



## Martian Plasma Waves

Scientists from the **Indian Institute of Geomagnetism** studied **high-frequency plasma waves** in Mars' upper atmosphere using data from [NASA's MAVEN spacecraft](#).

- The study found two types of waves in Mars' magnetic environment—**some below and some above the electron plasma frequency**. These waves are important because they help us understand how electrons behave around Mars.
- NASA's MAVEN (**Mars Atmosphere and Volatile Evolution**) was launched in November 2013 with the mission to gain insights of the **planet's atmospheric conditions**.
- Plasma waves are **oscillations or disturbances in the electric and magnetic fields** that propagate through plasma, which is a state of matter consisting of charged particles like ions and electrons.
  - These waves play a significant role in various plasma phenomena, influencing **energy transfer, particle acceleration, and the behavior of charged particles within plasmas found in space**.

Read more: [NASA's MAVEN spacecraft](#)

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## GSAT-20 (GSAT-N2) Aboard SpaceX's Falcon-9

Source: [TH](#)

### Why in News?

The commercial arm of the [Indian Space Research Organisation \(ISRO\)](#), [NewSpace India Limited \(NSIL\)](#) is set to launch **GSAT-20 (GSAT-N2)**, aboard [SpaceX's Falcon-9](#) in 2024.

- Falcon 9 is the world's first orbital class **reusable, two-stage rocket** designed and manufactured by **SpaceX** for the reliable and safe transport of people and payloads into Earth orbit and beyond.

### What is GSAT-20?

- GSAT-20 is a **high throughput Ka-band satellite** that provides **high-speed broadband internet connectivity**, digital video transmission, and audio transmission.
  - It is being launched to address the growing broadband communication needs of India. It is designed to provide comprehensive coverage across India, including remote regions like [Andaman and Nicobar Islands](#) and [Lakshadweep Islands](#).
- This satellite offers an impressive **HTS (High Throughput Satellite) capacity** of nearly 48Gbps. Notably, it comprises **32 beams specifically designed to meet the demanding service needs** of underserved areas, aiming to bridge the connectivity gap.

### Note

The Ka-band refers to radio frequencies ranging from **27 to 40 GHz**. It allows high-speed satellite data transfers with wide coverage through focused spot beams.

## What is NewSpace India Limited (NSIL)?

- NSIL, incorporated on 6<sup>th</sup> March **2019 (under the [Companies Act, 2013](#))**, is a wholly owned **Government of India company**, under the administrative control of **Department of Space (DOS)**.
  - Its primary responsibility is **enabling Indian industries to take up high technology space related activities** and is also responsible for promotion and commercial exploitation of the products and services emanating from the Indian space programme.
- **The Major Business Areas of NSIL include:**
  - Production of [Polar Satellite Launch Vehicle \(PSLV\)](#) and [Small Satellite Launch Vehicle \(SSLV\)](#) through industry
  - Production and marketing of **space-based services**, including launch services and space-based applications like transponder leasing, remote sensing and mission support services;
  - Building of **Satellites (both Communication and Earth Observation)** as per user requirements.
  - Transfer of technology developed by ISRO centres/ units and constituent institutions of Dept. of Space;
  - Marketing spin off technologies and products/ services emanating out of ISRO activities
  - Consultancy services
- In June 2022, **NSIL successfully completed its first demand-driven satellite mission, GSAT-24**, which was fully secured by Tata Play, a satellite television service.
  - Currently, NSIL manages and operates **11 communication satellites in orbit**.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. With reference to India's satellite launch vehicles, consider the following statements: (2018)**

1. PSLVs launch the satellites useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites.
2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.
3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid rocket motors, and the second and fourth stages using liquid rocket engines.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3
- (c) 1 and 2
- (d) 3 only

**Ans: (a)**

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**BIS: 77 Years of Shaping Standards**

Recently, the [Bureau of Indian Standards \(BIS\)](#), a body under the **Ministry of Consumer Affairs, Food, and Public Distribution, Government of India**, celebrated its **77<sup>th</sup> Foundation Day on 6<sup>th</sup> January 2024**.

- BIS is the **National Standard Body** of India established under the [BIS Act 2016](#) for the harmonious development of the activities of standardization, marking and quality certification of goods. BIS has its **headquarters at New Delhi**.
  - It operates various schemes like [Product Certification \(ISI mark\)](#), [Hallmarking](#) of Gold and Silver Jeweller, **ECO Mark Scheme** (for labeling of environment friendly products).
- The BIS Act, 2016, has been implemented since October 2017. The major highlights of the act are:
  - Enables the government to **authorize any agency apart from BIS to certify and enforce** conformity to a standard.
  - Provides **consumer protection measures** like recall of non-conforming standard marked products, compensation to the consumer and more stringent penal provisions.

**Read more:** [Bureau of Indian standards \(BIS\) Act 2016](#)

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## PRITHvi Vlgyan Scheme

**For Prelims:** PRITHvi Vlgyan (PRITHVI) Scheme, [ACROSS Scheme](#), [O-SMART Scheme](#), [PACER](#)

**For Mains:** Earth System Sciences, Modeling systems for understanding climate change science, Government Policies, Disaster Management

[Source: PIB](#)

### Why in News?

The Union Cabinet recently approved the comprehensive scheme "**PRITHvi Vlgyan (PRITHVI)**" by the **Ministry of Earth Sciences**.

- This initiative spans five sub-schemes, aiming to enhance Earth System Sciences and provide crucial services for societal, environmental, and economic well-being.
- The Cabinet also approved an agreement between the [Indian Space Research Organisation \(ISRO\)](#) and **Mauritius Research and Innovation Council (MRIC)** to jointly develop a "small satellite."

### Note

- India and Mauritius have a history of cooperation since the 1980s when ISRO established a **ground station in Mauritius** for tracking and telemetry support for ISRO's launch vehicle and satellite missions.

## What is the "PRITHvi Vlgyan (PRITHVI)" Scheme?

- **About:**
  - It is an overarching scheme of the Ministry of Earth Sciences (MoES) for the period from

2021 to 2026.

- It encompasses five ongoing sub-schemes, namely:
  - [ACROSS: Atmosphere and Climate Research-Modelling Observing Systems & Services.](#)
  - [O-SMART: Ocean Services, Modelling Application, Resources and Technology.](#)
  - [PACER: Polar Science and Cryosphere Research.](#)
  - **SAGE:** Seismology and Geosciences
    - The scheme includes six activities, including seismological monitoring and microzonation. SAGE aims to strengthen **earthquake monitoring and research on the Earth's solid components.**
  - [REACHOUT: Research, Education, Training and Outreach.](#)
- PRITHVI scheme comprehensively addresses the **five components of Earth System Sciences:** [atmosphere](#), hydrosphere, geosphere, [cryosphere](#), and biosphere.
  - This holistic approach aims to enhance understanding and deliver reliable services for the country.
- **Objectives:**
  - To augment and sustain long-term **observations of the atmosphere, ocean, geosphere, cryosphere and solid earth** to record the vital signs of the Earth System and change
  - Development of modelling systems for understanding and **predicting weather, ocean and climate hazards** and understanding the science of [climate change](#).
  - Exploration of **polar and high seas regions of the Earth** towards discovery of new phenomena and resources;
  - Development of technology for exploration and sustainable harnessing of oceanic resources for societal applications.
  - Translation of knowledge and insights from Earth systems science into services for societal, environmental and economic benefit.
- **Benefits for India:**
  - PRITHVI provides **advanced warning services** for natural disasters like [cyclones](#), [floods](#), [heatwaves](#), and [earthquakes](#), facilitating prompt and **effective disaster management**.
    - Additionally, the scheme ensures **precise weather forecasts** for both land and oceans, enhancing safety and minimizing property damages in adverse weather conditions.
  - PRITHVI extends its reach to explore the three poles of the Earth; [Arctic](#), [Antarctic](#), and [Himalayas](#) facilitating valuable insights and knowledge about these regions.
  - The scheme encourages the development of technology for exploration and sustainable harnessing of oceanic resources, aligning with modern advancements in Earth Science.

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## Outlook of OTT in 2024

**For Prelims:** Outlook of OTT in 2024, [Over-The-Top \(OTT\) Market](#), Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021.

**For Mains:** Outlook of OTT in 2024.

[Source: TH](#)

### Why in News?

The OTT market in India is currently battling the dilemma **between growth and profitability** in a price-

sensitive market. In 2023, the [Over-The-Top \(OTT\) Market](#) in India experienced significant disruptions and challenges that shaped its trajectory.

## What is Over-The-Top?

### ▪ About:

- OTT stands for "**Over-The-Top**," a term used **to describe content delivery** over the internet directly to viewers, bypassing traditional broadcast, cable, or satellite TV platforms.
- The OTT market **refers to the industry that provides streaming media services**, delivering movies, TV shows, music, and other content to users via the internet.
- **Examples:** Netflix, Disney+, Hulu, Amazon Prime Video, Peacock, CuriosityStream, Pluto TV, and so many more.

### ▪ Benefits of OTT:

- **Flexibility and Convenience:**
  - Users can access content anytime, anywhere, across multiple devices, providing unparalleled convenience.
- **Diverse Content:**
  - OTT platforms offer a wide array of content, including movies, TV shows, documentaries, and original productions, catering to varied tastes and interests.
- **Personalization:**
  - These platforms use algorithms to recommend content based on viewing habits, enhancing user experience and content discovery.
- **Cost-Effectiveness:**
  - Compared to traditional cable or satellite TV subscriptions, OTT services often offer more affordable pricing options, including free content with ad support or subscription tiers.
- **Global Accessibility:**
  - OTT platforms transcend geographical barriers, allowing users worldwide to access content regardless of their location.

### ▪ Limitations of OTT:

- **Internet Dependence:**
  - Reliable high-speed internet is crucial for seamless streaming. In areas with poor connectivity, accessing content can be frustrating.
- **Content Fragmentation:**
  - Exclusive content rights on different platforms result in fragmentation. To access specific shows or movies, users may need multiple subscriptions.
- **Data Privacy Concerns:**
  - OTT platforms collect user data for personalization, raising privacy concerns if mishandled or if data is shared with third parties without consent.
- **Content Quality and Quantity:**
  - While there's a vast selection of content, quality can vary. Additionally, the sheer volume of content can make discovering quality material overwhelming for users.

## What was the State of OTT in 2023 and Outlook for 2024?

- In 2023, the **OTT landscape saw disruptive moves** with platforms offering premium content for free, impacting subscription revenue.
- Monetization challenges persisted, none reaching **break-even due to high content costs**.
- Freemium models emerged, curbing password sharing and integrating ads. Regulatory concerns lingered **but censorship wasn't favored**, fostering selective data sharing.
- Looking to 2024, expect cost-efficient content strategies with a decline in experimental content. Mergers among major players like Zee/Sony and potential collaborations like RIL/Disney may **restructure market dynamics**, influencing bargaining power and content costs.
- Pricing strategies will continue evolving, likely intensifying limitations on sharing and embedding ads.
- Regulatory compliance may tighten, emphasizing sensitivity toward religious or minority sentiments. Increased transparency in viewership trends will aid advertisers and creators.



## What are the Laws regulating OTT Platforms?

- In 2022, the Ministry of Electronics and Information Technology (MeitY) had **notified the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021** to regulate OTT platforms.
- The rules establish a **soft-touch self-regulatory architecture** with a Code of Ethics and three-tier grievance redressal mechanism for OTT platforms.
  - Every publisher should appoint a Grievance Officer based in India for receiving and redressing grievances in 15 days.
  - Also, every publisher needs to become a member of a self-regulating body. Such a body will have to register with the Ministry of Information and Broadcasting and address grievances that have not been resolved by the publisher within 15 days.
  - The Ministry of Information Broadcasting and the Inter-Departmental Committee constituted by the Ministry constitute the third-tier Oversight Mechanism.
- They provide for self-classification of the content **without any involvement of Central Board of Film Certification.**

## What Can be Done for Better Regulation of OTT?

- **Self-Regulation Frameworks:**
  - There is a need to encourage **OTT platforms to establish transparent** content guidelines and rating systems akin to traditional media.
  - Industry-led self-regulation **can address concerns without stifling creativity.**
- **Collaborative Oversight Bodies:**
  - It is imperative to form **independent bodies comprising industry experts, stakeholders, and government representatives.** These bodies can monitor content, review complaints, and set industry standards.
- **Clear Content Classification and Ratings:**
  - There is a need to implement **standardized content classification systems** to help users make informed viewing choices based on age-appropriateness and content themes.
- **Transparency in Data Sharing:**
  - Encourage OTT platforms to share viewership trends selectively with oversight bodies, aiding in content evaluation and ensuring compliance with guidelines.
- **Regular Audits and Compliance Checks:**
  - There is a need to conduct **periodic audits to ensure platforms** adhere to established guidelines, fostering accountability and responsible content curation.

## Conclusion

- OTT has transformed **the way people consume entertainment, providing flexibility, choice, and convenience.**
- The market continues to evolve, driven by **technological advancements,** changing consumer preferences, and the dynamic landscape of media and entertainment.

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## Rise of Child Marriages in West Bengal

**For Prelims:** [Child marriage](#), [Prohibition of Child Marriage Act, 2006 \(PCMA\)](#), [Kanyashree Prakalpa Scheme](#),

**For Mains:** Major Factors Associated with Child Marriage, Legislative Framework and Initiatives Related to

[Source: TH](#)

## Why in News?

A recent **Lancet** study on [child marriage in India](#) highlighted an overall decrease in child marriage across the country. However, it emphasized that certain states, specifically **Bihar (16.7%), West Bengal (15.2%), Uttar Pradesh (12.5%), and Maharashtra (8.2%)**, collectively contributed to over half of the total headcount burden of child marriages in girls.

- Despite the implementation of multiple **policy interventions in West Bengal aimed at curbing child marriage**, the region has experienced a **substantial surge of 32.3% in the incidence of child marriages**. This increase corresponds to over 500,000 additional girls getting married as children.

## Note

- **National Family Health Survey-5 (2019-21):**
  - The National Family Health Survey-5 indicates that the prevalence of women **aged 20-24 years** married before 18 remains high in **West Bengal at 41.6%, compared to the national figure of 23.3%**.

## Has Policy Intervention in West Bengal Effectively Curbed Child Marriage?

- **Policy Interventions to Stop Child Marriage in West Bengal:**
  - **The Kanyashree Prakalpa Scheme:**
    - Launched in 2013, Kanyashree Prakalpa incentivizes the **schooling of teenage girls aged 13 to 18** while simultaneously discouraging child marriage. The scheme has covered 81 lakh girls, according to the West Bengal Budget for 2023-24.
      - The scheme received international recognition with the **United Nations Public Service Award in 2017**.
    - While the **school enrolment of girls has increased in the State**, questions are being posed based on [National Family Health Survey](#) data and the Lancet study of whether the scheme has achieved its promise of arresting child marriage.
  - **Rupashree Prakalpa:**
    - In addition to Kanyashree, the state government runs the Rupashree Prakalpa, **providing cash incentives for girls' marriages**.
      - Some families utilize benefits from both schemes, organizing marriages shortly after cashing in on the school scheme.
- **Educational Stride and Child Marriage Rates:**
  - Despite **girl's enrolment in schools has "significantly increased** over the past few years and **yet the incidence of child marriage remains high** in West Bengal".
    - The All-India Survey of Higher Education for 2020-21 puts the number of **estimated enrolment of girls in West Bengal at 9.29 lakh**, which is higher than the boys enrolment which stood at 8.63 lakh.
  - As per NFHS- 5, the Purba Medinipur district with **over 88% literacy rate** has the highest incidence of **child marriage of more than 57.6%**.
  - Experts noted **migration in West Bengal fuels child marriage** as families fear **leaving unmarried daughters behind**, driven by societal norms and economic factors.
    - This perpetuates a cycle where cultural expectations prioritize early marriages for **wives to bear children while men work**.

### ▪ **Challenges in Law Implementation:**

- Beyond social issues, **challenges in law implementation contribute to the persistence of child marriage.**
  - As West Bengal's 105 cases under The Prohibition of Child Marriage Act (PCMA), 2006 in 2021 raise concerns. Because comparatively, states with **smaller populations reported more cases.**
- The Ministry introduced the [Prohibition of Child Marriage \(Amendment\) Bill, 2021](#), proposing raising the age of marriage for women to 21, currently under Parliamentary review.
  - The data suggests gaps in law enforcement and highlights the need for comprehensive strategies.

## What are the Impacts of Child Marriage?

### ▪ **Ending Childhood:**

- **Child marriage is a global problem and is compounded by poverty.** It abruptly **ends a boy's/girl's childhood**, pushing them into adulthood before they are physically and mentally prepared.
  - Arranged marriages often involve girls marrying significantly older men, intensifying the challenges they face.
  - Early marriage significantly decreases the likelihood of girls staying in school, leading to **lifelong economic repercussions.**
  - Child marriage leads **childhood grooms to drop out of school** and often **settle for low-paying jobs to provide for their families.**
  - Child brides and grooms often experience isolation and have their freedom curtailed, limiting their social interactions and personal autonomy.

### ▪ **Human Rights Violation:**

- Child marriage is considered a [human rights violation](#) and a **recognised form of sexual and gender-based violence**, the adverse impact of child marriage is manifested across maternal and child health in the State.
- Child brides are frequently denied their [fundamental rights](#), including access to health, education, safety, and the opportunity for active participation.
- [United Nations Children's Fund \(UNICEF\)](#) **categorizes child marriage as a human rights violation** due to its adverse impacts on the development of both girls and boys.
  - Each year, some **12 million more girls will marry before reaching age 18** and of those, 4 million are under age 15.
  - **Save the Children's Global Girlhood Report** estimates that an additional **2.5 million girls are at risk of child marriage** globally between 2020 and 2025, as a result of reported increases in all types of **gender-based violence** due to the [Covid-19 pandemic](#).

### ▪ **Maternal and Child Health Implications:**

- The adverse impact of child marriage extends to maternal and child health.
  - Child brides often become **pregnant during adolescence**, when the risk of **complications during pregnancy** and childbirth increases. The practice can also isolate girls from family and friends, taking a heavy toll on their mental health.
- Child brides are also more susceptible to contracting [Human Immunodeficiency Virus \(HIV\)](#).

## What are the Initiatives to Tackle Child Marriage?

- [Prohibition of Child Marriage Act, 2006 \(PCMA\)](#)
- [BetiBachaoBetiPadhao \(BBBP\) scheme.](#)
- [National Commission for Protection of Child Rights \(NCPCR\).](#)
- [Protection of Children from Sexual Offences Act 2012.](#)
- [CHILDLINE.](#)

## Way Forward



- Mobilize **political will at both state and national levels** to prioritize the eradication of child marriage through legislative measures.
  - Conduct **social campaigns involving all stakeholders** including panchayats, schools and local communities and without a political will to enforce the existing laws the situation at the grass roots will not improve as rapidly as it has in other parts of the country.
- Promote a culture of **reporting and transparency** by regularly updating and providing detailed information on child marriage cases under PCMA 2006.
  - Facilitate a **comprehensive review of PCMA 2006** to identify loopholes and areas for improvement in enforcement.
- Advocate for the swift approval of the **Prohibition of Child Marriage (Amendment) Bill, 2021**, by the Parliamentary Standing Committee.
  - The Bill amends the PCMA 2006 to increase the **minimum age of marriage of females to 21 years**. Further, the Bill will override any other law, custom, or practice.
- Empower girls with **information, skills, and support networks** for increased autonomy and decision-making.

## UPSC Civil Services Examination Previous Year Question (PYQ)

### Mains

**Q.** Examine the main provisions of the National Child Policy and throw light on the status of its implementation. **(2016).**

## National Birds Day

National Bird Day, which has **American origins**, is celebrated annually on **5<sup>th</sup> of January**, to raise awareness about the value of birds in the ecosystem.

- The day also aims to raise awareness for the conservation of **avian species** affected by **habitat destruction, reducing food choices, and [climate change](#)**.
- India's Union Cabinet Minister for Environment, Forest and Climate Change, called for saving the **[wetlands to preserve bird populations in the country](#)**.
  - Wetlands become home to various species of birds in India and sustain ecosystems vital to feed local avian populations.
- National Bird Day is different from occasions such as **International Migratory National Bird Day**, **[World Migratory National Bird Day \(May 13\)](#)**, and several other National Bird Days.

## World Typing Day

**8<sup>th</sup> January is observed as World Typing Day** to encourage people to express themselves via **written communication**.

- Celebration of the day started in Malaysia in 2011. It commemorates the **2011 Malaysian Speed Typing Contest**, which broke records for the fastest typist and largest participation.
- The day holds special significance as it **celebrates the ability to type and communicate with one another**.

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## Peregrine Mission One

[Source: TH](#)

### Why in News?

The United States embarks on the **Peregrine Mission One**, marking the first attempt to land on the Moon in over 50 years.

- The mission is spearheaded by private space enterprises, **Astrobotic Technology and United Launch Alliance**, this collaborative mission, signals a shift towards leveraging private sector capabilities for space exploration.

### What are the Key Highlights of Peregrine Mission One?

- The **Peregrine Lander** is expected to be one of the first American spacecraft to land on the Moon **since the [Apollo program](#)**.
  - The Peregrine Lunar Lander, also known as Peregrine Mission One, is a lunar lander built by Astrobotic Technology.
- It is part of the [National Aeronautics and Space Administration \(NASA\)'s Commercial Lunar Payload Services \(CLPS\) programme](#), which aims to stimulate a broader lunar economy.
  - NASA is partnering with diverse American companies under the CLPS initiative to **transport science and technology payloads to the lunar surface**.
  - The CLPS contracts aim to facilitate lunar exploration, experimentation, and technology demonstrations in preparation for upcoming human missions.
- It is expected to touch down on a **mid-latitude region of the Moon called Sinus Viscositatis, or Bay of Stickiness**.
- This mission will also help prepare for [Artemis](#), the NASA-led programme to **return astronauts to the Moon** later this decade, in preparation for missions to Mars.
  - Artemis is NASA's ambitious initiative named after the **moon goddess in Greek mythology**. With a **mission to land humans on the Moon by 2024**, including the first woman and person of colour on the lunar surface.
  - The program envisions an **Artemis Base Camp on the lunar surface** and a strategic Gateway in lunar orbit.

### Note

- Until now, a **soft landing on the Moon** has only been accomplished by a handful of national space agencies: the **Soviet Union was first, in 1966**, followed by the **United States**, which is still the **only country to put people on the Moon**. China has successfully landed three times over the past decade, while India with [Chandrayaan-3](#) is the most recent to achieve the feat on its second attempt, in 2023.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Prelims

**Q. What is the purpose of the US Space Agency's Themis Mission, which was recently in the news? (2008)**

- (a) To study the possibility of life on Mars
- (b) To study the satellites of Saturn
- (c) To study the colourful display of high latitude skies
- (d) To build a space laboratory to study the stellar explosions

**Ans: (c)**

**Q. Consider the following statements: (2016)**

**The Mangalyaan launched by ISRO**

1. is also called the Mars Orbiter Mission
2. made India the second country to have a spacecraft orbit the Mars after USA
3. made India the only country to be successful in making its spacecraft orbit the Mars in its very first attempt

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Ans: (c)**

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