

# Topics

- Geotextile
- India Iran agreement on chabahar port
- The Indian Ocean Region Strategic Review Act.
- Solar storm -aditya L1
- Wax treatment
- Grande Prairie Forest
- Deferral status to NHRC
- Extrapulmonary tuberculosis (EPTB)
- AI Sandbox
- Alice Munro
- **Mains**



By saurabh Pandey



# Target Mains -2024/25

Q "Chabahar port has more than strategic importance" examine

Q "चाबहार बंदरगाह का सामरिक महत्व से कहीं अधिक है" का परीक्षण करें

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**telegram channel**

Kunal Roy.

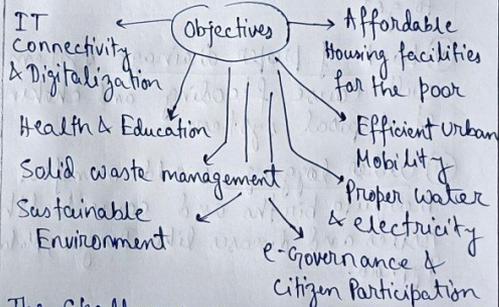
11Q

Messy Urbanisation is the biggest challenge for the smart city mission. Discuss (10)

(Please don't write anything in this space)

The objective of Smart City Mission is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment through application of 'Smart' solutions.

(Please don't write anything in this space)



The Challenges are:-

- (i) Improper planning of the cities has covered up the water bodies and aquifers, also caused forests to be cut down.
- (ii) Lack of greenery has led to the formation of Urban Heat Islands.

(iii) The area chosen for developing such cities could be the habitat of animals, which would be displaced..

(Please don't write anything in this space)

(iv) Displacement of the poor, the street vendors and slum ~~de~~ dwellers ought to happen, with them nowhere to go.

(Please don't write anything in this space)

(v) Lack of proper drainage system will cause flooding and choking of disposal system.

(vi) Water logging would manifest mosquito births and cause health issues and diseases like Dengue, Malaria, Typhoid.

Due to all these reasons, and messy urbanisation, the Smart City Mission is being slowed down and may be on the path of failure.

# Coir bulwark



**Green cover:** The Eloor municipality in Kochi is laying coir geotextiles for the protection of the side walls of waterbodies such as ponds and streams ahead of the monsoon. The protective covering helps in controlling soil erosion and checking surface run-off. H. VIBHU



# Geotextiles

**Geotextiles are woven, nonwoven or knitted textile materials consisting of synthetic and or natural polymers.**

**They are used in geotechnical and civil engineering applications, such as infrastructure works, roads, railways, coastal protection, landfills, erosion control...**





# ▶▶▶ GEOTEXTILES & ITS USES

- SOIL STABILISATION:
- ROAD CONSTRUCTION:
- DRAINAGE SYSTEMS:
- COASTAL PROTECTION:
- LANDSCAPING AND AGRICULTURE:
- GEOTEXTILE TUBES:
- SEPARATION:

[READ MORE](#)



## Benefits

Geotextile products have been improving geotechnical designs for years, providing numerous advantages in comparison to traditional techniques:

- **A reduced environmental impact when using geotextiles.**  
In use as a filter layer instead of traditional materials, greenhouse gas emissions are reduced by 90% and energy demand drops by > 80%.  
See [Quality & Certification](#) for more information.

**A reduced thickness of the design.**

**A geotextile fabric can act as a high performing filter layer, replacing up to 1m of filter material in e.g. erosion control systems.**

# New Chabahar pact 'not exempt' from Iran sanctions: U.S.

**Suhasini Haidar**  
NEW DELHI

The new 10-year agreement between India and Iran to develop the Chabahar port carries the “potential risk” of sanctions, the U.S. State Department said on Tuesday, casting a cloud over whether the special exemption India had received from the U.S. in 2018 will still be applicable for the next phase of development and investments in the Iranian project.

In particular, India’s plans under the new agreement to invest approximately \$120 million in equipment for the port and a credit window of \$250 million are likely to be under the scanner if the U.S. decides against extending its sanctions carve-

out for India.

In response to specific questions about the long-term contract signed between India Ports Global Ltd. and Port and Maritime Organisation of Iran on Monday, in the presence of Shipping Minister Sarbananda Sonowal and his Iranian counterpart Mehrdad Bazrpash in Tehran, the State Department spokesperson said the U.S. had noted the agreement and said there was “no” specific exemption for it.

“We’re aware of these reports that Iran and India have signed a deal concerning the Chabahar port,” U.S. State Department spokesperson Vedant Patel said.

“As it relates to the United States, U.S. sanctions on Iran remain in place and we’ll continue to enforce



Officials during the signing of the deal between India Ports Global Ltd and Ports and Maritime organisation of Iran on Monday. PTI

them,” he said, adding that all entities considering business deals with Iran “need to be aware of the potential risk that they are opening themselves up to and the potential risk of sanctions”.

The statement by the U.S. that came hours after

the signing of the contract in Iran is significant as India has thus far managed operations at Chabahar’s Shahid Beheshti Terminal despite stringent sanctions on companies otherwise dealing with Iran.

In 2018, a carve-out made by the previous

Trump administration had been seen as a considerable success for India-U.S. diplomacy, and for India’s plans to support the then-democratic government in Afghanistan.

## Carve-out clause

According to the U.S.’s carve-out clause, detailed in amendments to the Iran Freedom and Counter-Proliferation Act (IFCA) made in November 2018, the U.S. President could authorise exemptions to sanctions imposed against Iran in two cases: humanitarian aid for Iranian people, and assistance for Afghanistan.

Section 1244 of the IFCA (f) states that “The [US] President may provide for an exception from the imposition of sanctions under this section for reconstruction assistance or

economic development for Afghanistan” provided it is in the “national interest of the United States”.

A third exception, a six-month waiver on oil imports from Iran ran out in 2019, and India complied with the U.S. demand to “zero out” its purchases of Iranian oil.

The External Affairs Ministry declined to comment on the U.S.’s response. However, it is understood that officials are studying the comments with a view to whether they indicate any impact on the U.S. position on India’s future dealings on Chabahar.

With election under way in India, and due in the U.S. later this year, a clearer picture may not, however, appear for several months.



# India and Iran agreement on Chabahar port

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AFGHANISTAN  
KABUL

IRAN

CHABAHAR  
PORT

PAKISTAN

GWADAR

NEPAL

INDIA

Saudi Arabia

Oman

Yemen

Myanmar

MUMBAI

Bay  
of  
Bengal

**72 KM**

Distance  
between the  
Chabahar &

- **Chabahar Port is located in the Sistan-Balochistan province of Iran, on the southeastern coast of the country, near the border with Pakistan and Afghanistan.**

- **Alternate route to Afghanistan and Central Asia**
- **Access to the Arabian Sea**
- **Key component of India's connectivity plans in the region**
- **Leverage point for India to compete with China**

- **Iran and US tussle**
- **Delays in the completion of the projects**
- **Lack of proper road and rail connectivity**
- **Competition with other ports in the proximity**
- **Security concerns**

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# U.S. lawmakers to introduce legislation to formalise strategy for Indian Ocean Region



## Sriram Lakshman

Members of the U.S. House of Representatives' Foreign Affairs Committee will introduce legislation on Tuesday requiring the U.S. administration to present a formal and "cohesive" Indian Ocean strategy across key departments.

The Indian Ocean Region Strategic Review Act, sponsored by Joaquin Castro (Democrat, Texas) and Darrell Issa (Republican, California), is based on a recommendation of the Bipartisan U.S.-China Economic and Security Review Commission, a body set up in 2000 to review and report on the U.S.-China relationship.

The Commission's November 2022 report had recommended that the U.S. administration submit an Indian Ocean Region



Joaquin Castro, member of the U.S. House of Representatives' Foreign Affairs Committee. REUTERS

(IOR) strategy that would include plans to develop U.S. economic interests in the region, defend freedom of navigation, support regional partners, and promote cooperation with Japan, Australia, India, the U.K., and France, among others.

Mr. Castro supported the Biden administration's Indo-Pacific strategy, his spokesperson told *The Hindu*, but felt it was too

heavily focused on the Pacific Ocean and wanted the State Department to increase its prioritisation of the Indian Ocean Region.

The proposed Act would require coordination across three key departments – State, Defence, and the U.S. International Agency for International Development (USAID) – in synthesising and executing a strategy for the IOR. The

strategy will require the U.S. to strengthen diplomatic ties in the region such as via its participation in regional organisations.

The U.S. Secretary of State will be required to, within 180 days of the Act becoming law, submit a "multi-year strategy and implementation plan" for U.S. "engagement and posture" in the region, according to the text seen by *The Hindu*.

The Act will require the U.S. to "build upon existing agreements with strategic partners like India to foster military communication and intelligence sharing", according to a spokesperson for Mr. Castro.

There is also a freedom of navigation clause in the legislation and a mandate to protect international shipping lanes. The text of the legislation says the re-

port to Congress must provide details of efforts to improve cooperation between Quad countries (the U.S., India, Australia, and Japan).

The legislation will also require the administration to work closely with island nations, India, Japan, Australia, and others to foster commercial exchanges and economic development.

The Bill mandates that the U.S. government enhance the capacity of regional governments and NGOs to respond to and mitigate environmental disasters.

"Congressman Castro is optimistic that the legislation could be included in future legislative packages focused on competition with China along with other bipartisan priorities," a spokesperson for Mr. Castro said.



## **The Indian Ocean Region Strategic Review Act.**

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- **There is also a freedom of navigation clause in the legislation and a mandate to protect international shipping lanes.**
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# More solar storms brewing after last week's aurorae as Sun 'wakes up'

Beautiful though the aurorae are, the events on the Sun that produce them can trigger blackouts on the earth, knock out satellites in space, endanger the lives of astronauts and affect space weather in the Solar System. Studying, understanding, and, in future, predicting them is thus a key goal of solar physics research

Karthik Vinod

**I**n Friday night, people from across the world were treated to a rare spectacle: vivid aurorae hanging like curtains of light in the sky. They appeared even in places where aurorae aren't usually visible. For instance, people at the Indian Astronomical Observatory spotted an aurora over Hanle in Ladakh – far away from places near the poles, where they are a more common sight.

"I haven't seen anything like this in the last 20 years," says Divyendra Nandi, a space physicist at the Indian Institute of Scientific Education and Research (IISER), Kolkata.

Beautiful though the aurorae are, the events on the Sun that produce them can trigger blackouts on the earth, knock out satellites in space, endanger the lives of astronauts, and affect space weather throughout the Solar System. Studying, understanding, and, in future, predicting them is thus a key goal of solar physics research.

## Approaching the peak

Aurorae like these are created when some violent events on the Sun's surface throw up a mass of charged particles into space. A geomagnetic storm happens on the earth when these particles become trapped in the planet's magnetic field and interact with atoms in the upper atmosphere. These interactions finally produce aurorae.

These storms are rare, occurring around once every few decades. The last time charged particles from the Sun blew into the earth with similar energy and intensity was in 2003. And both events happened as the Sun was nearing the peak of its solar cycle – an 11-year period during which the star's magnetic field flips.

The peak is when the flip actually happens, creating magnetically active patches on the star's surface called sunspots. These sunspots grow and shrink as solar cycles begin and end. The charged particles that struck the earth on May 10 are rooted in events at these sunspots. "This is definitely a sign that the Sun is 'waking up' and is becoming more active, especially compared to the last solar cycle," Jonathan Eastwood, a space physicist at Imperial College London, the U.K., said.

In the last solar cycle, which spanned the 2000s, no sunspot gave rise to a geomagnetic storm that matched the intensity of that on Friday.

Since early May, scientists have been monitoring the sunspot AR 3664. It was growing in size: by May 7, it was 16-times



People watch the aurora Australis at Port Phillip Bay in Melbourne, Australia on May 11. AFP

as wide as the earth and brimming with magnetic energy.

The supercharged magnetic fields in such sunspots sometimes disconnect and reconnect in fractions of a second, releasing a great burst of energy that sends plumes of charged particles called coronal mass ejections (CMEs) into space.

On May 10, three CMEs struck the earth. CMEs happen together with solar flares – powerful flashes of radiation – and all these active events are collected under the term 'solar storms'.

## Surging currents

Magnetic fields deflect charged particles, but the earth's couldn't prevent many of the particles from slipping through to locations close to the planet's magnetic poles. Here, their interactions with oxygen atoms in the upper atmosphere produced vivid red light, and with oxygen, and nitrogen in the lower atmosphere producing green and purple light, respectively. Thus, the world had its aurorae.

On May 10, a few space-weather forecasters – including the Center of Excellence in Space Sciences India (CESSI) at IISER Kolkata – warned of potential power disruptions.

The fluctuations in the earth's magnetic field during a geomagnetic storm can send currents surging through cables, like what happened in Sweden and South Africa in 2003.

"These storms can also affect satellites in orbit on which our communication and GPS navigation networks depend," Dr. Nandi, who also heads CESSI, said.



The Indian Astronomical Observatory spotted an aurora over Hanle in Ladakh – far away from places near the poles, where they are a more common sight

CESSI is the only Indian institute that provides timely updates on space weather.

## Early warnings matter

This is not the worst geomagnetic storm to have ever struck the earth. In 1859, the Sun spouted a strong solar flare and triggered a super-geomagnetic storm on the earth, the most powerful in history. Telegraph wires either caught fire or were able to operate without a power supply (because they drew on the current surges produced by the storm).

Dr. Nandi said such storms – which CESSI would have categorised as 'extreme' – are likely to occur every few centuries. The May 10 geomagnetic storm was 'severe' on CESSI's scale, and caused only minor power grid irregularities during and GPS disruptions.

In high-latitude countries such as New Zealand, power grid operators switched off local circuits to prevent outages.

According to Dr. Nandi, these are some ways by which early warnings from space-weather forecasters made a difference.

He also said the solar storm that struck the earth had weakened by May 12, but that it may be too early to say the storms are subsiding altogether. For example, CESSI flagged moderate storms on May 13 as a result of an earth-bound CME that erupted on May 11.

## Waiting for Aditya

Space scientists have long wanted to anticipate a solar storm before it even begins brewing. Currently, the best they can do is catch a CME and/or flares as soon as they happen. Many spacecraft that monitor the Sun for these events are parked in the L1 point in space, about 1.5 million km in the earth-Sun direction, from where they have an uninterrupted view of the star. One of these spacecraft is Aditya-L1 of the Indian Space Research Organisation (ISRO), which reached L1 in March this year.

The principal investigator of its primary instrument, the Visible Emission Line Coronagraph (VELC), told *The Hindu* it is still being calibrated, so it hasn't chimed in on the events since May 10.

Of the other instruments: ISRO said on May 14 the ASPeX payload had "captured the enhancement of the alpha particle and proton flux of the solar wind" as signatures of the solar storm. It also said the SoLEXS and HELIOS payloads had detected "the multiple X- and M-class flares ... during the last few days". The Chandrayaan-2 orbiter around the moon also reportedly detected "signatures" of the emissions from the Sun. (Karthik Vinod is an intern with *The Hindu*.)

## THE GIST

Solar storms are rare, occurring around once every few decades. The last time charged particles from the Sun blew into the earth with similar energy was in 2003. Both events happened as the Sun was nearing the peak of its solar cycle

Scientists monitoring a sunspot called AR 3664 observed it growing. By May 7, it was 16-times as wide as the earth and brimming with magnetic energy. On May 10, three coronal mass ejections struck the earth

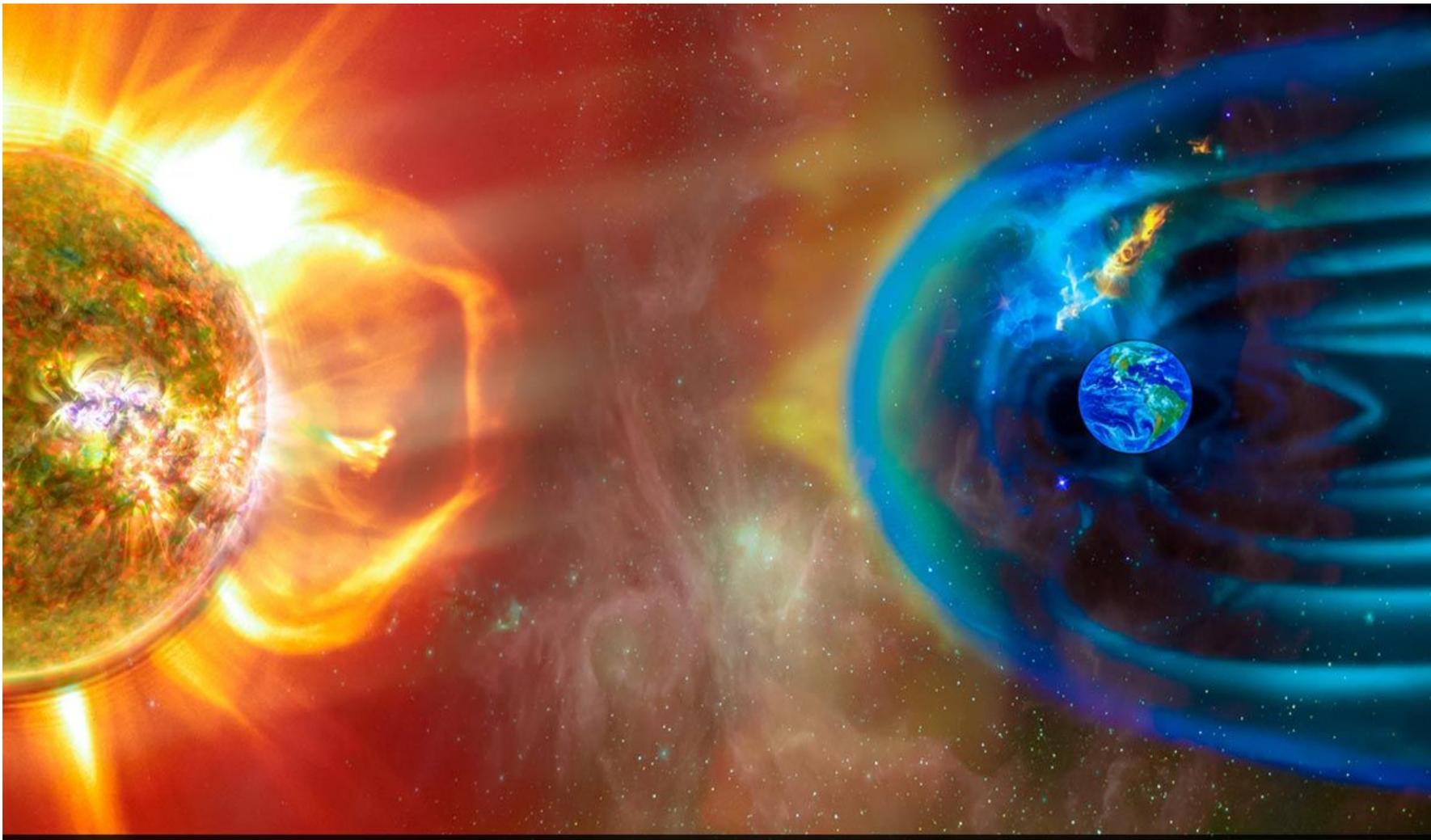
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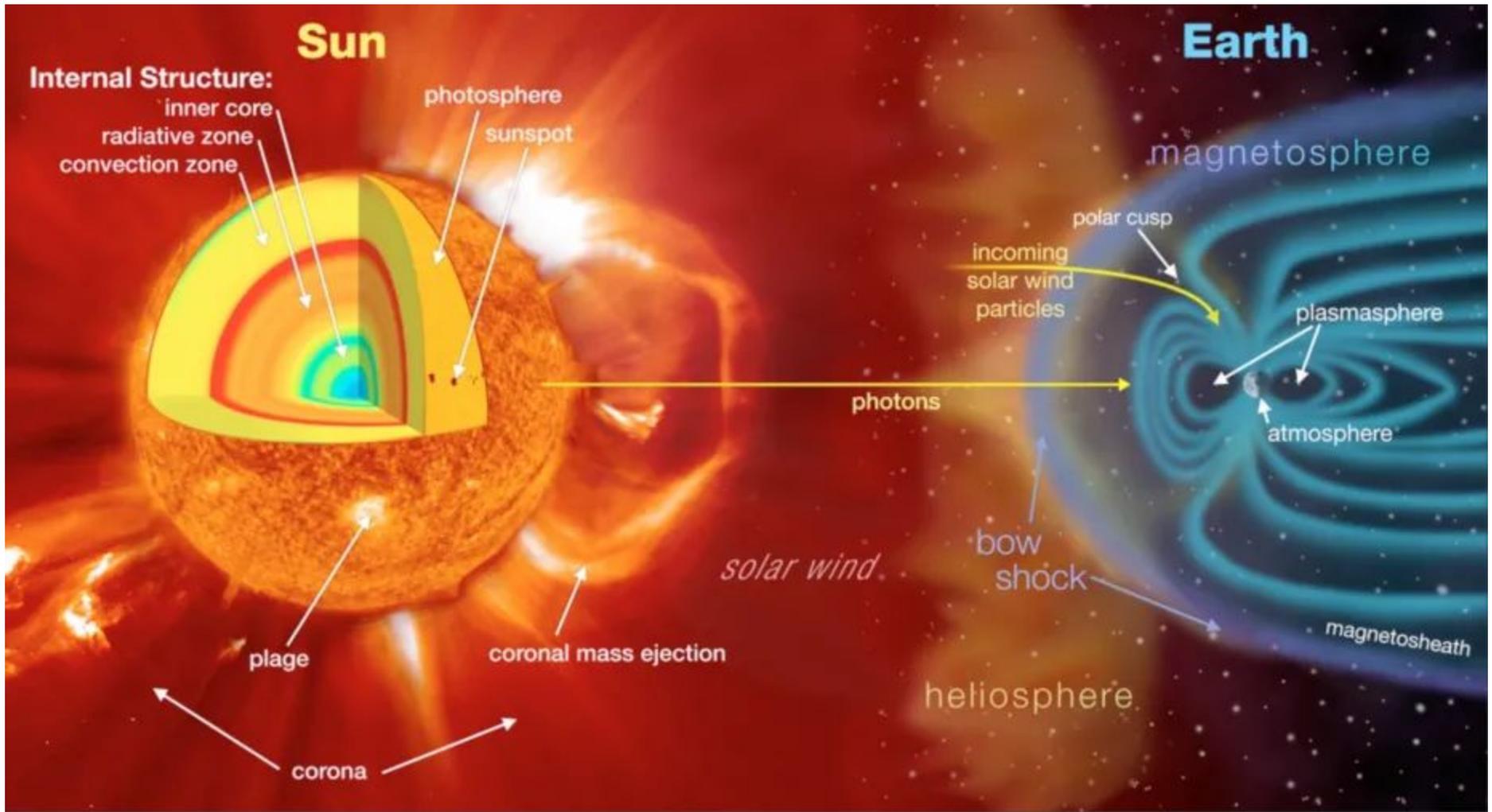


# Solar storm

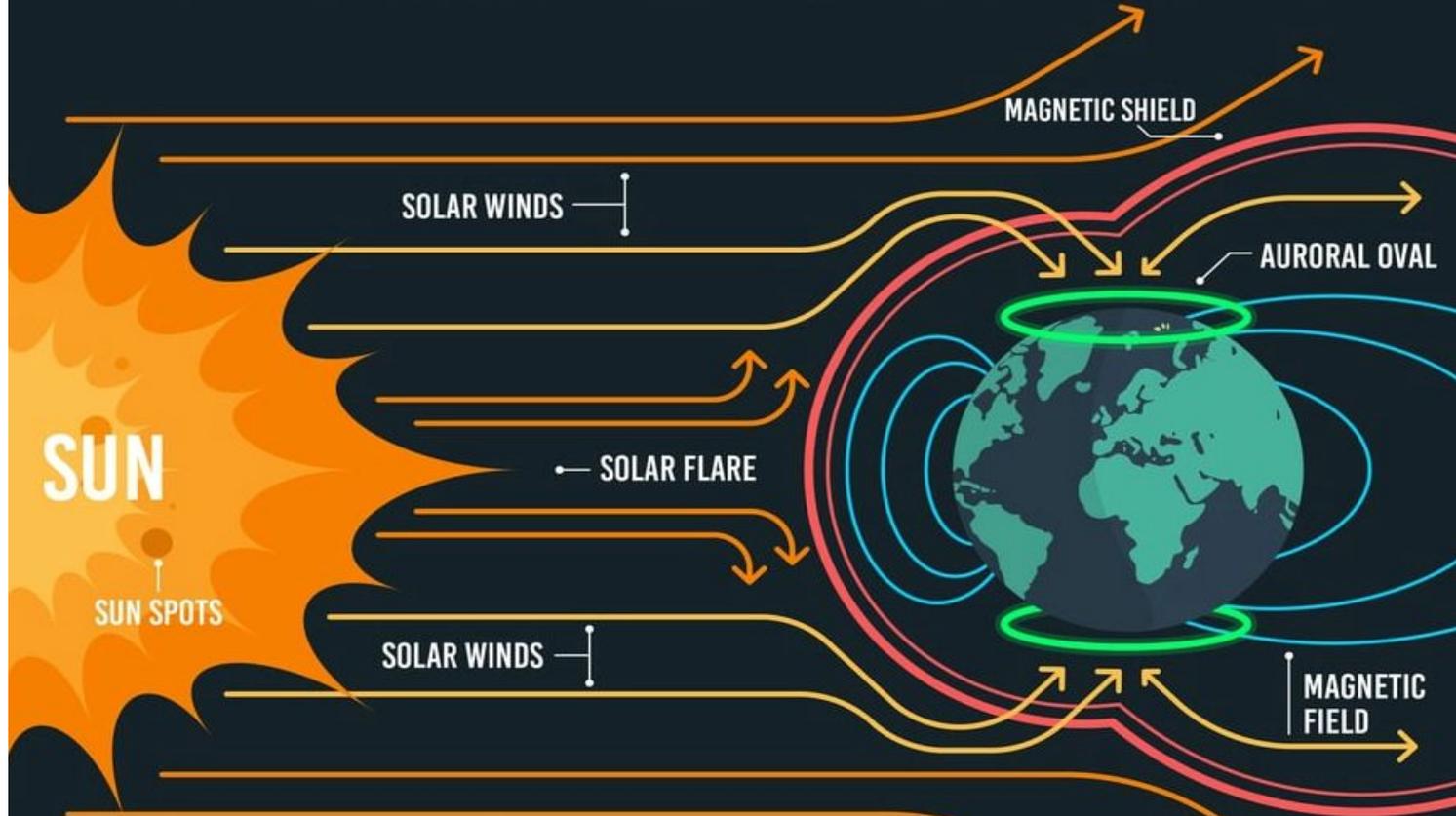


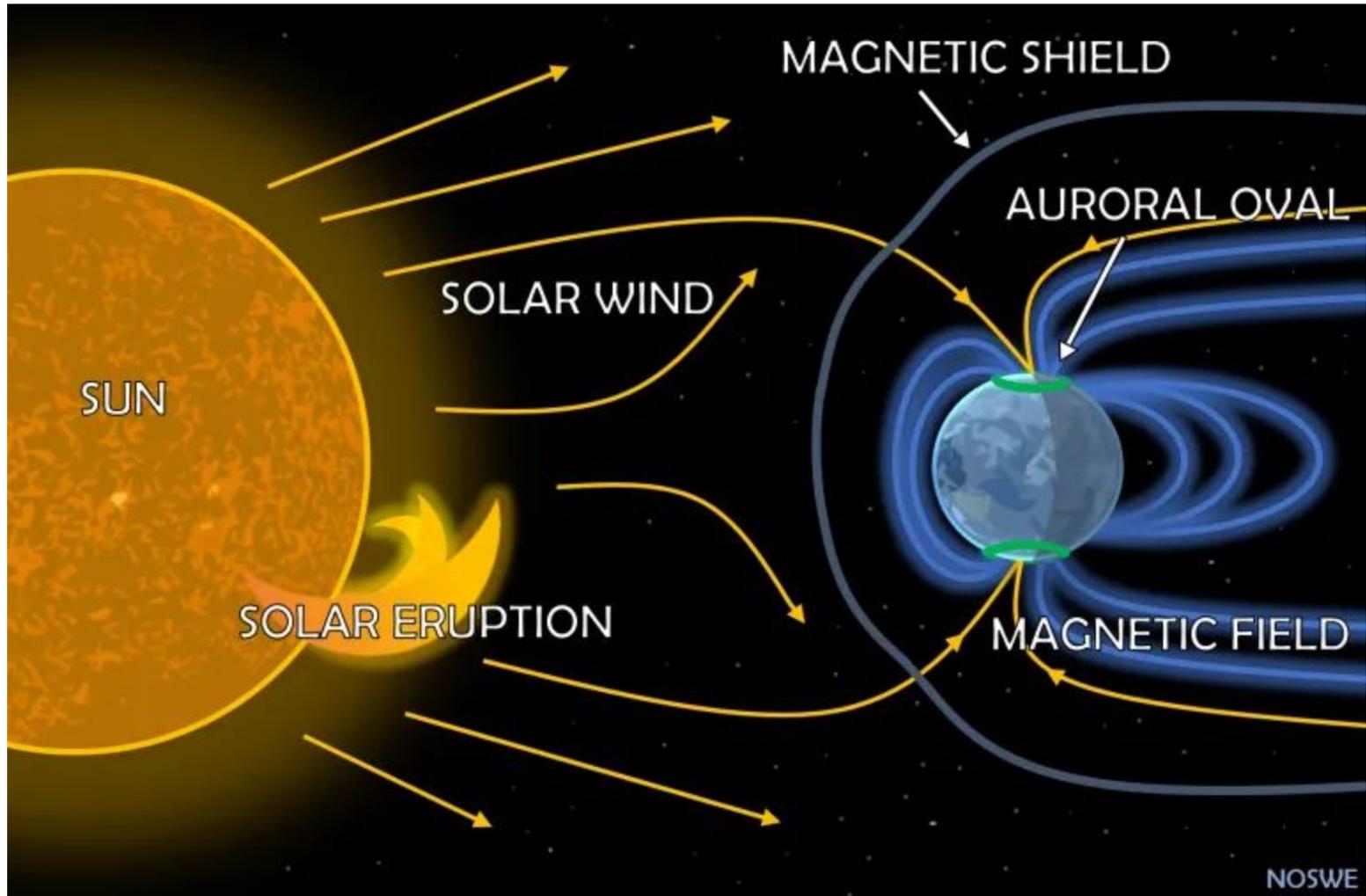
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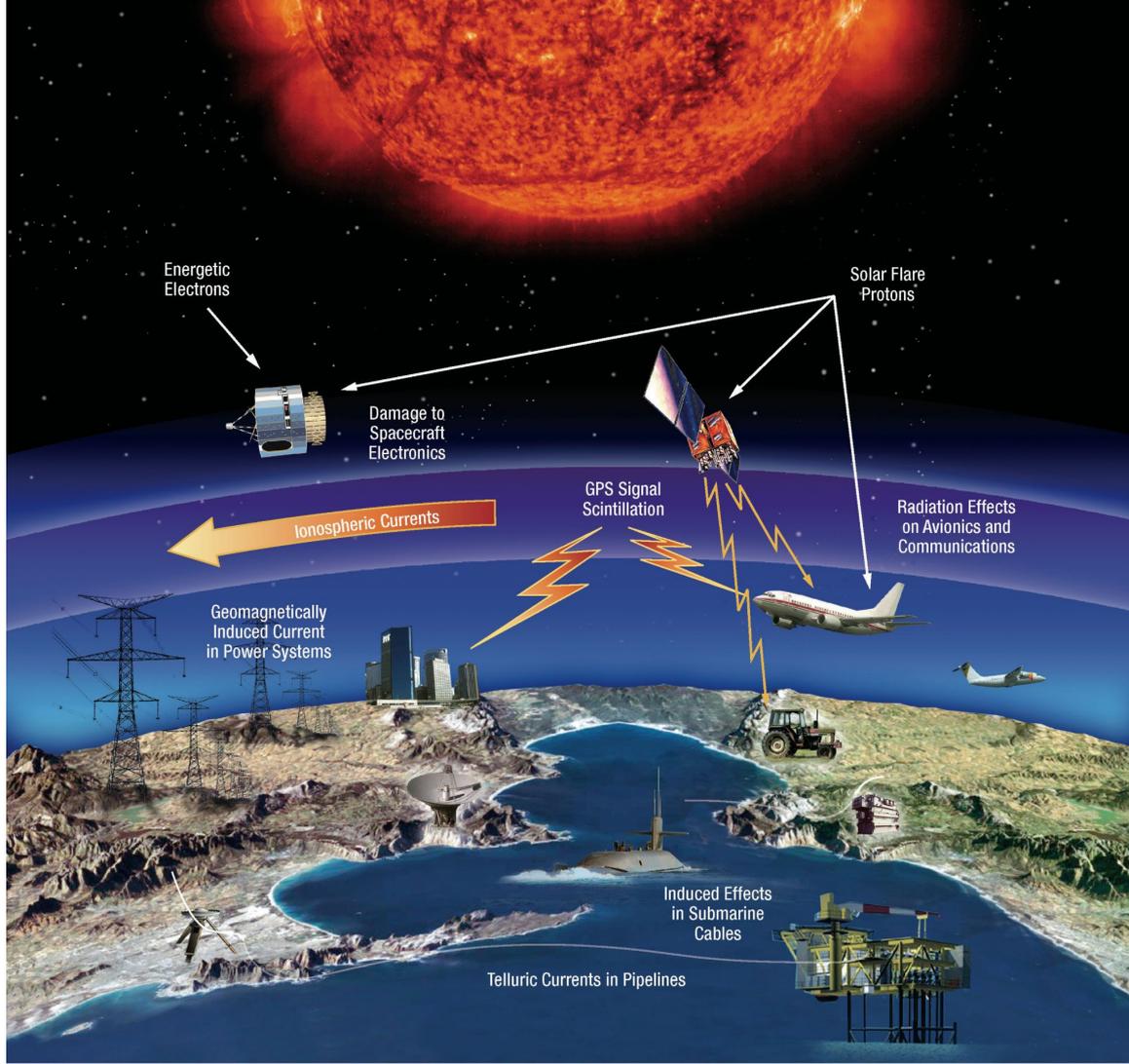




# WHAT CAUSES THE NORTHERN LIGHTS?







# Geomagnetic Storm Impact Scale



**G1**

## Minor

Weak power grid fluctuations and minor impacts on satellites are possible.

Migratory animals are affected at this and higher levels.

Aurora is commonly visible at high latitudes.

**G2**

## Moderate

Transformer damage is possible with long duration storms.

Corrective actions to spacecraft orientation may be required; may affect orbit predictions.

Aurora may be seen as low as New York and Idaho.

**G3**

## Strong

Power system voltage corrections may be required.

Satellite and LF radio navigation problems may occur. HF radio may be interrupted.

Aurora may be seen as low as Illinois & Oregon.

**G4**

## Severe

Possible widespread voltage control problems on the power grid.

HF radio sporadic, satellite navigation degraded for hours, LF radio navigation issues.

Aurora may be seen as low as Alabama and northern California.

**G5**

## Extreme

Blackouts or complete collapse of power grids possible.

Navigation systems may be out for hours or days.

Aurora may be seen as low as Florida and southern Texas.

# About Aditya L1

**The daring Aditya L1 solar mission**  
India's Aditya-L1 mission aims to put 1,500-kg heavy class satellite into halo orbit around Lagrangian point L1, a point between Sun and Earth about 1.5 million km from Earth.

ISRO is set to launch first solar mission Aditya-L1 in 2019 to study sun.

Mission cost: ₹3 Crore for the financial year 2016-17

The satellite will be programmed to orbit L1 point and image sun's magnetic field from space for very first time in world.

**Objectives of mission**

- > Study dynamic nature of sun's outer most layers, the corona and the chromosphere, and collect data about Coronal Mass Ejections.
- > Study on origin of solar storms and their path through the interplanetary space from the

44 m

STAGE 3

PSLV

STAGE 2

INDIA

STAGE 1

Polar Satellite Launch Vehicle (PSLV)

SWISS

STEPS-1

PAPA

VELC

SUIT

HELIOS

MAGNETOMETER

New Delhi

INDIA

Bay of Bengal

Sriharikota

L4

L3

Aditya-L1

1.5 million km

~ 148 million km

L1

L2

L5

+R

+P

+Y



- **Many spacecraft that monitor the Sun for these events are parked in the L1 point in space, about 1.5 million km in the earth-Sun direction, from where they have an uninterrupted view of the star.**
- **One of these spacecraft is Aditya-L1 of the Indian Space Research Organisation (ISRO), which reached L1 in March this year.**
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- **The Chandrayaan-2 orbiter around the moon also reportedly detected “signatures” of the emissions from the Sun.**

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## Wax treatment for joint injury

Q

**Q: I fractured my ankle five months ago. Under continuous stress, say when you**

**leave your legs dangling for over an hour, they swell up. On the doctor's advice, I underwent wax treatment. What is the basis for using wax? Can one not use hot water instead of wax?**

**A:** The swelling in the ankle and foot is due to an increased accumulation of lymphatic fluid around the injured area. This is because of gravity.

The principle behind wax treatment is the latent heat given off by the molten wax (above 45 degrees C) during its cooling process.

This heat enlarges the blood vessels (a process called vasodilation) below the applied area and helps to effectively drain the accumulated fluid.

This temperature is quite bearable and soothing. But the latent heat given off by hot water, at about 100 degrees C, is certainly harmful to the human body.

Hot water can also be used at bearable temperatures but it cools far more rapidly than



The latent heat given off by the molten wax during cooling enlarges the blood vessels and helps to drain the accumulated fluid. GETTY IMAGES

molten wax.

In the case of molten wax, moreover, the latent heat given off during its change of state, from liquid to solid, helps in vasodilation as well.



**For feedback and suggestions**

for 'Science', please write to [science@thehindu.co.in](mailto:science@thehindu.co.in) with the subject 'Daily page'

# Wax Treatment

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- **Hot water can also be used at bearable temperatures but it cools far more rapidly than molten wax**

## BIG SHOT



▲ This picture from the Alberta Wildfire Service, taken on May 10, shows smoke from wildfires burning in the Grande Prairie Forest area, 4 km east of the town of Teepee Creek, in Alberta, Canada. After its worst-ever-wildfire season last year, Canada experienced one of its warmest winters with low to non-existent snow in many areas, raising fears of a hot summer triggering blazes in forests amid an ongoing drought. AFP



# Mapping

- **Grande Prairie Forest area, 4 km east of the town of Teepee Creek, in Alberta, Canada**

# Candid notes on the NHRC's status deferral



The National Human Rights Commission of India (NHRC) was formally informed late last week that the deferral of its status would continue for a year more. The deferral was put in place by the sub-committee on accreditation (SCA) of the Global Alliance of National Human Rights Institutions (GANHRI) for a year, in 2023. While the SCA did not agree with the plea of some leading international non-governmental organisations, to put the NHRC in category 'B', it also rejected India's request to lift the deferral.

The NHRC chairperson, a former Justice of the Supreme Court of India, Justice Arun Mishra, and the government may have been unhappy with the continuing deferral but are sure to be relieved that they have avoided the ignominy of a downgrade. The NHRC, directly and, the government, from behind the scenes, had lobbied hard for the deferral to be removed and the cloud over India's 'A' status goes away. Justice Mishra retires in early June and, if the new government to be formed in June after the general election 2024 does not reappoint him, he will be the first NHRC chairman to leave the organisation with the sword of Damocles hanging over its head. This would only strengthen the initial doubts raised about his appointment.

## The NHRC brochure

A peep into Justice Mishra's approach to human rights is available from a brochure published by the NHRC, titled 'Human Rights 75'. The document was put out as part of the celebrations of 'Azadi ka Amrit Mahotsav'. In its introduction the document sought to establish that "India's earliest civilisations... laid the fundamental edifice for some basic human rights principles". To substantiate this point it referred to ancient texts such as the *Vedas* and the *Upanishads*. It rightly asserted that they promoted the exploration of spiritual truths. Thereafter, the



## Vivek Katju

is a retired Indian Foreign Service officer

Much of the criticism of the West for weaponising human rights is valid, but the continuing deferral of the NHRC's status must lead to hard questions in India

publication went on to state, "The concept of justice and fairness is also central to ancient Indian literature. The *Manusmriti*, while reflecting the social norms of its time, also outlines principles of justice, including punishment proportionate to the crime".

For crores of historically disadvantaged Indians, the *Manusmriti* is the fountainhead of the evil of discrimination and violence they have suffered. Its mention in a NHRC document, despite the routine caveat attached to the reference, will be outrageous to them and to those who are pledged to uphold the Indian Constitution. Was the *Manusmriti's* mention an oversight or does it reflect the considered views of Justice Mishra? Even at this stage a clarification would be useful. He would certainly know that the foundational values of the Indian Constitution are in direct conflict with the basic postulates of the *Manusmriti*.

## Drifting away from the Paris Principles?

Certainly, the GANHRI's decision has not been influenced by the reference to the *Manusmriti* but because of the belief that India has not been adhering to the Paris Principles. In early 2017, the SCA had put the NHRC in the deferral category but it was lifted after a review later that year. Hence, India retained its 'A' status.

In a public note on that occasion, the NHRC had stressed the importance of the 'A' status. It stated, "'A' status accreditation also grants participation in the work and participation of the GANHRI, as well as the work of the Human Rights Council and other UN mechanisms". On the Paris Principles the NHRC noted, "The United Nations' Paris Principles provide the international benchmarks against which the National Human Rights Institutions (NHRIs) can be accredited". The Paris Principles were adopted by the UN in 1993. The NHRC stated that the Paris Principles set out "six main criteria that NHRIs are

expected to meet. These are: Mandate and competence, Autonomy from Government, Independence guaranteed by a Statute or Constitution, Pluralism, Adequate Resources; and adequate powers of investigations. The GANHRI found the NHRC, India compatible with these criterion" and so gave it 'A' status. That was then. But now, the GANHRI's doubts continue, obviously.

## This is a peer-reviewed evaluation

The GANHRI evaluation process is a peer-reviewed one and hence cannot be dismissed as the government has done, since 2019, any criticism of the human rights situation in India. Indeed, External Affairs Minister S. Jaishankar has been especially sensitive to charges of the Narendra Modi government falling short in observing civil liberties and fundamental freedoms. He has, in response to criticism of India on these issues, pointed to the deficiencies in the West on these fronts. He has been acclaimed in India for doing so. Much of the criticism of the West for weaponising human rights is valid but the diplomacy of criticising the West and those who lecture India need not have been abrasive. Firmness does not need the use of the bludgeon of harsh language but the rapier of logic and reason. It also requires the acceptance that India, like all other countries, is not perfect. But such approaches are considered timid in these muscular times.

It is not clear if the Jaishankar muscular approach was adopted by the NHRC in dealing with the SCA. If it was, it has obviously not succeeded. The continuing deferral proves this. But there is a more substantial issue involved. This is the attitude of the government towards the NHRC. Doubts arise because of the nature of the appointments to it and also because of the continuing vacancies in the body. Finally, the NHRC itself has a lot to introspect about.

# Deferral status of NHRC

- **The National Human Rights Commission of India (NHRC) was formally informed late last week that the deferral of its status would continue for a year more.**
- **The deferral was put in place by the sub-committee on accreditation (SCA) of the Global Alliance of National Human Rights Institutions (GANHRI) for a year, in 2023.**
- **While the SCA did not agree with the plea of some leading international non-governmental organisations, to put the NHRC in category ‘B’, it also rejected India’s request to lift the deferral**

- **NHRC had stressed the importance of the ‘A’ status. It stated, “‘A’ status accreditation also grants participation in the work and participation of the GANHRI, as well as the work of the Human Rights Council and other UN mechanisms”.**
- **On the Paris Principles the NHRC noted, “The United Nations’ Paris Principles provide the international benchmarks against which the National Human Rights Institutions (NHRIs) can be accredited”.**



- **The Paris Principles** were adopted by the UN in 1993. The NHRC stated that the Paris Principles set out “six main criteria that NHRIs are expected to meet.
- These are: Mandate and competence, Autonomy from Government, Independence guaranteed by a Statute or Constitution, Pluralism, Adequate Resources; and adequate powers of investigations.

# GANHRI

It is an organisation affiliated to the UN High Commissioner for Human Rights.

It is a global network of national human rights institutions (NHRIs) that works to promote and protect human rights.

GANHRI represents 120 NHRIs from around the world.

GANHRI's mission is to unite, promote, and strengthen NHRIs to operate in line with the UN Paris Principles.

# The challenge of extra-pulmonary TB



**W**hile the most common form of tuberculosis (TB), which is pulmonary TB, infects the lungs, some 20% of TB infections develop in the lymph nodes, brain, gut, eyes, or other organs. Some of these organs have immune privileges in the body. This means that extra-pulmonary infections can persist even after the TB infection in the lungs is resolved. Just as we have an undercount of the people infected with TB, the public health challenge of extra-pulmonary TB (EPTB) may be larger than our current estimates.

The World Health Organization (WHO) reports over 10 million new cases of TB every year and India alone accounts for 27% of the global TB burden. However, the burden of EPTB is hard to estimate. EPTB is often stain negative, which means it is not detectable on regular TB stain tests. The infection may surface in any part of the body and present itself like other non-TB conditions. Many cases of EPTB may not have a corresponding lung infection. So, EPTB's true prevalence in society remains hidden.

As the burden of pulmonary TB is greatest, it makes epidemiological sense to focus our efforts on its elimination. The lungs are the primary source of infection spread and reducing this burden will impact all forms of the disease. However, given the scale of TB, variants like EPTB end up affecting a large number of people. EPTB's under diagnosis results in irreparable damage to the infected organs, leading to vision loss or even blindness, for example. It is therefore important to address TB in all its complexity.

## Knowledge gap

The twin challenges in tackling EPTB are lack of awareness, even among physicians, and lack of accurate diagnostic and treatment criteria. The mycobacterium that causes TB was first isolated in the eye just a year after Robert Koch



**Tejah Balantrapu**

is Associate Director, Science, Health Data, and Story-telling, LV Prasad Eye Institute



**Soumyava Basu**

is Head, Uveitis Services, LV Prasad Eye Institute

The twin challenges in tackling EPTB are lack of awareness, even among physicians, and lack of accurate diagnostic and treatment criteria

identified the organism. Yet, many who treat the disease (and some who treat the eyes) are ignorant of this association. This situation is true with most of the other organs that host a TB infection as well. Even for those who are aware, it is challenging to reach an accurate diagnosis and put patients on the right therapy for treatment.

As TB can be present in multiple organs, the lack of formal and functioning protocols to exchange information between doctors in multiple specialities leads to silos of knowledge. In 2014, a group of experts from different health institutions across the country, the WHO, and the Cochrane Infectious Disease Group came together to formulate INDEX-TB, a set of guidelines for EPTB management in India. The group also released a set of clinical practice points for 10 organs, but good quality evidence was available only for five of them. This work has remained dormant. More needs to be done to foster and build a common approach to EPTB management, especially in a high TB burden country like India.

Armed with guidelines and practice points, our hospital systems need to generate better data on EPTB. Our current source of EPTB numbers are the TB departments of large public hospitals. However, specialist departments for each organ are the primary centres for EPTB management. Their data practices are diverse and do not become part of our aggregate numbers for EPTB prevalence. These departments must capture patient data and be ready to share it with the National TB Control Programme. Their action may help reinvigorate Ni-kshay, the national patient management portal for TB control, which has incomplete and missing data on TB patients insofar as EPTB patient data are concerned.

## Research priority

Key aspects of EPTB, including the mechanisms of infection spread and the TB bacterium's

interactions with our organs, remain under-explored. A troubling aspect of EPTB infection is the prolonged presence of disease markers even after the infection is resolved with treatment. Some EPTB patients who complete anti-TB therapy may still find themselves affected by the disease. In the eye, for example, an autoimmune response to antigens triggered by the original infection can lead to a persistent intraocular inflammation even after appropriate anti-TB therapy. Similarly, there might be other immunological mechanisms lurking in other organs affected by EPTB that may prolong the disease, even after the bacteria have been cleared from that organ. This phenomenon causes a lot of misery to persons with EPTB and is an active area of research.

A concerted effort by different EPTB specialities, and advanced immunological tools such as single-cell RNA sequencing, might be able to uncover the immune mechanisms for the disease. Unless we understand these mechanisms, physicians will continue to treat EPTB with long duration anti-TB therapy (sometimes for even two years or more), assuming that the infection is persisting in the organ. This not only fails to resolve the disease, but also exposes the patient to the toxicity of anti-TB therapy.

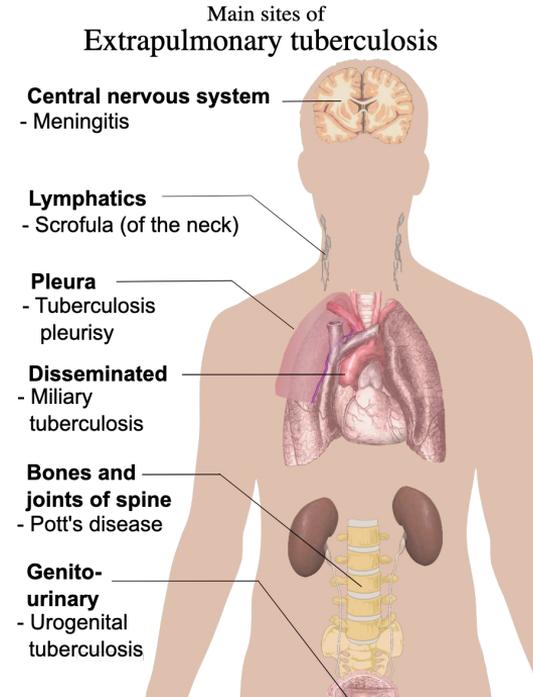
Diagnosis and treatment protocols for all organs affected by EPTB do not exist. We will need high-quality data through clinical trials to formulate them. Similarly, INDEX-TB guidelines were formulated over a decade ago and need to be updated with the latest data and experience. They also need to be multidisciplinary and benefit from inputs from a variety of specialised areas of health care.

Nearly one in five TB patients have EPTB. Most of them go undiagnosed, and the few who are diagnosed cannot benefit from care unless they visit a few specialist health facilities. It is time we bring EPTB out of the shadows.

# Extrapulmonary tuberculosis (EPTB)



It is tuberculosis outside of the lungs. EPTB includes tuberculosis meningitis, abdominal tuberculosis (usually with ascites), skeletal tuberculosis, Pott's disease (spine), scrofula (lymphadenitis), and genitourinary (renal) tuberculosis





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# On the importance of regulatory sandboxes in artificial intelligence

Regulatory sandboxes have become a significant instrument in various countries, used to evaluate innovations within a defined and monitored time frame while being subject to regulatory oversight and controlled constraints

**Sanhita Chaurha**

The advancement of Artificial Intelligence (AI) technologies has posed both unprecedented opportunities and complex challenges for societies worldwide. As AI applications continue to proliferate across industries such as healthcare, transportation, finance, and more, concerns have emerged regarding ethical implications, data privacy, and potential risks associated with their deployment. In response, many governments and regulatory bodies have turned to innovative approaches such as "AI regulatory sandboxes" to strike a balance between fostering AI innovation and ensuring responsible development.

## To regulate but not restrict

Regulatory sandboxes have become a significant instrument in various countries, used to evaluate innovations within a defined and monitored time frame while being subject to regulatory oversight and controlled constraints. This approach serves as a valuable tool for policymakers, furnishing them with empirical evidence regarding the advantages and potential risks associated with emerging technologies. Moreover, an evidence-based approach empowers policymakers to adopt a well-informed stance in crafting legal and policy responses that foster beneficial innovation. For businesses engaged in these sandboxes, insights gleaned from a study on "fintech regulatory sandboxes" indicate that this controlled environment enhances access to funding by mitigating information imbalances and reducing regulatory costs. Such multifaceted utility positions regulatory sandboxes as a catalyst for fostering innovation, supporting economic growth, and ensuring responsible governance in a rapidly evolving landscape of emerging technologies.

While the inception of the first formal regulatory sandbox is often attributed to the Financial Conduct Authority in the UK, numerous other nations have subsequently introduced or announced similar initiatives to assess innovations spanning various industries. According to data from the World Bank, as of November 2020, there were approximately 73 regulatory sandboxes, both announced and operational, within the financial sector across 57 jurisdictions. In India, all financial sector regulators, including the Reserve Bank of India, Securities and Exchange Board of India, Insurance Regulatory and Development Authority of India, Pension Fund Regulatory and Development Authority, and International Financial Services Centre Authority, have launched their respective regulatory sandboxes. Expanding beyond finance, Karnataka has enacted the Karnataka Innovation and Development Act, 2020, establishing an Innovation Authority dedicated to promoting and regulating innovative technologies through a regulatory sandbox model. Notably, the recently passed Telecommunications Act 2023 proposed a regulatory sandbox where the central Government has the authority to establish one or more regulatory sandboxes, as prescribed, to promote and facilitate innovation and technological development in the field of telecommunications, specifying the manner and duration for their implementation.

## The benefits of regulatory sandboxes

In the discourse surrounding AI regulation, the concept of regulatory sandboxes emerges as a compelling avenue for exploration. When one considers the necessity of stringent, detailed regulation or favouring adaptable strategies like soft or self-regulation, the introduction of a regulatory sandbox remains a viable option. Firstly, such a

sandbox provides a controlled environment for experimentation, offering invaluable insights into AI technologies capabilities and limitations while fostering collaboration between innovators and regulators. Additionally, it promotes transparency and accountability by requiring participants to disclose information about their AI models, addressing concerns about opacity and enabling tailored regulations. Furthermore, by mandating risk assessments and safeguards, the sandbox encourages responsible innovation, mitigating potential societal impacts of AI applications and nurturing a culture of ethical development within the industry.

Article 53 of the European Union's AI Act, has the provision of a regulatory sandbox to test technology before making it mainstream. Additionally, Spain became the first European country to have established the statute of the Spanish Agency for the Supervision of Artificial Intelligence (AESIA), ahead of the European regulation on artificial intelligence. This regulation will mandate member states to designate a "national supervisory authority" responsible for overseeing the implementation of regulations related to AI.

Globally, there is a competitive race to regulate and harness AI's vast potential. The EU has come up with an AI Act, the U.S. has released a white paper on the AI Bill of Rights, and the UK has a national AI Strategy. China is trying to regulate various aspects of AI like generative AI while Singapore is following an innovation-friendly approach.

## India's approach to AI

In India, NITI Aayog released a discussion paper outlining a national strategy for AI, which led to the establishment of the national AI Portal. The Ministry of Electronics and Information Technology (MeitY), released a report on AI Innovation 2023 highlighting India's AI

vision through seven working groups. The latest proposal of the Digital India Act, 2023 also talks about regulating AI by creating a separate set of laws and regulations.

India's interest in regulating AI is grounded in a multifaceted approach encompassing economic ambitions, ethical considerations, job creation, industrial transformation, and overall societal welfare. As a global technology hub, the chair of the Global Partnership on Artificial Intelligence and the Delhi Declaration, India aspires to foster innovation in alignment with its cultural and ethical values. A comprehensive regulatory sandbox can be envisioned to guide businesses, researchers, and policymakers, steering AI development towards sustainable growth.

A regulatory sandbox should not be viewed as an approach to directly govern AI, but rather as a progressive step preceding formal legislation. It serves as a preparatory measure tailored to India's specific circumstances, paving the way for future regulatory actions aligned with the country's needs and developments in the AI landscape. By providing a controlled environment for testing innovative AI applications, a regulatory sandbox enables stakeholders to assess risks, refine regulatory frameworks, and foster collaboration between regulators, industry players, and other stakeholders. This collaborative approach not only promotes responsible AI deployment but also positions India at the forefront of shaping effective and adaptive regulatory frameworks for emerging technologies. Given the distinct Indian context, it becomes pivotal to determine which approach is most viable and efficient in striking a balance between fostering AI innovation and ensuring ethical, transparent, and accountable AI implementations.

*Sanhita Chaurha is a Data Privacy and Technology Lawyer.*



# What it is an AI Sandbox?

- **The AI Sandbox is the development hardware, software, data, tools, interfaces, and policies necessary for starting an enterprise deep learning practice.**
- **Deep learning models require lots of data and specialized computing resources called GPUs (graphical processing units)**

# Nobel-winning author, Alice Munro, also known as ‘Canada’s Chekhov’, dies at 92



Agence France-Presse

OTTAWA

Alice Munro, the Nobel Prize-winning author known as “Canada’s Chekhov” for her mastery of the short story, has died at 92, Canadian media reported on Tuesday.

Awarded the Nobel Prize for Literature in 2013 and the International Booker Prize for her body of work in 2009, Munro had suffered from dementia in recent years. According to the *Globe* and *Mail*, she died late on Monday at her care home in Ontario.

Munro set her taut, acutely observed stories in the rural Ontario countryside where she grew up, focusing a stark lens on the frailties of the human condition.



Despite her vast success Alice Munro long remained as unassuming and modest as the characters in her fiction. AP

Despite her vast success and an impressive list of literary prizes, however, she long remained as unassuming and modest as the characters in her fiction.

That shy public profile contrasted with another Canadian contemporary literary giant, Margaret

Atwood.

Born on July 10, 1931, in Wingham, Ontario, Munro grew up in the countryside.

At just 11 years old, she decided she wanted to be a writer, and never wavered in her career choice.

Munro’s first story *The*

*Dimensions of a Shadow* was published in 1950, while she was studying at the University of Western Ontario.

Her short stories often appeared in the pages of prestigious magazines such as *The New Yorker* and *The Atlantic*, with her last collection *Dear Life* appearing in 2012.

Critics praised her for writing about women for women, but without demonising men.

Her subjects and her writing style, such as a reliance on narration to describe the events in her books, earned her the moniker “our Chekhov,” in reference to the 19th century Russian playwright Anton Chekhov – a term coined by Russian-American short story writer Cynthia Ozick.



## Alice Munro

- **Alice Munro, the Nobel Prize-winning author known as “Canada’s Chekhov” for her mastery of the short story, has died at 92, Canadian media reported on Tuesday.**
- **Awarded the Nobel Prize for Literature in 2013 and the International Booker Prize for her body of work in 2009,**

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**James Webb Telescope Vs Hubble Space Telescope**

**Location of operation**  
**JWST:** 1.5 million km away from Earth  
**HST:** 570 km away from Earth

**Primary mirror**  
**JWST:** 6.5 meter  
**HST:** 2.4 meter

**Mission Duration:**  
 5 - 10 years

**Proposed Launch Date:**  
 Webb will be launched in 2021

**Launch Vehicle:**  
 Ariane 5 ECA

**Focal length:**  
 131.4 meters

**Optical resolution:**  
 ~0.1 arc-seconds

**Orbit:**  
 1.5 million km from Earth

**No of mirror segments**  
**JWST:** 18 segments  
**HST:** 1 segment

**Mission objective**  
**JWST:** Look back 13.5 bn years and watch the birth of new galaxies  
**HST:** Look back 12.5 bn years and peer into young galaxies

**Service conditions**  
**JWST:** Not serviceable  
**HST:** Can be repaired

**Wavelengths**  
**JWST:** Explore near-infrared and mid-infrared light  
**HST:** Explores into ultraviolet, visible, parts of near-infrared light

**Diameter of primary Mirror:**  
 6.5 m (21.3 ft) approximately

**Primary mirror material:**  
 beryllium coated with gold

**JAMES WEBB TELESCOPE**  
 A window into cosmos

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**104.** The 7th edition of the Indian Ocean Conference was held at

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(d) Perth

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- External Affairs Minister S Jaishankar address the 7th Indian Ocean Conference in Australia's Perth that gets underway today with the theme "Towards a Stable and Sustainable Indian Ocean."
- The Indian Ocean Conference is a flagship consultative forum for countries in the Indian Ocean Region, organized annually by the Ministry of External Affairs, in association with the India Foundation..

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**61.** Which of the following were objectives of the G20 Summit, 2023 under India's Presidency?

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2. Accelerating progress on SDGs
3. Women-led development

Select the correct answer using the code given below.

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

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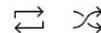
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