

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE**

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Sub: Monthly Summary of Department of space for the month of August, 2024

PART- I (Unclassified)

Glimpses of National Space Day celebrations



Maiden National Space Day Celebration

India proudly celebrated its maiden National Space Day (NSpD24) on August 23, 2024, marking a significant milestone in the country's space exploration journey with the successful landing of Chandrayaan-3 on the lunar south pole. This event not only emphasize India's advancements in space technology but also reflects the nation's commitment to scientific research and innovation.

Throughout August, Pan-India celebrations were organized, culminating in a grand event at Bharat Mandapam, New Delhi. The country was divided into seven zones, each organizing a variety of programmes designed to educate and inspire the public about space exploration. These programs included lectures from eminent scientists, interactive seminars, hands-on workshops, and competitions aimed at school and college students. Exhibitions, Space on Wheels, were also conducted showcasing the latest advancements and opportunities in the field of space technology.

The main event saw a distinguished gathering, inaugurated by the Honourable President of India. The Honourable Minister of State for Space and Secretary, DoS/ Chairman, ISRO were also present, reflecting the high-level support for the event. During the inaugural session, two impactful videos were showcased: "Genesis of National Space Day & Pan India Activities," which narrated the journey leading to the main event, and "Space Vision 2047," which laid out the roadmap for India's aspirations in space exploration for the next two decades. The Honourable President also presented prizes to the winners of the Robotics Challenge and the Bharatiya Antariksh Hackathon, for their innovative ideas.

Following the inauguration, an opening session featured addresses from the Secretary, DoS/ Chairman, ISRO and Chairman IN-SPACe. The Honourable Minister of State for Space released two important reports: one on the socio-economic impact analysis of the Indian space program and another detailing the scientific outcomes of Chandrayaan-3. The session included a video presentation on the Chandrayaan-3 scientific results, followed by a keynote address.

Five interesting panel discussions were conducted, featuring representatives from various ministries, industries, and academia. These discussions focused on the role of space technology in diverse areas, covering topics such as:

1. Space-enabled Governance & Development
2. Space-enabled Solutions & Citizen-Centric Services
3. New Horizons: Indian Academia in Space
4. Decadal Vision Implementation Roadmap &
5. Collaborative Space Ventures.

The event attracted a diverse audience, with approximately 1,250 students and faculty coordinators from schools and colleges in Delhi attending the inaugural session. Additionally, around 300 delegates from various ministries, 150 industry representatives, 30 academic delegates, 700 representatives from DoS/ISRO and 100 media personnel participated in the program, showcasing the broad interest and support for India's space initiatives.

An exhibition area was set up, showcasing stalls from different private companies, start-ups, ministries, and academic institutions. The exhibition served as a platform for showcasing the latest technologies, research, and advances in the space sector, allowing attendees to interact with experts and gain insights into career opportunities in space-related fields.

Space Commission

The 153rd meeting of Space Commission was held on 29th August, 2024. Twenty proposals were presented. Space Vision 2047, Missions Identified & projected, cash flow up to 2040 were presented. Major projects i.e.) Gaganyaan follow-on mission with Bharatiya Antariksh Station (BAS) - Module 1, NGLV Soorya Project, Third Launch Pad Project, Chandrayaan-4 Project, Chandrayaan -5/LUPEX Project and Venus Orbiter Mission were approved.

I. Important policy decisions taken and major achievements during the Month

A. Space Transportation:

- The third and final developmental flight of SSLV i.e. SSLV-D3 was successfully completed on August 16, 2024 with successful injection of the two spacecraft's i.e. EOS-08 as primary satellite, and SR-0 DEMOSAT as passenger satellite into its intended orbit. With the successful completion of this flight, development project initiated for the SSLV vehicle has been completed thereby enabling operational missions to be undertaken by Indian industry and NSIL.
- The integration activities of the uprated cryogenic upper stage (C32 stage) powering the human rated LVM3 vehicle required for the first Un-manned Gaganyaan i.e., LVM3-G1 mission, has been successfully completed and dispatched to SDSC, Sriharikota on August 12, 2024 for further operations.

B. Space Applications:

I. Earth Observation:

- Agriculture Technology project (for State governments): Cropping intensity map for Maharashtra state is generated for last four years. Sown area estimation for Kharif 2024 in Madhya Pradesh state was carried out. Crop affected due to high rainfall was assessed in four districts of MP.
- Development of hydro-informatic products and services [e.g. National Hydrology Project (NHP), for Ministry of Jal Shakti MoJS: Glacial Lake Outburst Flood (GLOF) risk modelling for two prioritized Glacial Lakes (GLs) in Ganga and three prioritized GLs in Brahmaputra Basin for various scenario is in progress.
- AMRUT 2.0; GIS based Master Plan formulation for Class-II towns [for Ministry of Housing & Urban Affairs (MoH&UA)]: Six states (58 towns) confirmed participation with ISRO. Satellite data acquisition and vendor empanelment are in progress.
- Urban Waterbody Information System (UWaIS, for MoH&UA): Land Use / Land Cover change assessment has been completed for selected (prioritized) waterbodies in three cities (cumulative 54 cities).
- Monitoring the Pradhan Mantri Krishi Sinchayee Yojana- Watershed Development Component 2.0 (PMKSY-WDC 2.0) projects using geospatial technologies [for Ministry of Rural Development (MoRD)]: Assessment of pre-implementation status of watersheds is initiated in seven states.

II. Disaster Management Support:

- Rapid assessment of catastrophic landslide on 30th July 2024 in Wayanad, Kerala was carried out using satellite data. Analysis of very high resolution RISAT data revealed the crown location of the landslide and damage to building and other infrastructures. The findings were submitted to all stake

holders. The result was presented to Honourable Prime Minister on 9th August 2024.

- 122 flood inundation maps/ value added satellite images covering floods in Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Telangana, Uttar Pradesh, west Bengal and Himachal Pradesh States were disseminated to the concerned States.
- Flood Early Warning System (FLEWS, Assam): Five flood alerts were issued to the Assam State Disaster Management Authority.
- 18 IRS data products were disseminated to Sentinel Asia for Disaster Management Support for Eight countries.

C. Human Spaceflight:

➤ Gaganyaan G-1 mission

- Successfully completed engine hot test on E13 engine for off-nominal operation with 20 Ton thrust as part of human rating of CE-20 engine.
- Successfully completed C32 LH2 tank module structural test at IPRC.
- Crew Module Assembly/Interface generation completed for Crew Seat, Laser Based Inertial Navigation System (LINS) deck & Bottom deck.
- TPS Tile machining: Medium Density Ablative (MDA) (152 out of 196) & Low Density Ablative (LDA) (100 out of 144) completed.

➤ Crew Escape System

- Structural Qualification Test (CES Conical Shroud & CES Ogive Shroud); Five (out of 6) test cases are completed.
- All motors for G1 mission are ready after Non Destructive Testing (NDT).
- Crew Module Fairing (CMF): Trial assembly with Crew Escape Ogive Shroud (CEOS) hardware carried out.

➤ Service Module

- Service Module Propulsion System: System Demonstration Module (SM-SDM) Phase-4A test is completed.

➤ Environmental and life support system:

- Configuration of checkout and validation of the ground systems for Environment Control & Life Support System (ECLSS) & Thermal and Humidity Control System (THCS) validated by standalone and integrated testing.
- Realization of qualification hardware of Suit Circuit Pressure Regulator(SCPR) is also.

D. Space Sciences:

- A total of 55 GB data from Chandrayaan-3 lander, rover scientific payloads and landing cameras was released to the users as onetime release on the occasion of National Space day. Besides this around 240 GB of AstroSat observations data and around 1TB data from Chandrayaan 2 were released for public in the month of August 2024.
- The Alpha Particle X-ray Spectrometer (APXS) experiment aboard the Pragyan rover of India's Chandrayaan-3 mission reported the first in situ measurements of the elemental abundances in the lunar southern high-latitude regions. The fairly uniform and primarily composed of Ferron Anorthosite (FAN) over a few tens of metres around the Chandrayaan-3 landing site provides an excellent ground truth for remote-sensing observations.
- A study on the spatio-temporal evolution of Equatorial Plasma Bubbles (EPBs) using radar and C/NOFS satellite observations, estimated its onset location across a wide longitudinal sector over Indian and Southeast Asian longitudes. This understanding can contribute to the development of accurate EPB forecasting models, which are essential to mitigate the detrimental effects of EPBs on communication and navigation systems.
- An idealized high-resolution (1 meter) simulation of the collision-coalescence-breakup process during a cloudburst event was carried out to model different flow regimes. The study indicated that multi-physics approach is essential for modelling the evolution of the cloudburst event.
- Prominent multi-decadal rainfall trends and trend reversal points in the Indian summer monsoon rainfall during 1901–2020 across India's four homogeneous regions (south peninsula, central, northwest, northeast) have been examined beginning at the district level. The study opens up a new front of research for hydrologists, meteorologists, and modelers to understand region-wise rain governing systems in more detail by focusing on distinct trends within specific time frames.

E. Capacity Building:

- Training Calendar for ISRO Technical Training Programme for FY 2024-25 has been released.
- A total of nine MoUs have been signed with different National Skill Training Institutes (NSTI), for conducting 30 training programmes during FY 2024-25.
- During the month two patents were granted and five new patent applications are filed at (Indian Patent Office) IPO.
- Bharatiya Antariksh Hackathon-2024: A national level Grand Finale for 30 hours (13-14 August, 2024) was conducted with the participation of 30 teams shortlisted from 3462 teams.
- MoU was signed with six parties for promotion of ISRO-theme based merchandise products.

F. Training & Workshop:

Sl No	Name of the course	Duration of the training	Number of participants
1.	RESONANCE – Space Technology Interest Exploration Workshop was conducted by RACS, Guwahati University for delegates from Universities/Colleges.	8 th August, 2024	150
2.	Driver's training programme for Heavy Vehicle Drivers at Institute of Driving and Training Research (IDTR), Pune	August 7-9 2024	16
DLP/online virtual mode courses and programmes			
3.	'AI/ML for geodata analysis'	August 19-23, 2024	46317 participants from 1798 institutions

G. Safe & Sustainable Space Operations:

- Collision Avoidance (COLA) analyses was carried out in coordination with Space X for SSLV-D3/EOS-8 mission to clear the nominal lift off time at 03:47 UTC/09:17 IST on 16 August 2024.
- Daily Space Object Proximity Analysis (SOPA) and re-assessment of close approach situation with 2991 critical Conjunction Data Messages (CDM) from CSpOC/ USSPACECOM were performed for 23 LEO and 30 GSO satellites.
- A total of 61 Orbital Manoeuvre (OM) plans were screened. All manoeuvre plans for INSAT-3Ds drift arrest manoeuvres were also screened through SOPA and proper update of orbital elements in space-track was ensured through coordination with USSPACECOM. Special analysis was carried out for EOS-8 with POD results after injection.
- For Chandrayaan-2 and Aditya-L1, conjunction analysis through Beyond Earth Collision Avoidance Tool (BEARTCAT) was carried out. The original OM-86 plan for apolune reduction and circularization of Chandrayaan 2 Orbiter (CH2O) was modified to avoid the potential close conjunction risks with Korea Pathfinder Lunar Orbiter (KPLO) around 15-16 August 2024.
- Atmospheric re-entry prediction was carried out for 84 large objects. As part of the ongoing Inter Agency Space Debris Coordination Committee (IADC)-2024 re-entry campaign, with SALSA as test object, re-entry prediction was submitted on behalf of ISRO to IADC portal.

H. International Cooperation:

- Exclusive training on “Remote Sensing and GIS for agriculture information” for 20 Kenyan officials was organised at IIRS from July 29 to August 23, 2024.
- ISRO and Mexican Space Agency (AEM) organised a 4-day in-person workshop on EO based forest fire management at Mexico during August 27-30, 2024.

- British High Commissioner to India visited Antariksh Bhavan on August 07, 2024 and Consulate General of Singapore visited VSSC on August 06 and had discussions with senior officials at the respective places.
- ISRO Gaganyaatris identified for Axiom-4 Mission commenced their 9-months flight preparation training on August 05, 2024 at NASA and Axiom facilities at Houston, USA.
- ISRO-Uzbekspace JWG had its 2nd meeting on August 05, 2024 and discussed on potential areas of cooperation including integration of Satellite data in Govt. portals.
- Meetings between ISRO and other space agencies/ entities viz NASA (August 01, 2024 on advanced astronaut training requirements), BRICS (August 20, 2024 to discuss the BRICS HoA joint statement), BRICS RSSC WG (August 21, 2024 to discuss cooperation under RSSC agreement) were held.

I. IN-SPACE Activities:

- IN-SPACE issued authorization for the launch of SSLV-D3 and establishment & operations of EOS-08 satellite.
- Two MoUs signed with a) M/s. Aditya Precitech India Pvt Ltd, Hyderabad for providing technical support for Antenna characterization, testing of other Aerospace Components, Sub- Systems and Systems and (b) M/s. SJC Institute of Technology, Chickballapur, Karnataka for providing technical support for satellites/payloads, design, testing, integration facilities & qualification of its systems/sub-systems, launch and post launch support activities.
- The pre-EOI conference for Earth Observation Public Private Partnership (PPP) was convened on 8th August 2024 at ISRO Headquarters, Bengaluru where 32 Industries participated.
- 15 nos. of ISO standards were deliberated thoroughly and recommended for adoption in BIS.
- Five Non-Government Entities (NGEs) with payloads on the POEM-4 (PSLV Orbital Experimental Module) mission conducted tests at the Technical Centre.
- PFMC-2 conducted for the seed fund grantee against AO-1 and proposals invited for the use of space technology in the Marine sector.
- Evaluated the applications from Students for CANSAT, a total of 69 teams were selected for PDR round.
- Model Rocketry Activities: Team evaluation and PDR guidelines released
- Short Term Course on Advances in Propulsion System for Launch Vehicles, Satellites and Landing Missions conducted from 25- 31 August, 2024 at Bangalore.
- Coordinated to conduct a Space Session chaired by Chairman, IN-SPACE during the CII India Africa Conclave on 20th August, 2024.
- Conducted Space Day with Singapore on 31st July 2024, attended by about 90 participants (6 companies from SG and 7 Companies from India, in addition to

State Governments of Kerala and Tamil Nadu presented their capabilities for the event).

J. NSIL Activities:

- NSIL organized a meeting between the Industry Consortium (HAL-L&T) and System Reliability (SR) at LPSC(V) to acquaint the consortium with the current protocols and procedures for quality certification in the procurement and fabrication of launch vehicle systems like Propellant tank, Liquid engine, etc.
- As part of realization of 15 nos. of SSLV, NSIL conducted Pre-bid meeting at VSSC for the RFP of SS2 & SS3 Motor case production.
- NSIL received responses from four parties to the RFQ issued for the production of LVM-3 under the Public-Private Partnership (PPP) model.
- NSIL launched satellite 'Space Rikshaw-0' of M/s SpaceKidz onboard SSLV-D3 (rideshare mode).
- For GSAT-N2, NSIL is coordinating with M/s SpaceX for launch campaign activities.
- NSIL allotted the Ku band Space Segment Capacity on GSAT-14 satellite to commercial users to meet their VSAT/IFMC & DSNG requirements.
- Provided IRS satellite data products to domestic and foreign customers through Bhoonidhi-NSIL Interface.
- NSIL provided service to Indian customer for priority tasking and supply of imagery from of foreign satellites.

2. No of Cases of 'Sanction of Prosecution' pending for more than three months: NIL

3. Particulars of cases in which there has been a departure from the Transaction of Business Rules or established policy of the Government: NIL

4. Status of ongoing Swachhta Abhiyan (progress under Special Campaign):

As per the guidelines of Government, Department has chalked out an action plan for implementation of Swachhta Pakhwada 2024 during 1st to 15th February, 2024 and communicated to DDWS and uploaded on Swachhta Samiksha portal.

Based on this action plan, DOS/ISRO Centres/ Units/ ABs/ CPSEs have observed Swachhta Pakhwada 2024 from 1st to 15th February, 2024 with active participation of senior officials, employees, housing colony residents, CIFS personnel, etc. The photograph of events carried out during Pakhwada were uploaded on Swachhta Samiksha Portal.

5. Status of Rationalisation of Autonomous Bodies:

EMC has recommended that NARL be governmentalized. The recommendations of the committee in respect of NARL is under review.

All the AB's under the Department namely, IIST, PRL, NARL & NESAC have been brought under Treasury Single Account.

6. Vacancy position of senior level appointments in the Ministry/Department including Autonomous Bodies/PSUs:

The detailed status regarding all the posts pertaining to Department of Space has been updated on AVMS. The status of updation of vacancy as on 31.08.2024 is as follows:

- Total number of posts required to be entered on AVMS: - 17
- Number of posts filled as on date: - 14
- Number of posts totally vacant as on date: - 03
- Number of posts under premature repatriation – 00
- Number of posts under additional charge arrangement: - 01
- Number of posts that would fall vacant during the next 06 months: - 03

7. List of cases in which ACC directions have not been complied with :- NIL.

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