

DAILY PT POINTERS

14th October, 2024



The Hindu-Science and Tech(GSIII)-Page 8

What is Wayanad's new X-band radar?

What is a Doppler radar and how does it work? Why does Wayanad need an X-band radar? Where and when was the first indigenously designed and manufactured X-band installed? Is India increasing the procurement and instalment of radars?

EXPLAINER

Priyali Prakash

andslides killed more than 200 X-band radar to be installed in the district landslide in the valley above region; its effects were compounded by a massive debris flow triggered by the rains.

How do radars work?

Radar is short for 'radio detection and ranging'. The device uses radio waves to determine the distance, velocity, and physical characteristics of objects around the device. A transmitter emits a signal aimed at an object whose characteristics are to be ascertained (in meteorology, this could be a cloud). A part of the emitted signal is echoed by the object back to the device, where a receiver tracks and

Weather radar, also known as a Doppler radar, is a common application of this device. The Doppler effect is the change in frequency of sound waves as their source moves towards and away radars can reveal how fast a cloud is moving and in which direction based on how the cloud's relative motion changes the frequency of the radiation striking it.

A pulse-Doppler radar can measure the radiation in pulses and tracking how often they're reflected to the receiver.

This way, modern Doppler radars can monitor weather conditions and anticipate new wind patterns, the formation of storms, etc.

What is on V band radar?



Weather blues: The complex housing an S-Band Doppler Weather Radar at the Neteorological Centre in Begumpet, Hyderabad, Fil.1 PHOTO

In Wayanad, the new radar is expected

to be able to monitor the movements of

particles, such as soil, to inform landslide

warnings. The device will also perform

high temporal sampling, that is, rapidly

sample its environs, allowing it to spot

particle movements happening in shorter

How many radars does India have?

The India Meteorological Department

(IMD) started using radar for weather

applications in the early 1950s. The first

smaller than the wavelength of the radiation. A radar trying to 'see' smaller particles like rain droplets or fog will need to use radiation of lower wavelengths, like in the X-band. An X-band radar is radar that emits radiation in the X-band of the electromagnetic spectrum: 842 GHz, corresponding to wavelengths of around 2-4 cm (this is in the microwave part of the spectrum.)

The smaller wavelengths allow the radar to produce images of higher resolution. However, the greater the

In its X-band radar network, India has both wind finding and storm-detecting radars, and some with dual capabilities.

IMD replaced 10 outdated X-band radars

with digital X-band radars.

The country also uses S-band radars (2-4 GHz) for long range detection. The first 5-band cyclone detection radar was installed in Visukhapamam in 1970 and the first locally made variant was commissioned in Mumbai in 1980. In September 2024, the Ministry of

Earth Sciences said India is set to have 56 additional Doppler radars in a few years. cleared the ₹2,000-crore 'Mission infrastructure in the country. This includes installing up to 60 meteorological radars until 2026 under the Mission's first phase

Minister of State for Earth Sciences itendra Pradhan said in August in Parliament that the government has stacted the process to procure and install 10 X-band Doppler radars to improve weather forecasting in the northeast States and in Himachal Pradesh's Lahaul and Spiti district.

The initiative to install an X-band rada in Wayanad included installing a C-band radar (4-8 GHz) with an observational range of 250 km in Mangaluru.

NASA and the Indian Space Research Organisation (ISRO) are currently developing a satellite called NISAR, short for TNASA-ISRO Synthetic Aperture Radar'. It will use radar imaging to produce a high-resolution map of the

its payload consists of an L-band radar 0.25 GHz, 24 cm) built by NASA and an S-band radar (3.2 GHz, 9.3 cm) built by ISRO. Together they will track and record changes in the earth's various natural

It is currently expected to be launched

THE GIST

Radar is short for 'radio detection and ranging'. The device uses radio waves to determine the distance, velocity, and alvaica characteristics of objects

The India Meteorologica Department (MD) started using in the early 1950s. The first indigenously designed and manufactured X-band storm detection radar was installed in 1970 in New Delhi.

The initiative to install an X-band radar in Wayanad radar (4-8 GHz) with an observational range of 250 km



After devastating floods and landslides killed more than 200 people in Kerala's Wayanad district in July 2024, the Union Ministry of Earth Sciences approved an X-band radar to be installed in the district.

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The Hindu-Governance(GSII)-Page 8

Who gets the preferred symbol when there are two factions?

Why has the Nationalist Congress Party (SP) filed a plea to restrain the use of the 'clock' symbol?

Rangarajan. R

The story so far:

ationalist Congress Party (NCP) founder Sharad Pawar has filed a plea in the Supreme Court, seeking a direction to restrain the Ajit Pawar faction from using the 'clock' symbol in the upcoming assembly polls in Maharashtra.

How are symbols allotted?

Symbols are allotted to political parties as per the provisions of the Symbols Order by the Election Commission of India (ECD. In the largest democracy where a sizeable population is still illiterate, symbols play a crucial role in canvassing and voting process. A national or State recognised political party has a reserved symbol that is not allotted to any other candidate in any constituency.

July 2023, there was a split in the NCP with the Ajit Pawar faction claiming the support of 41 MLAs out of 53 in the Maharashtra assembly. The ECI in February 2024 recognised Ajit Pawar faction as the real NCP and allotted to i the 'clock' symbol reserved for NCP during the Lok Sabha elections in April-May 2024. The NCP (Sharadchandra Pawar) [NCP(SP)] was allotted a common symbol of 'man blowing turha.' The present plea claims that during the Lok Sabha election, voters were confused as to which faction represented the real NCP. The NCP (SP) therefore has sought a direction to freeze the 'clock' symbol and allot a new symbol to Ajit Pawar faction.

What are past instances?

As per the Symbols Order, in case of split in a recognised political party, the ECI decides as to which faction or group is the recognised political party. It allots the dispute. The 'two leaves' symbol of the AIADMK party in Tamil Nadu was frozen in January 1989 and April 2017 due to

competing claims. The 'bow and arrow'

symbol of Shiv Sena was also frozen

before a bye-election in October 2022.

What can be the way forward?

The Supreme Court in Sadiq Ali wersus the ECI (1971), laid down the 3-test formula for determining which faction is to be recognised as the original political party. These are the aims and objectives of the party; its affairs as per the party's constitution that reflect inner party democracy; and majority in the legislative and organisation wings.

The ECI in its order in February 2024 held that there was no dispute between the two factions on the first test and that neither of the factions followed the party's constitution rendering the second test redundant. Since the organisational legislature as a majority of legislators supported the Ajit Pawar faction. However, in the Maharashtra Lok

Sabha elections, the NCP (SP) faction

despite fighting with its new symbol won eight seats as against just one seat won by the NCP led by Ajit Pawar that fought on its traditional 'clock' symbol. The Supreme Court generally does not interfere in the poll process as it is the domain of the ECI. Nevertheless, in exceptional circumstances, it has given directions to the ECI for ensuring a fair election process. In the instant case, because of the performance of the NCP (SP) in the recent Lok Sabha election, the third test of legislative majority can again be disputed. The decision of the ECI to recognise the Ajit Pawar faction as the real NCP has also been challenged in the SC by NCP(SP). Considering these factors the court may direct the ECI to freeze the 'clock' symbol for the assembly elections to be held in November 2024. The real reform required is institutionalising internal democracy through regular inner-party elections in our political parties. Various experts are of the view that the ECI should not be involved in monitoring these elections as it will drag a constitutional authority into the muddle of party politics. It is the members of various political parties as responsible citizenry who need to demand and operationalise such internal democracy

THE GIST

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- Nationalist Congress Party (NCP) founder Sharad Pawar has filed a plea in the Supreme Court, seeking a direction to restrain the Ajit Pawar faction from using the 'clock' symbol in the upcoming assembly polls in Maharashtra.
- How are symbols allotted?
 - Provisions of the Symbols Order by the Election Commission of India (ECI). In the largest democracy where a sizeable population is still illiterate, symbols play a crucial role in canvassing and voting process. A national or State recognised political party has a reserved symbol that is not allotted to any other candidate in any constituency.
 - As per the Symbols Order, in case of split in a recognised political party, the ECI decides as to which faction or group is the recognised political party. It allots the reserved symbol to such faction. However, the ECI has also frozen symbols in the past before determining the dispute.

The Hindu-Economy(GSIII)-Page 12



Modi lauds PM GatiShakti for driving faster development

Prime Minister Narendra Modi on Sunday said the PM GatiShakti National Master Plan (PMGS-NMP) has emerged as a transformative initiative aimed at revolutionising India's infrastructure and is driving faster and more efficient development across sectors. He also made a surprise visit to the PM GatiShakti Anubhuti Kendra at Bharat Mandapam in New Delhi on the third anniversary of PMGS-NMP. The Anubhuti Kendra showcases key features and milestones of PMGS-NMP which was launched on in 2021, to provide multi-modal connectivity infrastructure to various economic zones.



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The Hindu –GS 3(Space)-Page 12

Ladakh aurorae validate space weather tracking, scientists say

Press Trust of India LADAKH

Ladakh's recent sightings of aurora, marked by reddish or greenish light in the night sky and usually observed in the far-northern regions, is a validation of efforts in space weather monitoring, a team of astrophysicists that predicted the activity about 48-72 hours prior said.

The appearance of intense red-hued rays of light on the night of October 10-11 was the latest in a series of recent auroral sightings. Previous ones occurred on May 11 this year, and in November and May 2023.

All sky cameras operated by the Bengaluru-based Indian Institute of Astrophysics at Hanle and Merak in Ladakh captured the aurorae throughout the night.

Dibyendu Nandi, head of the Centre of Excellence in Space Sciences India



Solar signal: A rare red-coloured aurora was observed over the Hanle Dark Sky Reserve in Ladakh on May 11. PTI

tutes of Science Education and Research Kolkata, said, "The aurora sightings are a validation that we are on the right track. It boosts our confidence to predict extreme weather events in space that can potentially endanger all kinds of satellite-based services on the earth, bringing modern society to a standstill."

While aurorae are known for their scenic beauty, their occurrence in lower-latitude regions such as Ladakh is an indication of baightened color activity known as coronal mass ejections (CMEs), Mr. Nandi said.

Solar storms periodically occur as the sun's internal dynamo, which creates its magnetic field, intensifies and weakens. This activity cycle typically lasts 11 years.

In 2018, a CESSI team that included Mr. Nandi predicted the current solar activity cycle would peak in 2024.

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- In 2018, a CESSI team that included Mr. Nandi predicted the current solar activity cycle would peak in 2024.
- Aurorae are a common sight in the planet's far-north, in countries near or within the Arctic Circle.

The Hindu –IR(GSII)-Page 14

Vietnam, China hold talks on calming row on South China Sea

Agence France-Presse HANOI

Vietnam and China agreed to calm tensions in their South China Sea dispute, Vietnamese state media reported on Sunday, days after Hanoi accused Beijing of a "brutal" attack on its fishermen. China is Vietnam's biggest trade partner, but the two countries share historic tensions including in the South China Sea, a waterway through which trillions of dollars of trade pass each year.

Beijing has for years sought to expand its presence in contested areas of



Pham Minh Chinh

international ruling that its claim to most of the waterway has no legal basis.

Vietnamese Prime Minister Pham Minh Chinh and visiting Chinese Premier Li Qiang "exchanged sincere opinions on mari-



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the South China Sea: It is one of the most strategically and economically important waterways in the world, extending from the Strait of Malacca in the southwest, to the Strait of Taiwan in the northeast.

It is a crucial **maritime gateway** and junction for shipping **between the Pacific and Indian Oceans.**

- It is surrounded by several nations, including China, Taiwan, the Philippines, Malaysia, Brunei, Indonesia, Singapore, Cambodia, Thailand, and Vietnam.
- The region is rich in natural resources, including oil, gas, and fisheries, and serves as a crucial trade route for various economies.

Indian Express –History(GSI)/Governance(GSII)-Page 1

Govt begins study to find roots of ancient Indian communities

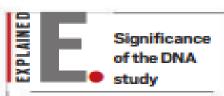
DIVYAA

NEW DELHI, OCTOBER 13

IN A first, the government has undertaken a comprehensive scientific study using ancient and modern genomics to "conclusively" find the population history of South Asia, amid conflicting theories about the origin of ancient Indian communities.

The study is being undertaken through the Anthropological Survey of India (AnSI), which functions under the aegis of the Ministry of Culture.

CONTINUED ON PAGE 2



THE STUDY, using scientific techniques such as DNA analysis, aims to offer insights into the movement of ancient populations in India. The evidence will also help understand the expansion of the ancient Indian population over time.



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- The study is being undertaken through the Anthropological Survey of India (AnSI), which functions under the aegis of the Ministry of Culture.
- Titled "Reconstruction of the population history of South Asia using ancient and modern genomics", the project will study 300 ancient skeletal remains – largely cranial and other bone fragments, including tooth — collected from different archaeological sites in India and Pakistan.
- These include remains collected during excavations carried out before and after Independence at Indus Valley Civilisation sites such as Harappa and Mohenjo-Daro (now in Pakistan), Burzahom (<u>Jammu</u> & Kashmir), Nagarjunakonda (<u>Andhra Pradesh</u>), Maski (<u>Karnataka</u>), Ropar (Punjab) and Lothal (Gujarat).

Indian Express – Health (GSII) - Page 13

Issues in the treatment of 'rare diseases', and what the govt

SOHINIGHOSH

NEW DELHLOCTOBER 13

of so-called "orphan drugs", which are med-

cular dystrophy — are classified as rare dis- Group 2 diseases require long-term or life - The following year, the Health Ministry Cost of orphan drugs

Therapies are available for less than 5% of pensive and must often continue lifelong, ments they wish to support Each CoE also has itable to produce them, pushing up prices.

rare diseases, leading to less than 1 in 10 pa- There are challenges in selecting the right its own Rare Disease Fund, which is used with tients receiving disease-specific care. Existing beneficiaries for these treatments.

started by the Indian Council of Medical fits, but patients need regular check-ups. patients and their rare diseases, the estimated expensive. The market for these drugs is small emption, saying 'the position cannot con-Research (CMR) has the records of 14.472 Group 3 diseases are those for which effect cost of treatment, and bank details of the CoEs. and the development costs are high, so phartiment in this manner tive treatments are available, but they are ex- Donors can choose the CoE and patient treat- maceutical companies often don't find it prof-

eases are not available, the government can, ing treatment.

financial assistance up to Rs 50 labh is pro-rent financial year. Before that, Rs 3.15 crove, companies that bring these drugs to India wasn't enough research and development in in 2021-22, 2022-23, and High Court has now set a deadline of 30 days negotiating with pharma companies and



- The Delhi High Court last week issued directions aimed at improving the availability of so-called "orphan drugs", which are medications used to treat "rare diseases" defined by the World Health Organization (WHO) as a debilitating, lifelong condition that affects 1 or fewer people in 1,000.
- In India, rare diseases are categorised into three groups based on the nature and complexity of available treatment options. Group 1 includes diseases that can be treated with a one-time curative procedure. Group 2 diseases require long-term or lifelong treatment which are relatively less costly and have shown documented benefits, but patients need regular check-ups. Group 3 diseases are those for which effective treatments are available, but they are expensive and must often continue lifelong. There are challenges in selecting the right beneficiaries for these treatments.
- In 2021, the National Policy for Rare Diseases (NPRD) was launched, under which financial assistance up to Rs 50 lakh is provided to patients receiving treatment at an identified CoE

Indian Express – Science and Tech (GSIII) - Page 13

WHAT ARE 'DRAGON DRONES', BEING USED IN RUSSIA-UKRAINE WAR?

A DEADLY new weapon has taken to the skies in the Russia-Ukraine war. Both sides have posted visuals of drones appearing to rain down fire — earning this weapon the moniker of "dragon drone".

What these drones are spewing, however, is a molten metal that burns at 2,427 degree Celsius.

What are 'dragon drones'?

Dragon drones essentially release a substance called thermite — a mixture of aluminium and iron oxide — which was developed a century ago to weld railroad tracks.

When ignited (usually with the help of an electrical fuse), thermite triggers a self-sustaining reaction that is quite difficult to extinguish. It can burn through almost anything, from clothes to trees to military-grade vehicles. It can even burn underwater. On humans, it causes severe, possibly fatal, burns and bone damage.

"Combining thermite with high-precision drones that can bypass traditional defences makes dragon drones 'highly effective' and 'dangerous'," Al Jazeera quoted the United Kingdom-based antiwar advocacy organisation Action on Armed Violence (AOAV) as saying.

Dragon drones are believed to have been first deployed in the Russia-Ukraine war around September. According to a report by The New York Times, Ukrainian forces used them to "ignite the vegetation that Russian troops use for cover and burn it out, exposing them and their



Ukrainians soldiers testing a drone in in May 2024. NYT

parcel of both the Allies and Axis forces aerial bombing campaigns. According to some estimates, the Allies dropped some 30 million 4-pound thermite bombs on Germany and another 10 million on Japan during World War II. Thermite hand grenades were also used during the war to disable artillery pieces, without an explosion.

In modern conflict, thermite is most often used by espionage agents, or special operations teams due to its ability to burn intensely but without a bang.

Is it legal to use thermite in weapons?

The use of thermite in war is not prohibited under international law. However, the use of such incendiary weapons against civilian targets is barred under the



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PIB-Governance(GSII)

Ministry of Panchayati Rai



Union Government Releases XV Finance Commission Grants for Rural Local Bodies in Andhra Pradesh and Rajasthan

Major Boost for Rural Development: Over Rs.1267 crores for Rajasthan and over Rs.988 crores for Andhra Pradesh released as the first instalment.

Doeted On: 12 OCT 2024 11:16AM by DIR Delhi



- The Union Government has released the first instalment of the Fifteenth Finance Commission (XV FC) grants for the financial year 2024–25 to the Rural Local Bodies (RLBs) in Andhra Pradesh and Rajasthan. Andhra Pradesh has received untied grants amounting to ₹395.5091 crores and tied grants totalling ₹593.2639 crores.
- The untied grants will enable Panchayats to address specific local needs across 29 subjects under the Eleventh Schedule of the Constitution of India, ranging from agriculture and rural housing to education and sanitation. In line with Article 243G of the Indian Constitution, these funds empower Panchayats to manage essential services and infrastructure. The provision of tied grants has presented a significant opportunity for Gram Panchayats to redefine local selfgovernance in alignment with Mahatma Gandhi's vision of 'Gram Swaraj', fostering the development of responsible and responsive leadership at the grassroots level.

Air-Governance(GSII)

Centre Revokes President's Rule In J & K; Omar Abdullah Stakes Claim To Form Government





- Centre revoked the President's rule in Jammu and Kashmir late last night, paving the way for forming a new government in the Union Territory.
- Article 356 of the Indian Constitution allows the President to impose President's Rule.
- As per Article 355, the Indian Constitution imposes a duty on the Centre to protect every State against external aggression and internal disturbance and to ensure that the government of every State is carried on in accordance with the provisions of the Constitution.
- It is this duty in the performance of which the Centre takes over the government of a State under Article 356 in case of failure of Constitutional Machinery in the State.

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