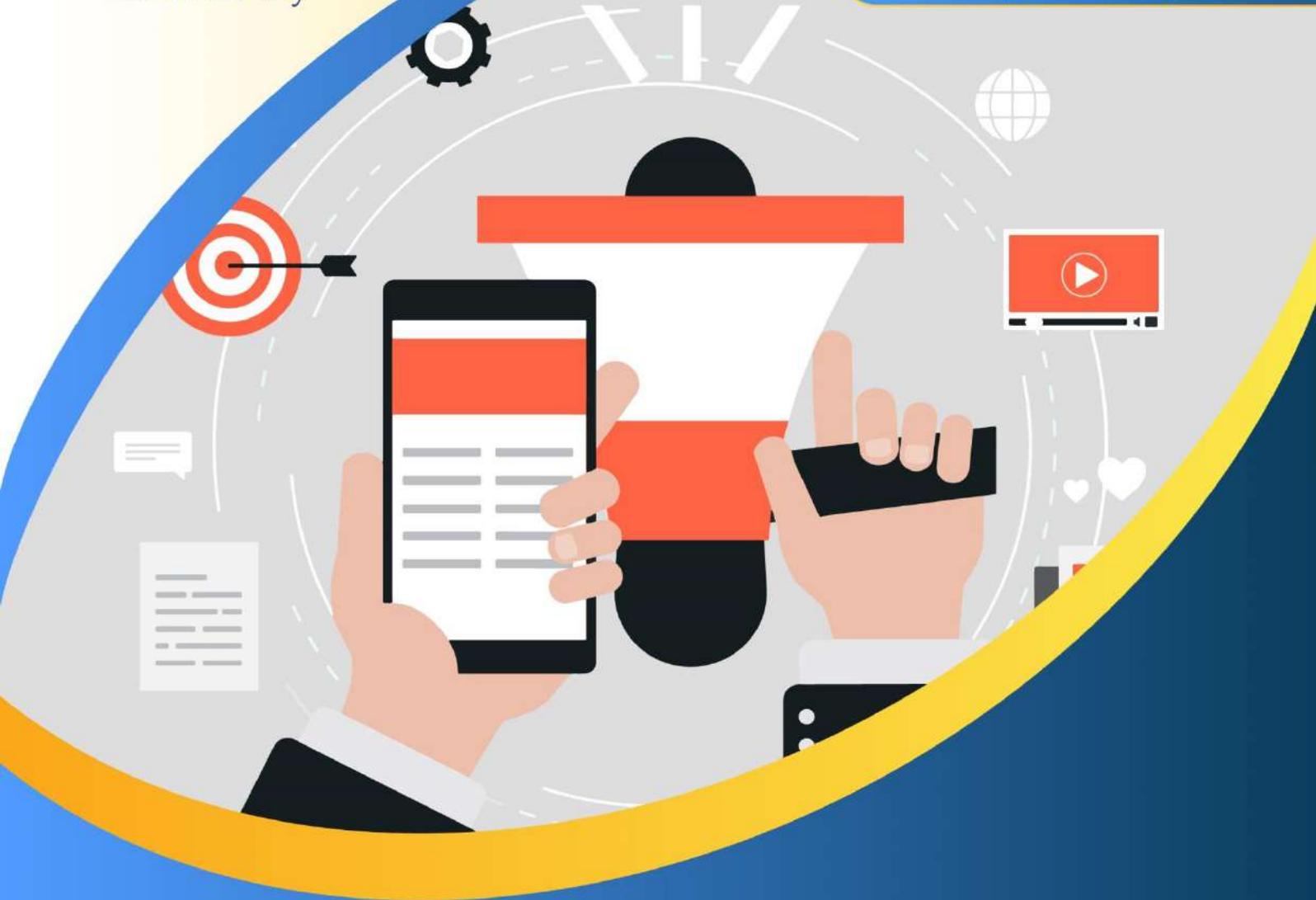


January to July 2021



2021 Current Affairs for Prelims 2021

GEOGRAPHY

Contact Us : 9964432222

portal.manifestias.com/www.journalsofindia.com

GEOGRAPHY.....	2
1. MEDICANES.....	2
2. MODERN GRAND SOLAR MINIMUM	2
3. HEAT DOME (CONCEPT AND THE HIGH TEMPERATURES IN DEATH VALLEY).....	3
4. SATURN'S TILTING AXIS.....	3
5. SEMERU VOLCANO OF INDONESIA.....	3
6. MUKUNDPURA METEORITE.....	4
7. SOIL AMELIORANTS	4
8. EASTERN RAJASTHAN CANAL PROJECT.....	5
9. CAUVERY - VAIGAI – GUNDAR RIVER INTERLINKING PROJECT	5
10. MYTHICAL SARASWATI RIVER	5
11. MULLAPERIYAR DAM.....	6
12. MOUNT SINABUNG	6
13. DISCOVERY OF MOST DISTANT QUASAR.....	7
14. CRISIS OF HELIUM IN INDIA.....	7
15. NITI AAYOG'S PROPOSAL FOR LITTLE ANDAMAN	8
16. CHINA'S GREEN LIGHT FOR FIRST DOWNSTREAM DAMS ON BRAHMAPUTRA.....	8
17. TULIP GARDEN OF SRINAGAR.....	8
18. MARITIME CHOKE POINTS OF INDIAN OCEAN	9
19. REQUIREMENTS FOR INTERNATIONAL DRIVING PERMITS AMENDED:.....	10
20. WULAR LAKE.....	10
21. WOLF RAYET STARS.....	10
22. RED SEA	11
23. LA SOUFRIERE ERUPTION IN ST. VINCENT AND GRENADINES	12
24. METTUR-SARABANGA LIFT IRRIGATION PROJECT.....	13
25. HOT SPRINGS AND GOGRA POST	13
26. NATIONAL PANCHAYATI RAJ DAY.....	14
27. KOWLOON PENINSULA.....	14
28. SUPERMOON	15
29. ASSAM EARTHQUAKE.....	15
30. MOUNT NYIRAGONGO	16
31. SOUTHERN OCEAN AS 5TH OFFICIAL OCEAN	16
32. NATIONAL OIL SPILL DISASTER CONTINGENCY PLAN-2015.....	17
33. SUMMER SOLSTICE.....	18
34. GLACIAL LAKE ATLAS IN GANGA BASIN	18
35. TAAL VOLCANO	19
36. UAE'S HOPE ORBITER AND DISCRETE AURORAS ON MARS.....	19
37. POLAVARAM PROJECT.....	21
38. GREEN NATIONAL HIGHWAY CORRIDORS (GNHCP).....	22
39. SELA TUNNEL.....	22
40. LONAR CRATER LAKE	23

GEOGRAPHY

1. Medicanes

In news- According to experts, human-induced climate change may increase Medicanes.

What is Medicanes?

- **Extra tropical storms in the Mediterranean Sea** are known as 'Medicanes' or 'Mediterranean Hurricanes'
- The medicane is more of a tropical stormlike cyclone.
- They **form when a non-tropical storm feeds off the warm waters of the Mediterranean.**
- The storm can then begin to strengthen and develop tropical storm characteristics.
- The area that typically experiences a medicane is **central Mediterranean countries** like Greece, Italy or Turkey.
- On September 18, 2020, a medicane named Ianos made landfall along the coast of Greece.

How is it different from other systems?

- Medicanes **occur more in colder waters** than tropical cyclones, hurricanes and typhoons. Hence, the cores of these storms are also cold.
- **Warmer cores tend to carry more moisture (hence rainfall), are bigger in size and have swifter winds.**
- The chances of a medicane developing into a major hurricane-strength system are extremely small.
- There is **not a classified system with categories.**
- Very rarely do they produce anything **over 120-130 mph, equivalent to a Category 3 or 4 hurricane.**
- Although a medicane is not a hurricane, many times they try to form an eye that could resemble one of a hurricane.
- They also **spin like other tropical systems.**

2. Modern Grand Solar Minimum

In News- The magnitude of the Sun's solar activity is decreasing and this period of decreased solar activity will last from 2020 to 2053.

Measurement of Solar Activity-

- This is done by observing the number of Sunspots at any given time. **More Sunspots mean more solar activity.**
- **Sunspots** are areas that appear **dark** on the surface of the Sun (photosphere) and are **cooler than other parts of the Sun's surface.**
- Sunspots **form at areas where magnetic fields are particularly strong** that they keep some of the heat within the Sun from reaching the surface.
- According to the United States National Oceanic and Atmospheric Administration's (NOAA), **71% of the Sun had no Sun spots in 2020** through September 21, 2020 as compared to 77% in 2019.
- **Possible Reason** might be 2020 marks the beginning of the 11th solar cycle which is a solar minimum, or when the Sun has the sunspots and thus, least activity.

Impact-

- Variations in solar irradiance will lead to heating of the upper layer of the Earth's atmosphere.

- It affects the climatic cycles of Earth such as the North Atlantic Oscillation (NAO) ((The NAO is the dominant mode of winter climate variability in the North Atlantic region and there will be a large-scale seesaw in atmospheric mass between the subtropical high and the polar low)).

3. Heat dome (concept and the high temperatures in death valley)

In news- The Death Valley's temperature on August 6th surpassed its previous recorded high temperature.

What is a Heat Dome?

- A heat dome occurs when the atmosphere traps hot ocean air like a lid or a cap.
- Summertime means hot weather and extreme heat waves have become more frequent in recent decades.
- High-pressure circulation in the atmosphere acts like a dome or cap, trapping heat at the surface and favouring the formation of a heat wave.
- By convection, the gradient causes more warm air, heated by the ocean surface.
- This rises over the Western Pacific and decreases convection over the Central and Eastern Pacific.
- As prevailing winds move the hot air east, the northern shifts of the jet stream trap the air.
- These winds move it toward land, where it sinks, resulting in heat waves.

Causes-

- It happens when strong, high-pressure atmospheric conditions combine with influences from La Nina.
- This creates vast areas of sweltering heat that gets trapped under the high-pressure "dome".
- Due to a strong gradient in ocean temperatures from west to east in the tropical Pacific Ocean, the pressure differences drive wind across the entire ocean in winter.

4. Saturn's tilting axis

In news- Recently, the scientists from the CNRS, Sorbonne University and the University of Pisa have reported that tilt of the rotation axis of Saturn may in fact be caused by its moons.

Key findings:

- The current tilt of Saturn's rotation axis is caused by the migration of its satellites, and especially by that of its largest moon, Titan.
- The most recent observation shows that its **moons are gradually moving away from Saturn much faster than astronomers had previously estimated.**
- The researchers have concluded that this process affects the inclination of Saturn's rotation axis: as its satellites move further away, the planet tilts more and more.
- Only roughly a billion years ago that the gradual motion of its satellites triggered a resonance phenomenon that continues today.
- Saturn's axis interacted with the path of the planet Neptune and gradually tilted until it reached the inclination of 27 degrees observed today.

5. Semeru Volcano of Indonesia

In News- Mount Semeru, on Indonesia's most densely populated island of Java, spewed hot clouds as far away as 4.5 kilometers recently.

Semeru Volcano-

- Semeru also known as "The Great Mountain" - is the highest volcano in Java and one of the most active.

- It had previously erupted in December, 2019.
- Indonesia, with the maximum number of active volcanoes in the world, is prone to seismic upheaval due to its location on the Pacific's Ring of Fire.
- Semeru volcano is also the part of the Island arcs formed by the subduction of the Indo-Australian plate below Sunda Plate (part of Eurasian Plate).
- The trench formed here is called Sunda trench whose major section is the Java Trench.

6. MukundPura Meteorite

In news- Research is going on Mukundpura, a new CM chondrite fell near Jaipur, Rajasthan, India on June 6, 2017.

About Mukundpura CM2-

- An asteroid which made its landfall in Mukundpura village near Jaipur was classified to be a carbonaceous chondrite.
- This is a type of stony meteorite, considered the most primitive meteorite and a remnant of the first solid bodies to accrete in the solar system.
- The composition of carbonaceous chondrites is also similar to the Sun.
- Chondrites are silicate-droplet-bearing meteorites, and this Mukundpura chondrite is the fifth carbonaceous meteorite known to fall in India.
- Minerals like forsterite and FeO olivine, calcium aluminium rich inclusion (CAI) minerals escaped alteration during its impact.
- Few magnetites, sulphides and calcites were also found.
- Further X-ray studies showed it also had aluminium complexes.
- Detailed spectroscopic studies revealed that the meteorite had very high (about 90%) phyllosilicate minerals comprising both magnesium and iron.

7. Soil Ameliorants

In news- National Food Security Mission (NFSM) has been able to achieve around 110 lakh ha area to be treated with Micronutrients, Bio-fertilizers, soil ameliorants/ (Gypsum/Lime/others) from 2014-15 to 2019-2020.

What is soil ameliorant/ (Gypsum/Lime/others)?

- An ameliorant is chemical that is applied to improve the quality of the soil and thereby improve plant growth
- Gypsum is an ideal soil ameliorant for hard compacted soils with poor water penetration or sodicity.
- Adding gypsum to the soil reduces erosion by increasing the ability of soil to soak up water after precipitation, thus reducing runoff.
- Gypsum application also improves soil aeration and water percolation through the soil profile.
- In the right conditions, adding lime or gypsum to dispersive soils decreases the sodium exchange percentage, reduces dispersion, and increases stable soil structure.
- Calcium ions displace some of the sodium ions on the surface of soil particles, creating better soil structure which allows sodium ions to leach out.

Plants must obtain the following mineral nutrients from their growing medium:

- The macronutrients: nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), sulfur (S), magnesium (Mg), carbon (C), oxygen (O), hydrogen (H)
- The micronutrients (or trace minerals): iron (Fe), boron (B), chlorine (Cl), manganese (Mn), zinc (Zn), copper (Cu), molybdenum (Mo), nickel (Ni)

8. Eastern Rajasthan Canal Project

In news: Rajasthan Chief Minister Ashok Gehlot has been strongly demanding national project status for the Eastern Rajasthan Canal Project (ERCP).

About ERCP:

- ERCP is planned to harvest surplus yield available in the Southern Rajasthan rivers and transfer to deficit basins in South-Eastern Rajasthan.
- Under the project the surplus water in the sub basins of Kunnu, Kul, Parvati, Kalisindh and Mej rivers received during monsoon has to be carried to the sub basin of Banas, Morel, Banganga, Gambhir and Parbati rivers.
- ERCP is planned to meet the drinking water needs of the 13 districts of Southern & South Eastern Rajasthan for Humans and Livestock till year 2051.
- The project will help to irrigate nearly 2.8 lakh hectares of land through 26 different large and medium projects.
- It will take care of Flood/ Drought situations in the area.
- Would also boost the Delhi-Mumbai Industrial Corridor (DMIC) in Alwar district and generate employment for youths of the state.
- The Project will be executed in three phases.
 - The first phase of the project will extend from Galway Dam to Dholpur,
 - The second phase will extend from Galway to Bisalpur-Isarda,
 - The third phase will extend from Galway to Alwar
- Proposed to be completed by 2023.
- In the project with national project status the funding pattern is 90:10.
- **Current Status** is 60% by the Centre and 40% by the state.

9. Cauvery - Vaigai – Gundar river interlinking project

In news: Chief Minister Edappadi K. Palaniswami laid the foundation stone for the first phase of the Cauvery-South Vellar-Vaigai-Gundar intra-State river-link project.

Cauvery–Vaigai Link Canal:

- The Cauvery – Vaigai - Gundar link is an **integral part of the Peninsular Rivers Development component** under the National Perspective Plan proposals.
- Tamil Nadu state government started this project linking Kaveri and Vaigai rivers which would benefit during the drier seasons.
- Project involves construction of a **60-kilometre long canal from Mayanur in Karur district to link river Kaveri with Vaigai.**
- **National Water Development Agency**, the gravity canal will provide water for irrigating an additional area of 3.38 lakh hectares and for domestic and industrial water supply.
- The Cauvery – Vaigai - Gundar link project **lies entirely in Tamil Nadu State.**

10. Mythical Saraswati River

In news: The Centre has reconstituted an advisory committee to chalk out a plan for studying the mythical Saraswati river for the next two years, after the earlier panel's term ended in 2019.

Composition of the panel-

- The committee will be chaired by the Culture Minister.
- Include officials from the Culture, Tourism, Water Resources, Environment and Forest, Housing and Urban Affairs Ministries; representatives of the ISRO, officials from the governments of Gujarat, Haryana and Rajasthan and an ASI official.

Saraswati River-

- Originated from Kapal tirth in the Himalayas in the west of Kailash.
- The river flowed through Haryana, Rajasthan and North Gujarat and through Pakistan before meeting Western Sea through Rann of Kutch.
- The Saraswati River is an extinct river mentioned in the Rig Veda and later Vedic and post-Vedic texts.
- The Saraswati is considered by Hindus to exist in a metaphysical form, in which it formed a confluence with the sacred rivers Ganges and Yamuna, at the Triveni Sangam.
- Book 6 of the Rig Veda includes hymn praises of the Saraswati as being “perfect mother, unsurpassed river, and supreme goddess”.

11. Mullaperiyar Dam

In news: The Supreme court has ordered Mullaperiyar Dam Supervisory Committee to issue directions on issues concerning the dam's safety.

About Mullaperiyar Dam-

- It is a masonry gravity dam on the Periyar river, located 881 m above mean sea level, on the Cardamom Hills of the Western Ghats in Thekkady, Idukki District of Kerala.
- It was constructed between 1887 and 1895 by John Pennycuik and also reached an agreement to divert water eastwards to the Madras Presidency area.
- The Periyar National Park in Thekkady is located around the dam's reservoir.
- The dam is built at the confluence of Mullayar and Periyar rivers.
- The dam is operated and maintained by the neighbouring state of Tamil Nadu.
- The catchment area of the Mullaperiyar Dam itself lies entirely in Kerala and thus not an inter-State river.
- Lease agreement was renewed in the 1970s by both Tamil Nadu and Kerala, giving the former rights to the land and water from the dam, authority to develop hydropower projects at the site and Kerala would receive rent from Tamil Nadu.
- The Central Water Commission recommended lowering the water stored in the dam's reservoir to 136 feet from 142 feet.
- In 2012, however, an Apex court-appointed committee stated that the dam was “structurally and hydrologically safe” and that the Tamil Nadu government could raise water levels up to 142 feet.
- In 2014, the Supreme Court had also directed the Centre and the governments of Kerala and Tamil Nadu to set up three panels to prepare a contingency plan in case of a disaster.
- In the direction of SC, in 2018, the Dam Supervisory Committee headed by A M Khanwilkar was formed.

12. Mount Sinabung

In news: Mount Sinabung of Indonesia erupted and sent a cloud of hot ash as high as 3 km.

About Mount Sinabung volcano:

- It is located in **Karo Highlands** in North Sumatra, Indonesia.

- This mountain sits on the **Sunda Arc of the subduction zone** of the Indo-Australian plate under the Eurasian plate.
- It is a **pleistocene-to-holocene era stratovolcano**, and it had been dormant for about 400 years until 29 August 2010.
- This volcano is among the 120 other active volcanoes in the country that are **located on the Ring of Fire**, which is an arc of volcanoes and fault lines that is encircling the Pacific Ocean.
- It is the **only volcano that is currently on level 4 alert** and is considered, by global experts, to be highly dangerous.
- Sinabung has **four overlapping summit craters** aligned along a N-S direction.

13. Discovery of Most Distant Quasar

In news: Recently, a team of astronomers have discovered the most distant 'radio-loud' quasar with the help of European Southern Observatory's Very Large Telescope (ESO's VLT).

What are Quasars and significance of recent findings:

- Quasars are very luminous objects in faraway galaxies that emit jets at radio frequencies.
- **Quasars are formed by the energy emitted by materials spiralling around a blackhole** right before being sucked into it.
- However, 90 percent of them do not emit strong radio waves, making this newly-discovered one special.
- **Named P172+18**, the quasar emitted wavelengths which had a **redshift of 6.8**.
- The three other 'radio-loud' sources with redshift greater than six have been discovered so far and the most distant one had a redshift of 6.18.
- The **higher the redshift of the radio wavelength, the farther away is the source**.
- The recently discovered quasar appears to the scientists as it was when the universe was just around 780 million years old.

14. Crisis of Helium in India

- India imports the majority of helium for its domestic needs but the U.S appears to cut off exports of helium from 2021.
- Helium (He) is an **inert gas of Group 18 (noble gases)** of the periodic table.
- The **second lightest element** helium is a colorless, odorless, and tasteless gas that becomes liquid at -268.9°C (-452°F).
- It constitutes about 23 percent of the mass of the universe and is thus **second in abundance to hydrogen** in the cosmos.
- The boiling and freezing points of helium are lower than those of any other known substance.
- Helium is the **only element that cannot be solidified by sufficient cooling** at normal atmospheric pressure.
- Helium is concentrated in stars, where it is synthesized from hydrogen by nuclear fusion.
- Helium occurs in Earth's atmosphere, in small amounts in radioactive minerals, meteoric iron, and mineral springs and also found as a component (up to 7.6 percent) in natural gases in the United States.
- Smaller supplies have been discovered in Algeria, Australia, Poland, Qatar, and Russia.
- It is used in medicine, scientific research, for blimp inflation, party balloons as well as in welding applications, in magnetic resonance imaging (MRI) scans, in rockets and in nuclear reactors.

15. NITI Aayog's Proposal for Little Andaman

- **NITI Aayog** has devised a plan named the **Sustainable Development of Little Andaman Island Vision Document** for the sustainable and holistic development of the 680 sq km of fragile Little Andaman Island.
- **The Plan is to** build a new greenfield coastal city, that will be developed as a free trade zone and will compete with Singapore and Hong Kong.
- The development is **divided in three zones** - **Zone 1** is spread over 102 sq km alongside the east coast of Little Andaman, **Zone 2** is spread over 85 sq km of pristine forest and **Zone 3** is spread over 52 sq km of pristine forest.
- It shall be a nature zone, **additionally categorized into three districts** - an unique forest resort, a nature therapeutic district and a nature retreat, all on the western coast.
- **As per Supreme Court notifications on protection of tribal population** 640 sq km of the island is Reserve Forest under the Indian Forest Act, and nearly 450 sq km is protected as the **Ongce Tribal Reserve**.

16. China's green light for first downstream dams on Brahmaputra

In news: Recently, China has given a green signal for first downstream dams on Brahmaputra.

Key updates-

- A draft of China's new Five-Year Plan (2021-2025), has given the green light for the first dams to be built on the lower reaches of **Yarlung Zangbo river, as the Brahmaputra is known in Tibet**, before it flows into India.
- The objective is to build hydropower bases on the lower reaches of the river.
- **State-owned hydropower company POWERCHINA** had signed "a strategic cooperation agreement" with the Tibet Autonomous Region (TAR) government.
- The plan also proposes to have "**clean energy bases**" in the **upper and lower reaches of the Jinsha river** in western China.
- In **2015, China operationalized its first hydropower project at Zangmu in Tibet**, while three other dams at Dagu, Jiexu and Jiacha are being developed, all on the upper and middle reaches of the river.

17. Tulip garden of Srinagar

In news: Asia's largest tulip garden overlooking the famous Dal Lake in the summer capital of Jammu and Kashmir was thrown open to the public.

About Tulip garden of Srinagar-

- Formerly known as **Siraj Bagh**, the Indira Gandhi Memorial Tulip Garden was opened in 2008 by then chief minister of erstwhile Jammu and Kashmir state Ghulam Nabi Azad.
- The garden is spread over 30 hectares in the **foothills of snow-clad Zabarwan range**.
- It has nearly **15 lakh flowers of more than 64 varieties**.
- Apart from tulips, other species of flowers found are hyacinths, daffodils and ranunculus.
- Garden is built on a sloping ground in a **terraced fashion** consisting of seven terraces.
- **Tulip festival** is an annual celebration that aims to showcase the range of flowers in the garden as a part of tourism efforts by the State Government.
- It is organized during the onset of spring season in Kashmir valley.

About Zabarwan Range-

- Is a Sub-mountain range **between Pir Panjal and Great Himalayan Range**, located in the central part of the Kashmir Valley.
- The highest peak of this range is **Mahadev Peak** at 13,013 feet (3,966 m).
- The Shankaracharya Temple is built on the edge of the central part of the Zabarwan Range.
- **Dachigam National Park** holds the last viable population of Kashmir stag (Hangul), and also has the largest population of black bear in Asia.
- On Northern slopes of the central part of the Zabarwan Range there are three Mughal gardens built by Emperor Shah Jahan as **Chashma Shahi, Nishat Bagh, and Shalimar Garden** alongside the Pari Mahal.

18. Maritime choke points of Indian Ocean

- Maritime choke points are **naturally narrow channels of shipping having high traffic** because of their strategic locations.
- **Indian Ocean** has some of the **world's most important choke points**, notably the Straits of Hormuz, Malacca, and the Bab-el Mandeb.
- These choke points are strategically important for global trade and energy flow, the security of them become strategically important.
- According to a recent analysis of global conflicts by the **Heidelberg Institute for International Conflict Research**, altogether 42% of world conflicts can be associated with Indian Ocean countries.

Seven famous maritime chokepoints around the world are-

1. The Malacca strait in the Indian Ocean.
2. The Gulf of Hormuz in the Middle-east.
3. The Suez Canal linking the Mediterranean and the Red Sea.
4. The Panama Canal linking the Atlantic with the Pacific Ocean.
5. The Strait of Bosphorus (Turkish Strait) linking the Mediterranean Sea to the Black Sea.
6. The three Danish Straits linking the Baltic Sea with the North Sea.
7. The Strait of Bab el-Mandeb form a gateway for vessels to pass through the Suez Canal, through the east coast of Africa.



19. Requirements for international driving permits amended:

In news: The Central Motor Vehicles (First Amendment) Rules, 2021 were notified by the Ministry of Road Transport and Highways.

The amendments include the following:

- These **amend the Central Motor Vehicles Rules, 1989** to change the requirements to obtain an International Driving Permit (IDP).
- Currently, an application for an IDP must include several **documents** such as valid driving license, proof of Indian nationality, proof of passport, visa proof, and a medical certificate among others.
- The **amendment removes** the requirement of the medical certificate and visa proof.
- **Application fee** for an IDP has been **increased from Rs 500 to Rs 1,000**.
- Currently, an applicant has to specify in their application form if he has been disqualified for obtaining a driving license, and the reasons for such disqualification.
- The **amendment adds** that the applicant must specify if he has been barred from driving in that country, along with the reasons for the same.

International Driving Permit-

- International Driving Permit will be issued to an applicant who holds a valid Indian Licence and who is a resident of India.
- The application shall be made in Form 2 or in writing to the RTO within whose jurisdiction the applicant resides, specifying the countries to be visited and the duration of stay etc...

20. Wular Lake

- Wular Lake is the largest lake in the Jammu and Kashmir territory, in the northern part of the Indian subcontinent.
- It is sited in Bandipora district in Jammu and Kashmir.
- The lake basin was formed as a result of tectonic activity and is fed by the Jhelum River.
- It lies at the north end of the Vale of Kashmir, 20 miles (32 km) north-northwest of Srinagar.
- Wular has considerably shrunk over the past eight decades due to siltation and has turned into a land mass.
- The Tulbul Project is a "navigation lock-cum-control structure" at the mouth of Wular Lake.
- Aim of the project is to regulate the release of water from the natural storage in the lake to maintain a minimum draught of 4.5 feet in the river up to Baramulla during the lean winter months.
- There has been an ongoing dispute between India and Pakistan over the Tulbul Project since 1987, when Pakistan objected that it violated the 1960 Indus Waters Treaty (IWT).

21. Wolf Rayet Stars

In news- Recently, Indian astronomers have tracked a rare supernova explosion and traced it to one of the hottest kinds of stars called Wolf–Rayet stars or WR stars.

About Wolf–Rayet stars-

- WR stars are a rare heterogeneous set of stars with unusual spectra showing prominent broad emission lines of ionised helium and highly ionised nitrogen or carbon.

- They are highly luminous objects a thousand times that of the Sun.
- They are massive stars and strip their outer hydrogen envelope which is associated with the fusion of Helium and other elements in the massive core.
- The surface temperatures of known Wolf-Rayet stars range from 30,000 K to around 210,000 K, hotter than almost all other kind of stars.
- A team of astronomers from Aryabhata Research Institute of Observational Sciences (ARIES), Nainital with international collaborators have conducted the optical monitoring of one such stripped-envelope supernova called SN 2015dj hosted in the galaxy NGC 7371 which was spotted in 2015.
- They calculated the mass of the star that collapsed to form the supernovae as well as the geometry of its ejection.
- They have also found that the original star was a combination of two stars, one of them is a massive WR star and another is a star much less in mass than the Sun.

22. Red Sea

In news- Recently, an Iranian cargo ship to be a base for the paramilitary Islamic Revolutionary Guard Corps (IRGC) and anchored for years in the Red Sea off Yemen has been attacked.

About Red Sea-

- Red Sea, (in Arabic Al-Baḥr Al-Aḥma), is a narrow strip of water extending southeastward from Suez, Egypt, for about 1,200 miles to the Bab el-Mandeb Strait, which connects with the Gulf of Aden and thence with the Arabian Sea.
- Geologically, the Gulfs of Suez and Aqaba (Elat) must be considered as the northern extension of the same structure.
- The sea separates the coasts of Egypt, Sudan, and Eritrea to the west from those of Saudi Arabia and Yemen to the east.
- With its connection to the Mediterranean Sea via the Suez Canal, it is one of the most heavily traveled waterways in the world, carrying maritime traffic between Europe and Asia.
- Normally, the Red Sea is an intense blue-green but occasionally it is populated by extensive blooms of the algae *Trichodesmium erythraeum*, which, upon dying off, turn the sea a reddish brown colour.
- It lies in a fault depression that separates two great blocks of Earth's crust - Arabia and North Africa.
- The sill (submarine ridge) separates the Red Sea and the Gulf of Aden at the Bab el-Mandeb Strait.
- At the bottom of these areas are unique sediments, containing deposits of heavy metal oxides from 30 to 60 feet thick.
- The Red Sea occupies part of a large rift valley in the continental crust of Africa and Arabia.
- This break in the crust is part of a complex rift system that includes the East African Rift System, which extends southward through Ethiopia, Kenya, and Tanzania and northward from the Gulf of Aqaba to form the great Wadi Aqaba - Dead Sea - Jordan Rift.
- The Red Sea is considered a relatively new sea, whose development probably resembles that of the Atlantic Ocean in its early stages.
- No water enters the Red Sea from rivers, and rainfall is scant.
- The evaporation loss in excess of 80 inches per year is made up by an inflow through the eastern channel of the Bab el-Mandeb Strait from the Gulf of Aden.



23. La Soufriere eruption in St. Vincent and Grenadines

In news- Recently, a volcano on the eastern Caribbean island of St. Vincent has experienced an "explosive eruption".

About La Soufriere Volcano-

- La Soufriere or Soufriere Saint Vincent is an active volcano on the island of Saint Vincent.
- It is the highest peak in Saint Vincent and the Grenadines and has had five recorded explosive eruptions since 1718, most recently in April 2021.
- Soufriere is a stratovolcano with a crater lake and is the island's youngest and northernmost volcano.
- Due to increased volcanic activity that was observed in December 2020 a new dome formed inside the crater.
- Many volcanoes in the Caribbean are named Soufriere including Soufriere Hills on Montserrat and La Grande Soufriere en Guadeloupe.

- Saint Vincent and the Grenadines is an island country in the Caribbean.
- It is located in the southeast Windward Islands of the Lesser Antilles, which lie in the West Indies at the southern end of the eastern border of the Caribbean Sea where the latter meets the Atlantic Ocean.
- Saint Vincent and the Grenadines is a densely populated country for its size over 300 inhabitants/km².
- Most of it lies within Hurricane Alley.
- It has a British colonial history, and is now **part of the Organisation of Eastern Caribbean States, CARICOM, and the Commonwealth of Nations, the Bolivarian Alliance for the Americas** and the Community of Latin American and Caribbean States (CELAC).

24. Mettur-Sarabanga Lift Irrigation Project

In news- Recently, the southern bench of the National Green Tribunal (NGT) has dismissed the petition challenging the Tamil Nadu government's ambitious Mettur-Sarabanga lift irrigation project.

More about the Issue-

- According to the applicant, the project requires prior environmental clearance and the government was proceeding with the project without obtaining the mandatory clearance under the Environment Impact Assessment (EIA) Notification, 2006.
- Union Environment Ministry has said that EIA Notification, 2006 was amended in 2018 according to which Mettur-Sarabanga project falls in the category of minor irrigation system with cultivable command area less than 2,000 hectares and such projects were exempted from the requirement of environmental clearance.
- Even NGT has accepted the government's view.

About Mettur-Sarabanga Lift Irrigation Project-

- It is a Rs 565 crore project to divert surplus floodwater from Mettur Dam to the Sarabanga River in Salem, through lift irrigation technique.
- The scheme will provide water to 33 tanks in Edappadi and 67 tanks in M Kalipatti tank group, covering a total ayacut of 4,238 acres.

Sarabanga River-

- Sarabanga is a river flowing in the Salem district of Tamil Nadu.
- The origin of the river is traditionally placed at Yercaud foothills in Tamil Nadu.
- The river fulfils demands for agricultural irrigation in Danishpet village.
- The river flows through Danishpet, Omalur, Thoppur, Tharamangalam, Dharapuram, Idappadi, Chettipatti, Perichipalayam, Thevur and joins the Kaveri River near Annamar Kovil before flowing into the Bay of Bengal.
- Dams on the river are located at Perichipalayam.

25. Hot Springs and Gogra Post

In news- China still has platoon-level strength and vehicles at two friction points along LAC, **Patrolling Point 15 (PP15)** in Hot Springs and **PP17A** near Gogra Post.

What is the difference between PP15 and 17A?

- The Indian Army has been given some positions along the Line of Actual Control (LAC) between India and China that its troops must access in order to patrol the region under its control.
- The China Study Group (CSG) decides on these points, which are known as patrolling points, or PPs.
- CSG is the apex decision-making body in China and was founded in 1976, when Indira Gandhi was Prime Minister.
- These patrolling points, with the exception of Dapsang Plains, are on the LAC, and troops use them to maintain control over the region.
- Two of the 65 patrolling points along the LAC in Ladakh are PP15 and PP17A.
- PP15 is located in an area known as the Hot Springs, while PP17A is near an area called the Gogra post.
- Both are located near the Chang Chenmo river in the LAC's Galwan sub-sector in eastern Ladakh.
- The region is north of the Karakoram Mountain Range, which is north of the Pangong Tso Lake, and south east of Galwan Valley, which has become a major flashpoint.
- The region is close to Kongka Pass, which according to China, marks the Indian-Chinese border.

- India's claim to the international border extends dramatically east, encompassing the entire Aksai Chin region.

What role do they play in the military?

- Both PP15 and PP17A are located in a region where India and China have reached a consensus on the LAC's alignment, which runs southeast from Galwan Valley, descends at Kongka La, and continues, to Ann Pass until reaching the north bank of Pangong Tso.
- A big People's Liberation Army post is located a few kilometres east of Kongka La, while Indian posts are located southwest of it.
- However, the area **is not identified as a major "launchpad"** from which either side can launch an offensive, according to the official history of the 1962 war between India and China.

26. National Panchayati Raj Day

In news- India observes National Panchayati Raj Day on April 24 every year.

About National Panchayati Raj Day-

- The annual celebration is done to commemorate the day on which the 73rd Constitutional Amendment was passed in 1992.
- The act came into effect on April 24, 1993.
- Rajasthan was the first state that carried the Panchayati Raj System in 1959 during the times of late Prime Minister Jawarharlal Nehru.
- Former Prime Minister Manmohan Singh had declared the first National Panchayati Raj Day on 24 April in the year 2010.
- There is no particular theme for National Panchayati Raj Day.
- During the National Panchayat Raj Day event, the following awards were given to the best performing Panchayats.
 - Deen Dayal Upadhyay Panchayat Sashaktikaran Puraskar (DDUPSP) in General and Thematic categories for all three levels of Panchayats.
 - Nanaji Deshmukh Rashtriya Gaurav Gram Sabha Puraskar (NDRGGSP) to Gram Panchayats for outstanding performance of Gram Sabha.
 - Gram Panchayat Development Plan (GPDP) Award conferred upon three best performing Gram Panchayats across the country.
 - e-Panchayat Puraskar
 - Child-friendly Gram **Panchayat Award**

27. Kowloon Peninsula

In news- Hong Kong is expected to give China's national security office a location on the western Kowloon Peninsula for a permanent base in the capital.

About Kowloon Peninsula-

- The Kowloon Peninsula is a **peninsula in Hong Kong's territory** that forms the southern part of the main landmass, alongside Victoria Harbour and facing Hong Kong Island.
- Geographically, the name "Kowloon Peninsula" may also apply to the region south of the Beacon Hill, Lion Rock, Tate's Cairn, Kowloon Peak, and other mountain ranges.
- The peninsula **encompasses five of Hong Kong's eighteen districts.**

- The peninsula's **northeastern tip is home to Kowloon Bay.**

28. Supermoon

- A super moon occurs when a full moon or a new moon coincides with the Moon's elliptical orbit's closest approach to the Earth, resulting in the maximum apparent size of the lunar disc as seen from Earth.
- The 'perigee-syzygy' of the Earth–Moon–Sun system is the scientific term.
- The word "super moon" has nothing to do with astronomy but comes from astrology, and the concept is fairly broad, resulting in approximately six super moons each year.
- A super moon is formed when a new or full moon occurs when the moon is at or near (within 90 percent of) its closest approach to Earth in a given orbit.
- To be called a supermoon, the new or full moon must pass within 361,524 kilometres (224,641 miles) of Earth, as measured from the centres of the moon and Earth.
- All full moons (and new moons) combine with the sun to produce higher-than-average tides, but closer-than-average full moons (or closer-than-average new moons) raise the tides even higher.
- The super moons are accompanied by spring tides.

29. Assam Earthquake

In news- Recently an earthquake of magnitude 6.4 on the Richter scale hit Assam which caused loss of lives and property.

Location of epicentre-

- The primary earthquake had its epicentre at latitude 26.690 N and longitude 92.360 E, about 80 km northeast of Guwahati, and a focal depth of 17 km, the National Centre for Seismology (NCS) .
- According to preliminary research, the events occurred near the Kopili Fault, which is closer to the Himalayan Frontal Thrust (HFT).
- The Kopili Fault, which runs from the Bhutan Himalaya to the Burmese arc, is a 300-kilometer northwest-southeast trending fault.
- The HFT, also known as the Main Frontal Thrust (MFT), is a geological fault that runs along the tectonic plate boundary between India and Europe.
- The fault is a crack in the crust that has caused the blocks on each side to shift relative to one another parallel to the fracture.
- The region is seismically very active, falling in the **highest Seismic Hazard zone V** associated with collisional tectonics where the Indian Plate subducts underneath the Eurasian Plate.

The latest 2002 version of the **seismic zone map by the Bureau of Indian Standards (BIS)** divided India into **four zones, viz. Zone II, III, IV and V.zones, viz. Zone II, III, IV and V.**

Zone II: This is seismically the least active region. It covers parts of India that are not included in Zone III, IV and V.

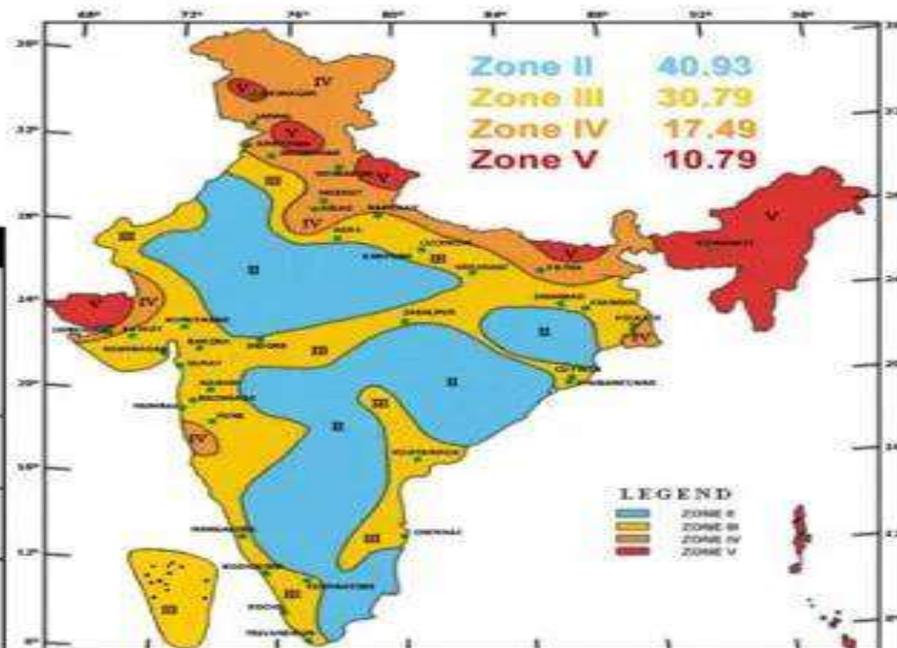
Zone III: Comprises Kerala, Goa, Lakshadweep islands, remaining parts of Uttar Pradesh, Gujarat and West Bengal, Parts of Punjab, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh, Maharashtra, Orissa, Andhra Pradesh, Tamil Nadu and Karnataka.

Zone IV: It covers parts of Jammu and Kashmir and Himachal Pradesh, National Capital Territory (NCT) of Delhi, Sikkim, Northern parts of Uttar Pradesh, Bihar and West Bengal, parts of Gujarat and small portions of Maharashtra near the west coast and Rajasthan.

Seismic Zone Map of India: -2002

About **59 percent** of the land area of India is liable to seismic hazard damage

Zone	Intensity
Zone V	Very High Risk Zone Area liable to shaking Intensity IX (and above)
Zone IV	High Risk Zone Intensity VIII
Zone III	Moderate Risk Zone Intensity VII
Zone II	Low Risk Zone VI (and lower)



Zone V: This is seismically the most active region. Parts of the Himalayan boundary in North and Northeast India, the Kutch area in the West falls here. Remaining parts of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, part of North Bihar and Andaman and the Nicobar Islands are included.

30. Mount Nyiragongo

In news- Mount Nyiragongo, one of the world's most active volcanoes, recently erupted.

About Mount Nyiragongo-

- The volcano's deadliest eruption happened in 1977, and recently in 2002.
- It is an active stratovolcano with an elevation of 3,470 m (11,385 ft) in the Virunga Mountains associated with the Albertine Rift.
- It is located inside Virunga National Park, in the Democratic Republic of the Congo, just west of the border with Rwanda.
- The main crater is about two kilometres wide and usually contains a lava lake.
- The crater presently has two distinct cooled lava benches within the crater walls.
- Nyiragongo's lava lake has at times been the most voluminous known lava lake in recent history.
- Nyiragongo and nearby Nyamuragira are together responsible for 40 percent of Africa's historical volcanic eruptions.
- The lava in Mount Nyiragongo is particularly fluid and has the potential to move fast.
- Its lavas are low-silica, alkali-rich, ultramafic extrusive rocks essentially free of feldspars.
- It has been said that of late the volcanic activity had not been properly observed by the **Goma Volcano Observatory**, since the World Bank cut funding amid allegations of corruption.

31. Southern ocean as 5th official ocean

In news- Recently, the **National Geographic Society** named 'Southern Ocean' as the world's 5th ocean.

- Key updates-

- On June 8th World Oceans Day, the society announced that it would henceforth be labeling the Southern Ocean also known as Antarctic ocean as the fifth ocean on its maps of our planet.
- With this decision, the Southern Ocean around Antarctica will be added to the list of oceans along with the Atlantic, Pacific, Indian and Arctic oceans.
- National Geographic began making maps in 1915, but the society had only formally recognized just four oceans, which they defined by the continents that bordered them.
- In contrast, the Southern Ocean is defined not by the continents that surround it, but by the Antarctic Circumpolar Current (ACC) that flows from west to east.
- The newest body of water makes it the second-smallest, after the Arctic.
- The ACC flows through all waters that surround Antarctica until about 60 degrees south, except for the Drake Passage and the Scotia Sea, which are both roughly between South America's Cape Horn and the Antarctic Peninsula.
- The waters of the ACC and therefore most of the Southern Ocean, are colder and slightly less salty than the ocean waters to the north.
- The ACC pulls in water from the Atlantic, Pacific and Indian oceans to help drive a global "conveyor belt" that carries heat around the planet, while the cold dense water of the ACC sinks and helps to store carbon in the deep ocean.

National Geographic Society-

- It is a global nonprofit organization committed to exploring and protecting our planet.
- It is headquartered in Washington, D.C., United States.
- Founded in 1888, its interests include geography, archaeology, and natural science, the promotion of environmental and historical conservation, and the study of world culture and history
- It is governed by a board of trustees whose 21 members include distinguished educators, business executives, former government officials and conservationists.
- The organization **sponsors and funds scientific research and exploration.**
- The Society's media arm is National Geographic Partners, a joint venture between The Walt Disney Company and the Society, which publishes a journal, National Geographic in English and nearly 40 local-language editions.
- National Geographic has followed the International Hydrographic Organization (IHO) on marine names.
- While not directly responsible for determining them, the IHO works with the United Nations Group of Experts on Geographical Names to standardize names on an international scale.

32. National Oil Spill Disaster Contingency Plan-2015

In news- The Madurai Bench of the Madras High Court has sought response from the Centre and the State on a PIL that sought a direction for constitution of **Oil Spill Crisis Management Groups** at State and district levels as per the National Oil Spill Disaster Contingency Plan-2015.

About National Oil Spill Disaster Contingency Plan (NOS-DCP):

- The NOS-DCP was originally promulgated in 1996 and subsequently updated to include additional information, latest update being in 2014.
- The Indian Coast Guard is the designated national authority for oil spill response in Indian waters under the Plan.
- It comes under the purview of the **National Disaster Management Authority (NDMA), Ministry of Home Affairs.**

Objectives of the plan:

- To establish an effective system for detection and reporting of spills;
- To establish adequate measures for preparedness for oil and chemical pollution;
- To facilitate rapid and effective response to oil pollution;
- To establish adequate measures for crew, responders, and public health and safety, and protection of the marine environment;
- To establish appropriate response technique to prevent, control and combat oil pollution and dispose-off the recovered material in an environmentally sound manner;
- To establish record-keeping procedures to facilitate recovery of costs;
- To maintain the evidence for the purpose of identifying the polluter and taking suitable administrative, civil or criminal action against the polluter.

The plan assigned **task-based responsibilities to government departments and agencies**. The government of every coastal State should constitute a State-level Oil Spill Crisis Management Group. It also mandated the constitution of district and local level crisis management groups in order to protect the livelihood of fishermen and marine resources.

33. Summer solstice

In news- Summer Solstice, the Longest Day of the Year, fell on June 21.

More information-

- Solstice means “sun stands still” in Latin.
- It is an astronomical event that occurs twice in a year, once in summer (June) and once in winter (December).
- Summer solstice refers to the longest day and the shortest night of the year in the Northern Hemisphere.
- The longest day does not necessarily mean that it brings the earliest sunrise or latest sunset and depends on the latitudinal location of the country.
- Technically, the solstice occurs when the sun is directly over the imaginary Tropic of Cancer or 23.5°N latitude.
- The other names of Summer Solstice are Estival solstice or midsummer. .
- The Northern Hemisphere gets more direct sunlight and heat from the Sun owing to the earth's axis' maximum inclination towards the Sun between March and September.
- During the solstice, the Earth's axis is tilted in a way that the North Pole is tipped towards the sun and the South Pole is away from it.
- According to NASA, the amount of incoming energy the Earth received from the sun on this day is 30 percent higher at the North Pole than at the Equator.
- In contrast, the Southern Hemisphere receives most sunlight on December 21, 22 or 23 when the northern hemisphere has its longest nights– or the winter solstice.

34. Glacial lake atlas in Ganga basin

In news- The Ministry of Jal Shakti has released an updated atlas of glacial lakes that are part of the Ganga river basin.

Key updates-

- About 4,707 glacial lakes have been mapped in the Ganga basin.

- Glacial lakes with water spread area greater than 0.25 ha were mapped using Resourcesat-2 (RS-2) Linear Imaging Self Scanning Sensor-IV (LISS-IV) satellite data.
- Based on its process of lake formation, location, and type of damming material, glacial lakes are identified in nine different types, majorly grouped into four categories.
- The study portion of Ganga River basin covers part of India and transboundary region.
- The Atlas is available on the Bhuvan portal of National Remote Sensing Centre (NRSC), ISRO.
- The atlas could be used as reference for carrying out changes in the lakes over time, the spatial extent (expansion/shrinkage), and formation of new lakes.
- The information on glacial lakes including their type, hydrological, topographical, and associated glaciers are useful in identifying the potential critical glacial lakes and consequent GLOF (Glacial Lake Outburst Flood) events.
- It can be used as reference data for carrying out change analysis, both with respect to historical and future time periods.
- The atlas can also be used in conjunction with glacier information for their retreat and climate impact studies.
- Central and State Disaster Management Authorities can make use of the atlas for disaster mitigation planning and related programs.
- In December, 2020, Glacial lakes in the Indus river basin were mapped.

35. Taal volcano

In news- A tiny volcano in the Philippines exploded leaving steam and ash into the sky.

About the volcano-

- Taal Volcano is a large caldera filled by Taal Lake in the Philippines.
- It is part of a chain of volcanoes lining the western edge of the island of Luzon.
- They were formed by the subduction of the Eurasian Plate underneath the Philippine Mobile Belt.
- It is located in the province of Batangas and is one of the most active volcanoes in the country.
- Because of its proximity to populated areas and its eruptive history, the volcano was designated a Decade Volcano, and is one of the 16 Decade Volcanoes.
- It was known as Bombou or Bombon in the 1800s.
- It is one of the world's smallest volcanoes.
- All volcanoes in the Philippines are part of the Ring of Fire.
- The volcano and the Taa-lan River (now known as Pansipit River) are named after the Taa-lan tree, which grows along the river.
- Since the formation of the caldera, subsequent eruptions have created a volcanic island within the caldera, known as Volcano Island.
- The Main Crater Lake on Volcano Island is the largest lake on an island in the world.
- Taal erupted in January, 2020, displacing thousands of people and sending clouds of ash to Manila, about 65 kilometers (40 miles) to the north.

36. UAE's Hope orbiter and discrete auroras on Mars

In news- UAE's Hope Mars orbiter spotted an elusive aurora on the Red Planet recently.

Key updates-

- Hope spacecraft has captured images of glowing atmospheric lights in the Red Planet's night sky, known as discrete auroras.

- The data gathered by the orbiter include far and extreme ultraviolet auroral emissions which have never been imaged before at Mars.
- The beacons of light that stand out against the dark nightside disk are highly structured discrete auroras.
- Unlike auroras on Earth, which are seen only near the north and south poles, discrete auroras on Mars are seen all around the planet at night time.
- Scientists have observed three types of auroras on Mars-- One type of Martian aurora occurs exclusively on the daylit side of the planet; the other two occur on the nightside.
- One of the nighttime phenomena occurs only during extremely strong solar storms and lights up the whole disk.
- Significance of Martian auroras can offer clues as to why the Red Planet lost its magnetic field and thick atmosphere.

What is an aurora and reasons for an aurora on Earth?

- Auroras are caused when charged particles ejected from the Sun's surface called the solar wind enter the Earth's atmosphere.
- These particles are harmful, and our planet is protected by the geomagnetic field, which preserves life by shielding us from the solar wind.
- However, at the north and south poles, some of these solar wind particles are able to continuously stream down, and interact with different gases in the atmosphere to cause a display of light in the night sky.
- This display, known as an aurora, is seen from the Earth's high latitude regions (called the auroral oval), and is active all year round.
- In the northern part of our globe, the polar lights are called aurora borealis or Northern Lights, and are seen from the US (Alaska), Canada, Iceland, Greenland, Norway, Sweden and Finland.
- In the south, they are called aurora australis or southern lights, and are visible from high latitudes in Antarctica, Chile, Argentina, New Zealand and Australia.

Difference between Earth's & Martian auroras-

- Unlike Earth, which has a strong magnetic field, the Martian magnetic field has largely died out because the molten iron at the interior of the planet which produces magnetism has cooled.
- Earth's auroras are tied to the planet's global magnetic field and are triggered by charged particles from the sun.
- The Martian crust, which hardened billions of years ago when the magnetic field still existed, retains some magnetism.
- In contrast with Earth, which acts like one single bar magnet, magnetism on Mars is unevenly distributed, with fields strewn across the planet and differing in direction and strength.
- These disjointed fields channel the solar wind to different parts of the Martian atmosphere, creating "discrete" auroras over the entire surface of the planet as charged particles interact with atoms and molecules in the sky as they do on Earth.

About UAE's Hope Mars mission-

- Also known as the **Emirates Mars Mission (EMM)**, Hope is designed to study Mars' atmosphere across all its layers and at a global scale throughout the course of the year.
- It is the **Arab world's first mission to Mars**, took off from Earth in July 2020, and has been orbiting the Red Planet.
- The **objective of the mission is to study Martian weather dynamics**.
- By measuring how much hydrogen and oxygen is spilling into space, scientists will be able to look into why Mars lost so much of its early atmosphere and liquid water.
- It is expected to create the first complete portrait of the planet's atmosphere.

37. Polavaram project

In news- The Supreme Court recently sought the response of the Telangana government and others on an appeal filed against an NGT order which had accepted the recommendations of a committee relating to the Polavaram project.

Key updates-

- The Supreme court was hearing the appeal filed by Odisha government against the September 18, 2020 order of the NGT contending that it has erroneously accepted the report of a committee without affording the state an opportunity to be heard.
- The NGT on September 18, 2020 had accepted the report of a four member Joint Committee comprising Central Pollution Control Board, Telangana State Pollution Control Board, Ministry of Environment and Forests and the District Collector, Khammam.
- The committee had recommended that as per the interstate agreement on April 2, 1980 and final Godavari Water Disputes Tribunal **award**, Odisha and Chhattisgarh had to give their consent and exercise either one of options for construction of protective embankment or rehabilitation of affected people.

About Polavaram Project -

- It is a major under construction multi-purpose irrigation project being constructed on the Godavari River, and spread across three states – Andhra Pradesh, Odisha and Chhattisgarh.
- It is in the West Godavari District and East Godavari District in Andhra Pradesh.
- The project has been accorded National project status by the Union Government of India.
- Its back water spreads into parts of Chhattisgarh and Odisha States.



- The project envisages transfer of 80TMC of surplus Godavari water to river Krishna which will be shared between AP, Karnataka and Maharashtra in proportion to 45 TMC by AP and 35 TMC by Karnataka and Maharashtra as per the decision of the GWDT award.
- It envisages construction of Earth-cum-Rock fill dam across river Godavari.
- Once completed it will provide Irrigation benefits for the upland areas of East Godavari, Visakhapatnam Districts under Left Canal and West Godavari, Krishna Districts under Right Canal and will generate 960 MW of Hydro Electric Power.
- In addition, this project will supply 23.4 TMC of drinking water to Visakhapatnam city and also to Vizag steel plant through its left canal.

- It will also provide indirect benefits such as development of Pisciculture, tourism and urbanisation.
- Odisha and Chhattisgarh shall be benefited with 5 TMC & 1.5 TMC of irrigation water respectively.

38. Green National Highway Corridors (GNHCP)

In news- Recently the progress under the Green National Highway Corridors (GNHCP) was reviewed by the Union government.

Key updates-

- The Government of India and the World Bank signed a \$500 million project to build safe and green national highway corridors in the states of Rajasthan, Himachal Pradesh, Uttar Pradesh and Andhra Pradesh.
- The loan from the International Bank for Reconstruction and Development (IBRD), has a maturity of 18.5 years including a grace period of five years.
- The project includes upgradation of about 781 km length of various National Highways passing through the above said states.
- The scheduled date of completion is December, 2025.
- The project will also enhance the capacity of the Ministry of Road Transport and Highways (MoRTH) in mainstreaming safety and green technologies.
- The objective of transport infrastructure is to provide seamless connectivity and reduce logistics costs.
- The project will help reduce GHG emissions in the construction and maintenance of highways.
- It will also support analytics to map the freight volume and movement pattern on the National Highway network, identify constraints, and provide innovative logistics solutions.
- It helps in creating jobs for women by training women-led micro enterprises and women collectives to implement green technologies in the highway corridors.
- The first stretch of green highway being built under the project is expected to be completed by December 2021 in Rajasthan.

39. Sela tunnel

In news- The last blast of the escape tube of under-construction Sela Tunnel was conducted by Director General Border Roads (DGBR) through video conferencing recently.

About the tunnel-

- The Prime Minister laid the foundation stone of Sela Tunnel on February 09, 2019 to provide all weather connectivity between Guwahati in Assam and Tawang, Arunachal Pradesh through the Balipara-Chariduar-Tawang Road.
- The construction of the tunnel started on April 01, 2019 with the first blast taking place on October 31, 2019.
- On completion, it will be the longest bi-lane road tunnel in the world at an altitude above 13,000 feet on NH 13 component of Trans-Arunachal Highway system.
- The project provides for two tunnels of 1,790 m and 475 m lengths and an escape tube of 980 m.
- This unique tunnel constructed using the latest New Austrian Tunneling Method (NATM), is much below the snow line allowing all weather travel without the challenges of snow clearance.
- It will reduce travel time and ensure speedier movement across the Sela Pass.
- In case of natural calamities and adverse weather, it can prove to be a vital link for evacuation of personnel.
- It has a target completion date of Feb 2022.
- It is being constructed **by the Border Roads Organisation (BRO) under Project Vartak.**

40. Lonar Crater Lake

In news- Recently the Nagpur bench of the Bombay High Court directed the Maharashtra government to establish **Lonar Crater Lake Development Authority** for the conservation of Lonar crater lake. The petitions were filed in the court to save the Crater Lake which is being contaminated due to passing of sewage water and other such reasons.

About the lake-

- It is in the Buldhana district of Maharashtra and is a 50000-year-old Crater Lake.
- The **water of the lake is both saline and alkaline in nature**, which makes it one-of-its-kind not only in India, but also in the world.
- This **wetland on the Deccan Plateau is an endorheic** or closed basin.
- This **blue lagoon** was created due to a meteorite.
- The crater on which the lake sits is oval in shape indicating that the comet or asteroid hit the spot at an angle of 35 to 40 degrees.
- The outer region of the lake is a neutral region that has a pH level of 7 while the inner region is the alkaline part that has a pH level of 11.
- Both the regions are unique and house diverse flora and fauna.
- The most prominent reptiles found in the Lonar Crater Lake are the monitor lizards.
- Another feature of this lake is the non-symbiotic nitrogen fixing microbes.
- The lake has been declared a **Ramsar site** since November, 2020.

The colour of the lake water **recently had turned pink**, due to the presence of **Haloarchaea or halophilic archaea**. The absence of rain, less human interference and high temperature resulted in the evaporation of water which increased its salinity and pH that facilitated the growth of halophilic microbes. Now the lake has turned back to its original colour.

Though the lake is the most famous one for being the world's largest basaltic impact crater, the **other two India's prehistoric meteoric craters** are **Dhala in Madhya Pradesh and Ramgarh in Rajasthan**.