

**GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE**

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

**PART- I (Unclassified)**

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

The Union Cabinet of the Government of India has accorded approval for four major project proposals: (1) Gaganyaan follow on missions up to the first module of Bharatiya Antariksh Station (BAS-01), (2) Chandrayaan – 4: Lunar Sample Return Mission, (3) Next Generation Launch Vehicle (NGLV) and (4) Venus Orbiter Mission (VOM).

**A. Space Transportation:**

- The fluid mockup test for uprated Cryogenic Upper Stage (C32) is successfully completed on September 27, 2024. With this test, the flight stage for the first unmanned flight of Gaganyaan mission is ready.

**B. Space Applications:**

**I. Earth Observation:**

- Agriculture Technology project (for State governments): Monitoring the sown area progression and analytics of weather & ground data for 2024-25 Kharif crops, have been carried out for Maharashtra State.
- Development of hydro-informatic products and services [National Hydrology Project (NHP) for Ministry of Jal Shakti (MoJS)]: Glacial Lake Outburst Flood modelling for Shako Cho Glacial Lake in Brahmaputra Basin for various scenarios is completed.
- Urban Waterbody Information System (UWaIS) for Ministry of Housing & Urban Affairs (MoH&UA): Land Use / Land Cover change assessment has been completed for selected (prioritized) waterbodies in 12 cities (cumulative 66 cities).
- Rejuvenating watershed for Agriculture Resilience through Innovative Development Programme (REWARD) for Ministry of Agriculture & Farmers' Welfare (MoA&FW): Revised version of National Technical Standards on Geospatial applications for watershed planning and development is submitted to National Rainfed Area Authority.
- Hon'ble Chief Minister, Meghalaya released the project report on "Mineral Mining Database of Meghalaya", jointly generated with NESAC/DoS.

- Hon'ble Chief Minister of Uttarakhand launched 'Adrash Champawat Geospatial Dashboard' developed by ISRO/IIRSC (<https://maps.iirs.gov.in/champawat>)
- SRO/NRSC and DoS/NESAC have been conferred with "National Geospatial Enabler Award" and "National Geospatial Enabler Award (Jury Award)", respectively, as part of IIT Bombay National Geospatial Awards 2024 (Edition 01).

## **II. Disaster Management Support:**

- 70 flood inundation maps/ value added satellite images covering floods in Andhra Pradesh, Telangana, Gujarat, Bihar, Uttar Pradesh, West Bengal, Himachal Pradesh and Tripura States were disseminated to the concerned States.
- 34 IRS data products were disseminated to Sentinel Asia and International Charter for Disaster Management Support.

## **C. Human Spaceflight:**

- **Gaganyaan G-1 mission:**
  - Service Module Propulsion system assembly, integration and leak checks completed.
  - Crew Escape System Conical shroud hardware realised and pre-dispatch review completed.
- **Crew Module:**
  - Secondary float inflation trials completed for Crew Module Up-righting system.
- **Crew Escape System:**
  - ST-03 static test of Low-altitude Escape Motor (LEM) completed at SDSC.
- **Environmental and life support system (ECLSS):**
  - Thermal Humidity Control Systems (THCS) Integrated Testing (Phase III) - Demonstration of integrated performance of both condensing and non-condensing network with radiators is completed.
  - Trial Integration of THCS components on G1-Service Module (SM) structures is completed.

## **D. Space Sciences:**

- Space science data pertaining to Chandrayaan-2, Chandrayaan-3 and AstroSat missions were uploaded to the public portal of the Indian Space Science Data Centre (ISSDC), for scientific analysis by the community. The

total volume of data from these missions, which are made available to public use, stand at 56.8 TB.

- On September 4, 2024, ISRO and Indian Institute of Geomagnetism (IIG) have signed an MoU for collaboration in space science exploration.

***Other major accomplishments of space science activities include:***

- First direct observations of the variabilities of double intertropical convergence zone over tropical oceans.
- Deformation of the Gruithuisen region lava tube under compressional stress on the Moon, a major information relevant to future human habitation on Moon.
- Analysis of the propagation characteristics of acoustic waves in the lower solar atmosphere, unravel the key information about the energy transport within the sun.
- Study of the cloud characteristics in the Aravalli Ranges of Western India, reveals that cirrostratus cloud were the most common cloud type. It also brings out seasonal changes in cloud occurrence, which could help in improving weather forecast in complex hilly regions.
- Conducted laboratory simulation of Carbon nanodust in deep space and it reveals that shocks in the interstellar medium provide the energy for carbon chemistry which forms almost all known allotropes of carbon.

**E. Capacity Building:**

- NESAC user interaction meet was held at NESAC, Shillong on September 05-06, 2024.
- Industry Interface - Bengaluru Space Expo (BSX) -2024: The Bengaluru Space Expo 2024, took place from September 18-20, 2024, at the Biennial International Exhibition and Conference (BIEC) in Bengaluru, organized by Confederation of Indian Industry (CII) in collaboration with the ISRO, IN-SPACE & NSIL. This year's theme, "Accelerating Tomorrow: Harnessing the Potential of the Space Sector for Unified Expansion," attracted over 150 speakers and more than 800 delegates from 14 countries, including Australia, the UK, Russia, Sweden, and Italy.
- During the month, two patents were granted and three new patents & three copyrights applications are filed at Indian Patent Office (IPO).
- Conceptualized "Space Touring Circuits for Youth" and formulated the guidelines for the execution of programme based on the discussions with Indian Railways Catering and Tourism Corporation (IRCTC) and Dept. of Higher Education, MoE.

**F. Training & Workshop:**

SI No	Name of the course	Duration of the training	Number of participants
1.	One-week certificate course on 'Atmospheric & oceanic hazards'	September 09 - 13, 2024	9

SI No	Name of the course	Duration of the training	Number of participants
2.	One-week certificate course on 'RS - an overview for decision makers'	September 10 - 14, 2024	24
3.	One-week certificate course on 'UAV-RS & its application'	September 23 - 27, 2024	11
4.	One-week Structured Training Programme (STP) on 'Advances in satellite Radar imaging'	September 23 - 27, 2024	28
<b>DLP/online virtual mode courses and programmes</b>			
5.	CSSTEAP: Short course on 'Forest carbon dynamics assessment using earth observation data'	September 02 - 06, 2024	19 participants from 7 countries
6.	'अंतरिक्ष प्रौद्योगिकी का अवलोकन'	September 09 - 20, 2024	2154 participants from 303 institutions
7.	'Remote sensing & digital image analysis'	August 27, 2024 to September 20, 2024	17968 participants from 1439 institutions
8.	'Workshop on understanding cryospheric hazards'	September 06, 2024	4916 participants from 542 institutions

#### **G. Safe & Sustainable Space Operations:**

- Daily Space Object Proximity Analysis (SOPA) and re-assessment of close approach situation with 2506 critical Conjunction Data Messages (CDM) from CSpOC/USSPACECOM were performed for 23 LEO and 30 GSO satellites. One collision avoidance manoeuvre was carried out on September 16, 2024 to safeguard Cartosat-2A against critically close approach risk due to SL-14 rocket body (Catalogue id -18153). A critical conjunction of CMS02 with Raduga-2 on September 17, 2024 was resolved by adjusting the regular planned manoeuvre on September 16, 2024.
- A total of 70 Orbital Manoeuvre (OM) plans were screened. Out of these, 8 OM plans were revised based on screening results to avoid potential post manoeuvre conjunctions. Coordination and ephemeris exchanges with European Space Agency (ESA) were carried out to ensure spaceflight safety for conjunctions between ASTROSAT and SAOCOME-1A satellite predicted on September 21, 2024.
- For Chandrayaan-2 and Aditya-L1, conjunction analysis through Beyond Earth Collision Avoidance Tool (BEARTCAT) was carried out. The original OM-87 plan (executed on 19<sup>th</sup> September 2024) for perilune increase of Chandrayaan 2 Orbiter (CH2O) was modified to avoid the potential close conjunction risks with Korea Pathfinder Lunar Orbiter (KPLO) around 1<sup>st</sup> October, 2024. The tentative plan for the next manoeuvre OM-88 scheduled on 1<sup>st</sup> October, 2024 was also adjusted to avoid post manoeuvre conjunctions with other lunar orbiters (KPLO, LRO).

- Atmospheric re-entry prediction was carried out for 42 large objects. There were 36 Starlink satellite re-entries in this month. As part of the ongoing Inter Agency Space Debris Coordination Committee (IADC)-2024 re-entry campaign, with SALSA as test object, 2 more re-entry predictions were submitted on behalf of ISRO to IADC portal. Regular monitoring of space weather alerts was carried out and geomagnetic storm warning was issued to operations team of MCF and ISTRAC.
- SCATSAT-1 Post Mission Disposal (PMD) was completed with passivation and decommissioning on September 26, 2024 as recommended by the committee for PMD of LEO satellites.

## **H. International Cooperation:**

- Memorandum of Understanding between the Government of Brunei Darussalam and the Government of India on cooperation in the operation of telemetry tracking and tele-command station for satellite and launch vehicles and in the field of space research, science and applications was signed on September 04, 2024.
- Five member ISRO/DOS delegation led by Chairman ISRO/ Secretary, DOS participated in the 5th Space Economy Leader Meeting (SELM) held at Foz Do Iguacu, Brazil during September 11-13, 2024. Secretary, DOS/Chairman, ISRO, delivered a talk at the Heads of Agency session on the topic of "Climate Change and Sustainable Development: challenges and opportunities". Bilateral meetings with few Space Agencies also conducted.
- Ambassador of Slovenia H.E Mateja Vodeb Ghosh; H.E. Mr. Håkan Jevrell, State Secretary for Foreign Trade, Ministry for International Development Cooperation and Foreign Trade, Sweden; CNES & Ariane Group officials; & Marubeni Corporation, Japan officials; visited ISRO Antariksh Bhavan and held discussions on respective areas of cooperation with Chairman, ISRO and other senior ISRO officials.
- Head, Australian Space Agency held bilateral meeting with Scientific Secretary, ISRO and visited ISITE & SDSC SHAR as part of his engagement with ISRO (September 18-20, 2024) during his visit to India.
- Heliophysics JWG Meeting of ISRO-Italian Space Agency and ISRO-Colombia on space cooperation was held to discuss on the ongoing cooperation and other possible areas of future cooperation.
- Meetings held between ISRO and other space agencies viz Roscosmos, Russia (on Gaganyaan and Engine Cooperation); ASI, Italy (Heliophysics JWG); MinCiencias, Colombia (third meeting of JWG). ISRO also participated in 6<sup>th</sup> BRICS Space Agency Consultation convened by Roscosmos.

## **I. IN-SPACE Activities:**

- IN-SPACE has released a document on Ground Stations as a Service (GSaaS) in India, which describes the opportunities, scope of activities, regulatory guidelines & procedures, and way forward for Ground Station Operators looking to provide GSaaS in India. The document has been brought out through joint efforts of IN-SPACE, Wireless Planning and Coordination Wing (WPC) Wing, Department of Telecommunications (DoT), ISRO, Indian Space Association (ISpA) and Confederation of Indian Industry (CII).
- A comprehensive report on the assessment of the satcom capacity demand in India for the next 5 years was prepared by IN-SPACE in coordination with SATCOM-PO/ISRO HQ, Ministry of Information & Broadcasting (MI&B) and Licensing Division of DoT, after one-to-one consultations with more than 30 entities representing satellite operators, service providers, teleport operators, DTH operators, Industry Associations, etc. The report has been submitted to Standing Committee for Inter-Ministerial Coordination (SC-IMC) for its consideration while reviewing the authorization of non-Indian satellites capacity provisioning in India for satcom services.
- Advisory note issued to Ms/. Akshath Aerospace, Bengaluru to enable the Non-Government Entities (NGE) to make ITU filing through WPC Wing of DoT for their 3U Cubesat namely, SambuSat-1.
- India-Sweden Space Industry Day was conducted in Bengaluru. India-Australia Industry Round Table was also conducted at BSX 2024.
- Seed Fund Scheme: Project Facilitation and Monitoring Committee (PFMC)-3 conducted for the seed fund grantee against Announcement of Opportunity (AO)-1 & 2 and proposals invited for the use of space technology in the Marine sector.
- Pre-Incubation Entrepreneurship (PIE) Outreach was conducted at Bhubaneswar and an online PIE workshop was also conducted in association with Agnirva Space Community.
- Model Rocketry and CANSAT: Conducted virtual Q&A session for participants.
- Short Term Course on 'Essentials of Space Based Communication and Navigation Systems' currently undergoing from September 21 to October 05, 2024.
- The Space Commission has cleared the base price for SSLV. The corrigendum for the Request for Proposal (RFP) has been prepared to this effect and circulated to the six shortlisted industries on September 02, 2024. The queries from Industries are being addressed.
- The proposal for "Satellite Bus as a Service" was cleared in IN-SPACE board.
- The Expression of Interest (EOI) for Establishing Earth Observation System under Public-Private Partnership (PPP) has been published in IN-SPACE Digital Platform. A total of 35 industries have accessed the EOI document.

## **J. NSIL Activities:**

- NSIL organized an interface meeting between the Industry Consortium (HAL-L&T) and ISRO to acquaint the consortium with current protocols and procedures of quality control for Avionics for PSLV.
- Pre-evaluation committee was constituted for the assessment of the RFQ bids that were received for the production of LVM3 under the Public-Private Partnership (PPP) model. The finalization of financial model for RFP is in progress.
- NSIL signed Launch Service Agreement (LSA) with M/s ST Engineering, Singapore for launching their NS2 satellites onboard PSLV (Dedicated mission).
- Launch Campaign Activities for PSLV-C59/Proba-3 mission have started at SDSC-SHAR for Launch during November 2024.
- For GSAT-N2, Spacecraft shipment to SpaceX facility at Florida, USA is being worked out. NSIL is coordinating with M/s SpaceX for launch campaign activities.
- For GSAT-7B, Payload Preliminary Design Review (PDR) is completed. BUS system Preliminary Design Review (PDR) is under progress.
- For GSAT-N3, procurement initiated for cable mesh of unfurlable antenna and spherical bearings.
- NSIL has issued two permanent Letter of Frequency Allotments to one government user and one Tele Education user. Apart from these, two more Occasional use Allotment Letters were issued to a teleport operator and a start-up for testing their indigenously designed RF system.
- NSIL and MEASAT (Malaysia's Satellite Operator) executed a collaboration Agreement for providing continuous services to one DTH Operator adhering to Indian Space Policy 2023.
- NSIL provides data products from IRS Satellites to domestic and foreign customers through Bhoonidhi-NSIL Interface.
- NSIL has signed eight technology transfer agreements with Indian Industries.

**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 1<sup>st</sup> to 15<sup>th</sup> 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 1<sup>st</sup> to 15<sup>th</sup> 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 30.09.2024 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: - 04

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

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