

Mistiness

- Mistiness is caused by tiny droplets of water that scatter light and make the glass opaque. Wiping the glass with a cloth that is soaked in a detergent leaves a residue that lowers the surface tension of the water droplets enough to allow them to spread as a thin film.

The Hindu

Zodiacal dust

- Zodiacal dust is most commonly known for [Zodiacal light](#) which is "a faint, roughly triangular, diffuse white glow seen in the night sky that appears to extend up from the vicinity of the Sun along the ecliptic or zodiac. It is caused by sunlight scattered by space dust in the zodiacal cloud."
- It is best seen just after sunset in spring, and just before sunrise in autumn, when the zodiac is at a steep angle to the horizon but is so faint that either moonlight or light pollution renders it invisible.



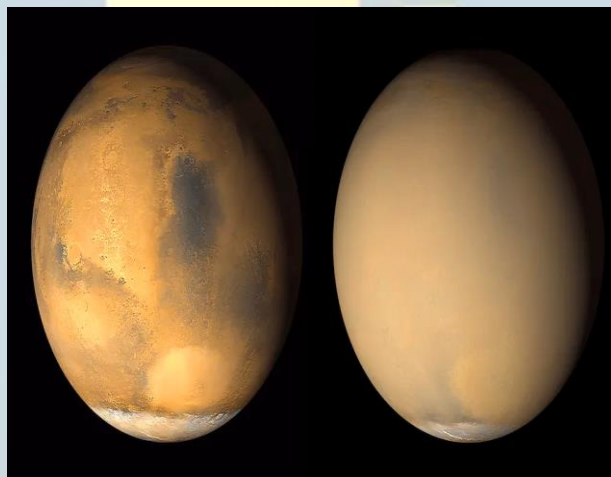
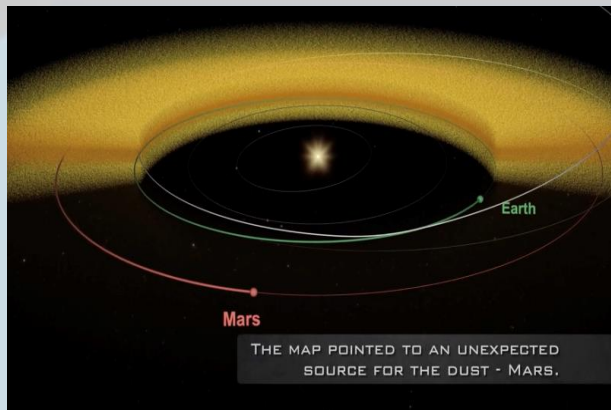
- Zodiacal dust is simply [cosmic dust](#) located mainly between the Sun and Jupiter. This dust is "10 and 300 micrometers in diameter, most with a mass around 150 micrograms."
- The light effect is caused due in part to the large collection of this dust in the aforementioned area and also in part to the Sun's reflection off of this dust.
- As far as why observing Zodiacal dust is so rare can be attributed to [forward scattering](#).
- This type of light deflection makes the dust only "just after sunset in spring, and just before sunrise in autumn when the zodiac is at a steep angle to the horizon but is so faint that either moonlight or light pollution renders it invisible."

Recent study on Mars

- The study compared the flux of dust near Mars, and the number of particles escaping the two moons of Mars and concluded that these moons could be the dust source.
- No other phenomenon in the neighborhood was found that could release as much dust. The study incorporated the shapes of the two Martian moons along with the gravitational effects of Mars, incoming and outgoing dust particles, the effect of spacecraft ejecta, and

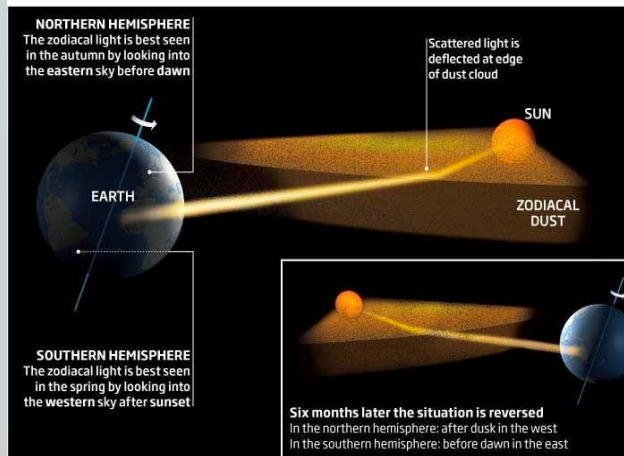
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other parameters in models for the dust.



How to see the zodiacal light

Sunlight scattered by dust in the plane between Earth and the sun produces the faint night-time glow over the horizon. Here is the best way to see it. ©NewScientist



From this the influx at Deimos and Phobos was estimated.

This combined with observational data led to a mechanism that could explain how Deimos and Phobos could be contributing to the zodiacal dust

These dust particles can easily escape Phobos and Deimos because of the moon's low gravity.

The smaller of these particles escape into space whereas Mars's gravity pulls in the larger ones.

The Hindu

Zaporizhzhia

The Zaporizhzhia Nuclear Power Station in southeastern [Ukraine](#) is the largest [nuclear power plant](#) in Europe and [among the 10 largest in the world](#).

It has been under [Russian](#) occupation since 2022. It was built by the [Soviet Union](#) near the city of Enerhodar, on the southern shore of the [Kakhovka Reservoir](#) on the [Dnieper](#) River.

It is operated by [Energoatom](#), who operate Ukraine's other three nuclear power stations..



Human ashes on moon

Human ashes

- Among the payloads aboard a recent private moon mission by U.S. company Astrobotic which ultimately failed to reach the moon's surface were dozens of capsules of human ashes and a can of Japanese sports drink Pocari Sweat.
- The exact purpose of the can was unclear.
- Under U.S. law, those items and anything else can go to the moon, as long as the U.S. Federal Aviation Administration and other agencies certify a rocket payload's launch of Earth does not "jeopardise public health and safety."
- U.S. national security or international obligations of the United States."
- The issue will gain more attention as the National Aeronautics and Space Administration leans heavily on private companies to cut the costs of its trips to the moon.
- Lawyers with space-law expertise worry that the absence of regulations could pit U.S. companies against other countries operating on the lunar surface or spark international disputes over which private endeavors could be considered land



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appropriation or claims of sovereignty.

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Delimitation of constituencies

- The delimitation of constituencies for the Lok Sabha and State Legislative Assemblies is to be carried out on the basis of the first Census after 2026.
- The 2021 Census was originally postponed due to the COVID-19 pandemic and subsequently due to delays on the part of the Central government.

What is delimitation?

- Delimitation means the process of mixing of seats and boundaries of territorial constituencies in each State for the Lok Sabha and Legislative assemblies.
- It also includes determining the seats to be reserved for Scheduled Castes (SC) and Scheduled Tribes (ST) in these houses.
- Article 82 and 170 of the Constitution provide that the number of seats in the Lok Sabha and State Legislative assemblies as well as its division into territorial constituencies shall be readjusted after each Census.

• This 'delimitation process' is performed by the 'Delimitation Commission' that is set up under an act of Parliament.

- Such an exercise was carried out after the 1951, 1961, and 1971 Census.

What is the constitutional requirement?

- 'Democracy' means 'rule or government by the people'.
- It follows that the government is elected by a majority with the broad principle of 'one citizen-one vote-one value'.

• The number of seats in the Lok Sabha based on the 1951, 1961, and 1971 Census was Fixed at 494, 522, and 543 when the population was 36.1, 43.9, and 54.8 crores respectively.

• This broadly translated to an average population of 7.3, 8.4, and 10.1 lakh per seat respectively.

• However, it has been frozen as per the 1971 Census to encourage population control measures so that States with higher population growth do not end up having higher numbers of seats.

• This was done through the 42nd Amendment Act till the year 2000 and was extended by the 84th Amendment Act till 2026.

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- Hence, the population based on which the number of seats is allocated refers to the population as per the 1971 Census.
 - This number will be re-adjusted based on the first Census after 2026.
 - The boundaries of territorial constituencies were readjusted (without changing the number of seats) and seats for SC and ST were determined as per the 2001 Census and will again be carried out after 2026.
 - In a normal course of events, the delimitation process for the number of seats, boundaries of territorial constituencies and determining the reserved seats for SC and ST would have happened based on the Census of 2031 as it would have been the first Census after 2026.
 - However, with the 2021 Census now being postponed and the year 2026 nearing, there have been talks about the impending delimitation exercise.
 - The number of seats were frozen based on the 1971 Census in order to encourage population control measures.
 - The population explosion that happened in our country during the last few decades has been uneven with some States like Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan having a greater increase than States like Kerala, Tamil Nadu, Karnataka and Andhra Pradesh.
 - There are two options that are being discussed in the public domain with respect to the revised delimitation exercise based on the projected population of various States as of 2026.
 - The Hindu
- ### Price war -china vs Europe
- A flood of cheap Chinese solar panel imports is driving record solar energy installations.
 - But those same imports are crushing Europe's few local solar manufacturers.
 - EU measures already underway, including a law due to be finalised which aims at fast tracking permits for local manufacturing and giving products made in the EU, such as panels, an advantage in future clean tech tenders.
 - solar panel prices have climbed in the United States, which has duties on Chinese imports. “
 - Europe is in a “price war” with China,

What are the issues?

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India's inclusion in JPMorgan's bond index

- What India's inclusion in JPMorgan's bond index means for its markets

How large will the inflows be?

- JPMorgan said Indian bonds will eventually hold a weight of 10% in its index, following 1% additions to its weightage each month from next June.
- The inclusion could result in inflows of close to \$24 billion over this 10-month period, analysts estimate.
- This is significantly higher than the \$3.5 billion invested by foreign investors in Indian debt so far this calendar year. Foreign holdings of outstanding bonds could rise to 3.4% by April-May 2025, from 1.7% currently, analysts estimate.

- **What is the impact on bond yields, borrowing costs?**

- India's fiscal deficit remains high at a targeted 5.9% of GDP for the year ending March 31, 2024, which will result in the government borrowing a record 15 trillion rupees (about \$181 billion).

So far, banks, insurance companies and mutual funds have been the largest buyers of government debt. An additional source of funds will

help cap bond yields and the government's borrowing costs.

- Traders estimate the benchmark bond yield will fall 10-15 basis points to 7% over the next few months. Corporate borrowers will also benefit as their borrowing costs are benchmarked to government bonds.

However, increased foreign flows will also make the bond and currency markets more volatile and could push the government and central bank to intervene more actively.

- **What does it mean for the rupee?**

- Larger debt inflows from the next financial year will make it easier for India to finance its current account deficit and reduce the pressure on the rupee. Index inclusion-related inflows of close to \$24 billion will cover a material part of India's \$81 billion current account deficit, estimated for next financial by IDFC First Bank

- India will monitor flows of foreign funds after its inclusion into JPMorgan's emerging market debt index and take steps to avoid 'hot money' that can trigger volatility in currency and bond markets.

What is Hot Money?

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- **"Hot money"** refers to funds that are controlled by investors who actively seek short-term returns. These investors scan the market for short-term, high-interest-rate investment opportunities
- Banks usually attract "hot money" by offering relatively short-term certificates of deposit that have above-average **interest rates**.
- **The Hindu**

Financial transfer to states

Determining State Finances

- According to Article 293(3) of the Constitution, the State has to obtain the consent of the Centre to raise 'any loan', if 'any part of the previous loan' extended by the Centre is outstanding.
- The imposition of the Net Borrowing Ceiling (NBC) is done by invoking the powers of the Centre under Article 293(3).
- On scrutiny, the Centre's decision to include extra-budgetary borrowings by state-owned enterprises in the total debt of the State is constitutionally suspect.
- The Union Finance Minister justified the decision by relying on the 15th Finance Commission Report, which says, "Governments at all tiers may observe strict discipline by resisting any further additions to the stock of o-budget transactions and contingent liabilities which is against the norms of Fiscal transparency and detrimental to fiscal sustainability."
- One very important purpose of our recommendation for higher borrowing limit to the Union and State Government is to foster transparency and to avoid build-up of non-transparent liabilities."
- Notably, the Finance Commission has not called for the inclusion of the debt of state-owned enterprises in the NBC.
- Parliament does not have the power to legislate upon the 'Public Debt of the State' as this finds place in Entry 43 of the State List of the Constitution.
- Therefore, the power to make laws on, administer, and determine aspects of the public debt of the State falls squarely on the State Legislature.
- The State government raises another crucial argument that the balances in the public account of the State should not be included in the NBC.
- The State relies upon Article 266(2) of the Constitution which indicates that the money collected by the Central or

State government, which do not pertain to the consolidated fund, can be brought under the head of 'public accounts'.

- Small savings, security deposits, provident funds, reserve funds and other treasury deposits constitute 'public accounts'.
- All activities related to public accounts fall within the domain of the State Legislature and the Centre has no power to include the withdrawals from public accounts in the NBC.

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