru Port Authority (JNPA) and the Maharashtra Maritime Board (MMB).
- The project aligns with the objectives of the **PM Gati Shakti program**.

- It has the potential to generate direct and indirect employment opportunities for around 12 lakh individuals, contributing to the local economy.

### Jawaharlal Nehru Port (Nhava Sheva):

- The Vadhavan Port **complements the existing Jawaharlal Nehru Port (Nhava Sheva)**, which is the largest container port in India.
- Nhava Sheva is located east of Mumbai, in Navi Mumbai, Maharashtra, and is accessed via Thane Creek.
- It plays a crucial role in India's maritime trade, **handling around 55% of total containers across major ports in the country**.



JULY 2024

### 1. SHYOK RIVER

- The Shyok River **originates at the Rimo Glacier** in the Karakoram Range in the Indian-administered union territory of Ladakh.
- It is a tributary of the **Indus River**.
- Its alignment is very unusual, originating from the Rimo glacier, it flows in a southeasterly direction and, joining the Pangong range, it takes a northwestern turn, flowing parallel to its previous path.
- **The Nubra River, originating from the Siachen glacier**, is a significant tributary of the Shyok River.
- The southeasterly flowing river Nubra takes a northwest turn on meeting the river Shyok.
- The similarity in the courses of these two important rivers probably indicates a series of paleolithic fault lines trending northwest-southeast in delimiting the upper courses of the rivers.
- Other tributaries include **the Chang Chen Mo River and the Galwan River**.
- The Shyok Valley is the valley of the Shyok River. It is near the Nubra Valley. Khardung La on the Ladakh Range lies north of Leh and is the gateway to the Shyok and Nubra valleys.

### 2. BLACK SEA



- The Black Sea, also known as the Euxine Sea, is one of the major water bodies and a famous inland sea of the world.
- This **marginal sea of the Atlantic Ocean**, located **between Eastern Europe and Western Asia**.
- It is surrounded by the **Pontic, Caucasus, and Crimean Mountains** in the south, east and north respectively.
- The Turkish straits system - **the Dardanelles, Bosphorus and Marmara Sea** - forms a transitional zone between the Mediterranean and the Black Sea.
- The Black Sea is also **connected to the Sea of Azov by the Strait of Kerch**.
- The **bordering countries** of Black Sea are: **Russia, Ukraine, Georgia, Turkey, Bulgaria and Romania**.
- The Black Sea is the world's largest water body in which the bottom waters never mix with shallower waters (a condition known as **"meromictic"**). As a result, the deeper waters are completely anoxic (devoid of oxygen).
- As a result, salinity gradually increases with depth from about 18 ppt at the surface to about 22 ppt in deeper waters. A water mass known as the **Cold Intermediate Layer (CIL)** separates surface waters from deeper waters, and is the major reason for deep-water isolation.

### 3. SRI LANKA

- Sri Lanka, formerly known as Ceylon, is an **island nation in the Indian Ocean**, southeast of the Indian subcontinent.
- Sri Lanka **lies in a strategic position near major sea lanes**.
- It is **southwest of the Bay of Bengal**, separated from the Indian peninsula by the **Gulf of Mannar and the Palk Strait**.
- It shares a maritime border with the **Maldives in the southwest and India in the northwest**.

- The main island of Sri Lanka covers an area of approximately making it the **twenty-fifth largest island in the world**.
- **Jaffna Island**, the largest offshore island, is linked to the Indian mainland by **Adam's Bridge** (also known as Rama's Bridge in Hindu mythology).
- This land connection is now mostly submerged, with limestone shoals remaining above sea level.



#### 4.VANUATU



- Vanuatu is an island country consisting of a chain of **13 principal** and many smaller islands located in the **southwestern Pacific Ocean**.
  - These islands are situated approximately **east of Australia**.
  - The islands extend north-south in an irregular Y shape. The northernmost group is the Torres Islands, and southward from there, the main islands include Vanua Lava, Santa Maria (Gaua), Espiritu Santo, Aoba (Ambae), Maéwo, Pentecost, Malakula, Ambrym, Épi, Éfaté, Erromango, Tanna, and Anatom.
- Formerly the jointly administered Anglo-French condominium of the New Hebrides, Vanuatu achieved

independence in 1980.

The capital, largest city, and commercial centre is **Port-Vila (Vila)**, on Éfaté.

#### 5.BRAHMAPUTRA RIVER



- The Brahmaputra River is a **trans-boundary river that flows through Tibet (China), Northeastern India, and Bangladesh**.
  - It originates from the **Chemayungdung glacier near Mount Kailash** in the Himalayas (Tibet) and is known as the **Yarlung Tsangpo** in Tibetan.
  - After entering India near the village of Gelling in **Arunachal Pradesh**, it flows southwest through the **Assam Valley** as the **Brahmaputra**.
- The river crosses Assam and enters Bangladesh.
  - In Bangladesh, the Brahmaputra River is known as the **Jamuna**, and when it joins the Ganga, they together form the mighty **Padma River** and finally drains into the **Bay of Bengal**.
  - **Dibang River, Lohit River, Dhansiri River, Kameng River, Manas River, Teesta River, Subansiri River** are the major tributaries of River Brahmaputra

## 6.TUTICORIN PORT

- The **V.O. Chidambaranar Port**, also known as the Tuticorin Port, is one of the **major ports in India**.
- It is situated in Thoothukudi, Tamil Nadu.
- **This artificial port** was declared a major port on July 11, 1974.
- The port is named after V.O. Chidambaram Pillai, an eminent freedom fighter, and continues to play a crucial role in India's maritime trade.
- It serves as **the second-largest port in Tamil Nadu** and the fourth-largest container terminal in the country.
- The port operates round the clock throughout the year and plays a crucial role in supporting export-import (EXIM) trade.
- Tamil Nadu has three major ports: V. O. Chidambaranar Port (Tuticorin) and Kamajar Port (Ennore) and Chennai Port.
- These ports, along with an intermediate port at Nagapattinam, play a crucial role in facilitating trade and commerce in the state.

## 7.KAVERI RIVER



- The **Kaveri River**, also known as Cauvery, is a significant river in India, **flowing through the states of Karnataka and Tamil Nadu**.
- The Kaveri River rises at **Talakaveri in the Brahmagiri range of the Western Ghats**, located in Kodagu district, Karnataka.
- **The Shivanasamudra Falls Hogenakkal Falls, Chunchanakatte Falls** are some of the **waterfalls** situated along the Kaveri River.
- The river flows for approximately 800 kilometers before reaching its **outfall into the Bay of Bengal**.
- It **reaches the sea** near Poompuhar, in Mayiladuthurai district, **Tamil Nadu**.
- **Left Bank:** Harangi, Hemavati, Shimsha, Arkavati, Sarabanga, Thirumanimutharu.
- **Right Bank:** Lakshmana Tirtha, Kabini, Bhavani, Noyyal, Amaravati, Moyar.
- The **Kaveri basin** covers three states and a Union Territory:
  - **Tamil Nadu:** 43,868 square kilometers.
  - **Karnataka:** 34,273 square kilometers.
  - **Kerala:** 2,866 square kilometers.
  - **Puducherry:** 148 square kilometers
- Several dams and reservoirs manage Kaveri's flow, including the **Krishna Raja Sagara Dam, Mettur Dam, and Kabini Dam**.
- These structures play a crucial role in water allocation and storage.

## 8.PANGONG LAKE



➤ **Pangong Tso, also known as Pangong Lake, is a high-altitude lake situated in the Changthang region of eastern Ladakh.**

➤ **Pangong Tso spans both India and China. Approximately 50% of the lake lies within Tibet (administered by China),**

while 40% is in Indian-administered Ladakh. The remaining 10% is a disputed buffer zone between India and China.

- **Disputed Territory:**The Line of Actual Control (LAC), which separates boundary between India and China, passes through the lake.
- India controls about 45 kilometers of the lake's stretch, while China claims the rest.
- The lake's strategic significance lies in its proximity to the Chusul Valley, a historical battlefield **during the 1962 India-China war.**

## 9.IRAN

Masoud Pezeshkian has been elected as **Iran's** ninth president.



➤ **Iran, officially known as the Islamic Republic of Iran, is a country situated in West Asia.**

➤ **Iran shares its northern borders with three post-Soviet states: Armenia, Azerbaijan, and Turkmenistan.**

➤ **To the west, Iran borders Turkey in the north and Iraq in the south.**

➤ **The Persian Gulf and Gulf of Oman form the southern border of Iran.**

➤ **To the east, Afghanistan lies to the north, and Pakistan to the far south.**

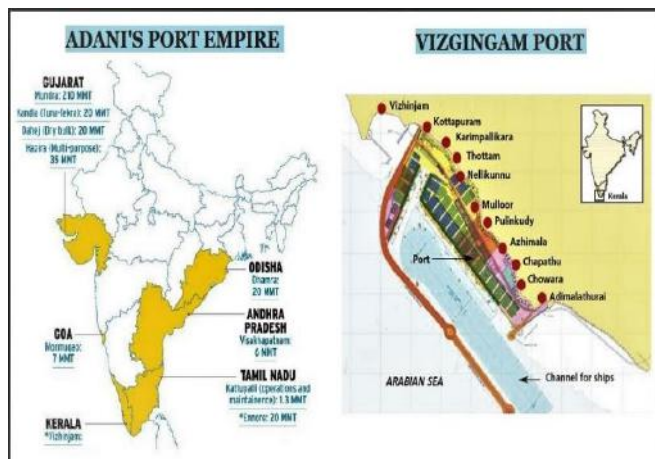
➤ **Iran occupies a high plateau, rising higher than 1,500 feet (460 meters) above sea level.**

- **The main mountain chain is the Zagros Mountains, a series of parallel ridges interspersed with plains that bisect the country from northwest to southeast.**
- **There are no major river systems in the country.**

## 10.VIZHINJAM PORT

- **With the completion of the first phase of the country's first exclusive trans-shipment port, the Vizhinjam Port is all set to receive its first mothership.**
- **The Vizhinjam International Seaport is being developed under a Public Private Partnership (PPP) model with Adani Ports Private Limited.**
- **Located at Vizhinjam, a coastal town in Thiruvananthapuram District, Kerala, this port is designed primarily for container transshipment and handles multi-purpose and break-bulk cargo.**
- **Notably, Vizhinjam is not only the first exclusive trans-shipment port in India but also the first semi-automated container terminal in the country.**





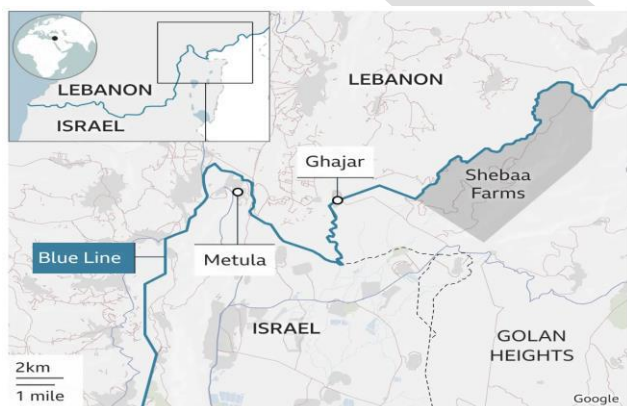
- Additionally, it aims to become a global bunkering hub, supplying clean and green fuels like hydrogen and ammonia
- With a natural draft of 18 meters, Vizhinjam is poised to accommodate some of the largest container ships globally.
- The port's strategic location, just 10 nautical miles from the International Shipping Route connecting Europe, the Persian Gulf, and the Far East, adds to its significance.

### 11.KAZIRANGA NATIONAL PARK (KNP)



- Kaziranga National Park is located in the Golaghat, Karbi Anglong, and Nagaon districts of the state of Assam, India.
- It sits on the southern banks of the Brahmaputra River.
- This park hosts two-thirds of the world's Indian rhinoceroses and is recognized as a UNESCO World Heritage Site.
- The park's rich biodiversity includes large breeding populations of elephants, wild water buffalo, and swamp deer.

### 12.LEBANON-ISRAEL 'BLUE LINE 'FRONTIER



- The Blue Line is a border demarcation established by the United Nations in 2000 after Israeli troops withdrew from southern Lebanon.
- Acting as the boundary between Lebanon and Israel, it aims to prevent conflicts and establish a foundation for security arrangements in the volatile region.
- Originally, this line was the boundary established by Britain and France in the 1920s, delineating the borders between Lebanon, Syria, and Palestine. It's important to note that the Blue Line is not an official international border but rather a demarcation line.

### 13.AUSTRIA

- Recently, Prime Minister Narendra Modi visited **Austria**, marking the first visit by an Indian Prime Minister in 41 years.
- Austria is a **landlocked country in Central Europe**.

- Austria is **bordered** to the north by the **Czech Republic**, to the northeast by **Slovakia**, to the east by **Hungary**, to the south by **Slovenia**, to the southwest by **Italy**, to the west by **Switzerland and Liechtenstein**, and to the northwest by **Germany**.
- It extends roughly 360 miles (580 km) from east to west.
- India and Austria **established diplomatic relations in 1949**.
- India played a crucial role during Austria's negotiations with the Soviet Union on the State Treaty of Austria, which led to Austria's independence in 1955.
- Additionally, both nations have worked together on issues like the UN South Tyrol Conventions.
- India has an embassy in Vienna.



#### 14. TRANSHUMANCE

- International Council on Monuments and Sites (ICOMOS) launched World Heritage Transhumance Initiative to highlight the heritage value of **Transhumance Cultural Landscape**.
- Transhumance is the traditional practice of seasonal livestock movement, which **involves the migration of human communities along with their herds**.
- It is a common practice in several mountainous regions throughout the world.
- **In 2023, two transhumance traditions – Transhumance in 10 European States and Alpine Pasture season of Switzerland – were declared Intangible Cultural Heritages of Humanity.**
- **Significance of Transhumance Landscapes**
  - Sustainable Adaptation
  - Food Security
  - Cultural Identity
  - Conservation.
- **Threats to Transhumance Culture:**
  - Economic Changes
  - Climate Change
  - Industrialization
  - Urban Development
- **Transhumance Landscapes of India**
  - The transhumance practice is prevalent in the Himalayas, where there are several nomadic tribes such as Gujars, Bakarwals, Gaddis and Changpas, who rear sheep and goats.
  - Animals are moved to subalpine and alpine pastures during summer, while during winter they are grazed on adjoining plains.

- This system also exists in the plains, such as Rajasthan, Madhya Pradesh, Tamil Nadu, Gujarat and Uttar Pradesh.

### 15.MACKENZIE RIVER



- The **Mackenzie River** is located in **Canada**, flowing through the Northwest Territories.
- It is the **longest river system in Canada**, with a length of approximately 1,650 km (1,025 miles).
- **The river originates from Great Slave Lake and empties into the Beaufort Sea in the Arctic Ocean.**
- **Major tributaries include the Liard River, Peace River, and Athabasca River.**

### 16.NEPAL



- KP Sharma Oli has been appointed as **Nepal's** Prime Minister for the fourth time.
- **Nepal is a landlocked country in South Asia.**
- **It bordered by China to the north and India to the south, east, and west.**
- Five Indian states – **Uttar Pradesh, Uttarakhand, West Bengal, Sikkim, and Bihar** share their borders with Nepal.
- **Terai Region:** The southern lowland plains, covering 17%

of Nepal's area. It is an **extension of the Gangetic plains of India** and is known for its fertile land.

- **Hilly Region:** This region covers 68% of the country and consists of the **Mahabharat Range and the lower Himalayas.**
- **Himalayan Region:** The northern part, covering 15% of Nepal's area, includes the high mountain ranges and peaks like **Mount Everest.**
- Nepal has diverse climate zones ranging from tropical in the Terai to arctic in the high Himalayas.
- The country experiences four main seasons: spring, summer (monsoon), autumn, and winter.
- **Rivers:** The major rivers include the **Koshi, Gandaki, and Karnali**, which flow southward into India.
- **Lakes:** Notable lakes include Rara Lake, the largest in Nepal, and Phewa Lake in Pokhara.

Nepal is rich in biodiversity, with numerous national parks and conservation areas, such as **Chitwan National Park and Sagarmatha National Park**

### 17.TIZU AND ZUNGKI RIVERS

- **Tizu River** originates near Longkhim in Tuensang district, Nagaland.
- Nagaland has four main rivers, namely, Doyang, Dhansiri, Dhiku, and Tizu.
- The first three flow towards the west through the Assam plains to join River Brahmaputra.
- **The Tizu River system flows towards the east and southeast and flows into the Chinwin River** (also known as Ningthi River) in Myanmar, which is a major tributary of the Irrawaddy River
- **Main tributaries of the Tizu river include Zungki, Lanye, and Likimro rivers.**
- Zungki River is largest tributary of the Tizu River within Nagaland.



**18. KRISHNARAJA SAGAR (KRS) DAM**

- The KRS Dam is **located below the confluence of the river Kaveri with its tributaries, Hemavati and Lakshmana Tirtha.**
- KRS Dam is the primary source of **drinking water** for **Mysore, Mandya, and Bengaluru cities.**
- It supplies water to the Shivanasamudra hydroelectric power station.
- Water released from KRS **flows into Tamil Nadu and is stored in the Mettur dam** in Salem district.
- The dam was **constructed during the rule of the Maharaja of Mysore, Krishnaraja Wadiyar IV, and it was named in his honour.**
- The construction of the KRS Dam began in 1911 and it was completed in 1931.
- The dam was **designed by Sir M. Visvesvaraya**, a famous Indian engineer.
- It was built using a mixture of surki mortar and limestone.
- **KRS Dam is a gravity dam**, relying on its weight to withstand water pressure.

**19. UPPER KARNALI HYDRO-ELECTRIC POWER PROJECT**

- The Indian Renewable Energy Development Agency Limited (IREDA) is set to invest approximately ₹290 crore in a hydroelectric project in Nepal, acquiring up to a 10% shareholding in GMR **Upper Karnali Hydro Power Limited** and Karnali Transmission Company Pvt. Ltd.
- **The Upper Karnali Hydro-Electric Power Project is a 900 MW run-of-the-river hydropower project.**
- It is being **developed on the Karnali River in Nepal.**
- The project **will supply power to Nepal, India, and Bangladesh** for a contracted period of 25 years.
- The Government of Nepal awarded the project to GMR Upper Karnali Hydro Power Limited (GUKHL), a subsidiary of GMR Group India.
- The project is being developed on a **build-own-operate-transfer (BOOT) basis.**
- As part of the memorandum of understanding (MoU) with GMR, the Nepal Government received 27% free equity in the project.
- The project is estimated to generate 3,466 million units of electricity annually.
- Additionally, it will offset approximately two million tons of greenhouse gas emissions each year.
- The project includes a concrete **gravity dam, headrace tunnels, a fish pass, feeder tunnels, surge and pressure shafts, and silt flushing tunnels.**

**Karnali River:**

- The Karnali River is a **perennial trans-boundary river originating in the Himalaya Mountains**
- The Karnali River **originates on the Nepal side of the Tibet border, near the sacred Mt. Kailash.**
- The Karnali River is **the longest and largest river in Nepal**, stretching approximately 315 miles.
- Over 90% of its basin lies within Nepal's territory.
- The river cuts through the Himalayas within Nepal.
- At Brahmaghat in India, it **joins the Sharda River.**
- **Together, they form the Ghaghara River**, which is a **significant left bank tributary of the Ganges.**

## 20.GODAVARI RIVER



- The Godavari River, also known as Dakshina Ganga, is India's second longest river.
- **The Godavari River rises in the Sahyadris, near Trimbakeshwar in the Nashik district of Maharashtra.**
- **It originates from the Bramhagiri mountains at Trimbakeshwar.**
- The Godavari River flows across the Deccan Plateau from the Western Ghats to the Eastern Ghats.
- It covers approximately 1,465 kilometers (910 miles) in a generally southeast direction, passing through the states of Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, and Odisha. Eventually, it empties into the Bay of Bengal through an extensive network of distributaries.
- **Right Bank Tributaries:** Pravara, Manjira, Maner
- **Left Bank Tributaries:** Purna, Pranhita, Indravathi, Sabari

## 21.YAMUNA RIVER

- The Yamuna River **originates from the Yamunotri Glacier** near Bandarpooch Peak in the Mussoorie range of the Lower Himalayas in the Uttarkashi district of **Uttarakhand**, India.
- It flows swiftly through the Himalayan foothills, exits **Uttarakhand**, and enters the Indo-Gangetic Plain.
- Along the border between **Uttar Pradesh and Haryana**, it feeds the Eastern and Western Yamuna canals.
- The Yamuna **passes through Delhi**, where it feeds the Agra Canal.
- It then flows south-eastward near **Mathura**, passing through **Agra, Firozabad, and Etawah**.
  - Near **Prayagraj (Allahabad)**, after a course of about 855 miles (1,376 km), the **Yamuna joins the Ganges (Ganga) River**.
  - This confluence is an especially sacred place for Hindus and hosts annual festivals and the **Kumbh Mela**, attended by millions of devotees.
  - The Yamuna is nourished by several tributaries such as **Chambal River, Sindh River, Betwa River, Hindon River Ken River and Tons River**.

## 22.BOHAJ GULF

- China's Migratory Bird Sanctuaries along the coast of the Yellow Sea-Bohai Gulf (Phase II) have been added to **UNESCO's World Heritage List**.
- These sanctuaries are part of the world's largest intertidal wetland system, providing vital habitats for migratory birds along the East Asian-Australasian Flyway.
- The Bohai Sea, also known as the Bohai Gulf, is an inland sea located on the east coast of Mainland China.
- The Bohai Sea serves as the northwestern and innermost extension of the Yellow Sea.



- It connects to the Yellow Sea via the Bohai Strait to the east.
- The Bohai Sea is enclosed by three Chinese provinces and one direct-administered municipality: Liaoning Province, Hebei Province, Tianjin Municipality, and Shandong Province.
- Its proximity to Beijing and Tianjin makes it one of the busiest seaways globally.
- Several major rivers drain into the Bohai Sea, including the Yellow River, Hai River, and Liao River.
- The gulf hosts important oil reserves, such as the Shengli Field.
- Notable islands in the Bohai Sea include the Changshan Archipelago, Juehua Island, Changxing Island, and others.

### 23.VENEZUELA



- Nicolas Maduro was declared the winner in **Venezuela's** presidential election.
- **Venezuela is located on the northern coast of South America.**
- It shares **boundaries with the Caribbean Sea and the Atlantic Ocean** to the north, **Colombia** to the west, **Brazil** to the south, **Trinidad and Tobago** to the northeast, and **Guyana** to the east.
- **Venezuela's economy heavily relies on hydrocarbons (petroleum), which constitute more than 85% of its exports.**
- Additionally, the country has received loans from China and Russia to sustain its economic activities.
- The crisis in Venezuela has implications beyond its borders. As a major oil exporter and an OPEC member, any instability in Venezuela may impact global oil prices.

## AUGUST 2024

## 1.GOBI DESERT

China is set to build the world's first nuclear power plant using molten thorium salt in the **Gobi Desert**, aiming for operation by 2025.

- **The Gobi Desert is a large, cold desert and grassland region in northern China and southern Mongolia.**
- It is the **sixth** largest desert in the world.
- Its **boundaries** extend from the foothills of the **Pamirs in the west** to the **Greater Khingan Mountains in the east**, the **Altai and Hangayn** mountain ranges in the **north** and the **Pei Mountains** in the **south**.
- **The Gobi is a rain shadow desert formed by the Himalayas**, which prevent rain-carrying clouds from reaching the region.
- Unlike typical sandy deserts, much of the Gobi resembles exposed bare rock.
- Sand dunes, grasslands, and rocky outcrops characterize its landscape.
- Despite its extreme conditions, the Gobi Desert hosts a variety of life forms adapted to desert survival including the Bactrian camel, Gobi bear (one of the rarest bears globally), snow leopards, and various bird species.

## 2.MOZAMBIQUE



The shipments of Tur/Pigeon peas from Nacala Port in **Mozambique**, disrupted by an “anti-India” group, have resumed after the Ministry of Consumer Affairs raised the issue with the Ministry of External Affairs.

- **Mozambique is a country in Southern Africa, situated in both the Southern and Eastern Hemispheres.**
- It has a coastline along the Indian Ocean to the east.
- **The Mozambique Channel separates Mozambique from the island countries and territories of Madagascar, Comoros, and Mayotte.**
- Maputo serves as the country's capital, while Matola is its largest city.

- Mozambique shares borders with several countries: Zimbabwe, Eswatini (formerly Swaziland), South Africa, Zambia, Malawi, and Tanzania.
- The **Zambezi River** is the largest, and other notable rivers include the Limpopo, Licungo, Lurio, and Rovuma.
- **Lake Malawi** (also known as Lake Nyasa) is the country's major lake, it is shared with Malawi and Tanzania.
- **Mount Binga** is the highest peak in Mozambique.
- Mozambique's principal natural resources include **natural gas, coal, minerals, sand and hydropower.**



### 3. PANGONG LAKE

China has recently constructed a 400-meter bridge near the Line of Actual Control (LAC) in Ladakh near Pangong Lake.

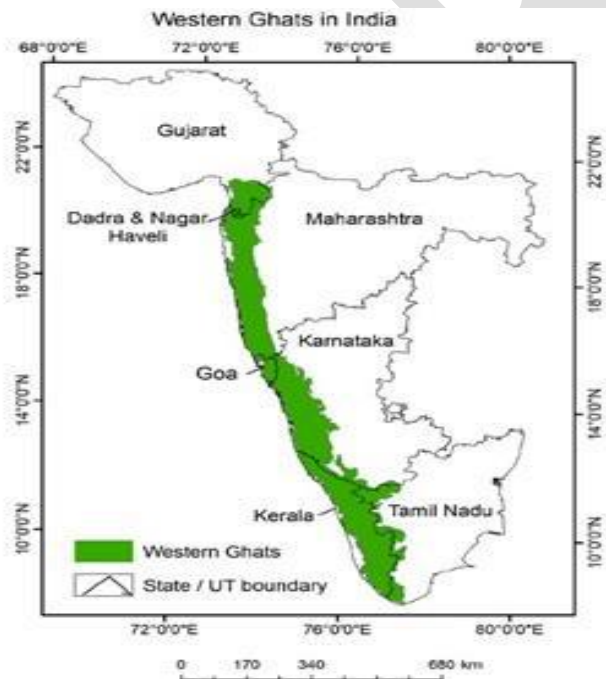


**Pangong Tso, also known as Pangong Lake**, is a remarkable high-altitude lake situated in the Himalayas.

- **Pangong Tso extends from India to the Tibetan Autonomous Region (TAR) in China.**
- Pangong Tso is an **endorheic lake**, meaning it retains its water and does not allow outflow to other external water bodies like oceans or rivers.
- The **Line of Actual Control (LAC)**—the boundary separating Indian and Chinese troops—runs through the width of Pangong Tso.
- **India controls approximately 45 kilometers of the lake's stretch, while China holds the rest.**

### 4. WESTERN GHATS

Karnataka Forest Minister Eshwar Khandre recently announced the formation of a task force aimed at addressing encroachments in the **Western Ghats**. This task force, led by the Principal Chief Conservator of Forests and Head of Forest Force.



- The **Western Ghats**, also known as the Sahyadri, is a mountain range that **stretches 1,600 km along the western coast of the Indian peninsula.**
- The **Western Ghats** traverse several Indian states: **Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.**
- These mountains form an almost **continuous chain along the western edge of the Deccan Plateau, from the Tapti River to Swamithoppe in Kanyakumari district** at the southern tip of India.
- The **range meets with the Eastern Ghats at Nilgiris** before continuing south.
- **Anamudi is the highest peak in Western Ghats.**
- **Endemic Species:** Many species found here are unique to the region. **For instance, the Nilgiri tahr (a mountain goat), the Malabar giant squirrel, and**

**the lion-tailed macaque** are endemic to the Western Ghats.

- **Rainfall Patterns:** The Ghats intercept monsoon winds, leading to heavy rainfall on the windward side (western slopes) and a rain shadow effect on the leeward side (eastern slopes). This influences India's overall climate.

- **Water Source:** Numerous rivers originate in the **Western Ghats**, including the **Godavari, Krishna, and Cauvery**. These rivers play a vital role in supporting agriculture and ecosystems downstream.
- It is a **UNESCO World Heritage Site**

## 5.CLOUDBURST

- In India, cloudbursts usually occur during the South-West Monsoon (from June onward).
- **A cloudburst is an intense weather event characterized by extremely heavy rainfall occurring within a short period.**
- Cloudbursts occur **when more than 10 centimeters (3.94 inches) of rain falls within a 10-square-kilometer (3.86 square miles) area in just one hour.**
- Cloudbursts are often associated with **cumulonimbus clouds** and can be disastrous due to their intensity and localized nature.
- Experts attribute the increasing frequency of cloudbursts partly to climate change.
- **Unplanned development in mountainous areas exacerbates the damage caused by these extreme events.**

**Impact: Flooding, Landslides and Loss of Life and Livelihood**

## 6.NIGERIA

- **Nigeria**, officially known as the Federal Republic of Nigeria, is a country in **West Africa**.
- It is situated between the Sahel to the north and the Gulf of Guinea to the south in the Atlantic Ocean.
- Nigeria is bordered by: Niger (north), Chad (northeast), Cameroon (east), and Benin (west).
- The country has a population of over 200 million people, with more than **250 ethnic groups**, and over 500 languages spoken. It is Africa's most populous country.
- The economy faces challenges, and the country is in the midst of a severe economic downturn. Nigeria experiences high levels of poverty and youth unemployment.
- Nigeria is a **founding member of the African Union** and a member of many international organizations, including the United Nations, the Commonwealth of Nations, NAM, the Economic Community of West African States, Organisation of Islamic Cooperation and OPEC.
- **Nigeria is Africa's top oil producer.**



## 7.MOUNT KILIMANJARO



**Mount Kilimanjaro is located in Tanzania, Africa.**

- It is the **tallest mountain in Africa**, standing at about 5,895 meters (19,340 feet) above sea level.
- **Kilimanjaro is a stratovolcano**, which means it is composed of layers of ash, lava, and rock.
- It has three main volcanic cones: Kibo, Mawenzi, and Shira.
- Kibo is the highest peak and is a dormant volcano, while Mawenzi and Shira are extinct.
- **Kilimanjaro National Park**, was declared a **UNESCO World Heritage site in 1987**.

## 8.KURSK REGION

A state of emergency has been declared in the **Kursk region** of Russia following a significant incursion by Ukrainian forces.

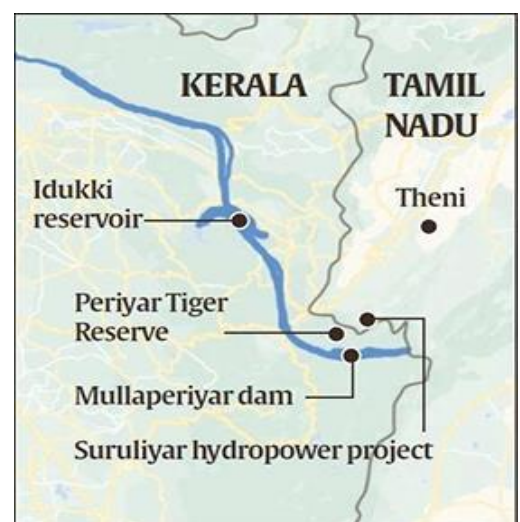
- **Kursk is a city and administrative centre of Kursk oblast**, located on the south-western border of Russia.
- **Situated in the centre of the European part of Russia**, it lies along the upper Seym River, about 280 miles (450 km) south of Moscow.
- The area is known as the Black Earth territory due to its fertile soil.
- The climate is moderately continental.
- **Mining: Kursk Oblast is one of Russia's major producers of iron ore.**



## 9.MULLAPERIYAR DAM

There have been ongoing concerns about the safety of the Mullaperiyar Dam, especially given its age and the potential risks it poses.

- **Mullaperiyar dam is situated on the confluence of the Mullayar and Periyar rivers in Kerala's Idukki district.**
- It was constructed between 1887 and 1895 by the British colonial government.
- **It is a masonry gravity dam**, standing 53.6 meters (176 feet) tall and 365.7 meters (1,200 feet) long.
- **Mullaperiyar dam was built using lime-surkhi (burnt brick powder) mortar.**
- The **primary purpose of the dam was to divert water eastwards to the Madras Presidency (now Tamil Nadu) for irrigation and drinking purposes.**





- Mullaperiyar dam is owned, operated, and maintained by Tamil Nadu.
- This arrangement is based on a lease agreement originally made during British rule, which allows Tamil Nadu to use the dam's water for irrigation, drinking water supply, and hydro-power generation.

### 10.NANKAI TROUGH

Japan recently issued its first-ever “megaquake advisory” following a magnitude 7.1 earthquake near the Nankai Trough.

- The **Nankai Trough** is a significant geological feature located off the **southwest coast of Japan**.
- The Nankai Trough stretches from the Suruga Bay off the coast of Shizuoka Prefecture to the Hyuga-nada Sea off the coast of Kyushu.
- It is a **subduction zone where the Philippine Sea Plate is being forced under the Eurasian Plate**. This process generates significant seismic activity.
- The Nankai Trough has a history of producing large earthquakes, known as Nankai megathrust earthquakes. These typically occur every 100 to 150 years.
- **Subduction Zone:** A region where **two tectonic plates collide**, and **one plate is forced beneath the other into the Earth's mantle**. This process is known as subduction.
- Subduction zones are responsible for some of the planet's most powerful earthquakes, tsunamis, and volcanic activity.



### 3 Types of Plate Boundaries

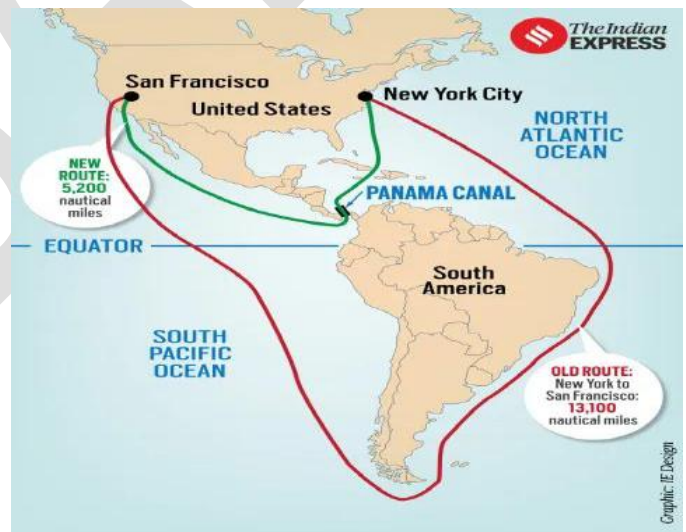
Type of Boundary	Divergent	Convergent	Transform
Motion	Spreading	Subduction	Lateral sliding
Effect	Constructive (oceanic lithosphere created)	Depends on type of crust	Conservative (lithosphere neither created or destroyed)
Topography	Ridge/Rift	Trench, volcanic arcs, mtn ranges	No major effect
Volcanic activity?	Yes	Yes	No



- **Tectonic plates are massive, irregularly shaped slabs of solid rock that make up Earth's lithosphere, which includes the crust and the upper part of the mantle.**
- These plates are constantly moving, albeit very slowly, due to the convection currents in the underlying semi-fluid asthenosphere.
- **The movement and interaction of these plates shape Earth's surface, leading to the formation of mountains, ocean trenches, and other geological features.**

## 11. PANAMA CANAL

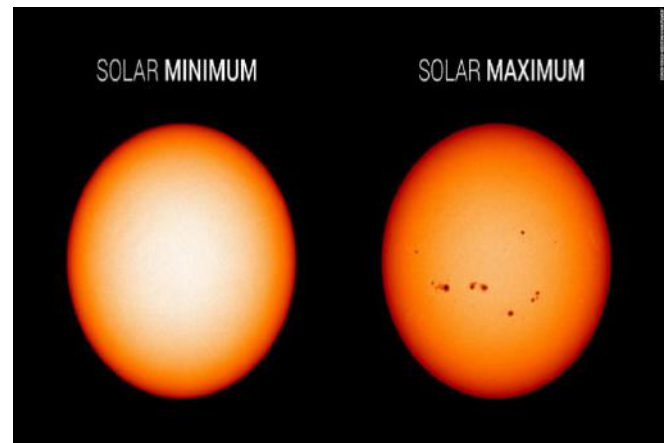
- The Panama Canal is a man-made waterway located in Panama, Central America.
- It **connects the Atlantic Ocean (via the Caribbean Sea) to the Pacific Ocean**, significantly reducing the travel distance for ships, which would otherwise have to navigate around the southern tip of South America via the Drake Passage or the Strait of Magellan.
- **It cuts across the Isthmus of Panama, a narrow strip of land that separates the two oceans.**
- **Importance**
- **Global Trade:** The canal is a critical conduit for international maritime trade, handling a significant portion of the world's shipping traffic.
- **Economic Impact:** It greatly reduces travel time and fuel costs for ships, enhancing the efficiency of global trade routes.
- **Strategic Value:** The canal holds strategic military importance, allowing for rapid naval deployment between the oceans.
- **Locks System:** The canal's locks are a system of compartments with gates that function as water elevators, raising ships from sea level to the level of Gatun Lake, which is 26 meters above sea level.
- **Gatun Lake:** An artificial lake that forms a major part of the canal, providing the necessary water for the lock operations.
- **Dimensions:** The canal is approximately 82 kilometers (51 miles) long, with locks that can accommodate ships up to 366 meters (1,200 feet) in length and 49 meters (160 feet) in width.
- **Expansion:** The canal was expanded in 2016 with the addition of a new set of locks, known as the Panama Canal Expansion or the Third Set of Locks, allowing for the passage of larger vessels, known as New Panamax or Neo-Panamax ships.



## 12. SOLAR CYCLE

- Astronomers from the Indian Institute of Astrophysics (IIA) have found a new method to predict the amplitude of the upcoming **solar cycle**.
- Their research focuses on the width of supergranular cells on the solar surface during the minimum year of the solar cycle. They found that this width is positively correlated with the number of sunspots seen during the subsequent solar cycle maximum.

- **The solar cycle is an approximately 11-year cycle during which the Sun's magnetic field undergoes significant changes, including a complete flip of its**
- **Solar Maximum:** The period in the solar cycle when the Sun has the most sunspots and solar activity is at its peak.
- **Solar Minimum:** The period when the Sun has the least sunspots and solar activity is at its lowest.
- **Space Weather:** Increased solar activity can lead to solar flares and coronal mass ejections (CMEs), which can disrupt satellite communications, GPS systems, and power grids.
- **Auroras:** Enhanced solar activity can cause spectacular auroras (Northern and Southern Lights) due to interactions between solar particles and Earth's magnetic field.
- **Climate Impact:** While the solar cycle can influence Earth's climate, its effects are relatively minor compared to human-induced climate change.



**Key concepts associated with the solar cycle:**

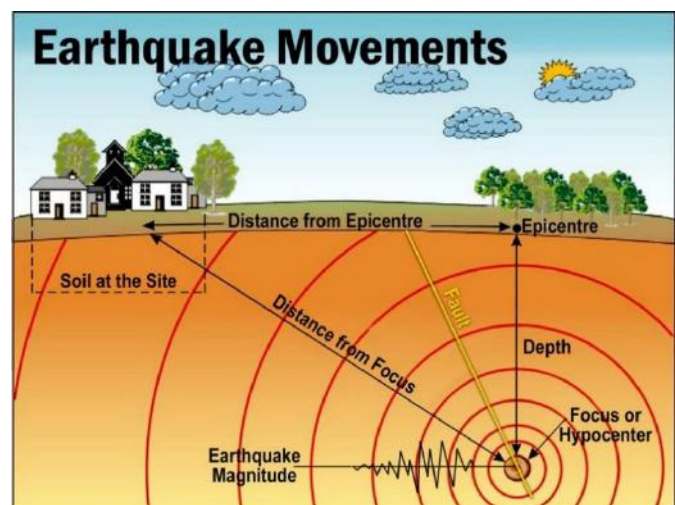
- **Sunspots:** Dark spots on the Sun's surface caused by magnetic activity. The number of sunspots increases during the solar maximum and decreases during the solar minimum.
- **Solar Flares:** Sudden bursts of energy and light from the Sun's surface, often associated with sunspots.
- **Coronal Mass Ejections (CMEs):** Large expulsions of plasma and magnetic field from the Sun's corona, which can impact Earth's magnetosphere and cause geomagnetic storms.
- **Magnetic Field Reversal:** Every 11 years, the Sun's magnetic field flips, meaning the north and south magnetic poles switch place.
- **Space Weather:** The solar cycle affects space weather, which includes phenomena like auroras, disruptions in satellite communications, and impacts on power grids on Earth.

### 13.EARTHQUAKE

- **An earthquake is the sudden shaking of the Earth's surface caused by the release of energy from the Earth's crust.**
- This energy release generates seismic waves that travel through the Earth, causing the ground to shake.

**Causes of Earthquakes**

- **Tectonic Plate Movement:**
- **Faults:** Most earthquakes occur due to the movement of tectonic plates along faults. When these plates grind against each other, they can get stuck due to friction. The stress



builds up until it overcomes the friction, causing a sudden slip and releasing energy in the form of seismic waves.

- **Plate Boundaries:** Earthquakes are common along plate boundaries where plates collide (convergent boundaries), move apart (divergent boundaries), or slide past each other (transform boundaries).
- **Volcanic Activity:** Earthquakes can also occur due to volcanic activity. As magma moves towards the Earth's surface, it can cause the surrounding rocks to fracture and create seismic waves.
- **Human Activities:** Activities such as mining, reservoir-induced seismicity (due to the filling of large reservoirs), and geothermal energy extraction can also induce earthquakes.

### Methods of Measuring Earthquakes

- **Seismographs:** Instruments that detect and record the vibrations caused by seismic waves. They produce seismograms, which are visual records of the waves.
- **Richter Scale:** Measures the amplitude of seismic waves but is less commonly used today.
- **Moment Magnitude Scale:** The most widely used scale, it measures the total energy released by an earthquake.
- **Modified Mercalli Intensity Scale:** Measures the effects of an earthquake at different locations, using Roman numerals from I (barely perceptible) to X (widespread destruction).

### Different Types of Seismic Waves

- **Body Waves:** Body waves travel through the Earth's interior and are the first to be detected by seismographs during an earthquake. There are two main types of body waves:
- **P-Waves (Primary Waves):** These are compressional waves that travel the fastest and can move through solids, liquids, and gases.
- **S-Waves (Secondary Waves):** These are shear waves that are slower than P-waves and can only move through solids.
- **Surface Waves:** Surface waves travel along the Earth's surface and are typically responsible for most of the damage during an earthquake. Surface Waves are slower than both P-waves and S-waves but cause more damage due to their motion and proximity to the Earth's surface. There are two main types of surface waves:
- **Love Waves:** Cause horizontal shearing of the ground.
- **Rayleigh Waves:** Cause a rolling motion, similar to ocean waves

## 14.SHIVELUCH VOLCANO

- The **Shiveluch volcano**, also known as Sheveluch, is **one of the most active volcanoes** in **Kamchatka Peninsula, Russia**.
- Shiveluch is **part of the "Ring of Fire,"** a major area in the Pacific Ocean basin known for its frequent earthquakes and numerous active volcanoes.
- It is a **stratovolcano**, which means it is **built up by many layers** of hardened lava, tephra, pumice, and volcanic ash. Shiveluch has been continuously erupting since 1999.



- **Shiveluch is part of the Kuril-Kamchatka volcanic arc, which is formed by the subduction of the Pacific Plate beneath the Okhotsk Plate.**
- The volcano has a complex structure with three main parts: the Old Shiveluch, an ancient caldera, and the active Young Shiveluch.
- A **volcano is an opening in the Earth's crust** through which molten rock, volcanic ash, and gases escape from below the surface.
- A volcanic eruption **occurs when magma (molten rock) from beneath the Earth's crust is expelled to the surface**, often accompanied by ash, gases, and pyroclastic material.

## 15.WATER SPOUT

- A **waterspout is a large column of air and mist rotating over a water body. It usually appearing as a funnel-shaped cloud in contact with the water.**
- A **waterspout is a column of rotating, cloud-filled wind that descends from a cumulus cloud to a body of water, such as an ocean or lake.** Despite its name, a waterspout is not filled with water from the ocean or lake; instead, the water inside a waterspout is formed by condensation in the cloud.
- **Waterspouts form when winds blowing in different directions collide, creating a rotating column of air near the surface.** This air rises, carrying water vapour high into the sky, where it forms rain showers, storms, and cumulus clouds. The process involves five stages:
  - **Dark Spot:** The water surface darkens where the vortex reaches it.
  - **Spiral Pattern:** Light and dark bands spiral out from the dark spot.
  - **Spray Ring:** A swirling ring of sea spray forms around the dark spot.
  - **Mature Vortex:** The waterspout reaches its most intense stage, visible from the water surface to the clouds.
  - **Decay:** The waterspout collapses as the flow of warm air weakens.



There are **two main types of waterspouts**:

- **Tornadic Waterspouts:** These start as true tornadoes influenced by severe thunderstorms and are the most powerful and destructive type.
- **Fair-Weather Waterspouts:** More common and less dangerous, these form in developing storm systems but not in storms themselves.
- **Waterspouts are most commonly found in tropical and subtropical regions.** Here are some of the key areas where they frequently occur:
  - **Florida Keys and Gulf of Mexico:** This region sees the highest number of waterspouts, with many forming during the late spring and summer months.
  - **Mediterranean Sea:** Waterspouts are common **off the coasts of Greece, Italy,** and other Mediterranean countries.



- **Great Lakes:** Although less frequent, waterspouts can also form over the Great Lakes, especially during the late summer and early fall.
- **Western Coast of Europe:** This includes areas like the **British Isles and the Baltic Sea.**
- **East Coast of Australia:** Waterspouts are also observed off the eastern coast of Australia.
- **These regions provide the warm, moist conditions that are conducive to waterspout formation.**

## 16.SUPER BLUE MOON



A Super Blue Moon is a rare celestial event that combines two phenomena: a supermoon and a blue moon. **Super Moon**

- A super moon is a full moon that appears larger and brighter than usual because it is at its closest point to Earth in its elliptical orbit, known as perigee.
- **Size and Brightness:** Appears about 14% larger and 30% brighter than a typical full moon.
- **Tides:** Causes higher than usual tides, known as “king tides,” which can lead to coastal flooding in some areas.

- **Frequency:** Typically occurs 3-4 times a year.

### Blue Moon

- A Blue Moon is a rare lunar event that can be defined in two ways:
- **Monthly Blue Moon:** The second full moon in a single calendar month.
- **Seasonal Blue Moon:** The third full moon in a season that has four full moons.
- **Features of a blue moon**
- **Appearance:** Despite the name, the moon doesn't actually appear blue. The term “blue moon” is more about the rarity of the event.
- **Frequency:** Occurs approximately every 2-3 years.
- **Atmospheric Effects:** On rare occasions, the moon can appear blue due to atmospheric conditions like volcanic ash or smoke, but this is unrelated to the Blue Moon event itself.

## 17.GUMTI RIVER

- The **Gumti River** also known as **Gomati** is a significant river **flowing through the northeastern Indian state of Tripura and the Comilla district in Bangladesh.**
- The Gumti River **originates from Dumur in the northeastern hilly region of Tripura, India.**
- It **flows through the state of Tripura**, passing through towns like Udaipur, before entering **Bangladesh.**
- In Bangladesh, it flows through the Comilla district and eventually joins the Meghna River near Daudkandi.



- The river is **dammed near Dumbur**, creating a 40 square kilometers (15 sq mi) lake.
- **Tributaries:** Major **right bank tributaries** include **Kanchi Gang, Pitra Gang, and San Gang.**
- **Left bank tributaries** include **Ek Chhari, Maharani Chhara, and Ganga.**
- The river **supports the Gumti Wildlife Sanctuary**, contributing to the region's biodiversity.
- The river is prone to flash floods, especially during the monsoon season. These floods can cause significant damage to the surrounding areas.

## 18.BALKAN REGION

- The Balkan region, also known as the Balkans, is located in southeastern Europe.
- It includes countries such as **Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, Montenegro, North Macedonia, Romania, Serbia, and Slovenia.**
- The region is **bordered by the Adriatic Sea to the northwest, the Ionian Sea to the southwest, the Aegean Sea to the south, and the Black Sea to the northeast.**

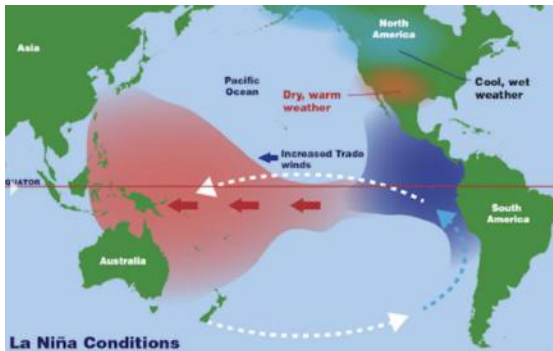
**Why people are migrating to the Balkan region?**

- **Economic Opportunities**
- **Safety and Stability**
- **Family Reunification**
- **Access to Services**



SEPTEMBER 2024

## 1. LA NINA



➤ La Niña is a climate pattern characterized by the cooling of sea surface temperatures in the central and eastern tropical Pacific Ocean.

➤ This phenomenon is part of the larger El Niño-Southern Oscillation (ENSO) cycle, which also includes El Niño (the warming phase) and a neutral phase.

➤ **Features of La Niña:**

- **Cooler Ocean Temperatures:** Central and eastern Pacific experience below-average sea surface temperatures.
- **Weather Impacts:** Causes wetter conditions in Southeast Asia, Australia, and parts of India, but drier weather in the southwestern U.S. and South America.
- **Monsoon Influence:** Strengthens India's monsoon, leading to above-average rainfall.
- **Global Effects:** Increases Atlantic hurricane activity and brings cooler, wetter winters to northern U.S.
- **Effects of La Niña on India**
  - **Enhanced Monsoon:** Brings above-average rainfall, benefiting agriculture.
  - **Flooding Risks:** Increases flood potential, especially in low-lying areas.
  - **Agricultural Productivity:** Boosts rain-fed crop yields but may cause waterlogging and crop damage.
  - **Water Resources:** Improves reservoir, river, and groundwater levels.
  - **Temperature Variations:** Causes cooler-than-normal winter temperatures.
  - **Pest & Disease Risks:** Creates favorable conditions for pests and crop diseases.

## 2. MULLAPERIYAR DAM

- The Mullaperiyar Dam is a masonry gravity dam located on the Periyar River in the
- Idukki district of Kerala.
- It was built between 1887 and 1895 by the British Government.
- Originally the Mullaperiyar Dam was constructed to divert water eastwards to the
- Madras Presidency area (present-day Tamil Nadu) for irrigation.
- Although located in Kerala, the dam is controlled and operated by the state of
- Tamil Nadu under a lease agreement.
- The dam has been a point of contention between Kerala and Tamil Nadu, primarily
- over safety concerns and water sharing.

### 3. AMAZON RAINFOREST



- Around 40% of the Amazon's most critical areas for climate change prevention lack special government protection, according to Amazon Conservation.
- Biodiversity: The Amazon hosts 10% of the world's known species, including endemic ones like the Amazon pink river dolphin and the jaguar.
- Tribes: Home to numerous indigenous tribes, the Amazon is vital for their culture and survival.
- Carbon Sink: It absorbs 2 billion tons of CO<sub>2</sub> annually, making it a vital carbon sink.
- River System: The Amazon River, the second-longest,

contributes 20% of Earth's freshwater.

- Climate Regulation: The rainforest plays a key role in global climate regulation.
- Brazil's Role: Holding the majority of the Amazon, Brazil's policies on deforestation are crucial for global conservation.

### 4. PORT BLAIR RENAMED AS SRI VIJAYA PURAM



- Port Blair, the capital of Andaman and Nicobar Islands, will be renamed 'Sri Vijaya Puram' to remove colonial influences, in line with PM Modi's vision.
- **History:** Named after Archibald Blair, the island was first called Port Cornwallis. The East India Company used it as a strategic harbor and penal colony.
- **Kaala Paani:** By 1906, the British built the Cellular Jail, housing many freedom fighters, including Veer Savarkar.
- **Chola Connection:** The Chola Empire used the islands as a naval base during its 1050 CE attack on Srivijaya. The Cholas likely named the island Ma-Nakkavaram, influencing the name Nicobar.
- **Srivijaya Conflict:** Rajendra I's invasion of Srivijaya led to the capture of its king and looting of treasures.

### 5. GULF OF MEXICO



- The Gulf of Mexico is a large ocean basin, bordered by the U.S., Mexico, and Cuba.
- **Geography & Size:**
- Area: 1.55 million sq. km.
- Depth: Average 1,615 meters, with the deepest point at 4,384 meters (Sigsbee Deep).
- Shape: Oval, about 1,500 km wide.



➤ **Boundaries:**

- North/Northeast: U.S. states of Texas, Louisiana, Mississippi, Alabama, Florida.
- South/Southwest: Mexican states.
- Southeast: Cuba.

➤ **Hydrology:**

- Major Rivers: Mississippi and Rio Grande.
- Connections: Atlantic Ocean via Straits of Florida; Caribbean Sea via Yucatán Channel.

➤ **Climate & Currents:**

- Climate: Tropical to subtropical.
- Gulf Stream: A warm Atlantic current originates here.
- Water Temp: Ranges from 18°C in winter to 32°C in summer.
- Hurricanes: Active during June-November, due to warm waters.

➤ **Ecological & Economic Importance:**

- Biodiversity: Rich marine life, including fish, crustaceans, and coral reefs.
- Oil & Gas: Vital offshore petroleum region, supporting the U.S. oil supply.
- Fisheries: Supports shrimp, oysters, and fish industries.

➤ **Environmental Concerns:**

- Pollution: Major oil spills, like Deepwater Horizon (2010).
- Dead Zones: Low oxygen areas caused by agricultural runoff, harming marine life.

## 6. MISSION MAUSAM

- Improve monsoon forecasts, air quality warnings, and extreme weather alerts.

➤ **Nodal Agency:** *Ministry of Earth Sciences (MoES) with IMD, NCMRWF, and IITM.*

➤ **Key Features:**

- Deployment of **next-gen radars, advanced satellites, and high-performance supercomputers.**
- Enhanced **earth-system models** and a **GIS-based Decision Support System** for real-time data.

➤ **Background:**

- Builds on the **Monsoon Mission (2012)**, which replaced statistical forecasting with **dynamical models.**
- Earlier methods failed to predict droughts, floods, and regional monsoon variations.
- The **Monsoon Mission** improved forecasting using **high-performance computing.**

➤ **Innovations in Mission Mausam:**

- Expands **dynamical forecasting** with upgraded equipment.
- Introduces **weather management**, including **cloud seeding** to modify rainfall.
- Plans to control **lightning strikes** using a **cloud chamber** at IITM.

## 7. INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SERVICES (INCOIS)

- The **Indian National Centre for Ocean Information Services (INCOIS)** is developing an **Integrated Ocean Energy Atlas** for India's **Exclusive Economic Zone (EEZ)**, mapping marine and hydrological energy resources.
  - **About INCOIS**
  - An autonomous body under the **Ministry of Earth Sciences**, established in 1998 and headquartered in **Hyderabad**.
  - **Key Services**
  - **Ocean Advisory:** Fishing zone advisories, tsunami warnings, and ocean state forecasts.
  - **Research & Data:** Ocean observations, climate studies, satellite monitoring, and in-situ data collection.
  - **Exclusive Economic Zone (EEZ)**
  - Extends **200 nautical miles (370 km)** from the coast under **UNCLOS (1982)**.
  - Grants sovereign rights over resources, marine research, and environmental protection.
  - Beyond EEZ, waters are international with free navigation and infrastructure rights.

## 8. LEBANON

- **Lebanon**, officially the **Republic of Lebanon**, is a **West Asian** country in the **Levant**. It borders **Syria (north & east)**, **Israel (south)**, and the **Mediterranean Sea (west)**.
- **Capital & Largest City:** Beirut
- **Official Language:** Arabic (French & English widely spoken)
- **Ethnic Groups:** Predominantly Arab, with Armenian and other minorities.



## 9. JUTE

- Jute production is expected to drop by 20% this year, as per the National Jute Board. Jute, known for its strength and eco-friendliness, comes from *Corchorus capsularis* (white jute) and *Corchorus olitorius* (tossa jute).
- It grows best in warm, humid climates, needing plenty of water and alluvial soil.
- India is the largest jute producer, making up 56% of global production. Key states include West Bengal, Assam, Bihar, Odisha, and Andhra Pradesh.
- Jute is sown from March to May and harvested from July to September. The process includes sowing, growing, cutting, retting, and drying.
- The jute industry employs around 4 lakh people and is export-driven, with goods sent globally. The Jute Packaging Materials Act of 1987 ensures ongoing demand for jute products.

## 10. RED SEA



- The Red Sea is an inlet of the Indian Ocean, bordered by Northeast Africa and the Arabian Peninsula. It is flanked by Egypt, Sudan, Eritrea, Saudi Arabia, and Yemen.
- Known for its warm and salty waters, its name derives from red-brown algae blooms.
- It connects to the Mediterranean Sea via the Suez Canal and to the Arabian Sea through the Bab el-Mandeb Strait.
- The Red Sea is a vital trade route, with the Suez Canal handling 10% of global trade, especially oil.
- It is key for Middle Eastern oil exports, and disruptions can affect global economies.
- The region holds strategic geopolitical importance, with naval bases and military interest from global powers.

## 11. PHILADELPHI CORRIDOR



- The **Philadelphi Corridor** (also called the **Philadelphi Route** or **Salah al-Din Axis**) is a 14-kilometer strip of land along the border between the **Gaza Strip** and **Egypt**.
- It was created as a demilitarized zone after Israel's withdrawal from Gaza in 2005.
- From the Mediterranean Sea in the north to the **Kerem Shalom** border in the south, where Egypt, Gaza, and Israel meet.
- **Strategic Importance:** Buffer zone, vital crossing for people and goods.

- **Historical Context:** Established in 1979; Egypt deployed 750 guards after Israel's disengagement in 2005.
- **Recent Issues:** Tunnels discovered for smuggling; Israel seized control during its 2023 ground offensive.

## 12. TAIWAN STRAIT



- The **Taiwan Strait** separates Taiwan from China's Fujian province.
- **Geography:**
  - Width: 180 km (110 miles) at its widest, 130 km (81 miles) at its narrowest.
  - Depth: Average of 200 feet.
  - Location: Connects the South China Sea to the East China Sea.
- **Historical Significance:**

- **First Taiwan Strait Crisis (1954-1955):** PRC shelled ROC-controlled islands, escalating military confrontations.
- **Second Taiwan Strait Crisis (1958):** PRC shelled ROC positions again, heightening tensions.
- **Ongoing Tensions:** Continues to be a hotspot for geopolitical and military conflict.

### 13. CHAMBAL RIVER



➤ The Chambal River originates in the Janapav Hills, Madhya Pradesh, and flows for 1,024 km (636 miles) through Madhya Pradesh, Rajasthan, and Uttar Pradesh, where it joins the Yamuna River.

➤ **Notable Projects:** Gandhisagar Dam, Rana Pratap Sagar Dam, and Jawahar Sagar Dam for hydroelectricity and irrigation.

➤ **Tributaries:**

➤ **Left:** Banas, Mej

➤ **Right:** Parbati, Kali Sindh, Shipra, Kuno, Shivna

➤ **Ecological Significance:** The Chambal is one of India's cleanest rivers, hosting endangered species like the gharial, mugger crocodile, Gangetic dolphin, and freshwater turtles. It also supports otters, skimmers, cranes, and storks.

### 14. TRINIDAD AND TOBAGO



➤ NPCI International Payments Limited (NIPL) has partnered with **Trinidad & Tobago** to develop a **real-time payments platform** similar to India's **Unified Payments Interface (UPI)**.

➤ **About Trinidad & Tobago:**

➤ **Location:** Southernmost Caribbean island nation, **11 km off Venezuela's coast**.

➤ **Geography:** Comprises **Trinidad (industrial hub, capital: Port of Spain)** and **Tobago (tourism-focused, known for beaches & coral reefs)**.

➤ **Neighbors:** Shares maritime borders with **Barbados,**

**Grenada, and Venezuela.**

➤ **Demographics:** Diverse mix of **African, Indian, European, and Chinese heritage**, shaped by Spanish, British, and French colonial history.

➤ **Economy:** **Oil & natural gas exports** drive its status as one of the **wealthiest Caribbean nations**.



**15. LAKE MICHIGAN**

- Scientists have confirmed the existence of over 40 large craters on the lakebed of **Lake Michigan**, following the discovery of unusual circular formations two years ago.
- Lake Michigan is one of the **five Great Lakes**, the largest group of freshwater lakes by area and the second-largest by volume globally.
- It is connected to **Lake Huron** through the **Straits of Mackinac**, forming a continuous water body.
- Part of the **Great Lakes-St. Lawrence Seaway**, Lake Michigan is vital for transporting goods like iron ore, coal, and grain.
- Major cities like **Chicago** and **Milwaukee** are located along its shores, supporting trade, shipping, and industrial activities, as well as commercial and recreational fishing.
- The **Great Lakes** include **Superior, Michigan, Huron, Erie, and Ontario**, spanning the **Canada-US border** and connecting to the **Atlantic Ocean** via the **Saint Lawrence River**.

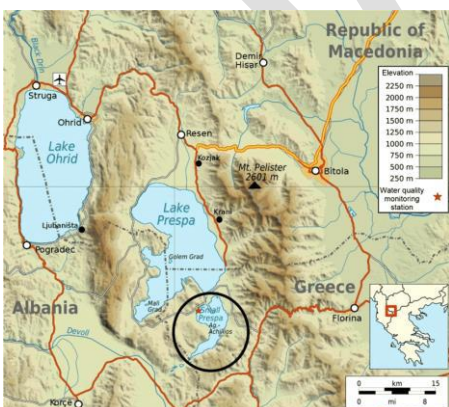
OCTOBER 2024

## 1. NEGEV DESERT



- **Location:**
  - A desert and semi-desert region in **southern Israel**.
  - Largest city: **Beersheba** (north).
  - Ends at **Gulf of Aqaba** and **Eilat** (south).
  - Covers **13,000 sq. km** (55% of Israel's land area).
- **Geography:**
  - Features **rocky terrain, mountains, sand dunes, and deep craters**.
  - Known for **makhteshim** (erosion craters) like **Makhtesh Ramon**, one of the world's largest.
- **Climate:**
  - **Arid**, with rainfall **below 200 mm annually**.
  - **Hot, dry summers** and **mild winters**.
- **Flora & Fauna:**
  - Home to **desert-adapted plants and animals**.
  - Includes **acacia trees, ibex, foxes, and birds**.
- **Human Settlements & Economy:**
  - Traditionally inhabited by **Bedouins**, practicing pastoralism.
  - Modern **agriculture** thrives using **drip irrigation**.
  - Key hub for **defense and energy** industries.
- **Strategic Importance:**
  - Vital for **military operations** due to vast uninhabited land.
  - **Rich in minerals** like **phosphate and copper**.

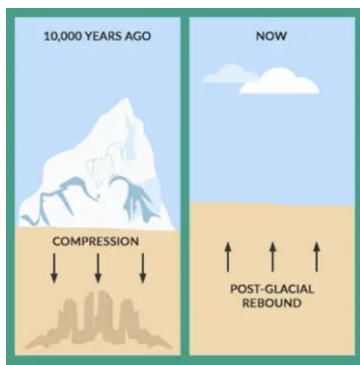
## 2. LITTLE PRESPIA LAKE



- **Location:**
  - Situated on the **Albanian-Greek border** in **southeastern Europe**.
  - Close to **Great Prespa Lake**, both forming a **transboundary wetland**.
- **Elevation:** 853 meters above sea level.
- **Ecological Importance:**
  - Home to rich **biodiversity** and endangered species.
  - Hosts the **largest Dalmatian pelican breeding colony** worldwide.

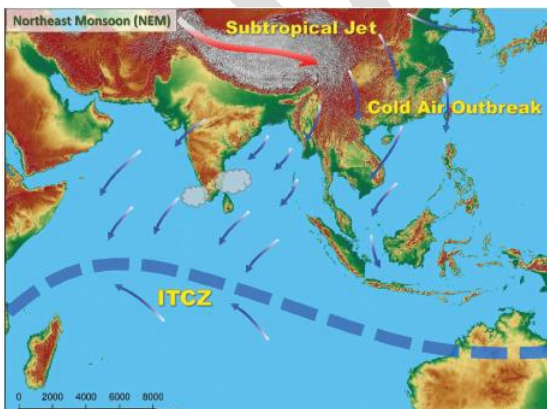
- Vital stopover for **migratory birds**.
- **Conservation Efforts:**
  - Designated as a **Ramsar site** for wetland protection.
  - Joint conservation efforts by **Greece, Albania, and global bodies**.
- **Cultural & Historical Significance:**
  - Region features **ancient settlements and churches**, mainly in Greece.
  - The **Prespa Agreement (2018)** increased global awareness of the lake's preservation.

### 3. RISE OF MOUNT EVEREST



- **Everest's Growth:**
  - The **Arun River basin**, spanning Nepal and Tibet, is losing landmass, causing Everest to rise by up to **2 mm per year**.
  - While the **Indian and Eurasian plate collision** is the primary driver, **changes in the Arun River network** further contribute to this uplift.
- **Isostatic Rebound:**
  - A **geological process** where landmasses rise when surface weight decreases.
  - The Earth's crust "floats" on the **semi-liquid mantle**; when heavy materials like **ice or rock are removed**, the land slowly rises.
- Around **89,000 years ago**, the **Arun River merged with the Kosi River**, accelerating **erosion** and reducing surface weight, aiding Everest's rise.
- **Tectonic Activity:**
  - Formed **50 million years ago** due to the **Indian Plate colliding** with the **Eurasian Plate**.
  - Uplifted sediments originated from the **Tethys Sea**, which once separated the plates.
- **Geological Evolution:**
  - The **Himalayas are still rising**, making the region prone to **frequent earthquakes and tectonic activity**.

### 4. NORTHEAST MONSOON



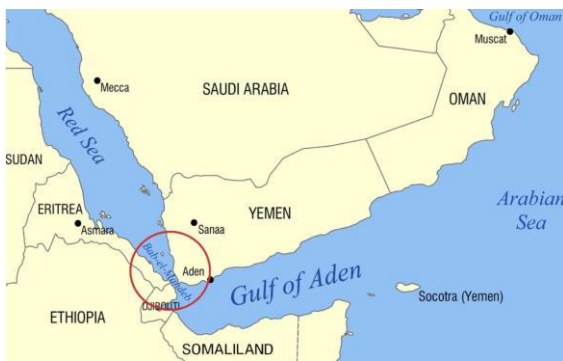
- **Duration:** October to December
- Also Known As:** Post-monsoon or retreating monsoon
- Wind Direction:** Northeast trade winds
- **Mechanism**
  - The **southward shift of the Inter Tropical Convergence Zone (ITCZ)** triggers the monsoon.
  - ITCZ moves north during the southwest monsoon but shifts south as temperatures drop in September.
  - This shift, along with the **heating of the Indian Ocean**, reverses wind direction, bringing rain.

- While most of India remains dry, winds pick up moisture over the **Bay of Bengal**, bringing rainfall to the southern states.

#### ➤ **Rainfall Distribution**

- **Tamil Nadu:** Receives **48%–60%** of its annual rainfall.
- **Southern Andhra Pradesh, Karnataka, and Kerala:** Get lesser rainfall.
- **Andaman & Nicobar Islands:** Also experience rainfall.
- **Importance**
- **Agriculture:** Essential for Tamil Nadu and Andhra Pradesh; supports **rice cultivation**.
- **Water Resources:** Recharges **reservoirs, groundwater, and irrigation**.
- **Fisheries:** Affects **marine ecosystems and seasonal fishing** along the Coromandel Coast.

## 5. YEMEN



- **Location:** Yemen borders **Saudi Arabia (north)**, **Oman (northeast)**, the **Red Sea (west)**, and the **Arabian Sea (south)**.
- **Capital:** **Sanaa** (constitutional), **Aden** (temporary, due to conflict).
- **Language & Religion:** **Arabic** is the official language. The population follows **Islam** (Sunni & Shia).
- **Maritime Security**
- The **Bab el-Mandeb Strait** is critical for India's **oil imports and trade routes** through the Arabian Sea and Red

Sea.

- Conflict has worsened **piracy** in the **Gulf of Aden and Arabian Sea**, threatening India's **trade and energy security**.
- **Indian Diaspora**
- *A small but significant **Indian community in Aden** has been affected.*
- **Operation Rahat (2015)** evacuated **5,600 people**, including Indians and nationals from **41 countries**.

## 6. MAHANADI RIVER



- **Origin & Course**
- Originates in **Sihawa hills, Chhattisgarh**, flows through **Chhattisgarh & Odisha**, and drains into the **Bay of Bengal**.
- **Length: 858 km.**
- Forms the **Kathjori distributary** near Cuttack and enters the sea via multiple channels near **Paradeep**.
- **Major Tributaries**
- **Right-bank:** Ong, Jonk, Telen, Danta.
- **Left-bank:** Seonath, Mand, Ib, Hasdeo.

- **Drainage Basin: 141,600 sq km** across Chhattisgarh, Odisha, Madhya Pradesh, Jharkhand, and Maharashtra.



➤ **Economic Importance**

- **Irrigation:** Supports **paddy cultivation** in Chhattisgarh & Odisha.
- **Hirakud Dam:** Provides **irrigation, hydropower, and flood control**.
- **Hydropower:** High potential with major projects like **Hirakud Dam**.

➤ **Environmental Aspects**

- **Floods:** Known as "**Sorrow of Odisha**" due to frequent monsoon flooding.
- **Pollution:** Industrial and urban waste impact water quality.
- **Biodiversity:** Delta **mangroves** support diverse species.

➤ **Challenges**

- **Water disputes:** Odisha & Chhattisgarh differ over water usage.
- **Water Management:** Overuse & erratic monsoons threaten **water security**.

**7. HIRAKUD DAM**

- **Location:** Built on the **Mahanadi River** in **Sambalpur, Odisha**.
- **Completion:** **1957**, one of India's first post-independence multipurpose river projects.
- **Reservoir:** **Hirakud Reservoir**, declared a **Ramsar site** in **October 2021**.
- **Capacity:** Stores **4.8 BCM** of water, covering **743 sq km**, among **Asia's largest artificial lakes**.

➤ **Structure & Features**

- **Type:** **Earth, concrete, and masonry dam**.
- **Length:** **25.8 km**, the **longest earthen dam in the world**.
- **Main Dam:** **4.8 km long**, spanning **two hills**, with **21 km of earthen dykes** on both sides.
- **Observation Towers:** **Gandhi Minar** and **Jawahar Minar**, offering panoramic lake views.

**8. AMAZON RIVER**

- The Amazon River, battered by back-to-back droughts fueled by climate change, is
- drying up, with some stretches of the mighty waterway dwindling to shallow pools only a few feet deep.
- The **Amazon River**, in **South America**, is the **world's second-longest river** (6,400 km) after the **Nile**. It flows through **Peru, Colombia, and Brazil**, draining into the **Atlantic Ocean**.
- **Amazon Basin:**
- The **largest drainage basin**, covering **7 million sq. km**, nearly **40% of South America**.
- **Floodplains (várzeas)** enrich soil through annual floods, while **terra firme** remains above inundation.
- The basin is mostly **rainforest**, transitioning into **dry forest, savanna, and montane forest**.
- **Hydrological Significance:**
- Carries **more water than any other river**, holding **20% of global fresh river water**.

- Largest discharge: **209,000 cubic meters per second**.
- Fed by **1,000+ tributaries**, including **Rio Negro, Madeira, and Tapajós**.
- **Biodiversity:**
- Among the **richest ecosystems**, home to **Amazon river dolphins, piranhas, electric eels, and 2,500+ fish species**.
- The **Amazon rainforest** nourished by the river hosts **10% of all known species**, vital for global biodiversity.

## 9. CONGO BASIN AND CONGO RIVER



- A recent study found that **cacao farming** in the **Congo Basin** causes up to **seven times more deforestation** than other agricultural activities.

### ➤ Congo Basin:

- The **world's second-largest river basin**, covering **3.4 million sq. km** across the **Democratic Republic of the Congo, Republic of the Congo, Central African Republic, Zambia, Angola, Cameroon, and Tanzania**.

- Known as the **"lungs of Africa"**, it is **the world's largest carbon sink**, absorbing more carbon than the Amazon.

- Home to the **second-largest rainforest**, it plays a key role in **global climate regulation**.

- Inhabited by **nearly 150 ethnic groups**, including the **Ba'Aka**, known for their **hunter-gatherer lifestyle**.

### ➤ Congo River:

- **Africa's second-longest river**, crossing the **Equator twice**.
- **Third-largest in the world by discharge**, after the **Amazon and Ganges**.
- **Deepest recorded river**, reaching depths of **220 meters**.
- **Drainage basin of 4 million sq. km**, covering **13% of Africa**.
- **Vital for water supply, agriculture, energy, and transportation**.
- Holds **cultural significance** for local communities.

## 10. AURORAS



- A rare **auroral display** lit up the sky in **Leh, Ladakh** after a **severe geomagnetic storm** struck Earth. **Auroras** occur when **solar wind (charged particles from the Sun)** interacts with **Earth's magnetic field and atmosphere**.

### ➤ Types of Auroras

- **Aurora Borealis (Northern Lights)** – Seen in the **Northern Hemisphere**.

- **Aurora Australis (Southern Lights)** – Seen in the **Southern Hemisphere**.

➤ **Formation Process**

- **Solar Wind** – The Sun releases charged particles (electrons & protons).
- **Magnetosphere Interaction** – Earth's magnetic field directs these particles toward the **poles**.
- **Atmospheric Collision** – Particles collide with **oxygen and nitrogen atoms**, producing **light emissions**.

➤ **Aurora Colors & Causes**

- **Green/Red** – Oxygen (100–300 km altitude).
- **Red** – Oxygen (above 300 km).
- **Purple/Blue** – Nitrogen molecules.

➤ **Aurora Locations**

- Usually seen in **high-latitude regions** near the **Arctic & Antarctic Circles**.
- The **Auroral Zone** spans **65° to 75° latitude**, where auroras occur most frequently.

**11. MOUNT ADAMS**

- Scientists are investigating an **unusual rise in earthquakes** at **Mount Adams** by installing **temporary seismic monitors**. Located in **Washington State**, it is the **second-highest peak** (3,743m) after **Mount Rainier**.

➤ **Geological Significance**

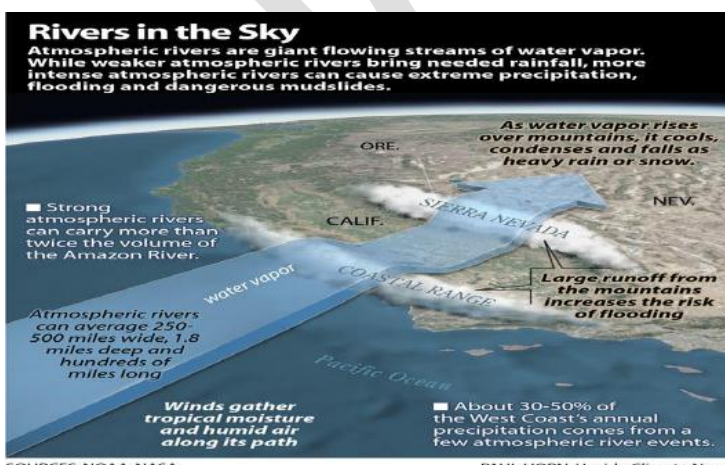
- **Stratovolcano**: Built from layers of **lava, ash, and pumice**, known for **explosive eruptions**.

- **Cascade Volcanic Arc**: Formed due to **subduction** of the **Juan de Fuca Plate** beneath **North America**.

- **Dormant, Not Extinct**: Last eruption **~1,000 years ago**, with potential for **future activity**.

➤ **Volcanic Hazards**

- **Lava Flows**: Four recorded in the last **12,000 years**, staying close to the volcano.
- **Lahars**: **Mudflows of ash, rock, and ice** pose the biggest threat, reaching **far distances** in both **eruptive and non-eruptive phases**.

**12. ATMOSPHERIC RIVERS**

- **ARs are long, narrow bands of moisture-laden air** that transport water vapor from **tropical regions to higher latitudes**, often causing **heavy rainfall and extreme weather**.

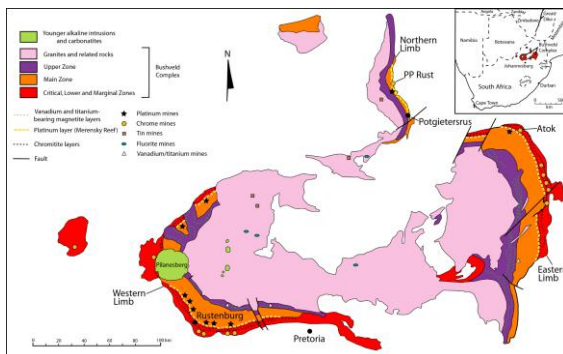
- They play a crucial role in the **global water cycle** and influence **precipitation patterns**, especially in coastal areas.

➤ **Key Characteristics**

- **Size**: Typically **2,000-4,000 km long** and **400-600 km wide**.

- **"Pineapple Express":** A strong AR carrying moisture from the **tropical Pacific to the U.S. West Coast.**
- **Location:** Common in the **extratropics (30°-50° latitude)**, affecting regions like the **U.S., Australia, and Chile.**
- **Landfall:** Frequently occurs over the **North Pacific/Atlantic, southeastern Pacific, and South Atlantic**, impacting **North & South America.**
- **Recent Study Findings**
- **Poleward Shift:** Over the past **four decades**, ARs have moved **northward (50°N)** and **southward (50°S)**, while decreasing at **30°N & 30°S.**
- **Why It Matters ?**
- **Drier Subtropics:** Areas like **California & southern Brazil** may experience **longer droughts & reduced water supply.**
- **Wetter Higher Latitudes:** More **extreme rainfall, floods, & landslides** in regions like the **U.S. Pacific Northwest & Europe.**
- **Arctic Impact:** Increased ARs could **accelerate sea ice melting**, worsening **global warming** and disrupting **polar ecosystems.**

### 13. BUSHVELD IGNEOUS COMPLEX



- The **BIC** is a vast underground rock formation in **northern South Africa**, exposed at the **edge of the Transvaal Basin.**

#### ➤ Geological Significance

- Covers **66,000 sq. km** (size of Ireland).
- Formed from ancient **magma** that cooled beneath the Earth's crust.
- Remained **stable for billions of years**, possibly supporting ancient life.

#### ➤ Mineral Wealth

- **World's richest ore deposits.**
- **Largest reserves of Platinum-Group Metals (PGMs):** platinum, palladium, osmium, iridium, rhodium, and ruthenium.
- Also rich in **chromium, vanadium, iron, and nickel.**
- **South Africa is the top platinum producer**, with most reserves in the BIC.

### 14. BLACK SEA



- The **Black Sea** lies between **Eastern Europe and Western Asia**, bordered by **Turkey, Bulgaria, Romania, Ukraine, Russia, and Georgia.**
- It connects to the **Mediterranean Sea** via the **Bosphorus Strait, Sea of Marmara, and Dardanelles Strait.**
- **Geography & Unique Features**



- Major rivers like the **Danube, Dniester, Dnieper, and Don** flow into it.
- The sea has **anoxic (oxygen-depleted) lower layers**, limiting marine life below certain depths.
- Limited connections to other water bodies create **unique salinity and ecosystems**.
- **Strategic Importance**
- A key **trade and energy corridor** for **Europe, Central Asia, and the Middle East**.
- Critical for **NATO and Russia**, both of which maintain a **naval presence**.
- **Ports & Maritime Trade**
- Major ports include **Odessa (Ukraine), Varna (Bulgaria), Constanta (Romania), and Novorossiysk (Russia)**.
- Vital for **shipping grain, oil, and natural gas**, especially from **Russia and Ukraine**.
- **Environmental Concerns**
- Threats include **pollution, oil spills, and agricultural runoff**.
- **Overfishing** and **invasive species** impact biodiversity.

NOVEMBER 2024

## 1. BOTSWANA



- **Geography:**
- **Landlocked** country in **Southern Africa**.
- Bordered by **South Africa, Namibia, Zambia, and Zimbabwe**.
- **Flat terrain**, with **70% covered by the Kalahari Desert**.
- Named after the **Tswana ethnic group**.
- **Capital:** Gaborone.
- **Economy:**
- Driven by **diamond mining, tourism, and agriculture**.
- Among the **world's top diamond producers**, contributing significantly to GDP.
- **Natural Resources & Biodiversity:**
- Home to **vast wildlife reserves** like the **Okavango Delta** and **Chobe National Park**.
- **Okavango Delta** is a **UNESCO World Heritage Site**, known for seasonal flooding and rich biodiversity.
- **International Memberships:**
- Part of the **African Union (AU)** and **Southern African Development Community (SADC)**.

## 2. DANA

- Occurs when **cold air descends** over the **warm Mediterranean Sea**.
- Causes **atmospheric instability**, making **hot, moist air rise rapidly**.
- Leads to **dense cumulonimbus clouds**, triggering **heavy rainfall in Spain**.
- **Connection to the Polar Jet Stream:**
- The **polar jet stream** is a high-altitude wind current moving **west to east**.
- It separates **cold polar air** from **warm tropical air**.
- Sometimes, a **cold air pocket detaches** and collides with **warm Mediterranean air**, causing DANA.
- **Common in Spain:**
- Typically occurs in **autumn and spring** in the **western Mediterranean**.

## 3. SUTLEJ RIVER



- The **Sutlej River** is the **longest of the five rivers** in the Punjab region. The other four are **Beas, Ravi, Chenab, and Jhelum**.
- **Origin & Course:**
- **Source:** Rakshastal Lake, near **Mount Kailash, Tibet (China)**.
- Flows through **Himachal Pradesh**, enters **Punjab (India)**, and then moves into **Pakistan**.
- Merges with the **Chenab River**, forming the **Panjnad River**, which joins the **Indus River**.
- **Tributaries:**

- **Baspa River**
- **Spiti River**
- **Key Projects & Infrastructure:**
  - **Bhakra Nangal Dam** – One of India's largest hydroelectric and irrigation dams.
  - **Nathpa Jhakri Dam** – Major hydroelectric project in Himachal Pradesh.
  - **Indira Gandhi Canal** – Supplies Sutlej water to Rajasthan for agriculture.
  - **Indus Waters Treaty (1960):**
    - Sutlej is **allocated to India** under the **Indus Waters Treaty** between **India & Pakistan**.
    - Along with **Ravi & Beas**, it remains under **India's control** for water usage.
  - **Important Wetlands:**
    - **Ropar Wetland** – A Ramsar site in Punjab with ecological significance.
    - **Harike Wetland** – Another Ramsar site where Sutlej meets the Beas River.

#### 4. KODO MILLET



- **Grown in: Central & Eastern India, parts of Africa.**
- **Drought-resistant:** Thrives in **rain-fed regions** with **poor, dry soils**.
- **Short-duration crop:** Cultivated mainly in the **kharif season**.
- **Minimal water & fertilizer needs**, making it a **sustainable alternative** to rice & wheat.
- **Nutritional Benefits:**
  - **Rich in proteins, fiber, iron, magnesium, and calcium.**
  - **Low glycemic index**, ideal for **diabetics**.
  - Contains **antioxidants & B vitamins**.
- **Challenges:**
  - **Mycotoxin contamination** (e.g., cyclopiazonic acid) poses health risks.
  - **Phytic acid content** may hinder nutrient absorption.

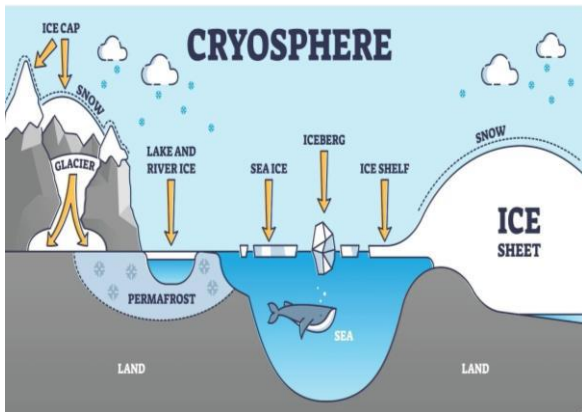
#### 5. SUBANSIRI LOWER HYDRO ELECTRIC PROJECT (SLHEP)



- **Power Generation Timeline:**
  - **750 MW by March 2025.**
  - **Full capacity (2,000 MW) by March 2026.**
- **Location:**
  - Built on the **Subansiri River**, a **Brahmaputra tributary**.
  - Spans **Arunachal Pradesh & Assam**.
- **Project Type:** **Run-of-the-river**, using natural water flow with **minimal reservoir storage**.
- **Dam Specifications:**
  - **Concrete gravity dam** with a **116m height** from the riverbed (**210m from the foundation**).

- **Reservoir capacity: 1.37 cubic km (gross), 0.44 cubic km (active).**
- **Challenges & Resumption:**
  - Faced **landslides, redesigns, and local opposition.**
  - Construction **halted (2011–2019)** due to protests.
  - **Resumed in 2019** after **National Green Tribunal approval.**

## 6. CRYOSPHERE



- The **cryosphere** includes all parts of Earth where **water exists in solid form**, overlapping with the **hydrosphere**.
- It consists of **snow cover, glaciers, ice sheets, ice shelves, icebergs, sea ice, lake ice, river ice, permafrost, and seasonally frozen ground**.
- **Significance of the Cryosphere**
- **Climate Regulation:** Reflects sunlight (**albedo effect**) to help **cool the planet**.
- **Freshwater Storage:** Releases **water during warmer months** for **ecosystems, agriculture, and human use**.

- **Sea Level Rise:** Melting ice contributes to **rising sea levels**, posing climate risks.
- **Ecosystem Support:** Sustains **polar wildlife** like **polar bears, penguins, and cold-adapted plants**.
- **Challenges**
- **Climate Change:** **Rising temperatures** shrink ice sheets, glaciers, and permafrost.
- **Feedback Loops:** **Melting permafrost releases methane**, further accelerating **global warming**.

## 7. SOLOMON ISLANDS



- **Location:** An island nation in the **South Pacific Ocean**, northeast of **Australia**, near **Papua New Guinea**.
- **Geography:** Consists of **six major islands** and **900+ smaller islands**. Part of **Melanesia** in the Pacific.
- **International Memberships:** Member of the **UN**, **Pacific Islands Forum**, and the **Commonwealth**.
- **Economy:**
- **Key Sectors:** **Agriculture** (palm oil, cocoa, copra), **fishing**, **forestry**, and **tourism**.

- **Currency:** Solomon Islands Dollar (SBD).
- **External Relations:** Australia & New Zealand are key economic partners.
- **Diplomatic Shift:** Recognized **China** in **2019**, raising concerns about **China's Pacific influence**.



## 8. LAKE KARIBA



- **Issue:** Severe drought has **drained Lake Kariba**, risking a shutdown of **Kariba Dam** for the first time in 65 years.
- **Impact:** **Zambia & Zimbabwe** face **daily power cuts** and economic strain.
- **About Lake Kariba:**
- **Largest Man-Made Lake:** *By volume, globally.*
- **Location:** *Border of Zambia & Zimbabwe, Central Africa.*
- **Formation:**
  - Created by **Kariba Dam** (1958–1963) on the **Zambezi River**.
  - Built to **generate hydroelectric power** for both nations.

### ○ Significance:

- **Biodiversity:** Home to **kapenta fish**, **Nile crocodiles**, and **hippos**.
- **Tourism Hub:** Popular for **fishing, boating, and wildlife safaris**.

## 9. DEAD SEA

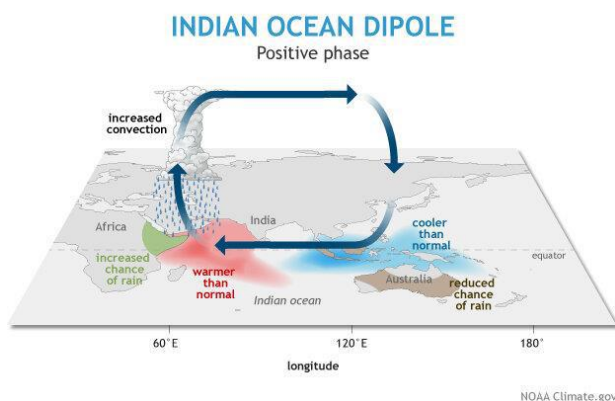


- **Location:** Bordered by **Jordan (east)**, **Israel**, and **Palestine (west)** in the **Jordan Rift Valley**.
- **Type:** **Endorheic lake** (no outlet streams).
- **Salinity & Features:**
- **Salinity:** **34%** – among the **saltiest water bodies** on Earth.
- **No Aquatic Life:** High salt concentration makes it nearly **lifeless**.
- **Lowest Point:** **~430m below sea level**, continuously decreasing.
- **Mineral-Rich:** Contains **magnesium, bromide, and potassium**, used in **therapeutic and cosmetic products**.
- **Floating Effect:** High **water density** allows effortless

floating.

- **Formation & Environmental Concerns:**
- **Tectonic Origin:** Formed due to **Jordan Rift Valley's** tectonic activity.
- **Water Source:** Primarily fed by the **Jordan River**.
- **Shrinking Levels:** Water levels drop **>1m annually** due to **river diversion and mineral extraction**.
- **Sinkholes:** Increasing due to **declining water levels**.

## 10. INDIAN OCEAN DIPOLE (IOD)



➤ **Definition:** IOD refers to the **irregular oscillation** of sea surface temperatures (SST) between the **western and eastern Indian Ocean**.

➤ **Types of IOD:**

➤ **Positive IOD:**

- **Warmer SST** near **Africa**, **cooler SST** near **Indonesia**.
- Leads to **good monsoon rainfall** in India.

➤ **Negative IOD:**

- **Cooler SST** in the **west**, **warmer SST** in the **east**.
- Causes **deficient monsoon rainfall** in India.

- Can **intensify heat waves** in **northern India** due to **weaker monsoon circulation**.

➤ **Neutral IOD:**

- **Minimal SST differences**, with **no major monsoon impact**.

## 11. SUDAN



➤ **Location:** Northeastern Africa

➤ **Borders:** Egypt (N), Red Sea (NE), Eritrea & Ethiopia (E), South Sudan (S), CAR (SW), Chad (W), Libya (NW)

➤ **Capital:** Khartoum

➤ **Major Rivers:** Blue Nile & White Nile (converge in Khartoum)

➤ **History**

➤ **Colonial Rule:** Jointly administered by Egypt & Britain (1899-1956)

➤ **Independence:** Gained from Anglo-Egyptian rule in **1956**

➤ **Civil Wars:**

○ **First:** 1955-1972

○ **Second:** 1983-2005

➤ **South Sudan Independence: 2011**

➤ **Economy**

➤ **Industries:** Agriculture, livestock, oil, minerals

➤ **Challenges:** Inflation, unemployment, conflicts

➤ **Culture**

➤ **Language:** Arabic (official) + multiple local languages

➤ **Religion:** Islam (dominant), Christianity, indigenous beliefs

➤ **Conflict in Darfur**

➤ **War in Darfur (2003):** Rebel groups fought against government oppression of non-Arab populations.

➤ **Government Response:** Ethnic cleansing, leading to mass civilian deaths.

➤ **ICC Charges:** Sudan's President **Omar al-Bashir** indicted for **genocide, war crimes, and crimes against humanity**.

## 12. SABARMATI RIVER



- **Scope:** Transforming **38 km** of riverbanks from **Ahmedabad to Gandhinagar** in **seven phases**.
- Current Status:** Monetizing **Phase 1**, covering **11 km** on both sides.

**Initiative:** A key project initiated by **PM Narendra Modi** during his tenure as Gujarat CM.

- **Sabarmati River Overview**
- **Origin:** Aravalli Range, Rajasthan.
- **Course:** Flows **48 km** in **Rajasthan** before entering

**Gujarat**, passing through **Ahmedabad and Gandhinagar**, and draining into the **Gulf of Khambhat**.

- **Tributaries:**
  - *Left Bank:* Wakal, Harnav, Hathmati, Watrak.
  - *Right Bank:* Sei.
- **Agriculture:** **74.68%** of the basin area is used for farming.
- **Monsoon-Dependent:** Water flow is **seasonal**, peaking during monsoons.

## 13. GUYANA



- India and Guyana signed 10 agreements to boost cooperation in hydrocarbons, digital payments, pharmaceuticals, and defense.
- PM Modi's visit marked a key milestone in India-Guyana relations. It was the first visit by an Indian Prime Minister to Guyana in over 50 years.
- **Location:** Northeastern South America, bordering the Atlantic Ocean, Venezuela, Brazil, and Suriname.
- **Capital:** Georgetown.

- **Major Rivers:** Essequibo, Demerara, Berbice.
- **Climate:** Tropical, with rainy and dry seasons.
- **Population:** ~800,000 (2023).
- **Ethnic Groups:** Indo-Guyanese, Afro-Guyanese, Indigenous peoples.
- **Language:** English (official).
- **Religion:** Predominantly Christianity, Hinduism, and Islam.
- **Biodiversity:** Home to part of the Amazon rainforest.
- **Natural Resources:** Bauxite, gold, diamonds, timber, and offshore oil (discovered in 2015).
- **Key Sectors:** Agriculture (sugar, rice), mining, oil.
- **Oil Boom:** ExxonMobil's discoveries have made Guyana one of the fastest-growing economies.
- **Independence:** Gained from the UK on May 26, 1966.
- **Memberships:** CARICOM, UN, Commonwealth.

#### 14. COLD WAVE

- A **cold wave** is a significant drop in temperature compared to normal climatological values.
  - **IMD Definition:**
    - **Plains:** Minimum temperature  $\leq 10^{\circ}\text{C}$ , with a **drop of 4.5 to 6.4 $^{\circ}\text{C}$** . A drop of  $>6.4^{\circ}\text{C}$  is a **severe cold wave**.
    - **Hilly Regions:** Minimum temperature  $\leq 0^{\circ}\text{C}$ .
    - **Plains (Severe Cold Wave):** Minimum temperature  $\leq 2^{\circ}\text{C}$ .
    - **Coastal Areas:** Minimum temperature  $\leq 15^{\circ}\text{C}$ , with a **drop of 4.5 $^{\circ}\text{C}$** .
  - **Season & Affected Regions:**
    - Cold wave season: **November to March**, peaking in **December and January**.
    - **Core Cold Wave Zone:** Includes **Telangana, Punjab, Himachal Pradesh, Uttarakhand, J&K, Ladakh, Delhi, Haryana, Rajasthan, UP, Gujarat, MP, Chhattisgarh, Bihar, Jharkhand, WB, Odisha**.
  - **Vulnerable Groups:**
    - **Homeless, elderly, economically disadvantaged, pregnant women, children, outdoor workers, and farmers.**
  - **Health Risks:**
    - **Hypothermia & Frostbite:** Due to prolonged cold exposure.
    - **Non-Freezing Cold Injuries:** *Immersion Foot* from extended exposure to cold, wet conditions.

#### 15. ASHTAMUDI LAKE

##### Under threat

Sewage discharged by industries and houseboats have severely polluted the lake



- Ashtamudi Lake is **Kerala's second-largest estuarine system** after **Vembanad Lake**. The name "**Ashtamudi**" means "**eight braids**" in Malayalam, referring to its **eight interconnected channels**. It serves as the **gateway to the Kerala backwaters** and is vital both **ecologically and economically**.

- **Key Features:**
  - **Location:** Kollam district, Kerala.
  - **Type:** Estuarine lake, where the **Kallada River** meets the **Arabian Sea**.
  - **Ramsar Site:** Declared a **Wetland of International Importance** in **2002**.
  - **Biodiversity:** Rich in flora and fauna, including **mangroves** (*Avicennia officinalis*, *Bruguiera gymnorhiza*) and endangered species like *Syzygium travancoricum*.

#### 16. DAL LAKE

- The **Indian Army** organized the **Chinar Boat Race 2024** in **Dal Lake, Srinagar**, as part of its efforts to strengthen **Army-public relations** in **Jammu and Kashmir**.
  - **Dal Lake – The Jewel of Kashmir**



- Dal Lake, a **freshwater urban lake**, is the **second-largest in J&K** and a major attraction in the **Kashmir Valley**. It is often called the "**Lake of Flowers**," "**Jewel in the Crown of Kashmir**," and "**Srinagar's Jewel**."



- **Hydrology & Ecology:**
  - **Primary Inflow:** Telbal Nallah from Marsar Lake.
  - **Primary Outflow:** Regulated through Dal Gate and Nalla Amir.
  - **Ramsar Site:** Declared a **Wetland of International Importance** in 2002.
  - **Biodiversity:** Home to **lotus flowers, water lilies, and various fish species**.
- **Floating Gardens:** Known as "**Rad**", these bloom with lotus flowers in **July-August**.
- **Islands:** Includes **Char Chinar (Roph Lank)** and **Sona Lank (Gold Island)**.
- **Tourism & Activities:**
  - **Houseboats & Shikaras:** Famous for **houseboats and colorful wooden boats (shikaras)** offering scenic rides.
  - **Mughal Gardens:** Surrounded by **Shalimar Bagh and Nishat Bagh**, built by Emperor **Jahangir**.
  - **Floating Market:** Vendors sell **fresh produce and handicrafts from boats**.

## 17. CANARY ISLANDS



**Location** – Spanish archipelago in the **Atlantic Ocean**, about **115 km (72 miles) west of Morocco**

- **Composition** – Seven main islands along with several smaller islands and islets
- **Formation** – Created by **volcanic activity** millions of years ago
- **Climate**
  - **Subtropical** – Warm temperatures throughout the year
  - **Mild Winters** – A popular tourist destination year-round
- **Population**
  - Home to approximately **2.2 million people**
- **Economy**
  - **Tourism** – Major industry, driven by **beaches, landscapes, and nightlife**
  - **Agriculture** – Known for **banana and tomato farming**
  - **Fishing** – Rich marine life supports a **thriving fishing industry**
  - The Canary Islands combine **natural beauty, a pleasant climate, and economic diversity**, making them a sought-after destination.

DECEMBER 2024

**1. VARKALA CLIFF**

**NGT Action** – The National Green Tribunal (NGT) has sought responses from the Geological Survey of India (GSI) and others regarding **environmental threats** to the Varkala Cliff.

**Geographical Features**

**Location** – Situated in **Varkala, Thiruvananthapuram, Kerala**, along the **Arabian Sea**.

**Formation** – Composed of **hard laterite and sandstone**, overlooking the sea.

**Elevation** – Cliffs rise up to **80 meters** above sea level.

**Unique Terrain** – The **only coastal cliffs** in southern Kerala adjacent to the Arabian Sea.

**Geological Significance**

**Age** – The cliffs expose **Mio-Pliocene sedimentary rocks**, dating back **1.3 million to 25 million years**.

**National Geological Monument** – Declared by the **Geological Survey of India (GSI)** for **geotourism promotion**.

**Geo-Heritage Site** – Recognized as a **geo-heritage site** in **2015** by the **Ministry of Mines and GSI**.

**Cultural & Spiritual Importance**

**Papanasam Beach** – Located at the **cliff's base**, known for **therapeutic natural springs**.

**Janardana Swami Temple** – A **2,000-year-old Vaishnavite shrine**, often called **Dakshin Kashi (Benares of the South)**.

**2. VADHAVAN PORT**

**Under construction** near **Dahanu, Maharashtra**, the port will **double India's container trade** after completion.

**Expected completion by 2034**, it aims to be among the **world's top 10 ports**.

**Location & Ownership**

**Situated** on the **Arabian Sea coast**, **70 km north of Mumbai** and **111 km north of JNPT**.

**Developed** by **Jawaharlal Nehru Port Authority (JNPA)** in partnership with **Maharashtra Maritime Board (MMB)**.

**Stakeholders** – JNPA holds **74%**, while MMB holds **26%**.

**Key Features**

**India's deepest seaport** with a **natural depth of 20 meters**.

**Infrastructure** – Includes **9 container terminals**, **4 multipurpose berths**, **4 liquid cargo berths**, a **Ro-Ro berth**, and a **Coast Guard berth**.

**Designed capacity** – Can handle **298 MMT per annum**.

**Draft depth of 18 meters**, allowing **large vessel accommodation**.

**Economic & Strategic Impact**

**Project cost** – Estimated at **₹76,220 crore (US\$9.1 billion)**.

**Employment** – Expected to generate **1 million jobs** (direct and indirect).

**Strategic role – A key project under Sagarmala, boosting India's logistics sector.**

### 3. UGANDA



**Location:** Landlocked country in East Africa.

**Independence:** Gained from Britain on **October 9, 1962**.

**Colonial History:** Was a **British protectorate** from 1894.

**Political History:** Faced **turmoil**, including **Idi Amin's brutal rule** in the 1970s.

**Borders:** Kenya (east), South Sudan (north), DRC (west), Rwanda (southwest), Tanzania (south).

**Lake Victoria:** Forms part of the **southern border**; **Africa's largest freshwater lake**.

**Climate:** Equatorial, with **two rainy and two dry seasons**.

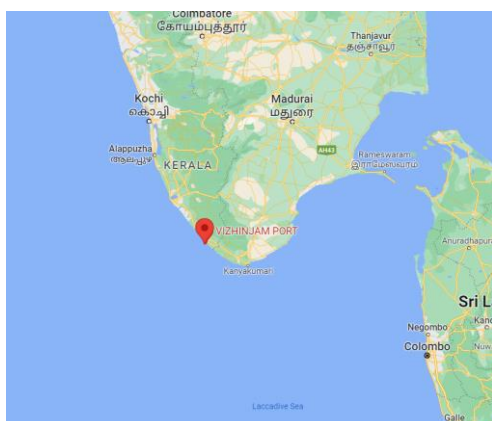
**Population:** Around **49 million** (2024).

**Capital:** **Kampala**, with **8.5 million** residents.

**Ethnic Groups:** **Diverse**, with **Baganda** as the largest (16.5%).

**Languages:** **English & Swahili** are official.

### 4. VIZHINJAM SEA PORT



**Location:** Vizhinjam, Thiruvananthapuram, Kerala, about **16 km** south of the city.

**Strategic Position:** **10 nautical miles** from a major international shipping route connecting **Europe, the Persian Gulf, Southeast Asia, and the Far East**.

**Natural Depth:** **24 meters**, minimizing dredging requirements.

**Capacity:** Handles **ultra-large container ships** exceeding **24,000 TEUs** (Twenty-foot Equivalent Units).

**Infrastructure:** Features **two breakwaters, a harbor basin, multiple berths, and a cruise berth**.

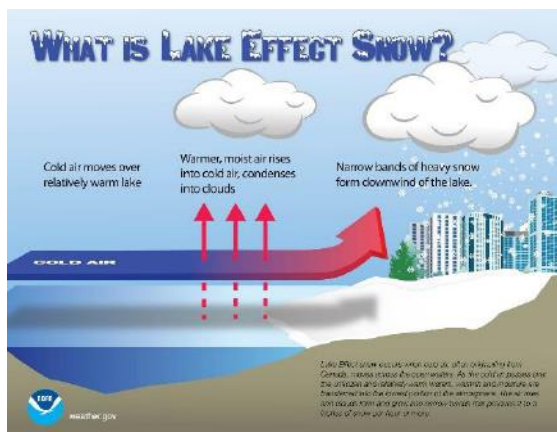
**Economic Impact:** Expected to manage **50% of India's container transshipment**, reducing reliance on **Dubai, Colombo, and Singapore**.

**Developer:** Joint venture between the **Government of Kerala** and **Adani Vizhinjam Port Private Limited (AVPL)**.

**Development Model:** Built under a **landlord model** with a **Public-Private Partnership (PPP)** on a **Design, Build, Finance, Operate, and Transfer (DBFOT)** basis.



## 5. LAKE EFFECT SNOW



**Impact:** Western New York saw nearly **4 feet of snow in four days**, prompting **emergency declarations** in New York and Pennsylvania.

### What is Lake-Effect Snow?

Occurs when **cold air passes over warmer lake waters**, leading to **heavy snowfall** in downwind areas.

### Formation Process

**Cold Air Moves In:** Frigid air flows over a **warmer lake surface**.

**Moisture Uplift:** Warm water **heats the air**, causing it to rise and condense into clouds.

**Heavy Snowfall:** These clouds release **intense, localized snowfall**, sometimes exceeding **several inches per hour**.

### Key Factors

**Temperature Difference:** Greater contrast between **air and lake temperature** enhances snowfall.

**Wind Direction:** Determines **where snow bands form** and how far they spread.

**Lake Size:** **Larger lakes** generate more intense snowfall.

### Notable Examples

**Great Lakes Region:** Cities like **Buffalo, NY**, and parts of **Michigan** frequently experience **lake-effect snow**.

**Other Locations:** Similar effects occur near **Great Salt Lake (Utah)** and **Lake Baikal (Russia)**.

## 6. SYRIA

**Event:** Syrian rebels seized **Damascus** on **December 8, 2024**, toppling **President Bashar al-Assad** after **13 years of civil war**.

**Geopolitical Impact:** This marks a major setback for **Russia and Iran**, key allies who supported Assad.

**Rebel Forces:** **Hayat Tahrir al-Sham (HTS)**, formerly an **al-Qaeda affiliate**, led the offensive. Some Syrians fear HTS may enforce **strict Islamist rule**.

### Syria: Key Facts

**Location:** In **West Asia**, bordered by **Turkey, Iraq, Jordan, Israel, Lebanon**, and the **Mediterranean Sea**.

**Capital:** **Damascus**, Syria's largest city.

### Historical Background

**Ottoman Rule:** Part of the **Ottoman Empire** until **World War I**.

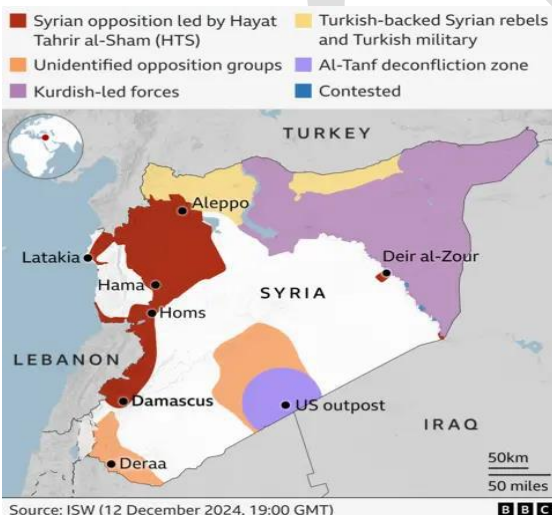
**French Mandate:** Came under **French control** before gaining **independence in 1946**.

**Modern State:** Established in the **mid-20th century**, with **Damascus** as its capital.

### Culture & Religion

**Ethnic Groups:** Majority **Arabs**, with **Kurds, Armenians, Assyrians**, and others.

**Religion:** Predominantly **Muslim (87%)** – **Sunni (74%), Shia (13%), and Christians (10%)**.



Source: ISW (12 December 2024, 19:00 GMT)





**Cultural Importance:** Damascus was once the seat of the **Umayyad Caliphate**.

#### **Economy**

**GDP:** \$50.28 billion (PPP), **per capita GDP:** \$2,900.

**Currency:** Syrian Pound (SYP).

**Economic Struggles:** The war has devastated **infrastructure** and **development**.

### **7. LONAR LAKE**



The **Maharashtra government** plans to submit **Lonar Lake** for inclusion in the **UNESCO World Heritage Sites** list.

The proposal will first be reviewed by the **Archaeological Survey of India (ASI)** before submission to **UNESCO**.

If accepted, **Lonar Lake** will be **India's 41st UNESCO Heritage Site**, joining **Ajanta & Ellora Caves**, **Elephanta Caves**, and **Chhatrapati Shivaji Maharaj Terminus**.

**Geological & Ecological Significance**

**Location:** Buldhana district, Maharashtra.

**Formation:** Created by a **meteor impact** about **50,000 years ago**.

**Unique Feature:** One of **four known basaltic impact craters** on Earth,

alongside sites in **Brazil**.

**Geo-Heritage Monument:** Recognized by the **Geological Survey of India (GSI)** for its national importance.

**Ramsar Wetland:** Declared in **November 2020**, highlighting its ecological value.

#### **Physical Characteristics**

**Size:** **1.2 km** in diameter, **150 meters** deep.

**Water Composition:** **Saline and alkaline**, seven times saltier than seawater.

**Color Changes:** The lake shifts from **green to pink**, influenced by **seasonal variations** and **microorganisms**.

#### **Cultural Significance**

**Ancient Temples:** Over **15 temples** surround the lake, some **1,200 years** old.

**Daitya Sudan Temple:** A major temple dedicated to **Lord Vishnu**.

**Local Legend:** Mythology attributes the lake's formation to the **demon Lonasura**, defeated by **Lord Vishnu**.

### **8. PORT OF LATAKIA**

**Israel Defense Forces (IDF)** targeted **Syria's naval fleet** at **Al-Bayda** and **Latakia ports**.

The attacks aim to **neutralize military assets** following the fall of the **Assad regime**.

#### **About Latakia Port**

**Location:** Mediterranean coast, Latakia, Syria.

**Historical Significance:** Syria's only seaport after gaining independence in 1945.

#### **Strategic Control:**

**Since 2019**, **Iran** has leased parts for **civilian & military** use.

**Russia** operates its **only Mediterranean naval base** in nearby **Tartus**.

## 9. MOLDOVA

**Location:** Landlocked country in **Eastern Europe**, bordered by **Romania (west)** and **Ukraine (north, east, south)**.



**Capital & Largest City:** Chişinău.

**Population:** 2.42 million (as of January 2024).

**Area:** 33,843 km<sup>2</sup>, including **Transnistria** (an unrecognized breakaway region).

### Historical Background

**Ottoman Rule:** Controlled by the **Ottoman Empire** until the early 19th century.

**Russian Empire:** Became **Bessarabia** after being ceded to **Russia in 1812**.

**Romanian Rule:** United with **Romania after World War I**.

**Soviet Era:** Incorporated into the **Soviet Union in 1940**, gaining independence in **1991**.

**Transnistria Conflict:** Declared independence but remains **internationally recognized as part of Moldova**. Backed by **Russia**, it has its own government and military.

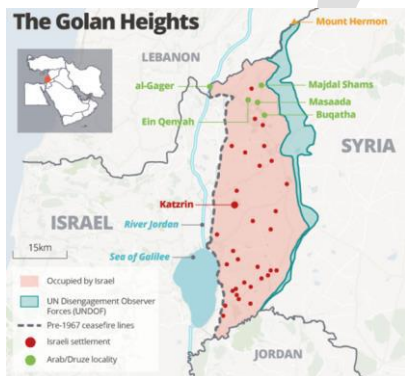
### EU Aspirations

Applied for EU membership in **March 2022**.

Granted **EU candidate status on June 22, 2022**.

Aims for **EU accession by 2030**.

## 10. GOLAN HEIGHTS



Israel plans to double its population in the occupied Golan Heights despite ongoing threats from Syria.

**Captured from Syria in the 1967 Six-Day War**, Israel annexed the region in **1981**.

### Golan Heights: Strategic Importance

**Location:** Southwestern **Syria**, bordering **Israel, Lebanon, and Jordan**.

**Area:** 1,800 km<sup>2</sup>, with hilly terrain and basaltic rock formations.

**Borders:** Yarmouk River (south), Sea of Galilee (west).

**Natural Resources:** Fertile volcanic soil supports **apple, cherry orchards, and vineyards**. Vital **water sources**, including the Hasbani River, feed the

Jordan River.

**Population:** 55,000 residents, including **24,000 Druze** who identify as **Syrians**.

**Highest Point:** Mount Hermon (2,814m / 9,232ft).

### Historical Timeline

**Ottoman Rule (16th century):** Controlled by the **Ottoman Empire**.

**French Mandate:** Became part of **Syria** after **World War I**.

**1967 Six-Day War:** Israel captured the Golan Heights.

**1973 Arab-Israeli War:** Syria attempted but failed to reclaim it.

**1974:** UN deployed peacekeeping forces (UNDOF) to maintain a ceasefire. **Currently, 1,274 UN personnel** are stationed there.

**1981:** Israel formally annexed the Golan Heights.

**2019:** The US (under Donald Trump) recognized Israeli sovereignty, a stance upheld by the Biden administration.

## 11. KERCH STRAIT

**Location:** Connects the **Black Sea** to the **Sea of Azov** in Eastern Europe.



**Borders:** Separates **Crimea's Kerch Peninsula (Russia-occupied)** from **Russia's Taman Peninsula**.

**Size:** 35 km long, 3.1–15 km wide, with an **average depth of 18 meters**.

**Historical Significance**

**Ancient Name:** Known as **Cimmerian Bosphorus**, named after the Cimmerians.

**Roman Era:** Called the **Strait of Cimmerian Bosphorus** by the Romans.

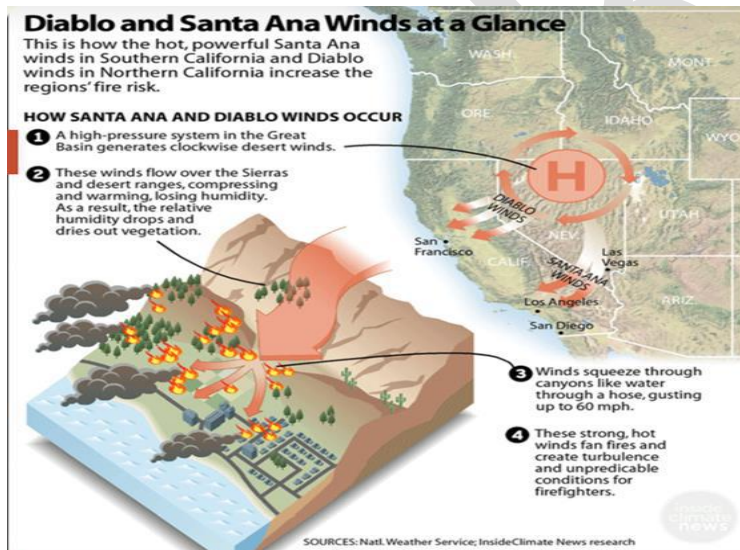
**World War II:** Site of **strategic naval battles**.

### Modern Developments

**Crimean Bridge:** Built in **2018**, it is **Europe's longest bridge (19 km)** with road and rail links.

**Conflict:** A site of tensions, especially after **Russia's annexation of Crimea (2014)** and the **2018 Kerch Strait incident** involving a naval clash between Russia and Ukraine.

## 12. SANTA ANA WINDS



**Santa Ana winds** occur when **high pressure** builds over the **Great Basin** and **low pressure** forms along **California's coast**.

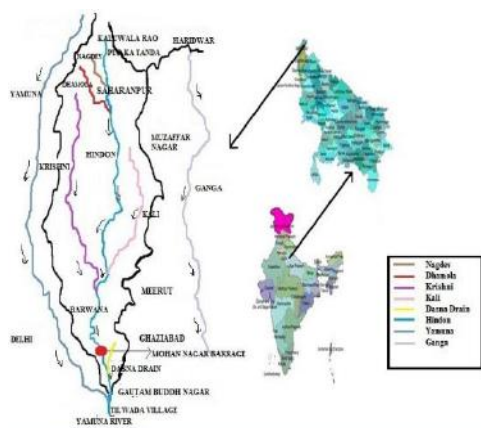
This pressure difference pushes **strong, dry winds** from inland deserts over the mountains toward the **Pacific Ocean**.

As the winds descend, they **compress, heat up, and lose humidity**, sometimes dropping below **10%**.

The **extreme dryness** makes vegetation highly flammable, fueling **wildfires** like those in **Malibu**.

These winds are most common between **October and January**.

### 13. HINDON RIVER



The **Hindon River** is a tributary of the Yamuna in northern India.

**Origin:** It rises from the **Shakumbhari Devi Range** (Upper Sivaliks) in **Saharanpur, Uttar Pradesh**.

**Course:** Flowing through **Muzaffarnagar, Meerut, Baghpat, Ghaziabad, and Gautam Buddha Nagar**, it joins the **Yamuna in Noida**.

**Length:** Approximately **400 km**.

**Catchment Area:** Covers **7,083 sq. km**.

**Key Features:**

**Tributary:** The **Kali River** merges with the Hindon near **Sardhana**.

**Rainfed:** It depends on **monsoon rains** for water.

**Pollution:** Heavy pollution from **urban, industrial, and agricultural waste** led the **CPCB** to declare it a '**dead river**' in **2015**.

**Historical Significance:**

**Indus Valley Civilization:** The **Alamgirpur site**, 28 km from Delhi, lies along its banks.

**1857 Revolt:** Witnessed battles, including the **Battle of Badli-ki-Serai**.

### 14. SILIGURI CORRIDOR



The **Siliguri Corridor**, or "**Chicken's Neck**," is a narrow land strip in **West Bengal**, linking **mainland India** to the **Northeast**.

It is **bordered by Nepal (west), Bhutan (north), and Bangladesh (south)**.

**Geography:**

**Narrowest point:** **22 km wide**.

Lies between the **Himalayan foothills** and **Bangladesh**.

**Strategic Importance:**

A **lifeline** for India's **Northeastern states**.

Crucial for **military movement, trade, and security**.

Facilitates **connectivity** with **Bhutan and Northeast India**.

**Economic Role:**

A key **trade hub** with **Bhutan, Nepal, and Bangladesh**.

Major **highways and railways**, including **NH-10**, pass through it.

**Strategic Challenges:**

**Vulnerable to Blockades:**

**Easily disrupted** during conflicts.

Close to **Doklam**, a sensitive **India-China-Bhutan** tri-junction.

**Geopolitical Sensitivities:**

Near **China's Tibet Autonomous Region** and **Bangladesh's border**.

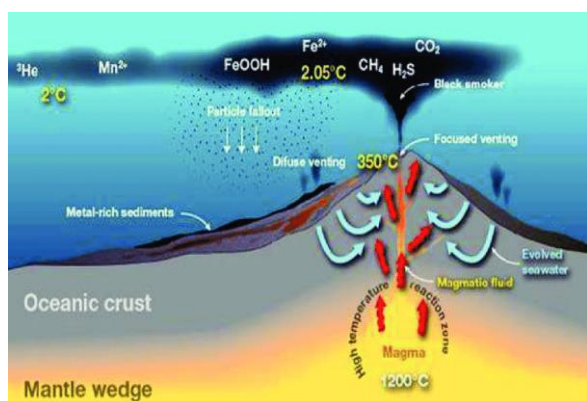
A region of **Chinese strategic interest**.

**Security Concerns:**

Risks of **insurgency, infiltration, and smuggling** due to **porous borders**.



## 15. HYDROTHERMAL VENT



Indian oceanographers have captured the **first-ever image** of an **active hydrothermal vent 4,500 meters** deep in the **Indian Ocean**.

This discovery boosts India's **Deep Ocean Mission**, including **Samudrayaan**, focused on **mineral exploration**.

**Hydrothermal Vents:**

**Geothermal systems** on the **ocean floor**, mainly near **tectonic boundaries**.

**Superheated, mineral-rich water** escapes due to **volcanic activity**.

**Formation:**

Found at **mid-ocean ridges** or **subduction zones**.

**Seawater seeps in**, heats up by **magma**, dissolves minerals, and resurfaces.

**Types of Vents:**

**Black Smokers:** Emit **dark, metal-rich** plumes.

**White Smokers:** Release **cooler, silica-rich** fluids.

**Ecological Significance:**

**Unique ecosystems** with **chemosynthetic organisms** (bacteria, archaea).

Host life like **tube worms**, **clams**, and **shrimp**.

**Insights into extremophiles** and the **origins of life**.

**Scientific & Economic Importance:**

**Rich in metals** like **gold**, **silver**, and **copper** for **deep-sea mining**.

**Astrobiology link:** Similar conditions may exist on **Europa & Enceladus**.

**Climate impact:** Influence **carbon and sulfur cycles** in the ocean.

## 16. LESOTHO



India has sent **1,000 metric tonnes** of humanitarian aid to **Lesotho** from **Nhava Sheva Port** to support **food security**.

**Lesotho Overview:**

A **landlocked country** in **Southern Africa**, entirely **surrounded by South Africa**.

**High-altitude terrain** with elevations **1,000 to 3,482 meters** above sea level.

**Climate:** **Temperate**, with **cold winters** (snow in highlands) and **hot summers**.

**Independence:** Gained from **Britain** in **1966**, facing **political & economic challenges**.

**Socioeconomic Issues:** Nearly **half the population** lives **below the poverty line**; **2nd highest HIV/AIDS prevalence** globally.

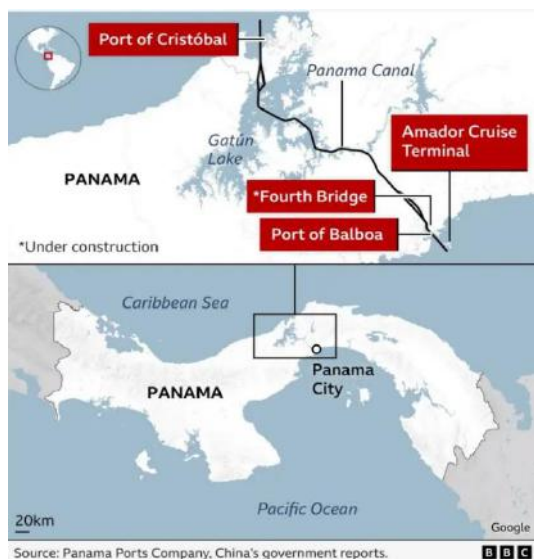
**Memberships:** Part of **UN**, **NAM**, **Commonwealth**, **AU**, and **SADC**.

**Economy:**

**Agriculture:** Major sector; grows **maize**, **wheat**, and **barley**.

**Mining: Diamond industry** significantly contributes to GDP.

## 17. PANAMA CANAL



Source: Panama Ports Company, China's government reports.

The **Panama Canal** is an **82-km (51-mile)** artificial waterway in Panama, linking the **Atlantic and Pacific Oceans** across the **Isthmus of Panama**.

It **shortens travel time** for ships, avoiding the long, hazardous route around **South America's southern tip**.

### History:

**Early Attempts:** Plans for a canal date back to the **1500s**. The **French** attempted construction in the **1880s** but failed due to **disease and financial issues**.

**U.S. Construction:** The **U.S. took over in 1904** and completed the canal in **1914**. It remained under U.S. control until **1999**, when **Panama took full authority**.

**Modern Era:** The canal remains **crucial for global shipping** under Panama's management.

### Structure & Functioning:

**Locks System:** Ships are **lifted to Gatun Lake (26m above sea level)** via locks and **lowered** at the other end.

**Water Usage:** Each transit consumes **200 million liters (52 million gallons)** of fresh water.

## 18. RANN OF KUTCH



**Location:** Spread across **Gujarat's Kutch district**, with a small portion in **Sindh, Pakistan**.

**Divisions:** **Great Rann** (larger) and **Little Rann of Kutch**.

**Size:** Covers **26,000 sq. km**, featuring **Kori Creek** and **Sir Creek**, part of the **Indus Delta**.

**Formation:** Result of **tectonic shifts** and **marine transgressions**.

### Seasonal & Climatic Features

**Climate:** **Semi-arid/tropical savanna**, with **hot summers (up to 50°C)** and **cold winters (below freezing)**.

**Rainfall:** **Monsoon (June–September)** turns it into a **marshland**; dries into a **salt plain** in summer.

### Ecological Importance

**Wildlife:** Home to the **Indian Wild Ass**, **flamingos**, **Demoiselle Cranes**, and **salt-tolerant plants** like **Suaeda**.

**Protected Areas:** **Wild Ass Wildlife Sanctuary** and **Ramsar wetland site**.

### Cultural & Economic Significance

**Heritage:** Indigenous **Rabari community** and **traditional crafts** like **Bandhani**, **Ajrakh printing**, and **embroidery**.

### Economy:

**Salt production** (major contributor to India's output).

**Tourism:** Hosts **Rann Utsav**, celebrating art and culture.

**Mining:** Limited extraction of **gypsum** and other minerals.

## 19. GREENLAND



**Location:** Between the **Arctic & Atlantic Oceans**, east of **Canada's Arctic Archipelago**.

**Size:** World's **largest island** (2,166,086 sq km).

**Elevation:** **Gunnbjørn Fjeld** (3,694m) is the **highest Arctic peak**.

**Arctic Reach:** Two-thirds of Greenland lies **within the Arctic Circle**, with its northern tip **less than 800 km from the North Pole**.

**Ice Coverage:** **80%** covered by the **Greenland Ice Sheet**, the **second-largest** after **Antarctica**.

**Historical & Political Background**

**Colonization:** Denmark began colonization in the **18th century**.

**Integration:** Became part of **Denmark** in **1953**.

**Autonomy:** Home rule granted in **1979**, with further **self-governance** in **2009**.

**Demographics & Culture**

**Population:** Estimated **56,800 (2024)**.

**Ethnic Groups:** Mostly **Inuit**, with Danish and Nordic minorities.

**Languages:** **Greenlandic (official)**, Danish is widely spoken.

**Economy & Resources**

**Key Sectors:** **Fishing, hunting, mining**.

**Potential Reserves:** **Oil & gas exploration** is ongoing.

**Interesting Facts**

**Capital:** **Nuuk**, the largest city.

**Northernmost Land:** **Kaffeklubben Island**.

## 20. TSUNAMI

A **tsunami** is a series of **large sea waves** triggered by the **displacement of water** in an **ocean or large lake**.

**Causes**

**Underwater Earthquakes:** Occur at **subduction zones**, where **oceanic and continental plates** collide.

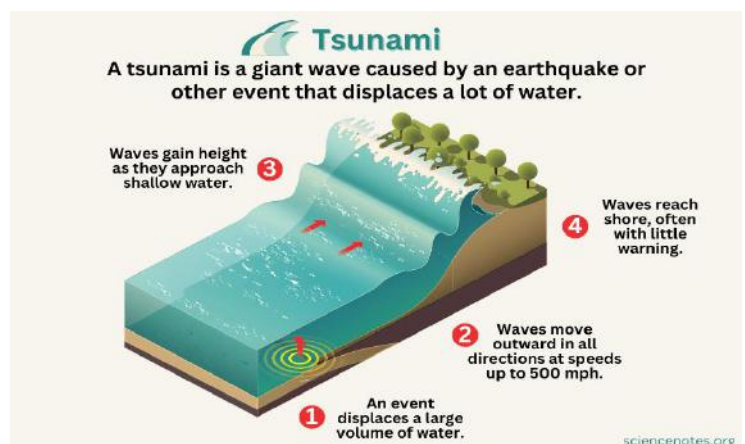
**Volcanic Eruptions:** Underwater volcanic activity can **displace water** significantly.

**Landslides:** Both **submarine and coastal landslides** can generate tsunamis.

**Meteorite Impacts:** Rare but can cause massive **water displacement**.

**Characteristics**

In **deep waters**, tsunamis travel at **500–1,000 km/h** with **low wave heights**.



Near the **shore**, speed **reduces**, but wave **height increases dramatically**.

### Tsunami-Prone Regions

The **Pacific "Ring of Fire"** is highly **susceptible** due to frequent **tectonic activity**.

Other risk zones include **the Indian Ocean, Mediterranean Sea, and parts of the Atlantic**.

### Major Tsunamis

#### 2011 Japan Tsunami

A **9.0-magnitude earthquake** near **Tohoku** triggered massive waves.

Led to **widespread destruction**, including the **Fukushima nuclear disaster**.

#### 2004 Indian Ocean Tsunami

Caused by a **9.1–9.3 magnitude earthquake** along the **Sunda Trench**.

The **Indian Plate** was subducting beneath the **Burma Plate**, causing **stress buildup** over centuries.

A **10–15m vertical seabed displacement** released **billions of cubic meters of seawater**, creating the tsunami.

Occurred at a **shallow depth (under 30 km)**, amplifying wave height.

### "Megathrust" Earthquakes Generating Tsunamis

**1952 Kamchatka, Russia**

**1960 Chile** (*largest recorded earthquake, M 9.5*)

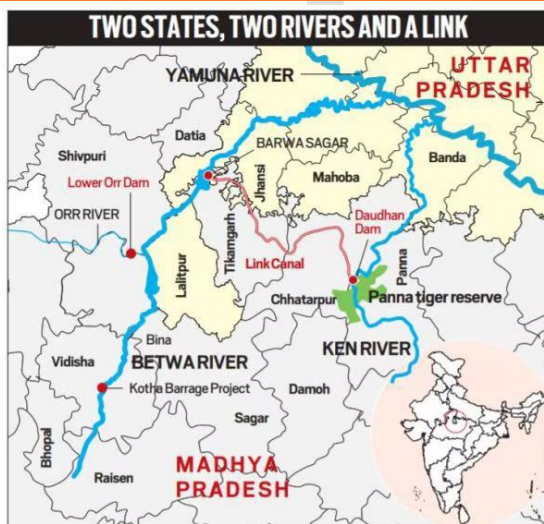
**1964 Prince William Sound, Alaska**

**2004 Sumatra, Indonesia**

**2011 Tohoku, Japan**

These quakes, exceeding **magnitude 9.0**, occurred in **subduction zones** at **shallow depths**, causing **seafloor displacement over 10 meters**, generating **massive tsunami waves**.

## 21. KEN-BETWA LINK PROJECT (KBLP)



First river interlinking project under India's **National Perspective Plan (1980)**.

Part of **16 peninsular river links**; **14 links** proposed under **Himalayan rivers development**.

**Project Cost:** ₹45,000 crore.

### Objective & Benefits

**Water Transfer:** Diverts water from **Ken River to Betwa River**, both **Yamuna tributaries**.

**Irrigation Coverage:** **10.62 lakh hectares** (8.11 lakh ha in **Madhya Pradesh**, 2.51 lakh ha in **Uttar Pradesh**).

**Drinking Water Supply:** **62 lakh people**.

**Power Generation:** **103 MW hydropower + 27 MW solar power**.

### Key Components

**Daudhan Dam:** **77 m high, 2.13 km long**, located in **Panna Tiger Reserve**.

**221-km Canal:** Links **Ken & Betwa Rivers**.

### Phases:

**Phase I:** **Daudhan Dam, Low & High-Level Tunnels, Ken-Betwa Canal, Powerhouses**.

**Daudhan Dam:** **2,031 m long** (1,233 m earthen, 798 m concrete).



**Submergence: 9,000 hectares**, affecting **10 villages**.

**Phase II: Construction of Lower Orr Dam, Bina Complex Project, and Kotha Barrage.**

**Environmental & Social Concerns**

**Wildlife Impact: 98 sq km of Panna National Park submerged; 2-3 million trees felled.**

**Threat to Fauna: Gharials, vultures, and other species** in the Ken Gharial Sanctuary.

**Unprecedented Approval: Daudhan Dam sanctioned within Panna Tiger Reserve core zone.**

**Viability Questions: Supreme Court's CEC suggested alternative irrigation methods** in the upper Ken basin.

**Controversy & Future Challenges**

**Ecological Disruptions: Risks tiger habitat fragmentation, biodiversity loss, and downstream impact.**

**Economic Feasibility: Experts question cost-effectiveness and alternative water management strategies.**

**Implementation Hurdles: Requires balancing infrastructure, conservation, and local livelihoods.**

Despite concerns, the project aims to **address water scarcity** and **boost agricultural & energy needs** in the region.

## 22. SUPER-AGED SOCIETY

**South Korea became a 'Super-aged society'.**

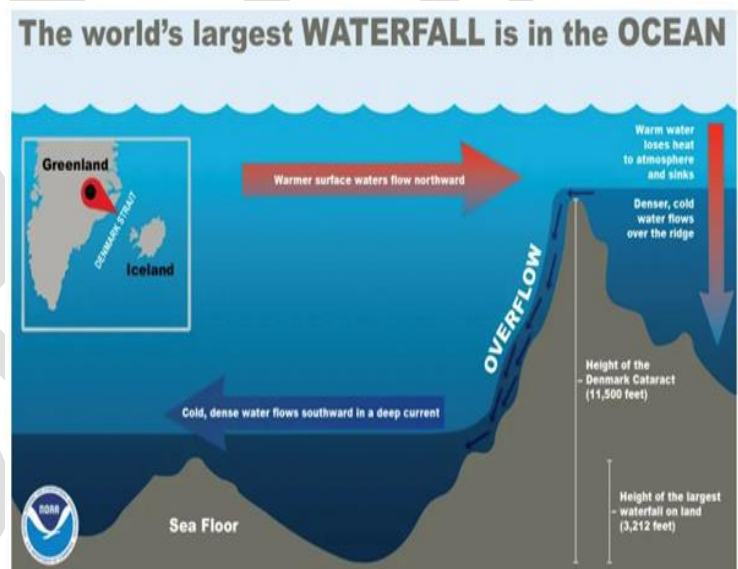
**Definition: A super-aged society** is a country where **20% or more of the population is 65 years or older**. The UN classifies nations as **aging (7% elderly), aged (14%), and super-aged (20%+)**.

**Current Status: As of 2024, 20% of South Korea's 51 million people (10.24 million) are 65 or older**, marking its transition into a super-aged society.

**Gender Distribution: 22% of women and 18% of men** in South Korea are in this age group.

**Demographic Crisis: The country faces a record-low birth rate of 0.72 (2023)**, the world's lowest, causing concerns about its shrinking workforce.

**Global Context: Unlike European nations that offset aging with immigration**, South Korea, Japan, and China have **been reluctant to adopt large-scale immigration policies**.



## 23. DENMARK STRAIT CATARACT

The **Denmark Strait Cataract** is the world's **largest underwater waterfall**, located in the **ocean channel between Iceland and Greenland**.

It is **hidden beneath the ocean surface** and significantly larger than any terrestrial waterfall.

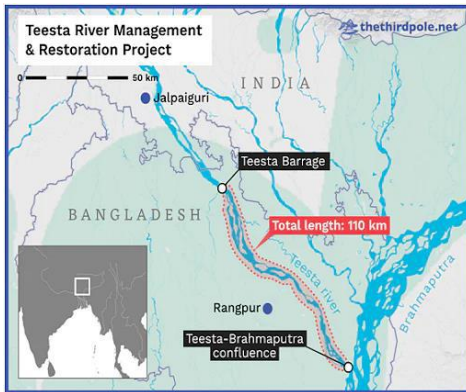
Water plunges **11,500 feet (3,500 meters) down a slope**, with the **actual waterfall measuring about 6,600 feet (2,000 meters)**. This makes it **twice as tall as Angel Falls**, the highest waterfall on land.

The cataract was **formed by glaciers** during the **last Ice Age**, between **17,500 and 11,500 years ago**.

It is located **along the Arctic Circle** and channels **cold, dense waters from the Greenland, Norwegian, and Iceland Seas** into the **Irminger Sea**.

This underwater waterfall plays a **crucial role in global ocean circulation**, influencing climate patterns and marine ecosystems.

## 24. TEESTA RIVER



The **Teesta Barrage Project**, initiated in **1975**, aimed to **irrigate 9.22 lakh hectares** of farmland in **North Bengal**. However, only **one lakh hectares** currently receive water.

A **pipe irrigation system** is being introduced to expand agricultural coverage under the project.

### Teesta River Overview

The **Teesta River** is a **transboundary river** flowing through **Sikkim, West Bengal, and Bangladesh**, where it merges with the **Brahmaputra River**.

Originating near **Pauhunri Mountain** in the **eastern Himalayas, Sikkim**, it spans **414 km** before reaching the **Bay of Bengal**.

### Course & Tributaries

#### Upper Course:

Originates as **Chhombo Chhu** from **Khangchung Chho glacial lake** (5,280 m).

Flows **southward** through **deep gorges** in the **Siwalik Hills**, passing **Chungthang** and **Mangan**.

#### Middle Course:

Enters **West Bengal** through **Darjeeling** and **Kalimpong** districts.

Joined by tributaries like the **Rangteet River**.

Characterized by **rapids**, making it a hub for **white-water rafting**.

#### Lower Course:

Flows through the **Jalpaiguri** and **Cooch Behar** districts.

Crosses into **Bangladesh (Rangpur division)**, joining the **Brahmaputra (Jamuna)** before reaching the **Bay of Bengal**.

## 25. WESTERN DISTURBANCE



**Western Disturbance (WD)** is an **extra-tropical storm** originating in the **Mediterranean region**, moving **west to east**.

It is carried towards **South Asia** by the **subtropical westerly jet stream**.

### Formation & Movement

Forms over the **Mediterranean, Caspian, or Black Sea** as a **low-pressure system** with **cyclonic circulation**.

Moves **eastward**, entering **India** through the **northwest**, influenced by the **jet stream**.

### Seasonality & Affected Regions

Most active during **winter (November to March)** but can occur in other seasons.

Affects **northwestern India** (Punjab, Haryana, Rajasthan, Western UP).

Extends to **Himalayan states** (J&K, Himachal Pradesh, Uttarakhand).

Can sometimes impact **central and eastern India**.

#### **Weather & Agricultural Impact**

**Rain & Snow:** Brings **winter rainfall** to the **plains** and **snowfall** to the **Himalayas**, crucial for **glaciers and water reserves**.

#### **Temperature Effects:**

**Daytime temperatures drop** due to **cloud cover and rain**.

**Nighttime temperatures rise**, as clouds **trap terrestrial radiation**.

**Agricultural Benefits:** Provides **moisture** essential for **Rabi crops** like **wheat and mustard**.

**Disruptions:** Can cause **flash floods, landslides, and avalanches** in mountainous regions.

**Intensification:** When **WD** interacts with **moist easterly winds** from the **Bay of Bengal**, it leads to **widespread precipitation**.

## 26. AZERBAIJAN



### **Geography & Location**

**Continent:** Eurasia (Located at the crossroads of Eastern Europe and Western Asia).

**Borders:** Russia (north), Georgia (northwest), Armenia (west), Iran (south), and the Caspian Sea (east).

**Capital & Largest City:** Baku (a major cultural and economic hub on the Caspian Sea).

### **Economy & Resources**

**Major Industries:** Oil & gas, petrochemicals, agriculture, and tourism.

**Currency:** Azerbaijani Manat (AZN).

### **Strategic Importance:**

Rich in **oil and natural gas**, particularly around the **Caspian Sea**.

Key location for **energy pipelines** linking **Europe and Asia**.

### **Culture & Heritage**

**Religion:** Predominantly Muslim (mostly Shia Islam).

**Cultural Influence:** A blend of Turkic, Persian, Russian, and Islamic traditions.

### **Notable Sites:**

**Maiden Tower & Palace of the Shirvanshahs** (Baku, UNESCO site).

**Gobustan Rock Art** (Prehistoric petroglyphs).

**Flame Towers** (Modern symbol of Baku).

### **Nagorno-Karabakh Conflict**

**Disputed Territory:** Long-standing conflict with **Armenia** over **Nagorno-Karabakh**.

**Recent Developments:** Azerbaijan regained control over **Karabakh** in **2020 (Second Nagorno-Karabakh War)** and **2023** (final military operation).

### **Modern Development & Global Relations**

**Member of:** UN, OIC, CIS, Non-Aligned Movement, and TURKSOY.

**Foreign Policy:** Balances relations with **Russia, Turkey, Iran, and Western countries**.

**Tourism Growth:** Baku is emerging as a **modern travel destination**, famous for its **skyline, cultural festivals, and historical sites**.

## JANUARY 2025

## 1. PANGONG LAKE



A statue of Maratha warrior king **Shivaji**, recently installed on the banks of **Pangong Tso** in eastern **Ladakh**, has sparked debate among army veterans and locals on social media.

Senior defence officials clarified that the installation was not directed by headquarters or any official policy but was done by the army unit stationed in the area.

**Pangong Tso** (or **Pangong Lake**) is a **high-altitude** lake located on the **India-China border** in **Ladakh**.

**Altitude:** 4,350 meters in the **Ladakh Himalayas**.

**Location:** Spans **eastern Ladakh (India)** and **western Tibet (China)**.

**Type:** **Endorheic lake** (landlocked) with **saline water** and no outflow.

Despite its **salinity**, the lake **completely freezes** in winter.

**Strategic Significance:**

A key point of **India-China border tensions**.

India controls **one-third** of the **135 km-long** boomerang-shaped lake.

The **Line of Actual Control (LAC)** divides the lake.

**Mountain spurs**, known as '**fingers**', extend into the lake.

India traditionally holds **Finger 4** but claims territory up to **Finger 8**, marking the **Indian perception of the LAC**.

## 2. TRINIDAD AND TOBAGO



The **government of Trinidad and Tobago** declared a **state of emergency** on **December 30** after a **violent weekend** in the Caribbean nation.

With a **population of 1.5 million**, the country already had **one of the highest murder rates** in the Caribbean, alongside **Jamaica and Haiti**.

**Trinidad and Tobago** is a **twin-island nation** in the **southern Caribbean**, near **Venezuela**.

It is a member of **CARICOM**, the **OAS**, and the **Commonwealth of Nations**.

**Trinidad** is the **larger and more populous** island, while **Tobago** lies **northeast** of it.

The **capital city** is **Port of Spain**, located in **Trinidad**.

**History:**

**Colonial Era:** **Trinidad** was colonized by **Spain** in the **16th century**, then taken by **Britain** in the **19th century**. **Tobago** changed hands multiple times between **Britain and France** before becoming a **British colony**.

**Indentured Labour:** After slavery ended, **Indians (1845–1917)** were brought as **indentured laborers** for sugar plantations, influencing the country's **demographics and culture**.

**Independence:** Gained from **Britain** on **August 31, 1962**.

**Republic Status:** Became a **republic** on **August 1, 1976**.

**Culture:**



**Carnival:** A globally famous festival featuring **vibrant parades, music, and dance**.

**Music:** The country is the birthplace of **calypso and soca music**.

#### **Relations with India:**

**Historical Ties:** India and Trinidad & Tobago share strong cultural ties due to the **large Indian diaspora** (over **37% of the population**) descended from **indentured laborers** brought in the **19th century**.

**Diplomatic Relations:** India and Trinidad & Tobago established **formal diplomatic ties in 1962**, the year of its **independence**.

**Economic & Trade Cooperation:** India has invested in sectors like **energy, pharmaceuticals, ICT, and education**, and bilateral trade has grown over the years.

**Cultural Exchange:** Indian culture, festivals, and traditions such as **Diwali, Holi, and Indian classical music** are widely celebrated. Bollywood films and cuisine are also popular.

**Technical and Economic Cooperation:** Trinidad & Tobago is a beneficiary of India's **Indian Technical and Economic Cooperation (ITEC) program**, providing **training and skill development**.

**High-Level Visits:** Several official visits have taken place, strengthening diplomatic ties, including participation in **India-Caribbean summits**.

### **3. COFFEE IN INDIA**

Traditionally a **tea exporter**, India is now making strides in the **global coffee market**. Exports during the current financial year (up to November) **surpassed \$1 billion** for the first time, according to the **Centre for Monitoring Indian Economy (CMIE)**.

#### **Tea vs. Coffee Exports**

Despite Sri Lanka's economic crisis, **India's tea exports** saw little growth.

However, **coffee exports surged**, driven by rising **Robusta coffee prices** and **pre-emptive stocking** before the **European Union's Deforestation Regulation (EUDR)**.

#### **India's Coffee Industry at a Glance**

**Unique Feature:** India is the **only country** that grows all its **coffee under shade**.

**Global Rank:** **7th-largest coffee producer**.

#### **Major Coffee Types:**

**Arabica** (900–1,800m altitude): Milder, aromatic, high market value.

**Robusta** (500–1,000m altitude): Strong flavor, higher yield, disease-resistant.

#### **Key Coffee-Producing States**

**Karnataka** – Largest producer (**70% of India's output**).

Major regions: **Kodagu (produces 33% of India's coffee), Chikmagalur, Hassan**.

**Kerala** – Second-largest producer.

Key regions: **Wayanad, Idukki, Palakkad**.

**Tamil Nadu** – Major estates in the **Nilgiri Hills**.

Key regions: **Pulneys, Nilgiris, Shevaroy**.

**Emerging Regions:** **Andhra Pradesh, Odisha, Northeast (Arunachal Pradesh, Nagaland)**.

#### **Climatic Needs for Coffee Cultivation**

**Temperature:** **15°C–28°C**.

**Rainfall:** **1,500–2,500 mm** (well-distributed).

**Soil:** **Well-drained, rich in organic matter**.

#### **Factors Driving Export Growth**

**Rising Robusta prices** boosted revenue.

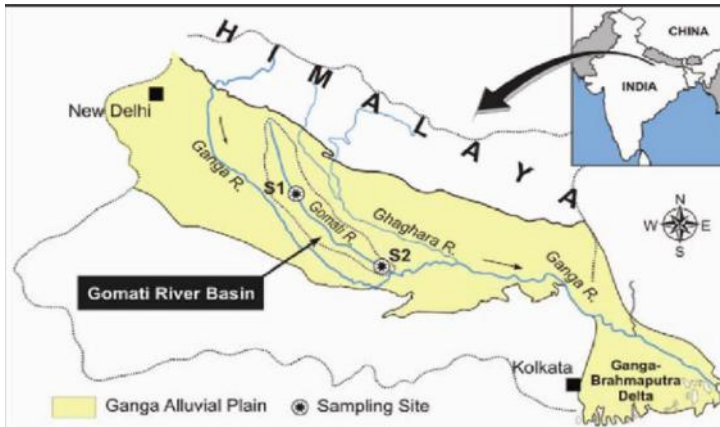
**EU's Deforestation Regulation (EUDR)** led to bulk stocking.

Aims to **prevent deforestation-linked imports**.

Was set for **December implementation** but extended by a year.

India's **higher deforestation rate** could **affect future exports** more than competitors.

#### 4. GOMTI RIVER



The Gomti River is a key tributary of the Ganges, flowing through Uttar Pradesh, India.

**Origin:** Begins at Gomat Taal (Fulhaar Jheel) in Pilibhit district.

**Course:** Flows south through Sitapur, Lucknow, Barabanki, Sultanpur, and Jaunpur, joining the Ganges near Kaithi, Ghazipur.

**Length:** Covers 960 km (600 miles).

**Religious Significance:** Considered the daughter of Rishi Vashishtha in Hindu tradition. Bathing on

Ekadashi is believed to cleanse sins.

**Urban Importance:** Lucknow, Uttar Pradesh's capital, lies along its banks and depends on it for development.

#### 5. NORTH SEA



U.S. President-elect **Donald Trump** urged opening the North Sea to more oil production and removing windmills in a post on Truth Social.

**Geography:** A marginal sea of the Atlantic Ocean, bordered by the UK, Norway, Denmark, Germany, the Netherlands, Belgium, and France.

**Location:** Lies between Great Britain (west) and mainland Europe (east), connecting to the Atlantic via the English Channel and to the Baltic Sea via the Skagerrak Strait.

**Economic Importance**

**Fishing:** A key seafood source for centuries.

**Oil & Gas:** Discovered in the 1960s, making it a major offshore energy hub.

**Trade & Shipping:** Critical maritime route linking Rotterdam, Hamburg, and London.

**Renewable Energy:** Offshore wind farms play a growing role in energy transition.

#### Current Developments

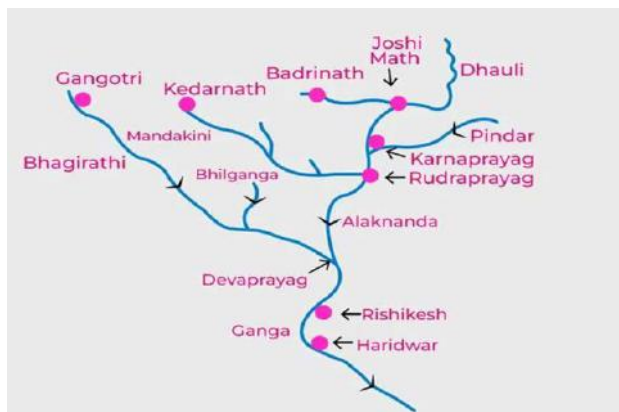
**Oil Production Decline:** The North Sea's output fell from 4.4 million boe/d (2000) to 1.3 million boe/d today.

**APA Corp's Exit:** U.S. oil firm Apache plans to leave the North Sea by 2029, expecting a 20% production drop in 2025.

**Windfall Tax Hike:** In **2023**, the UK raised the **oil & gas windfall tax from 35% to 38%**, aiming to fund **renewable energy** projects.

**Industry Backlash:** North Sea producers warn the **higher tax** could deter investments, prompting **early exits** from the ageing basin.

## 6. ALAKNANDA RIVER



A study by IIT Roorkee identifies the **Alaknanda River** in **Garhwal, Uttarakhand**, as the **most prone** to landslide-induced natural dams.

The region's **narrow valleys and gorges** heighten the risk of **landslide lake outburst floods (LLOFs)**.

**About the Alaknanda River**

**Significance:** A major **tributary of the Ganga**, holding **geographical, cultural, and religious** importance.

**Source:** Originates from **Satopanth and Bhagirath Kharak** glaciers, near **Badrinath**.

**Course:**

Flows **southeast** through **deep gorges and rugged terrain** in Uttarakhand.

Known for **swift currents** and **hydropower potential**.

**Major Tributaries:**

**Dhauliganga** – joins at **Vishnuprayag**.

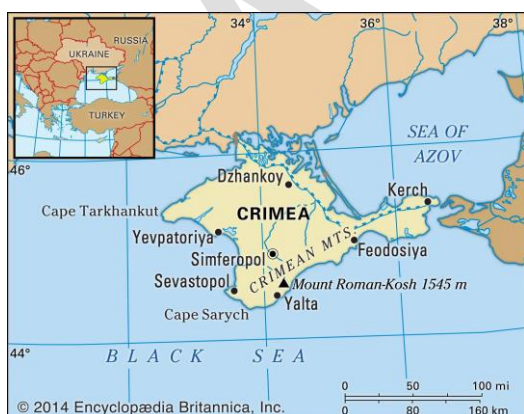
**Nandakini** – merges at **Nandprayag**.

**Pindar** – meets at **Karnaprayag**.

**Mandakini** – confluences at **Rudraprayag**.

**Formation of the Ganga:** The **Alaknanda** meets the **Bhagirathi** at **Devprayag**, forming the **Ganga River**.

## 7. CRIMEA



**Sevastopol**, Crimea's largest city, declared a **regional emergency** after **oil was detected on its shores**.

The spill originated from **two storm-damaged tankers** in the **Kerch Strait**, nearly **250 km** away.

**Crimea Overview**

A **Black Sea peninsula**, almost entirely surrounded by the **Black Sea** and **Sea of Azov**.

Divided into **three main zones: mountains, steppe, and the southern coast**.

The **Crimean Mountains** peak at **1,545 meters** (Roman-Kosh).

**Major rivers:** **Salhyr, Alma, Kacha, and Belbek**.

**Salt pans and lakes**, with **Lake Sasyk** being the largest.

**Political & Economic Aspects**

**Annexed by Russia in 2014**, despite **global condemnation**.

**Agriculture:** Major crops include **wheat, corn, potatoes, and sunflowers**.

**Industry: Spa tourism** (mud volcanoes, mineral springs) & **iron ore mining** in the **Kerch Peninsula**.

**Crimea Bridge (2018):** Connects Crimea to Russia via the Kerch Strait.

## 8. Z-MORH TUNNEL

Prime Minister Narendra Modi will visit Sonamarg on Monday to inaugurate the Z-Morh Tunnel.

This tunnel will lead to the Zojila Tunnel, Asia's **longest** under-construction tunnel at Zojila Pass, connecting Kargil (Ladakh).

**Z-Morh Tunnel: Key Facts**

**Location:** Connects Gagangir and Sonamarg in Ganderbal district on the Srinagar-Leh Highway.

**Length:** 6.4 km (Total project length: 12 km, including approach roads and an escape tunnel).

**Altitude:** 8,652 feet (2,637 meters).

**Strategic & Economic Importance**

**All-weather Connectivity:** Keeps Sonamarg accessible year-round, preventing winter isolation due to snow.

**Military Logistics:** Ensures uninterrupted access to Ladakh, crucial for India's defense.

### Future Prospects

Part of the Zojila Tunnel Project, aimed at seamless Srinagar-Ladakh connectivity.

While Z-Morh connects Sonamarg to Kashmir, the Zojila Tunnel (12,000 feet altitude) will link Sonamarg with Drass (Ladakh).

Zojila Tunnel is set to be completed by December 2026, providing all-weather access to Kargil and Leh.

## 10. POLAR VORTEX

The **polar vortex** is a large low-pressure system of cold air swirling around Earth's polar regions.

It exists in two forms: **tropospheric** and **stratospheric**.

**Types of Polar Vortex**

**Tropospheric Polar Vortex:**

Located in the **lowest atmospheric layer (10-15 km altitude)**.

Influences most **weather patterns**.

**Stratospheric Polar Vortex:**

Occurs **15-50 km** above the surface.

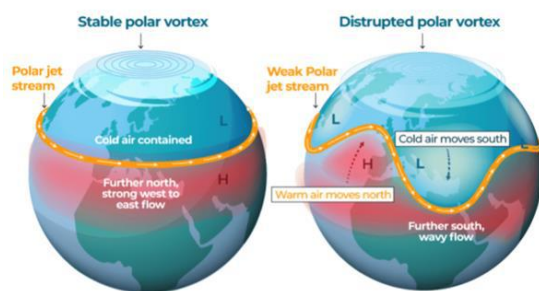
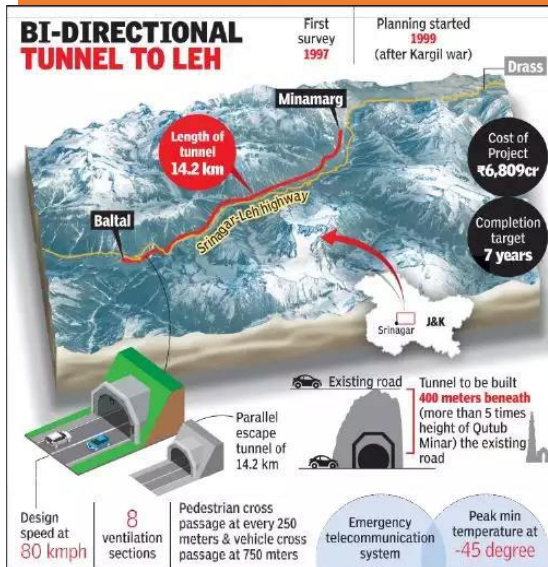
**Strongest in autumn**, disappears in summer.

### Impact on Weather

A **strong polar vortex** keeps the **jet stream stable**, maintaining cold air in the north and warm air in the south.

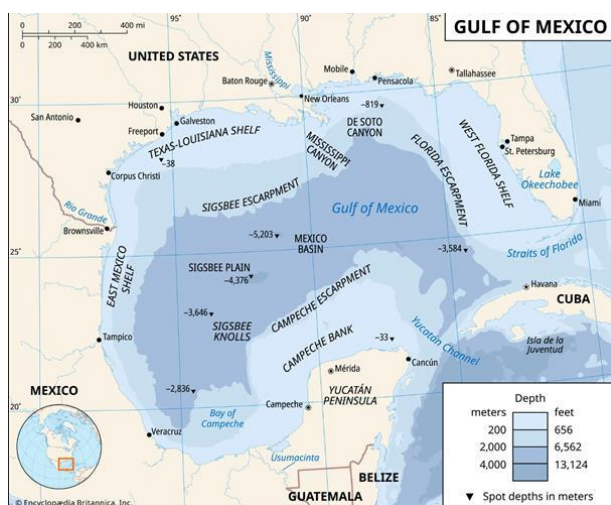
A **weakened polar vortex** disrupts the **jet stream**, making it wavy.

This allows **cold Arctic air** to shift **southward**, causing **harsh winter conditions** in lower latitudes.





## 11. GULF OF MEXICO



### Geography & Climate

**Location:** Bordered by the U.S., Mexico, and Cuba; connects to the Atlantic via the Florida Straits and to the Caribbean via the Yucatán Channel.

**Size:** ~1.6 million sq. km; **Deepest Point:** Sigsbee Deep (~4,384m).

**Loop Current:** A warm current influencing hurricanes and climate patterns.

### Economic Importance

**Energy:** Holds 15% of U.S. oil production, supporting 400,000+ jobs.

**Fisheries:** One of the most productive commercial and recreational fishing zones.

**Trade:** Hosts major ports like Houston & New Orleans, key for U.S. maritime trade.

### Environmental Concerns

**Oil Spills:** Notable disasters like the 2010 Deepwater Horizon spill.

**Dead Zones:** Hypoxia due to Mississippi River nutrient runoff, harming marine life.

### Geopolitical Significance

**Strategic Location:** Close to the Panama Canal, vital for global trade.

**Territorial Disputes:** Resource sharing impacts U.S.-Mexico relations.

## 12. INDIA BANGLADESH BORDER



**Length:** 4,096.7 km (India's longest international border).

**States Sharing the Border:**

**West Bengal** – 2,216.7 km (longest).

**Assam** – 263 km.

**Meghalaya** – 443 km.

**Tripura** – 856 km.

**Mizoram** – 318 km.

### Geographical Features

**Terrain:** Plains, rivers, hills, dense forests, and populated regions.

**Major Rivers:** Ganga, Brahmaputra, Teesta, Feni, and Surma.

**Bordering Indian Districts:** Murshidabad, Malda, Cooch Behar, Karimganj, South Tripura, among others.

### Historical Context

**Partition of India (1947):** Border demarcated along the **Radcliffe Line**, dividing Bengal into **West Bengal (India)** and **East Bengal (now Bangladesh)**.

**1971 Liberation War:** India played a key role in Bangladesh's independence from Pakistan.

**Indo-Bangladesh Land Boundary Agreement (LBA) 2015:** Resolved border disputes, including the exchange of **162 enclaves** (111 from India, 51 from Bangladesh).

### Border Management & Security Issues

**Border Fencing:** India is constructing a **barbed-wire fence** along the border to curb illegal immigration, smuggling, and infiltration.

**Illegal Migration:** A major issue, particularly in **West Bengal and Assam**.

**Insurgency & Smuggling:** Activities include arms, drugs, cattle, and human trafficking.

**Key Checkpoints:** **Petrapole-Benapole** (largest land port), Dawki, Agartala-Akhaura.

#### **Bilateral Relations & Connectivity Projects**

**Maitri Setu:** Connects Tripura with Bangladesh.

**Rail Links:** Akhaura-Agartala, Kolkata-Dhaka, and Kolkata-Khulna routes.

**BBIN Initiative:** Strengthens regional connectivity with Bangladesh, Bhutan, India, and Nepal.

**Sundarbans Conservation:** Shared efforts for protecting the world's largest mangrove ecosystem.

### **13. NANKAI TROUGH**



**Nankai Trough: Japan's Megathrust Earthquake Zone**

**Location:** An undersea subduction zone off Japan's southwest coast, extending **900 km**, parallel to Honshu.

**Tectonics:** The **Philippine Sea Plate** subducts beneath the **Eurasian Plate**, accumulating stress that can trigger earthquakes.

**Seismic Activity:** Known for **megathrust earthquakes**, including a **magnitude 8.0 quake** and tsunami in **1946**.

**Ring of Fire:** Part of the **Pacific seismic belt**, prone to intense geological activity.

**Additional Facts**

**Fault Length & Magnitude:** Larger fault ruptures cause stronger quakes.

**Strongest Earthquake:** **Magnitude 9.5**, recorded in **Chile (1960)** on a

**1,600 km** fault.

The **Nankai Trough** remains a **high-risk seismic zone**, closely monitored for future events.

### **14. DECCAN VOLCANISM**

**Event & Formation:** Deccan Volcanism occurred **~66 million years ago**, creating the **Deccan Traps**, a vast flood basalt region covering **500,000 sq. km** with layers up to **2,000 meters thick**.

**Cause & Duration:** Triggered by a **mantle plume** linked to the **Réunion hotspot**, eruptions lasted **600-800,000 years** during the **Cretaceous-Paleogene (K-Pg) transition**.

**Environmental Impact:** Released **greenhouse gases** and **sulfur aerosols**, leading to **global warming**, **acid rain**, and the **K-Pg mass extinction**, wiping out non-avian dinosaurs.

**New Findings by Birbal Sahni Institute of Palaeosciences (BSIP)**

While Deccan Volcanism **devastated terrestrial fauna**, it had **short-term, localized effects** on flora.

By eliminating **dinosaurs and gymnosperms**, it created **fertile, undisturbed land** under a **warm, humid climate**, allowing **angiosperms (flowering plants)** to **thrive and diversify**.

Thus, **Deccan Volcanism** shaped **modern tropical ecosystems** by paving the way for diverse plant life.

### **15. MISSION MAUSAM**

**Launched by PM Modi** during **IMD's 150th-anniversary celebration**, Mission Mausam aims to **upgrade weather forecasting, modeling, and dissemination** in India.

**Key Objectives**

- Improve weather forecasting across short-term, medium-term, extended-range, and seasonal scales.
- Develop high-resolution models for better monsoon predictions.
- Enhance observational networks using advanced radars, satellites, and automated weather stations.
- Provide actionable advisories for agriculture, water resources, energy, health, and disaster management.
- Strengthen research collaborations with national and international institutions.

**Implementation & Features**

- Budget:** ₹2,000 crore for the first two years.
- Infrastructure Expansion:** Doppler Weather Radars (DWRs), Automatic Weather Stations (AWS), and rain gauges across India.
- Supercomputing:** Utilizing Pratyush & Mihir for advanced climate modeling.
- Global Collaboration:** Partnerships with WMO and other agencies.
- Public Outreach:** Weather advisories via Mausam app, SMS alerts, and media channels.

**Weather Modification & Cloud Research**

- Mission Mausam** will explore enhancing or suppressing rainfall, hail, fog, and lightning.
- Cloud Chamber Research:** India is setting up a first-of-its-kind cloud chamber at IITM Pune to study Indian monsoon clouds under controlled conditions.

**16. SIACHEN GLACIER****Siachen glacier**

- Length: 70 km
- Altitude: 5,750-3,620 m
- Temperature: Can drop to -70°C (-95°F)

**World's highest battlefield**

The India-Pakistan ceasefire line (line of control) comes to a dead end 80 kms from the Chinese border. There is no agreement on the route it should take across the Siachen glacier

AFP Source: globalsecurity.org



Reliance Jio has expanded its **4G and 5G** services to **Siachen Glacier**, the world's **highest battlefield**. The company collaborated with **Indian Army Signallers** to manage logistics and airlift equipment in extreme weather conditions.

**Siachen Glacier: Key Facts****Location & Geography**

Situated in the **eastern Karakoram range**, Himalayas. Stretches **76 km**, making it the **longest Karakoram glacier** and **second-longest non-polar glacier**. Originates at **Indira Col West (6,115m)** and descends to **3,570m**.

Lies **north of Nubra Valley**, with meltwater feeding the **Nubra and Shyok Rivers**, which join the **Indus River**.

**Strategic & Military Importance**

- Located at the **India-Pakistan-China tri-junction**, making it geopolitically crucial.
- Overlooks key supply routes** and the **Karakoram Pass**.
- India has controlled the glacier since **Operation Meghdoot (1984)**.
- World's highest militarized zone**, with troops stationed above **20,000 feet**.



## 17. TUNGABHADRA RIVER



Residents of Shiranahalli, Gangapur, and Korlahalli in Mundargi taluk, Gadag district, are worried as the Tungabhadra River has turned green. While summer usually causes puddles to turn green, this year, flowing water has changed color, raising concerns.

### Tungabhadra River: Key Facts

#### Geographical Features

**Source:** Formed by the Tunga and Bhadra Rivers near Kudremukh, Karnataka.

**Course:** Flows 531 km through Karnataka, Andhra Pradesh, and Telangana, merging with the Krishna River at Sangameswaram, Andhra Pradesh.

**Basin Area:** Covers 71,417 sq. km across three states.

#### Significance

**Irrigation:** Supports farming in the Deccan Plateau. The Tungabhadra Dam irrigates 1.25 million hectares.

**Hydroelectric Power:** The dam supplies energy to Karnataka and Andhra Pradesh.

**Historical Importance:** The river was vital to the Vijayanagara Empire, with Hampi located on its banks.

## 18. KRISHNA RIVER



**Major River in South India,** flowing through Maharashtra, Karnataka, Telangana, and Andhra Pradesh.

**Source:** Mahabaleshwar, Maharashtra (Western Ghats).

**Course:** Flows eastward for 1,400 km before draining into the Bay of Bengal near Hamsaladeevi, Andhra Pradesh.

**States Covered:** Maharashtra (305 km), Karnataka (483 km), Telangana (360 km), Andhra Pradesh (612 km).

#### Tributaries

**Left Bank:** Bhima, Munneru, Musi, Dindi.

**Right Bank:** Tungabhadra, Malaprabha, Ghataprabha,

Panchganga, Warna, Koyana.

#### Significance

**Irrigation:** Lifeline for agriculture in Deccan Plateau.

#### Dams & Hydroelectric Power:

**Srisaillam Dam** (Largest capacity on Krishna).

**Nagarjuna Sagar Dam** (World's largest masonry dam).

**Almatti Dam** (Part of the Upper Krishna Project).

#### Additional Facts

**Sediment Load:** Krishna carries less silt than the Ganga due to its rocky terrain.

**Delta:** Forms a fertile delta in Andhra Pradesh, crucial for rice cultivation.

**Disputes:** Water-sharing conflicts among Maharashtra, Karnataka, Telangana, and Andhra Pradesh, resolved by the Krishna Water Disputes Tribunal (KWDT).



## 19. STRATEGIC STRAITS



**Nine Indo-Pacific navies, including India, are participating in France-hosted La Perouse.**

**Location:** Strategic **Malacca, Sunda, and Lombok Straits**, key entry-exit points between the **Indian and Pacific Oceans**.

**Rising Chinese naval activity** has increased the region's strategic significance.

**Strait of Malacca**

**Connects:** Andaman Sea (Indian Ocean) to the South China Sea (Pacific Ocean).

**Location:** Between **Peninsular Malaysia & Sumatra (Indonesia)**.

**Length:** 930 km.

**Width:** Narrowest - 2.8 km (Philips Channel, Singapore), Widest - 370 km.

**Depth:** Shallowest - 25m, challenging for large vessels.

**Sunda Strait**

**Connects:** Java Sea (Pacific) to the Indian Ocean.

**Location:** Between **Java & Sumatra (Indonesia)**.

**Length:** 130 km.

**Width:** Narrowest - 24 km, Widest - 150 km.

**Depth:** 20-100m, shallower than Malacca, limiting large vessel movement.

**Notable Feature:** Krakatoa volcanic island, site of the 1883 eruption.

**Lombok Strait**

**Connects:** Java Sea (Pacific) to the Indian Ocean.

**Location:** Between **Bali & Lombok (Indonesia)**.

**Length:** 60 km.

**Width:** Narrowest - 20 km.

**Depth:** 250-1,300m, deeper than Malacca & Sunda.

**Significance:** Part of the **Wallace Line**, a **biogeographical boundary** between **Asian & Australasian ecosystems**.

Strait	Connects	Location & Significance
<b>Hormuz Strait</b>	Persian Gulf & Gulf of Oman (Arabian Sea)	Between Iran & UAE/Oman; crucial for global oil transport.
<b>Bab el Mandeb</b>	Red Sea & Gulf of Aden (Indian Ocean)	Between Yemen & Djibouti/Eritrea; gateway to Suez Canal.
<b>Palk Strait</b>	Bay of Bengal & Gulf of Mannar (Indian Ocean)	Between India & Sri Lanka; shallow, historically significant.

<b>Bering Strait</b>	Arctic Ocean & Bering Sea (Pacific Ocean)	Between Russia & Alaska (USA); separates Asia & North America.
<b>Gibraltar Strait</b>	Atlantic Ocean & Mediterranean Sea	Between Spain & Morocco; key for Europe-Africa maritime trade.
<b>Bosporus Strait</b>	Black Sea & Sea of Marmara	In Turkey; vital for Russia & Eastern Europe access to Mediterranean.
<b>Dardanelles Strait</b>	Sea of Marmara & Aegean Sea (Mediterranean)	In Turkey; historically crucial, linking Europe & Asia.
<b>Magellan Strait</b>	Atlantic Ocean & Pacific Ocean	In Chile; important alternative to Panama Canal.
<b>Mozambique Strait</b>	Indian Ocean	Between Mozambique & Madagascar; major trade passage.
<b>Tsushima Strait</b>	Sea of Japan & East China Sea	Between Japan & Korea; key for regional trade.
<b>Cook Strait</b>	Tasman Sea & Pacific Ocean	Between North & South Islands of New Zealand.
<b>Dover Strait</b>	North Sea & English Channel	Between UK & France; busiest shipping lane in the world.

## 20. VAIGAI RIVER



**Major river in Tamil Nadu.**

**Source:** Originates from **Varusanadu Hills** (Western Ghats).

**Course:** Flows **northeast** through **Kambam Valley**, between **Palani & Varushanad Hills**, then **southeast** through **Theni, Dindigul, Madurai, Sivagangai, and Ramanathapuram**.

**Mouth:** Empties into **Palk Bay** near **Alagankulam**, close to **Pamban Bridge**.

**Length:** **258 km**.

**Notable Features**

**Vaigai Dam:** Located near **Andipatti (Theni district)**, essential for **irrigation & water storage**.

**Periyar Diversion:** Water from **Periyar River** enhances **Vaigai's flow & utility**.

**Vattaparai Falls:** A notable waterfall on the river.

## Cultural & Historical Significance

**Sangam Literature:** Revered in **Silappadikaram** and other ancient Tamil texts.

**Pandya Kingdom:** Mentioned in **Thiruvilayadal Puranam** as vital to Pandya rule.

**Madurai:** The ancient **Pandya capital**, located on **Vaigai's** banks.

## 21. MAURITIUS



Island nation in the **Indian Ocean**, about **2,000 km** southeast of Africa, east of **Madagascar**.

**Capital:** Port Louis.

**Major Islands:** Mauritius (main island), Rodrigues, Agalega Islands.

**Geography:** Volcanic mountains, lagoons, coral reefs.

**Colonial History**

Discovered by the Portuguese (16th century).

First colonized by the Dutch (1638), later abandoned.

French rule (1715–1810), followed by British rule (1810–1968).

Gained independence in 1968, became a republic in 1992.

## Demographics & Cultural Influence

Indentured laborers from India were brought after slavery was abolished (1835), shaping the island's culture.

**Ethnic diversity:** Indian, Creole, Chinese, and French communities.

## Economy

**Agriculture:** Historically dependent on **sugar production**, now diversified.

**Tourism:** Major revenue source due to **beaches, coral reefs, and heritage sites**.

**Manufacturing:** Textiles, apparel, and export-driven industries.

**Financial Services:** Emerging as an **offshore financial hub**.

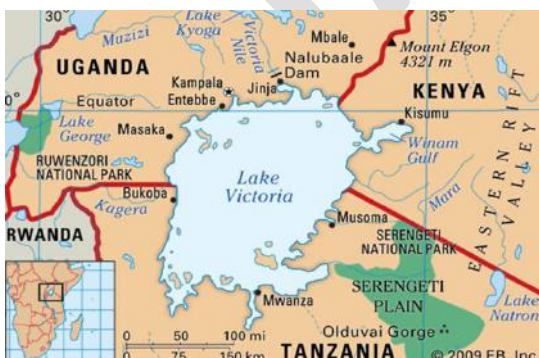
**Blue Economy:** Developing **marine-based industries** like fisheries and ocean-based tourism.

## Strategic Importance

Located on key maritime routes, playing a role in **regional trade and security**.

Maintains close ties with **India**, including defense and economic cooperation.

## 22. LAKE VICTORIA



Largest lake in Africa and **second-largest freshwater lake globally** (after Lake Superior).

**Location:** East Africa, along the **Equator**, shared by **Tanzania, Uganda, and Kenya**.

**Surface Area:** 68,800 sq. km.

**Hydrology**

**Major Inflow:** **Kagera River** (largest), along with rivers from surrounding highlands.

**Outflow:** **White Nile (Victoria Nile)**, crucial for the **Nile River system**.

**Depth:** Average 40m, maximum 84m.

#### **Biodiversity & Ecology**

**Rich in aquatic life**, home to **over 500 cichlid fish species**, many endemic.

**Supports diverse flora and fauna**, crucial for local ecosystems.

#### **Environmental Concerns**

**Eutrophication** due to **agricultural runoff, sewage, and industrial waste**.

**Invasive species** like the **Nile Perch** threaten native fish populations.

**Climate change** affecting **water levels, fisheries, and biodiversity**.

#### **Economic & Strategic Importance**

**Supports livelihoods** through **fishing, agriculture, and transport**.

**Tourism hub** due to **scenic landscapes, wildlife, and water-based activities**.

**Vital for regional trade** and **hydropower generation**.

**Part of the East African Community's** efforts for **sustainable resource management**.

### **23. PANGSAU PASS**



Arunachal Pradesh CM Pema Khandu announced plans to restore World War II remnants in Nampong, Changlang district, to boost tourism. Speaking at the **Pangsau Pass International Festival**, he emphasized the government's commitment to developing Nampong as a historical landmark.

**Nampong** has long been a center for migration, trade, and cultural exchange.

Located near **Pangsau Pass** on the Indo-Myanmar border, it

holds strategic importance.

The **Stilwell Road**, built during World War II, symbolizes its link between Southeast Asia and Northeast India.

#### **Learning Corner:**

**Pangsau Pass** is a mountain pass in the **Patkai Hills**, connecting Nampong (India) to Pangsau (Myanmar). It provides one of the easiest routes from the Assam plains into Myanmar.

#### **Historical Significance:**

Key part of the **Ledo Road (Stilwell Road)** during World War II, aiding Allied forces' supply to China.

Nicknamed "**Hell Pass**" due to its difficult terrain and harsh conditions.

#### **Economic & Cultural Importance:**

Serves as a trade route between **India and Myanmar**.

Hosts the **Pangsau Pass International Festival (PPIF)**, fostering cultural exchange and tourism.

### **24. YALA GLACIER**

The **Yala Glacier** in Nepal is expected to disappear by the **2040s**. It is the only **Himalayan glacier** listed in the **Global Glacier Casualty List**, a 2024 project by **Rice University, UNESCO, WMO, and other institutions**. It is classified as "**critically endangered**."

#### **Learning Corner:**

Located in **Langtang, Nepal**, near the Nepal-Tibet border.

**Retreated 680 meters** from **1974 to 2021**.



Lost 36% of its area in the same period.

#### Additional Information:

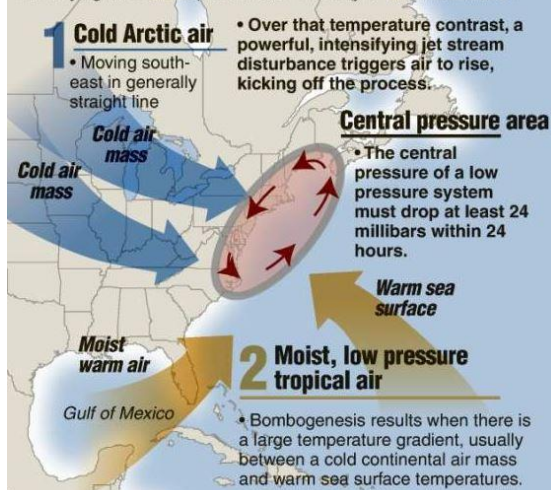
2025 is designated as the **International Year of Glaciers' Preservation** by the **United Nations**.

**March 21** will be observed annually as the **World Day for Glaciers** starting in **2025**.

**Dagu Glacier** in **China**, also "**critically endangered**," is expected to vanish by **2030**.

## 25. BOMB CYCLONE

A bomb cyclone, which is also called bombogenesis, is a rapidly intensifying area of low pressure, or basically a winter hurricane.



A bomb cyclone, also known as explosive cyclogenesis or a weather bomb, is a rapidly intensifying storm system marked by a significant drop in atmospheric pressure. Specifically, it occurs when the central pressure of a mid-latitude cyclone decreases by at least 24 millibars (mb) within 24 hours.

**Formation:** Bomb cyclones typically form when a cold air mass collides with a warm air mass, often over ocean waters. This interaction leads to a rapid drop in pressure and the storm's intensification.

#### Characteristics:

**Rapid Intensification:** The hallmark of a bomb cyclone is its quick strengthening, which can result in severe weather conditions.

**Weather Impact:** Bomb cyclones can produce heavy precipitation (rain or snow), strong winds, and coastal flooding, causing significant damage to infrastructure and posing risks to human safety.

#### Regions Prone to Bomb Cyclones:

**North America:** Common along the U.S. East Coast, Great Lakes region, and in Canada.

**Europe:** Frequently occurs in North Atlantic regions, including the UK and Scandinavia.

**East Asia:** Japan experiences bomb cyclones due to interactions between cold Siberian air masses and warm ocean air.

#### Significance:

Understanding bomb cyclones is crucial for meteorological forecasting and disaster preparedness. These storms can lead to dangerous conditions such as blizzards and high winds, impacting travel and safety.

Meteorologists monitor these systems closely due to their potential for rapid development and severe weather impacts, especially during winter months when they are most prevalent.

## 26. KARA SEA



The Kara Sea is a marginal sea of the Arctic Ocean, situated north of Siberia, Russia. It is bordered by the Novaya Zemlya archipelago to the west, the Severnaya Zemlya archipelago to the east, and Franz Josef Land to the northwest.

#### Climate

**Ice Cover:** The Kara Sea is one of the coldest seas globally, remaining ice-bound for most of the year, typically from

September to May.

**Temperature:** Air temperatures are below 0°C for 9-10 months in the north and 7-8 months in the south. In January, temperatures range from -28°C to -20°C, while in July, they range from -1°C to 6°C.

### Rivers and Islands

Major rivers that drain into the Kara Sea include the Yenisey, Ob, Pyasina, and Kara rivers.

The sea contains numerous islands, with the Nordenskiöld Archipelago being the largest group, comprising over 90 islands.

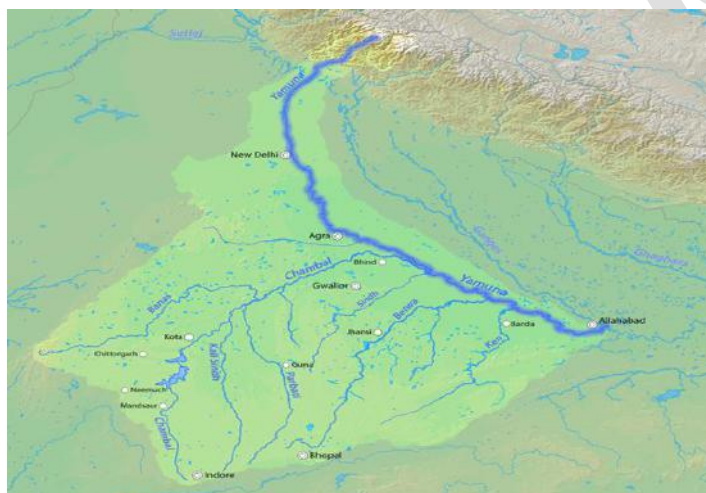
### Current Developments

Recent incidents have highlighted the significance of the Northern Sea Route (NSR), which Russian President Putin has prioritized.

The NSR is promoted as an alternative global shipping route that offers faster transit between Northern Europe and East Asia compared to the Suez Canal. For instance, it reduces the distance between Shanghai and Rotterdam by over 2,800 nautical miles (22%) and could lower transportation costs by 30-40%.

The Kara Sea's strategic location and resource potential make it a focal point for shipping and exploration in the Arctic region.

## 27. YAMUNA RIVER



The Yamuna River is the largest tributary of the Ganga River and one of India's most significant rivers.

### Key Facts about the Yamuna River

**Origin:** The river originates from the Yamunotri Glacier at an altitude of 6,387 meters in the Uttarkashi district of Uttarakhand.

**Length:** It stretches 1,376 km, making it the second-longest river in India after the Ganga.

**States Covered:** The Yamuna flows through several states, including Uttarakhand, Himachal Pradesh, Haryana, Delhi, Uttar Pradesh, Rajasthan, and Madhya Pradesh.

**Major Cities Along Its Banks:** Important cities along the Yamuna include Delhi, Mathura, Agra, Etawah, and Allahabad (Prayagraj).

**Confluence:** The Yamuna meets the Ganga at the Triveni Sangam in Prayagraj, where it is believed that the Saraswati River also joins.

**Tributaries:** Major tributaries of the Yamuna include the Tons, Chambal, Sindh, Betwa, and Ken rivers.

### Additional Information

The Yamuna River basin accounts for approximately 40.2% of the total basin area of the Ganga River and covers about 10.7% of India's total area. The catchment area of the Yamuna spans several states:

State	Catchment Area (km <sup>2</sup> )	Percentage of Total Area
Uttar Pradesh and Uttarakhand	74,208	21.5%

Himachal Pradesh	5,799	1.6%
Haryana	21,625	6.5%
Rajasthan	102,833	29.8%
Madhya Pradesh	140,230	40.6%
Delhi	1,485	0.4%
Total Area	366,223 km <sup>2</sup>	

The river plays a crucial role in agriculture and water supply for millions of people living along its banks.

However, it faces significant pollution challenges due to urbanization and industrial activities.

The **Yamuna Action Plan** was initiated in 1993 as a collaborative effort between India and Japan to restore the river's health and improve water quality.

Overall, the Yamuna River is not only vital for its ecological significance but also holds cultural and historical importance in India.

## 28. GUANTÁNAMO BAY



In a significant move that is expected to spark intense debate, U.S. President Donald Trump has signed an executive order to prepare a large-scale migrant detention center at the **U.S. naval base in Guantánamo Bay**. This facility will expand the existing migrant detention capabilities at the base, which has historically been known for **detaining foreign terrorism suspects** following the September 11 attacks.

### Context of Guantánamo Bay

**Location:** Guantánamo Bay is situated in Guantánamo Province at the southeastern tip of Cuba. The U.S. has maintained control over the bay since 1903 under a treaty that allows for indefinite use of the land, although Cuba has repeatedly demanded its return.

**Strategic Importance:** The bay's strategic location was recognized during the **Spanish-American War in 1898** when U.S. Marines landed there. It is positioned near the Windward Passage, linking the Atlantic Ocean to the Caribbean Sea and Panama.

**Historical Use:** The naval base has been a controversial site, primarily due to its role in detaining terrorism suspects. It also housed a migrant detention center in the past for individuals intercepted at sea.

### Current Developments

Trump's executive order is part of a broader strategy to manage migration and border security. The Northern Sea Route (NSR) will likely become a focal point for discussions on immigration policy, as it offers an alternative route for migrants attempting to reach the U.S.

### Implications

The establishment of a larger migrant detention center at Guantánamo Bay raises several concerns:

**Human Rights Issues:** Critics argue that expanding detention facilities could lead to human rights violations and inadequate conditions for detainees.

**Political Controversy:** The move is likely to provoke political backlash from various advocacy groups and human rights organizations.

**Cuba Relations:** This decision may further complicate U.S.-Cuba relations, as Cuba continues to demand sovereignty over the territory.

The executive order reflects ongoing tensions surrounding immigration policy in the U.S. and highlights Guantánamo Bay's complex history as both a military base and a site of humanitarian concern.



FEBRUARY 2025

## 1. SEA OF OKHOTSK



- The Sea of Okhotsk is a marginal sea of the Pacific Ocean, situated between Russia and Japan. It is bordered by the Kamchatka Peninsula to the east, the Kuril Islands to the southeast, Sakhalin Island to the west, the Siberian coast to the northwest, and Hokkaido Island (Japan) to the south.
- The sea covers about 1,583,000 square kilometers and has an average depth of 859 meters, with a maximum depth of 3,372 meters. Except for Hokkaido, the surrounding territories are under Russian administration.
- Sea ice covers the Sea of Okhotsk for nearly six months each year, from November to May, due to cold Siberian winds. This extensive ice cover significantly restricts navigation and fishing activities during winter. The sea is among the iciest in the world, with ice floes forming as far south as 30 km off Hokkaido.
- The Sea of Okhotsk is rich in marine resources, supporting major fishing industries for both Russia and Japan. It is especially known for salmon, herring, and crab. Additionally, the region contains significant oil and natural gas reserves, estimated at around 45 billion barrels of oil equivalent.
- Territorial disputes exist between Russia and Japan over the Kuril Islands, impacting claims and resource rights in the Sea of Okhotsk

## 2. MOUNT TARANAKI



- Mount Taranaki, now called **Taranaki Maunga**, in New Zealand has been granted **human status**. This dormant volcano now holds legal rights and responsibilities like a human being.
- **Taranaki Maunga** is the **third natural feature** in New Zealand to be granted individual status, after **Te Urewera National Park** and the **Whanganui River**.
- Mount Taranaki, also known as **Taranaki Maunga**, is a **stratovolcano** on the west coast of **New Zealand's North Island**.
- It stands at **2,518 meters (8,261 feet)**, making it the **second-highest mountain** in the North Island, after **Mount**

**Ruapehu.**

- The mountain is famous for its **near-perfect conical shape**, making it one of the most symmetrical volcanic cones globally.



- **Culturally**, Mount Taranaki is **sacred** to the Māori people, who regard it as a **sacred ancestor**.
- On **January 30, 2025**, Taranaki Maunga was granted **legal personhood**, giving it rights and protections like those of a human.
- Geologically, it is a **dormant stratovolcano**, with its last major eruption occurring in the **mid-18th century**.
- Despite being dormant, the mountain's **volcanic history** has created **fertile soils**, supporting rich **biodiversity** and **agriculture** in the region.
- 

### 3. GREAT LAKES REGION OF AFRICA



- After capturing Goma, M23 rebels and allied Rwandan forces have launched a new offensive in the eastern **Democratic Republic of Congo (DRC)**.
- **The Great Lakes Region of Africa** is located in **East and Central Africa**. It includes several large freshwater lakes within the **East African Rift Valley**, offering significant ecological and socioeconomic importance.
- The key lakes are **Lake Victoria, Lake Tanganyika, Lake Malawi, Lake Albert, Lake Kivu, and Lake Edward**. They are surrounded by ten countries: **Burundi, DRC, Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia**.
- Many of these countries have experienced violent conflict, and the region has a history of turmoil.
- The **resource curse**, where abundant natural resources fuel conflict and corruption, is a recurring issue in the region.

### 4. MARINE HEATWAVES (MHWs)

- Marine heatwaves (MHWs) that killed over 30,000 fish off Western Australia's coast in January were up to 100 times more likely due to climate change.
- **Marine Heatwave (MHW)**: Occurs when sea surface temperatures rise 3-4°C above average for at least five days. MHWs can last for weeks, months, or even years.
- **MHW Trends**: A 2021 report by the **International Union for Conservation of Nature (IUCN)** stated MHWs have increased by 50% over the past decade, lasting longer and becoming more severe.
- **Reasons for Intensification**:
- **Climate Crisis**: Global temperatures have risen 1.3°C above pre-industrial levels, with 90% of extra heat absorbed by oceans.
- **Rising SST**: Global sea surface temperatures (SST) have increased by 0.9°C since 1850, with 0.6°C of that rise occurring in the past 40 years. This has led to more frequent and intense MHWs.
- **Impact of MHWs**:
- **Marine Life**: MHWs devastate marine life. The 2010-11 heatwaves in Western Australia caused fish kills, destroyed kelp forests, and altered ecosystems. Kelps, which thrive in cooler waters, provide habitat and food for many marine animals.
- **Coral Bleaching**: MHWs also contribute to coral bleaching, reducing coral reproduction and making them more vulnerable, which endangers marine animals dependent on coral reefs.

## 5. CASCADES RANGE



- New research finds that long-quiet volcanoes in the Cascades region still contain large magma reservoirs, persisting for thousands of years without triggering eruptions.
- Scientists have debated whether magma remains in the upper crust for long periods or moves just before an eruption. The study suggests that in the Cascades, magma reservoirs can last for millennia without causing eruptions.
- **Cascade Range:** A major mountain range in North America, extending from British Columbia (Canada) to Northern California (USA), part of the Pacific Ring of Fire known for volcanic activity.
- **Geographical Features:** The range is about 1,100 km long, with Mount Rainier (4,392 m) as the highest peak.
- **Geological Significance:** Formed by the subduction of the Juan de Fuca Plate beneath the North American Plate, it contains active, dormant, and extinct volcanoes.

- **Climate & Ecology:** The western slopes have dense rainforests, while the eastern slopes are semi-arid. The region supports rich biodiversity, including Douglas fir, grizzly bears, and mountain lions.
- **Volcanic Hazards:** The 1980 eruption of Mount St. Helens was one of the U.S.'s most significant volcanic events. Future eruptions could impact populated areas in Washington and Oregon. The Cascadia megathrust fault may cause a major earthquake and tsunami.

## 6. ATACAMA DESERT



- The Atacama Desert, located in northern Chile, is one of the driest places on Earth. It holds significant geographical, climatic, and scientific importance.
- **Location:**
  - Situated in western South America, along the Pacific coast, between the Andes Mountains and the Chilean Coastal Range.
- **Climate:**
  - Hyper-arid with minimal rainfall due to the rain shadow effect of the Andes, and the influence of the Humboldt Current and Subtropical High-Pressure Belt.
- **Temperature:**
  - High diurnal temperature variation, with hot days and cold nights.
- **Importance:**
  - Contains salt flats (salares) and high-altitude lagoons, such as the Salar de Atacama, which is rich in lithium deposits.
  - Salar de Atacama has one of the world's largest lithium reserves, crucial for electric vehicle batteries and renewable energy storage.
  - Rich in mineral resources, especially copper and lithium. Chile is a top producer of both.
  - Home to unique microbial life, which is studied for its resemblance to

Martian conditions.

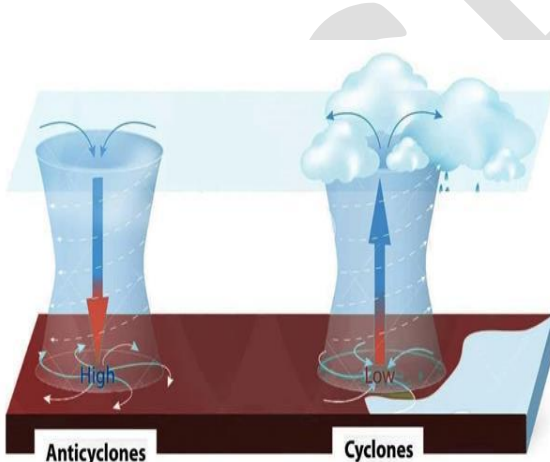
- Ideal for astronomical observations due to clear skies, low humidity, and high altitude.

- Hosts world-class observatories like the European Southern Observatory (ESO) and ALMA (Atacama Large Millimeter Array).

## 7. EARTH'S INTERIOR

- A recent study suggests that Earth's inner core may not be as stable as once believed. The research indicates structural changes in the inner core that could affect its rotation and potentially alter the length of a day.
- **Context:** Earth's core generates a magnetic field that protects life from harmful solar radiation. The inner core spins independently of the outer core and the rest of the planet. Without this motion, Earth could resemble Mars, which lost its magnetic field billions of years ago.
- **Earth's Interior Layers:**
- **Crust:** The outermost solid layer, 5-70 km thick, made mainly of silicon and aluminum. It consists of oceanic crust (basalt, 5-10 km thick) and continental crust (granite, 30-70 km thick). The crust and upper mantle form the lithosphere, separated from the mantle by the Mohorovičić Discontinuity (Moho).
- **Mantle:** Extends to 2900 km depth. Composed mostly of silicon and magnesium. The upper mantle, along with the crust, forms the lithosphere. Below is the semi-fluid asthenosphere, which allows tectonic plate movement. The boundary between the mantle and core is the Gutenberg Discontinuity.
- **Core:** Divided into the outer core (liquid, responsible for Earth's magnetic field) and the inner core (solid, composed of iron and nickel under extreme pressure). The boundary between the outer and inner core is the Lehmann Discontinuity.

## 8. ANTICYCLONE

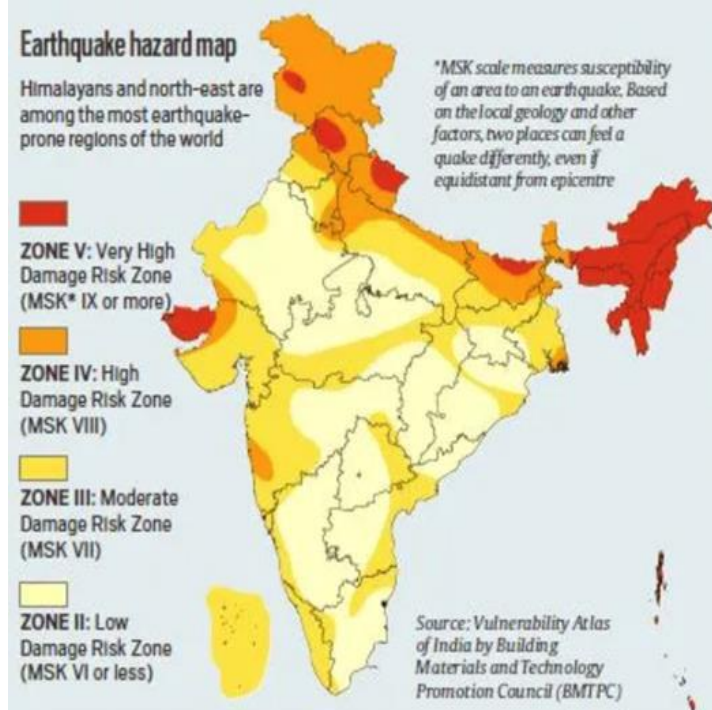


- Anticyclones are areas of high atmospheric pressure where air descends and diverges outward. In the Northern Hemisphere, they rotate clockwise, and in the Southern Hemisphere, counterclockwise.
- **Key Features:**
- High atmospheric pressure at the center.
- Descending air leads to stable conditions.
- Clear skies and dry weather due to limited cloud formation.
- Light winds blowing outward from the center.
- Can last from days to weeks and cover thousands of kilometers.
- **Formation:**
- Caused by subsiding air in the troposphere, often linked to mid-latitude high-pressure belts, such as the Azores and Siberian Highs.
- Can form over land (continental) or oceans (oceanic).
- **Types:**
- **Cold-Core Anticyclones:** Common in winter, e.g., Siberian High.
- **Warm-Core Anticyclones:** Found in tropical areas, e.g., Bermuda High.
- **Impact:**
- **Agriculture:** Can cause droughts due to prolonged dry spells.
- **Air Pollution:** Traps pollutants in temperature inversions.



- **Weather Hazards:** Linked to heatwaves in summer and cold waves in winter.
- **Examples:**
- **Siberian High:** Causes cold waves in North India.
- **Azores High:** Affects weather in Europe.
- **Mascarene High:** Influences India's monsoons.

## 9. EARTHQUAKES IN DELHI



- Delhi is in a seismically active area and falls under Zone 4 on India's earthquake hazard map, the second-highest classification for earthquake susceptibility.
- Zone 4 areas are expected to experience MSK-8-level intensity during earthquakes.
- The MSK (Medvedev-Sponheuer-Karnik) scale measures the intensity of shaking and damage, not the earthquake's strength (magnitude).
- Two places at the same distance from an epicentre may experience different intensities based on local geology and conditions.
- MSK-8 intensity indicates a high risk of major damage to buildings and infrastructure.
- Zone 5, the highest risk zone, corresponds to MSK-9 intensity or higher.
- **Aravalli-Delhi Fold Belt:**

- Delhi lies in the Aravalli-Delhi Fold Belt, a geological belt stretching from southern and eastern Rajasthan to Haryana and Delhi.
- This region is marked by ancient, deformed rock layers bent by geological forces millions of years ago.
- These deformities have stored stress that occasionally releases as earthquakes.
- This mechanism differs from the Himalayan region, where the Indian plate subducts under the Eurasian plate, causing continuous stress buildup.
- Although the Aravalli-Delhi Fold Belt is now more geologically stable than before, existing faults can still cause occasional mild earthquakes.

## 10. NAURU



- To fund the relocation of about 10,000 residents threatened by rising sea levels and floods, Nauru plans to sell citizenships.
- Nauru follows Dominica in using citizenship sales to protect populations from climate change impacts.
- Nauru, officially the Republic of Nauru, is a tiny island nation in the southwestern Pacific Ocean, about 42 km south of the Equator and 4,000 km northeast of Sydney, Australia.



- It is the world's smallest island nation, covering just 21 square kilometres, and the only republic without an official capital.
- Nauru is the least populous member of the United Nations.
- In the early 20th century, Nauru was among the richest nations per capita due to extensive phosphate mining.
- Phosphate deposits, formed by centuries of bird guano accumulation, fueled the economy but were heavily over-exploited.
- Resource mismanagement led to economic collapse and severe environmental degradation, leaving over 80% of the land uninhabitable.
- Nauru is a member of the United Nations, the Commonwealth of Nations, and the Organisation of African, Caribbean and Pacific States.
- **Selling Citizenship:**
- President David Adeang aims to raise an initial US\$65 million through citizenship sales.
- The funds will help rehabilitate the barren interior, developing a new township, farms, and workplaces.
- About 90% of the population is expected to be relocated under the plan.

## 11. QATAR



- During talks in New Delhi, Prime Minister Modi and Amir Sheikh Tamim bin Hamad Al Thani agreed to upgrade India-Qatar ties to a "strategic partnership."
- Qatar becomes the latest GCC nation after the UAE, Saudi Arabia, Oman, and Kuwait to enter a strategic partnership with India.
- Qatar, officially the State of Qatar, is a small but influential country on the northeastern coast of the Arabian Peninsula.
- It shares its only land border with Saudi Arabia.
- Qatar holds the world's third-largest natural gas reserves, after Russia and Iran.

- It boasts one of the highest GDPs per capita globally, with a nominal GDP of around \$221.4 billion in 2024.
- Doha, the capital and largest city, houses over 80% of Qatar's population.
- Qatar hosted the FIFA World Cup in 2022, the first Middle Eastern country to do so.
- **India-Qatar Relations:**
- Annual trade between India and Qatar stands at \$14 billion, with a target to double it to \$28 billion by 2030.
- India's major exports to Qatar include cereals, copper, iron and steel articles, vegetables, fruits, spices, processed foods, machinery, plastics, textiles, chemicals, precious stones, and rubber.
- Qatar is India's largest LNG supplier (10.74 MMT worth US\$ 8.32 billion in FY 2022-23), providing over 48% of India's LNG imports.
- It is also India's largest LPG supplier (5.33 MMT worth US\$ 4.04 billion in FY 2022-23), covering 29% of total LPG imports.
- As of 2024, Indians make up around 25% of Qatar's population, mainly as migrant workers.

## 12. CASPIAN SEA



➤ Environmental activists are alarmed by the rapidly declining water levels of the Caspian Sea. The sea's water area has shrunk by 7.1% over the past 15 years. From 2005 to 2023, the Caspian's water level dropped by 185 cm, leading to a loss of 31,000 sq km of water.

➤ The Caspian Sea is the world's largest inland body of water. Though called a "sea," it is a saltwater lake with no outlet to oceans.

➤ Located at the crossroads of Europe and Asia, it borders five countries: Kazakhstan, Russia, Azerbaijan, Iran, and Turkmenistan.

➤ It is home to unique biodiversity, such as the Caspian Seal and sturgeon (source of caviar).

### ➤ Water Characteristics:

- The Caspian has a mix of salinity levels, lower in the north due to river inflows, and higher in the south.
- Key rivers draining into it include the Volga, Ural, Kura, and Terek rivers.

### ➤ Strategic and Economic Importance:

- Energy Reserves: The Caspian holds vast oil and natural gas reserves, ranking third globally after the Persian Gulf and Siberia. Major oil fields include Kashagan (Kazakhstan), Shah Deniz (Azerbaijan), and Tengiz (Kazakhstan).
- Transport and Trade: The Caspian plays a vital role in trade, linking Europe and Asia, especially through the International North-South Transport Corridor (INSTC).
- Geopolitical Issues:
  - Ownership disputes over the Caspian remain despite the 2018 Convention on its Legal Status.
  - Russia and Iran oppose trans-Caspian pipelines to prevent energy export routes bypassing their territories.