Prelim Bits 31-07-2023 | UPSC Daily Current Affairs

Sub Glacial Over deepening

A recent study on Himalayan Geology found that 3 new lakes may form in Parkachik Glacier in Ladakh due to glacial retreat.

Over deepening

- It is a characteristic feature of basins and valleys that are eroded by the glaciers.
- They are found at all elevations in a glacial landscape, from glacial cirques to large depressions along valley floors.
- The distinguishing feature is the adverse slope that forms at the lip of the basin or cirque.

Cirque glaciers are bowl-shaped depression on the side of or near mountains.

Parkachik Glacier

- The Parkachik glacier is one of the largest glaciers in the Suru River valley, Kargil, Ladakh.
- The Suru River valley is a part of the ***Southern Zanskar Ranges*** in the western Himalayas.
- **Reasons for melting ice –** Global warming and increasing temperatures in the region
- It is at a lower altitude than other glaciers in the Zanskar region Suru River Valley, Ladakh Himalaya.
- **Glacial melt problems –** If the volume of water is large, there is a possibility of glacial lake outbursts.
- The loss of a valuable water resource since Ladakh primarily depends on glacial melt for water.

References

1. PIB | Parkachik Glacier in Ladakh
2. The Indian Express | Ladakh glacier melting may form three lakes

State of the Climate in Asia 2022

State of the Climate in Asia 2022 by the World Meteorological Organization (WMO) says

Asia is the world's most disaster-prone region in 2022.

Key takeaways

Overall global climate in 2022
• Atmospheric concentrations of the 3 major greenhouse gases (CO2, CH4 and N2O) reached new observed record highs in 2021 and real-time data indicate that levels continued to increase in 2022. • The global annual mean temperature in 2022 was around 1.15 ±0.13°C above the 1850-1900 pre-industrial average. • Ocean heat content in 2022 was the highest on record. Ocean warming and accelerated loss of ice mass from the ice sheets contributed to global mean sea level rise, which also reached a record high in 2022.

- **The mean temperature** over Asia in 2022
    - 0.72 degree Celsius above the 1991–2020 average,
    - 1.68 degree Celsius above the 1961–1990 average.
- **Drought** - Ravaged numerous parts of Asia in 2022.
- China particularly suffered the most as last year, the Yangtze River Basin, experienced the worst drought in the last six decades.
- **Severe floods and extreme monsoon rainfalls** - Pakistan received 60% of normal total monsoon rainfall within just three weeks of the start of the 2022 monsoon season.
- **Economic loss** – Economic loss due to disasters relating to floods exceeded the average for the 2002–2021 period.
- Pakistan incurred a loss of over $ 15 billion, followed by China, over $ 5 billion, and India, over $ 4.2 billion.
- **Heat waves -** India and Pakistan experienced "abnormally warm conditions" in the pre-monsoon season (March–May).
- China, Hong Kong and Japan also saw the mercury rising to record high levels in 2022.
- The WMO report also noted that the rise in frequency and severity of extreme weather events has particularly impacted the ***agriculture sector*** in Asia.
- **Glacier Melting** - Apart from natural disasters, climate change has exacerbated glaciers melting in Asia due to high temperatures and dry conditions.
- **Sea surface temperatures** - Even the sea surface temperatures in Asia are getting warmer than ever before.

References

1. The Indian Express | WMO report on climate change
2. World Meteorological Organisation | State of the Climate in Asia, 2022

PSLV C-56

The Indian Space Research Organization (ISRO) successfully launched the PSLV-C56 carrying Singapore's DS-SAR satellite and six other satellites.

PSLV C56 Mission

- PSLV-C56 is configured in its core-alone mode similar to that of C55.

- Core alone mode is one of the variants of PSLV.
- ***Core-alone mode*** does not utilize solid rocket strap-on motors in its first stage, making the launch vehicle incredibly flexible and adaptable to meet various mission requirements.
- PSLV-C56 / DS-SAR, is the Dedicated Commercial Mission of NewSpace India Limited (NSIL) for ST Engineering, Singapore.
- This is the 58th flight of PSLV and 17th flight of PSLV in Core Alone configuration.
- After injecting all the 6 satellites, the upper stage of the rocket would be placed in lower orbit to ensure its reduced orbital life.

DS-SAR satellite

- It is a Radar Imaging Earth Observation satellite and the primary satellite for the mission.
- It is a 360 kg satellite launched into a Near-equatorial Orbit (NEO).
- The DS-SAR satellite is developed under a partnership between *DSTA (representing the Government of Singapore) and ST Engineering (Singapore)*.
- Once deployed and operational, it will be used to support the satellite imagery requirements of various agencies within the Government of Singapore.
- DS-SAR carries a Synthetic Aperture Radar (SAR) payload developed by *Israel Aerospace Industries (IAI)*.
- This allows the DS-SAR to provide for all-weather day and night coverage, and capable of imaging at 1m-resolution at full polarimetry.
- The other satellites launched are:

Satellites	Purposes
VELOX-AM	Technology demonstration microsatellite
ARCADE	Atmospheric Coupling and Dynamics Explorer (ARCADE) is an experimental satellite
SCOOB-II	A 3U nanosatellite flying a technology demonstrator payload
NuLIoN by NuSpace	It is an advanced 3U nanosatellite enabling seamless IoT connectivity in both urban & remote locations
Galassia-2	A 3U nanosatellite that will be orbiting at low earth orbit
ORB-12 STRIDER	Satellite developed under an International collaboration

- **Nanosatellite -** Nanosatellites are loosely defined as any satellite weighing less than 10 kilograms.
- Nanosatellites has been developed under CubeSat standards.
- **Standard CubeSat unit** - 10x10x10 centimetres with a mass of somewhere between 1 and 1.33 kg. This unit is known as **1U**.
- This modular unit “U” was multiplied and larger nanosatellites are now common. For example, 1.5U, 2U, 3U, 6U or 12U.

References

1. The Hindu | ISRO’s PSLV-C56 puts 7 satellites in orbit
2. ISRO | PSLV-C56/DS-SAR Missio
3. Business Today | ISRO successfully launches PSLV-C56

All India Tiger Estimation Report, 2022

Ministry of Environment, Forest and Climate Change recently released the All-India Tiger Estimation, 2022 at Corbett Tiger Reserve on Global Tiger Day celebrated on 29th of July every year.

- India currently harbors almost ***75% of the world's wild tiger population***.
- India categorized tiger habitats into 5 major landscapes based on biogeography and interconnectivity, enabling effective ecological and management-based strategies.
- An increase in unique tiger sightings from 2461 in 2018 to 3080 in 2022, now more than ***3/4th of the tiger population*** is found within protected areas.
- In 2022, India has
    - Minimum tiger population – 3167
    - Upper limit of the tiger population - 3925
    - Average number - 3682 tigers.
- It reflects a commendable ***annual growth rate of 6.1%*** per annum.
- **Increasing trend** - Central India and the Shivalik Hills and Gangetic Plains, particularly in the states of Madhya Pradesh, Uttarakhand, and Maharashtra.
- **Declining trend** - Western Ghats has experienced localized declines in the tiger population.

- **Large tiger population** - ***Madhya Pradesh***, followed by Karnataka (563) & Uttarakhand (560), and Maharashtra (444).
- **Small tiger population** - Mizoram, Nagaland, Jharkhand, Goa, Chhattisgarh, and Arunachal Pradesh.
- The tiger abundance within the Tiger Reserve is highest in

Tigers within Tiger reserves	
Corbett (260)	Kanha (105)
Bandipur (150)	Kaziranga (104)
Nagarhole (141)	Sundarbans (100)
Bandhavgarh (135)	Tadoba (97)
Dudhwa (135)	Sathyamangalam (85)
Mudumalai(114)	Pench-MP (77)

- Approximately 35% of the tiger reserves urgently require enhanced protection measures, habitat restoration, ungulate augmentation, and subsequent tiger reintroduction.
- **Measures needed**
    - Fortifying protected area management,
    - Intensifying anti-poaching measures,
    - Employing scientific thinking and technology-driven data collection, and
    - Addressing human-wildlife conflict.

References

1. PIB | All India Tiger Estimation -2022
2. The Hindu | India's tiger population rises

Meri Mati Mera Desh Campaign

Prime Minister Narendra Modi has recently announced the launch of a new campaign 'Meri Mati Mera Desh'.

- The campaign is envisaged as a culminating event of the 'Azadi Ka Amrit Mahotsav' celebration of 75 years of Indian Independence.
- **Aim** – The campaign aims to honour the memory of brave men and women who laid down their lives for the country.
- The campaign will be launched in the run-up to Independence Day, with special inscriptions to be installed in panchayats in their memory.
- Under this campaign, several programmes will be organised across the country in the memory of immortal martyrs.
- **Amrit Kalash Yatra** – 7,500 pots carrying soil from different corners of the country will be brought to the national capital along with saplings.
- **Amrit Vatika** – It is a unique garden built by fusing the soil and saplings that would arrive in 7500 urns.
- It will be built near the National War Memorial and will become a grand symbol of 'Ek Bharat Shresth Bharat'.
- **Vasudha Vandhan** – It envisages every gram panchayat or village renewing Mother Earth by planting 75 saplings of indigenous species and developing an Amrit Vatika.

References

1. PIB | PM's address in the 103rd Episode of 'Mann Ki Baat'
2. The Indian Express | PM announces 'Meri Mati Mera Desh' campaign
3. Live Mint | 103rd edition of Mann Ki Baat

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