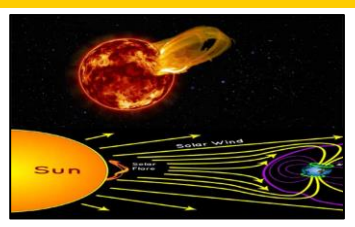
Solar Flare



❖ Context

➢ Recently, the **Sun sent out a powerful "X-class" solar flare** that peaked at 8.03 AM on Wednesday, March 29. The flare was classified as an X1.2 flare.

❖ Key Highlights:

- The solar flare was **detected by NASA's Solar Dynamics Observatory.**
- It came from a sunspot region on our solar system's central star called **AR3256**.

❖ About Solar Storms/Flares:

- Solar storms are **magnetic plasma** ejected at great speed from the **solar surface.**
- They occur during the release of magnetic energy associated with sunspots.
  - **Sunspots-** 'dark' regions on the Sun that are cooler than the surrounding photosphere.
- They **can last for a few minutes or hours.**
- **Types of Solar Flare :**
  - There are **four classes of solar storms–B, C, M & X.**
  - Just like the Richter scale, solar flares are classified on a logarithmic scale.
  - So this means that a C-class storm is 10 times more powerful than a B-class storm & so on.
  - The X-class denotes the most intense flares.
  - While the X-class denotes the strength of the flare, the number that comes after it signifies their strength at a finer scale.
  - Each class is therefore divided into nine subdivisions. For example, X1 to X9.
  - **X-class flares can trigger planet-wide radio blackouts** and long-lasting radiation storms, which is exactly what happened in parts of southeast Asia, Australia and New Zealand.

❖ Effect on Earth:

- Not all solar flares reach Earth, but solar flares/storms, **solar energetic particles** (SEPs), high-speed solar winds, and c**oronal mass ejections (CMEs)** that come close can impact space weather in near-Earth space & the upper atmosphere.
- Solar storms can hit operations of space-dependent services like **global positioning systems (GPS), radio, and satellite communications.**
- Geomagnetic storms interfere with **high-frequency radio communications** & GPS navigation systems.
- **Aircraft flights, power grids, and space exploration programmes** are vulnerable.
- CMEs, with ejectiles loaded with matter traveling at millions of miles an hour, can potentially create disturbances in the magnetosphere, the protective shield surrounding the Earth.
- **Astronauts** on spacewalks face health risks from possible exposure to solar radiation outside the Earth's protective atmosphere.

News in Between the Lines

Computer Emergency Response Team (CERT-In)

❖ Context

➢ Recently, The government informed Parliament that **The Indian Computer Emergency Response Team (CERT-in**) may soon be exempt from responding to queries under the **Right to Information Act.**

❖ Key Highlights:

- The Department of Personnel and Training has reviewed a proposal from the Ministry of Electronics and Information Technology to include **CERT-in in the Second Schedule to the RTI Act.**
- Second Schedule to the RTI Act deals with exempted organisations like the Central Bureau of Investigation (**CBI**) and the Border Security Force (**BSF**).
- The exemption would allow CERT-in to reject any application for information, even on policy related matters

❖ About CERT-In:

- Established in 2004 .
- **Functions :**
  - CERT-In is a **nodal government agency that deals with cyber security threats** like hacking and phishing in India.
  - CERT-in coordinates with public and private organisations in India when cyber incidents like data breaches and ransomware attacks are reported.
  - It also issues advisories for software vulnerabilities as guidance for organisations.
- **Nodal Ministry :**
  - It comes under the aegis of the Union Ministry of Communications and Information Technology.
  - **Headquarters: New Delhi.**

Yangli Festival

❖ Context

- Recently **Tiwa tribesmen** were shown taking part in a dance to celebrate the Yangli festival at **Gobha village** in the **Morigaon district of Assam.**

❖ Key Highlights:

- **Yangli, an occasion** to celebrate a bountiful harvest and seek protection for crops from pest and calamities, is an important festival of the Tiwas as agriculture is the mainstay of their economy.
- The festival is celebrated over a period of three days, and each day has its own **significance and rituals**. People offer prayers & sacrifices to their ancestors & perform traditional dances & songs.

❖ About Tiwa Tribesman:

- The Tiwa are an indigenous tribe of people who inhabit parts of Assam and Meghalaya in Northeast India.
- They are recognized as a Scheduled Tribe by the government of India.
- The Tiwa people have their own language, which is also known as Tiwa.
- **Traditionally**, the Tiwa people were animists, worshipping various natural objects such as mountains, rivers, and forests.
- The **Tiwa society is matrilineal,** meaning that descent and inheritance are traced through the mother's line.
- Women have a prominent role in Tiwa society, and their opinions are highly valued in decision-making.

Book Bank Initiatives For Poor Students

❖ Context

- **Ranchi Lok Sabha MP, Sanjay Seth's** initiative to establish a book bank for underprivileged students has been lauded by the Prime Minister.

❖ Key Highlights:

- The book bank, located in **Seth's office in Argora,** Jharkhand, provides students with free access to books that have been donated by various individuals and organizations.
- The students can take the books and return them after finishing their studies, ensuring the sustainable use of resources.
- This initiative reflects the values of empathy, compassion, community participation, volunteerism, responsibility, and accountability.
- By **making education accessible** to underprivileged students, Seth's book bank addresses the issue of inequality and empowers disadvantaged individuals.
- The involvement of the community in donating books and supporting the initiative demonstrates a sense of responsibility towards the education of the youth.

Mukupirna Fortidentata

❖ Context

- **Scientists at Flinders University in Australia** have recently discovered evidence of an ancient marsupial called Mukupirna fortidentata that roamed the country around 25 million years ago.

❖ Key Highlights:

- This newly discovered species, related to another marsupial called Mukupirna nambensis, is believed to have weighed up to 50 kg, making it one of the largest marsupials alive at the time.
- This **wombat-like creature** had a powerful bite and is thought to have consumed tough fruits and nuts.
- According to researchers, the extinction of the Mukupirnids began during a period of changing climate as ancient forest regions in Australia's center became increasingly arid.
- The **mukupirnids seemed** to have gone extinct sometime before the end of the late Oligocene, which was 23-25 million years ago.

❖ Significance:

- The discovery of the Mukupirna fortidentata is significant in shedding light on the evolution and extinction of ancient marsupial lineages.
- This helps scientists put the surviving marsupial groups, like the wombats and possums, in a broader evolutionary context.

Closure Of the Indira Gandhi Canal

❖ Context

- ➢ The **Indira Gandhi Canal**, the lifeline for northern and western districts of Rajasthan, will be closed for two months starting this week for the repair and relining of feeders.

❖ Key Highlights:

- The repairs have been necessitated due to the dilapidated condition of the canal at several places, which has led to seepage of water over the years.
- The closure of the canal is expected to have a severe impact on the drinking and irrigation needs of 1.75 crore people in the state, including numerous cattle, industrial usage, and Army Cantonments along the international border.
- Repair and relining work is being taken up at this time because farmers' dependence on the canal is at a minimum during the post-rabi crop season and before the onset of the kharif season.
- A partial flow of water will be allowed during the first fortnight of April only for drinking water needs.
- It is expected to get additional water by saving on the considerable seepage losses after the relining work, which will benefit the people downstream.

❖ About Indira Gandhi Canal:

- The **Indira Gandhi Canal,** also known as the Rajasthan Canal, is the longest canal in India, stretching over 650 km from the **Harike Barrage in Punjab to Jaisalmer in Rajasthan.**
- It was built between 1958 and 1987 and is named after the former Indian Prime Minister, Indira Gandhi.
- The **canal traverses seven districts** of Rajasthan, including Sriganganagar, Hanumangarh, Bikaner, Churu, Jodhpur, Jaisalmer, and Barmer.

ISRO's RLV TD Project

❖ Context

- ➢ Recently, the Indian Space Research Organisation and its partners successfully demonstrated a **precise landing experiment for a Reusable Launch Vehicle at the Aeronautical Test Range (ATR),** Chitradurga, Karnataka.

❖ Key Highlights:

- The **Reusable Launch Vehicle Autonomous Landing Mission (RLV LEX) test was the second of five tests** that are a part of ISRO's efforts to develop RLVs, or space planes/shuttles.
- One of the first trials of an RLV was announced by ISRO as far back as 2010, but was put off due to technical reasons.
- Another was hinted at in 2015 but was again grounded over technical issues.
- Finally, the first trial of the RLV-TD was conducted on May 23, 2016.

❖ About RLV TD Project:

- It **can travel to low earth orbits to deliver payloads** and return to earth for use again.
- ISRO's RLV-TD **looks like an aircraft**. It consists of a fuselage, a nose cap, double delta wings, and twin vertical tails.
- The RLV-TD will be used to develop technologies like hypersonic flight (HEX), autonomous landing (LEX), return flight experiment (REX), powered cruise flight, and Scramjet Propulsion Experiment (SPEX).
- **Advantages :**
  - A reusable launch vehicle is considered a **low-cost, reliable, and on-demand mode of accessing space.**

New Resident Mission in Vilnius

❖ Context

- ➢ India operationalizes new resident **Mission in Vilnius, Lithuania** recently.

❖ Key Highlights:

- The mission will also help **enable the growth of bilateral trade, investment,** and economic engagements, facilitate stronger people-to-people contacts, and enable more sustained political outreach in a multilateral form.
- **Indian Mission in Lithuania** will also better assist the Indian community and protect their interests.

Gamma Ray Burst (GRB)

❖ **Context**

- A **gamma-ray burst** that recently hit our solar system was so bright, it temporarily **blinded gamma-ray instruments in space**, according to a NASA release.

❖ **About Gamma Ray Burst (GRB)**

- When a pair of **binary compact systems** - either two blackholes, dense celestial bodies or neutron stars - rotate in a spiral fashion for billions of years, their ultimate merger leads to release of short GRBs.
- **These emissions last for less than two seconds.**
- GRBs are **massive but extremely bright, high-energy** short gamma radiations.
- The **energy** associated with GRBs is **many folds larger than what the Sun can emit in its entire lifetime**.
- **Long GRBs :**
  - When very **massive stars die**, the event results in the release of long GRBs.
  - The associated gamma radiations last for more than **two seconds or longer.**
- **Gamma Rays :**
  - Gamma rays have **the smallest wavelengths and the most energy** of any wave in the **electromagnetic spectrum.**
  - They are produced by the hottest and most energetic objects in the universe, such as neutron stars and pulsars, supernova explosions, & regions around black holes.

Space Systems Design Lab

❖ **Context**

- The **Indian National Space Promotion and Authorization Centre (IN-SPACe)** has recently inaugurated the Space Systems Design Lab in Ahmedabad.

❖ **Key Highlights:**

- The lab's main focus is to enable start-ups to build prototypes with minimal iterations, significantly reducing turnaround time and research and development costs.
- This will help non-government entities play an important part in the development of cutting-edge space technologies.
- To achieve its objectives, the **IN-SPACe** design lab comprises high-end analysis and simulation software for mission simulation, modeling, visualizing, optimizing payload and spacecraft, ground station, and launch vehicle avionics.
- The lab also features computing resources that can help start-ups to validate and visualize their design ideas before the launch of the manufacturing process.

Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

❖ **Context**

- Recently, Britain agreed to join the **Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).**

❖ **Key Highlights:**

- CPTPP is a trade pact **based around the Pacific rim,** as it seeks to build ties around the world after leaving the European Union.
- CPTPP is a **free trade agreement (FTA)** that was agreed in 2018 between 11 countries – **Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.**
- Britain will become the 12th member, and the first to join since the partnership since its inception.
- **CPTPP** countries will have a **combined GDP of 11 trillion pounds ($13.6 trillion) once Britain joins, or 15% of global GDP.**
- It does not have a single market for goods or services, and so regulatory harmonisation is not required, unlike the European Union, whose trading orbit Britain left at the end of 2020.
- **Side Note :**
  - **CPTPP succeeded the Trans-Pacific Partnership (TPP)** after the United States withdrew from the TPP in 2017.
  - All 11 countries of CPTPP are members of the **Asia-Pacific Economic Cooperation (APEC).**

MCQ Quiz
Daily Current Affairs
Daily Pre PARE Daily