

Newsletter of the Physical Research Laboratory

THE SPECTRUM



79th Independence Day Celebration at PRL

September 2025

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On the role of source surface height and magnetograms in solar wind forecast accuracy

The Author



Sandeep Kumar

(**Sandeep Kumar**, Nandita Srivastava, Dana-Camelia Talpeanu, Marilena Mierla, Elke D’Huys, and Marie

This study investigates how the choice of source surface height (R_{ss}) in the Potential Field Source Surface (PFSS) model and the type of magnetograms affect solar wind velocity forecasts at Earth’s L1 point. Using the PFSS model combined with the Wang–Sheeley–Arge (WSA) model and the Heliospheric Upwind Extrapolation (HUX) model, we analyzed 16 Carrington Rotations (CRs) from solar cycles (SCs) 24 and 25. The results show that the optimal value of R_{ss} depends on the solar cycle phase. During the declining and minimum phase of SC24, a higher R_{ss} of $3.0 R_{\odot}$ improved performance, increasing the correlation between observed and modeled solar wind velocity from 0.61 to 0.75 compared to the conventional $2.5 R_{\odot}$. In contrast, during solar maximum, lower R_{ss} values (2.0 – $2.5 R_{\odot}$) gave better results, while outcomes for SC25 maximum remained inconclusive due to stronger solar activity and limitations of PFSS in such conditions. Magnetogram quality was also found to be crucial: zero-point corrected (ZPC) GONG maps consistently outperformed standard maps, providing more accurate representations of the solar magnetic field and better agreement with both in-situ solar wind data and coronal structures seen in PROBA2/SWAP images. These findings highlight that optimizing R_{ss} and using improved magnetograms are key steps toward enhancing solar wind forecasting frameworks for space weather prediction. This work was carried out under the PROB2 guest investigator program.

Source/Reference of the Work: <https://doi.org/10.1051/swsc/2025021>

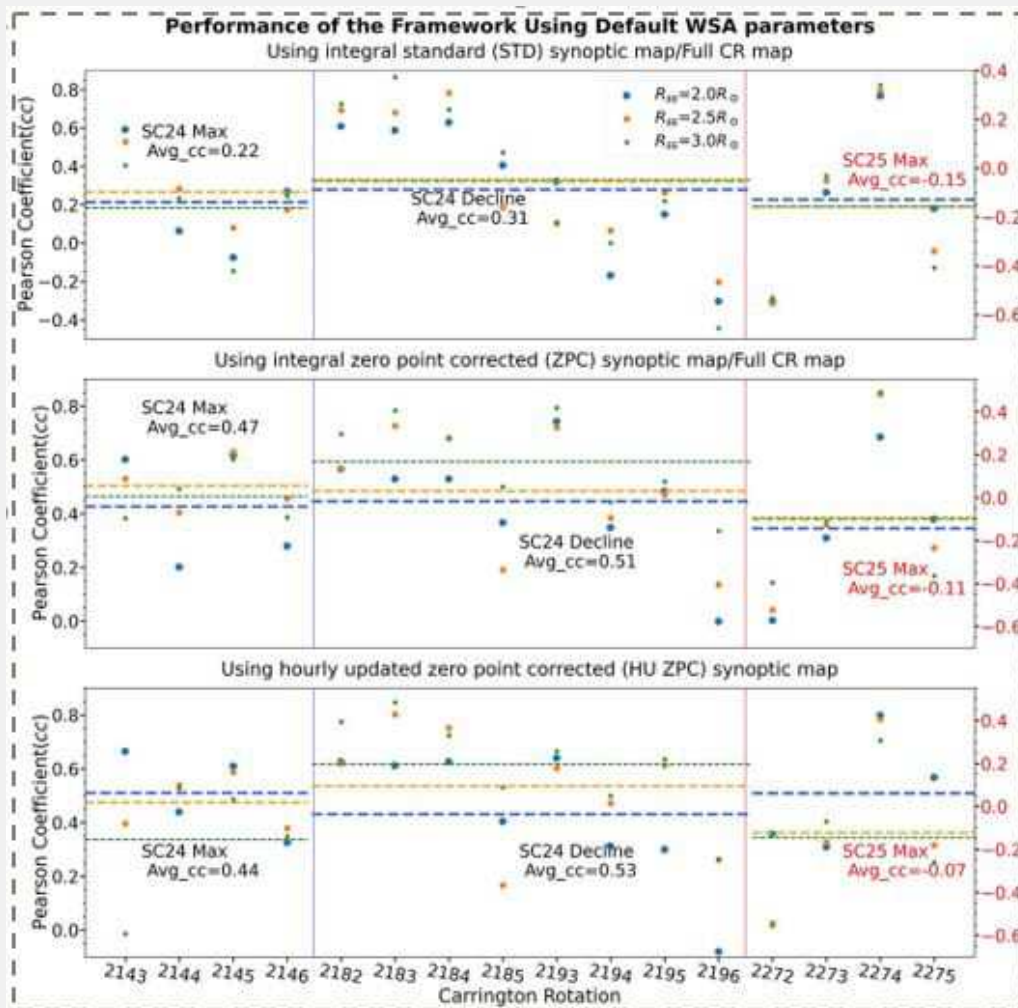


Figure Caption: The performance of the framework (cc) for different CRs with different R_{ss} based on default WSA parameters. For SC24, refer to the left y-axis, whereas for SC25 maximum, refer to the right y-axis in red. The top panel shows the result using standard Carrington maps (STD), the middle panel is for the zero-point corrected Carrington maps (ZPC), and the bottom panel is for hourly updated zero-point corrected maps (HU ZPC). Blue, orange, and green dots represent the performance of the framework, i.e., cc, for R_{ss} of $2.0 R_{\odot}$, $2.5 R_{\odot}$, and $3.0 R_{\odot}$, respectively. Horizontal dashed lines show the average performance in the respective phase for each R_{ss} and all CRs. The annotated value shows the average value of cc for each input map and SC phase for all three R_{ss} (dashed lines).

Unmasking the "Khichdi-Particle": Hunting for Cosmic Connectors in Particle Collisions

The Author



Partha Konar

(Anupam Ghosh, **Partha Konar**, Tousik Samui, Ritesh K. Singhi)

This study focuses on improving the search for leptoquarks, which are hypothetical hybrid particles linking two very different types of known particles, like electrons and quarks. Discovering such particles may enhance our understanding of how fundamental forces could unify at high energy levels. We have developed advanced data analysis techniques, particularly by examining the complex internal structures of "jets" formed by hadronic particles produced in high-energy collisions at facilities like the Large Hadron Collider (LHC).

A significant achievement of our research is the use of machine learning to greatly enhance the detection of these elusive leptoquarks, achieving a discovery-level signal significance of up to five sigma for a specific type of leptoquark. Additionally, we successfully employed advanced methodologies to differentiate between various theoretical leptoquark models (S3 and R2) based on the "spin" orientation (polarisation) of the produced top quarks, demonstrating a separation power of up to three sigma. This work provides powerful new tools for discovering these fundamental particles and understanding their precise properties.

Source/Reference of the Work: [https://doi.org/10.1007/JHEP07\(2025\)145](https://doi.org/10.1007/JHEP07(2025)145)



Figure Caption: Visualizing the characteristics of a "Khichdi-Particle," such as a leptoquark, draws inspiration from the imagination of the renowned Bengali writer, poet, and playwright Sukumar Roy. His nonsensical poem collection, *Abol Tabol*, depicts fantastical and absurd creatures created from the fusion of different animals, highlighting the chaos and incongruity of these combinations. He is the father of one of the greatest influential film directors, Satyajit Ray

The Author



Manoj Mandal

Relativistic X-ray reflection and thermonuclear burst from accreting millisecond X-ray pulsar SRGA J144459.2–604207

(Manoj Mandal, Sachindra Naik, and Birendra Chhotarayi)

A neutron star low-mass X-ray binary (LMXB) system consists of a neutron star (NS) and a low-mass companion star orbiting around the common centre of mass. The compact object accretes matter from the low-mass companion through the Roche lobe overflow mechanism, forming an accretion disc around the compact object. In the case of a weakly magnetized (10^7 – 10^9 G) NS in LMXB, the accretion disc may get extended close to the NS surface. In this case, the accreted material may directly accumulate onto the surface of the NS, unlike in the case of high-magnetic field NS LMXBs, where accretion takes place at the magnetic poles of the NS. In the low-magnetic field NS LMXBs, the accreted material consisting of hydrogen and/or helium burns unstably on the surface of the NS, resulting in thermonuclear X-ray bursts. Accreting millisecond pulsars (AMXPs) are a subclass of NS LMXBs, showing coherent pulsations of a few milliseconds. These systems show thermonuclear X-ray bursts, which are used to probe the accretion physics and the burning mechanism. The AMXP SRGA J144459.2–604207, discovered in February 2024 with the Spectrum-Roentgen-Gamma (SRG) observatory, was observed with several other X-ray observatories. A total of 42 thermonuclear X-ray bursts (left panel of Figure) from the newly discovered AMXP SRGA J144459.2–604207 were observed using different instruments onboard space-based XMM-Newton, NICER, Swift, and NuSTAR observatories. The evolution of spectral parameters is investigated using the time-resolved spectral study to understand the emission mechanism and underlying burning process. The best-fitted broadband burst peak spectra for a simultaneously detected (marked with asterisks in the left panel of Figure) with XMM-Newton EPIC/PN and NuSTAR are shown in the right panel of Figure. We reported reflection of the incident X-ray radiation from the accretion disk during the thermonuclear bursts, as well as in the burst-free persistent emission. The accretion disk parameters, such as the inner disk radius and the angle of inclination of the disk with respect to the observer, are reported using reflection spectral modeling. Assuming the inner disk is truncated at the magnetosphere boundary, the strength of the magnetic field of the neutron star is estimated to be in the order of 10^8 Gauss. The measurements of the mass accretion rate indicate that the bursts may be powered by a mixed H/He fuel.

Source/Reference of the Work: <https://doi.org/10.1093/mnras/staf1207>

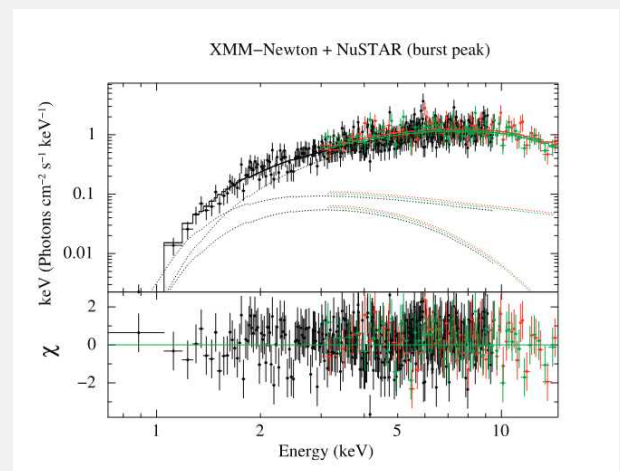
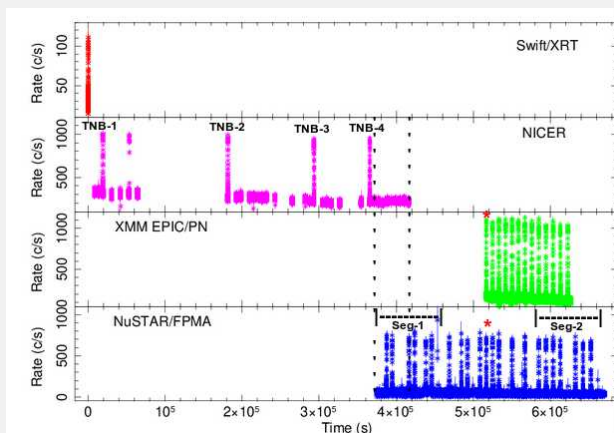


Figure Caption:

Left Panel: A total of 42 thermonuclear X-ray bursts using XMM-Newton, NICER, Swift, and NuSTAR from AMXP SRGA J144459.2–604207 (left panel). Right Panel: The best-fit broadband burst peak spectra of SRGA J144459.2–604207 for a simultaneously detected burst with XMM-Newton and NuSTAR

The Author



Veeresh Singh

Intra-night Optical Variability and Radio Characteristics of Radio-Loud Seyfert galaxies

(Veeresh Singh, Parveen Kumar, Avik Kumar Das, and Vineet Ojha)

Active Galactic Nuclei (AGN) are one of the most luminous sources in the universe and they are known to be the manifestation of accretion of matter onto the super-massive black holes (MSMBH $\sim 10^6 - 10^{10}$ times of Solar mass) residing in the centers of galaxies. Narrow-line Seyfert 1 galaxies (NLS1s) a sub-class of AGN are found to hosted in nearby galaxies and exhibit relatively narrow width of broad permitted Balmer emission lines ($\text{FWHM}(\text{H}\beta) < 2000 \text{ km s}^{-1}$) in their optical spectra. In general, NLS1s are mostly radio-quiet (radio-loudness parameter (R) < 10 ; which is defined as the ratio of 5.0 GHz radio flux density to the optical continuum flux at $4400 \text{ \AA}$) except for a small fraction of nearly 7.0 per cent of them being radio-loud (RL). In our previous research work we demonstrated that the fraction of extreme RL-NLS1s with $R > 100$ is even lower. The scarcity of RL-NLS1s, in particular extremely radio-loud RL-NLS1s, is intriguing. To understand the nature of extremely radio-loud NLS1s we investigated intra-night optical variability (INOV) and radio characteristics of a sample of RL-NLS1s. For most of our sample sources we reported intra-night photometric monitoring for the first time using observations from Mt. Abu telescopes. In our work, we found that RL-NLS1s show INOV with a high duty cycle (up to 25%) and large average amplitude similar to blazars. Further, in radio wavelengths, our RL-NLS1s are found to host luminous ($L_{3.0 \text{ GHz}} > 10^{24} \text{ W Hz}^{-1}$), compact (less than a few kilo-parsec), variable, flat spectrum radio sources. The INOV, radio characteristics, and radio luminosity versus supermassive black hole mass plot inferred that extremely radio-loud NLS1s are low-redshift and low-luminosity analogs of flat spectrum radio quasars wherein the former are powered by, on average, one order-of-magnitude less massive SMBHs.

Source/Reference of the Work:

<https://iopscience.iop.org/article/10.3847/1538-4357/adf210>

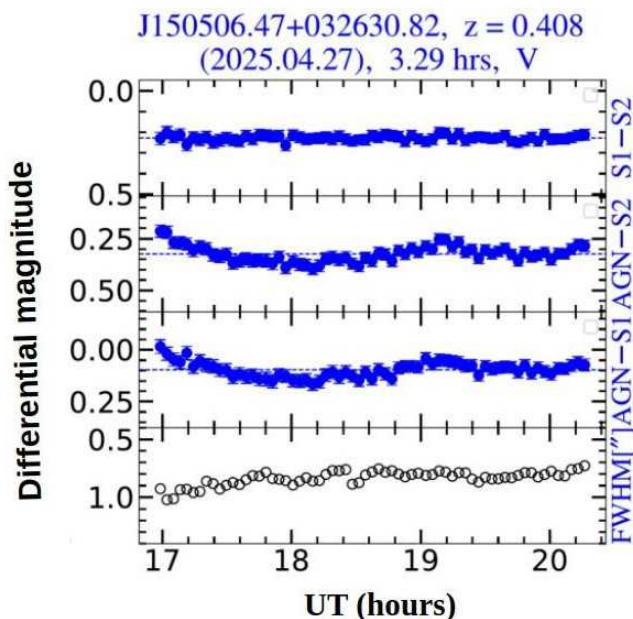


Figure Caption: R-band differential light curves (DLCs) of two sample sources. Source name, redshift, date, and duration of the monitoring session and variability status are mentioned at the top of each panel. The uppermost panel shows the DLC of two comparison stars denoted as “S1” and “S2,” while the next two panels show two DLCs of RL-NLS1 (AGN) relative to the two comparison stars. The lowest panel shows FWHM (seeing) variations during our observations..

The Author



Ruchita Shah

Investigation of the Atmospheric Clouds and Rainfall Characteristics over Leh-Ladakh Region using Ceilometer Lidar

(Ruchita Shah, Som Sharma, Dharmendra Kamat)

The Leh-Ladakh region, situated at ~3300 meters above mean sea level, in the cold desert under the rain shadow of the Himalayas, exhibits diverse cloud characteristics in shaping extreme weather conditions. The present work utilized ground-based ceilometer Lidar, satellite observations, and reanalysis data sets for investigation of cloud and rainfall characteristics over the Leh-Ladakh region. Study of the cloud base height (CBH) up to three distinct layers, designated as CBH1, CBH2, and CBH3 revealed significant seasonal and altitudinal variations in CBH, with cloud occurrence frequencies peaking during the pre-monsoon (~67%) and monsoon (~98%) seasons, reflecting the onset and active phases of the Indian summer monsoon. The highest prevalence of multi-layered clouds (~84%) was found during month of July, which includes triple-layered clouds (~42%) dominating over double-layered (~26%) and single-layered (~16%) clouds. Seasonal analysis showed a dominance of mid-level cloud occurrence of about 77%, while high-level clouds occurrence is found only ~5%. Whereas mid-level clouds (altostratus and altocumulus clouds) were particularly prominent across all the seasons, with their variability linked to topographic and climatic factors. These findings provide valuable insights into cloud dynamics and their role in extreme weather events such as cloudbursts and intense rainfall, which are increasingly frequent in the Himalayan region.

Reference of the Work: <https://doi.org/10.1016/j.atmosres.2025.108399>

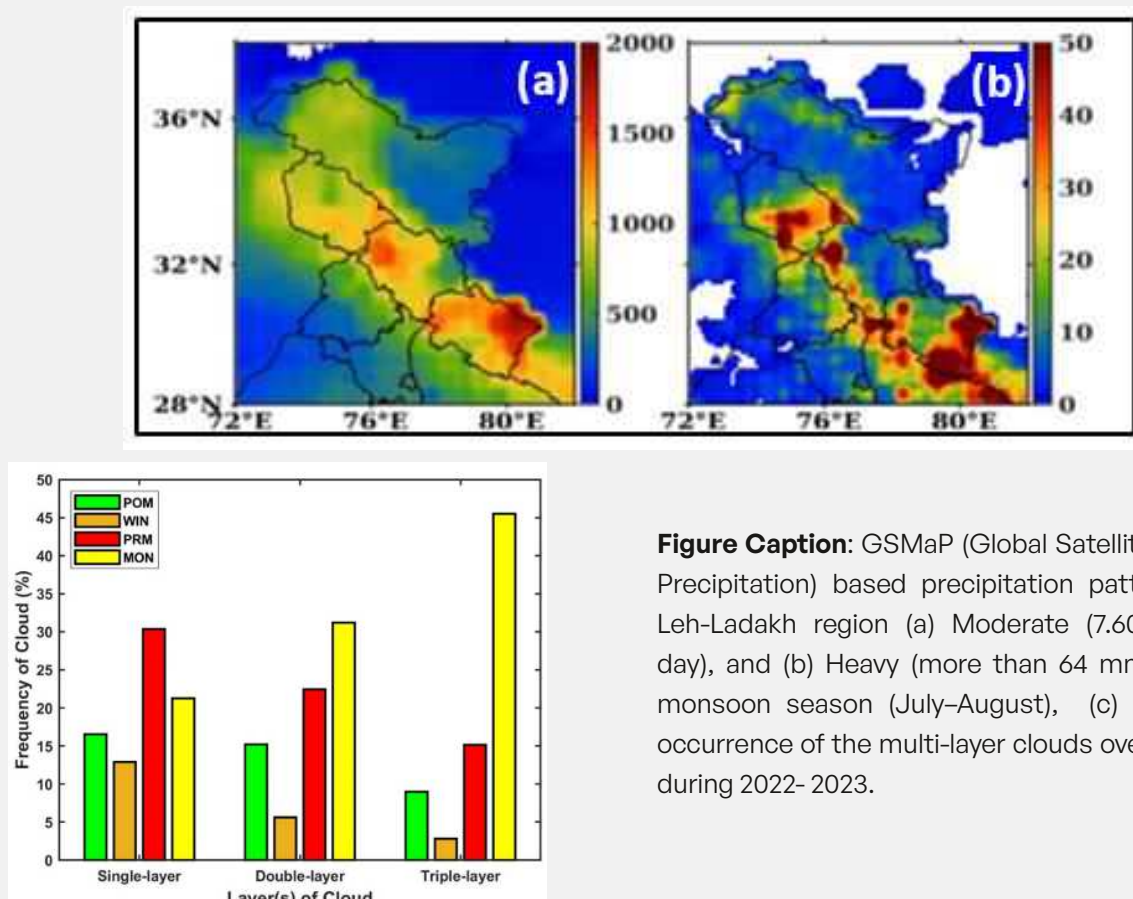


Figure Caption: GSMaP (Global Satellite Mapping of Precipitation) based precipitation pattern over the Leh-Ladakh region (a) Moderate (7.60–64.40 mm/day), and (b) Heavy (more than 64 mm/day) during monsoon season (July–August), (c) Frequency of occurrence of the multi-layer clouds over Leh-Ladakh during 2022–2023.

The Author



Ashok K. Singal

Our net motion in the Universe inferred from quasar redshifts

The Earth goes around the Sun at ~ 30 km/s while the Sun along with the Earth and the remaining Solar system bodies, apparently moves with a velocity ~ 250 km/s around the centre of our Galaxy (Milky Way aka Aakash Ganga). The Milky Way itself seems to be moving within the local group of galaxies, which may itself be moving with respect to the Virgo Super-cluster of galaxies and so on. A question may then arise - does relative motion exist on all scales? Or is there some large enough scale beyond which, except for the uniform Hubble expansion of the Universe, there is no other relative motion between constituents of the Universe. In other words, if we go to larger and larger scales in the Universe and keep adding all the intermediate velocity vectors, will the result at some stage converge to a certain unique value, giving our net speed and direction with respect to the rest of the Universe.

The Cosmological Principle (CP) comes to our help which says that beyond a certain large enough scale the Universe is homogeneous and isotropic and it is thought that on those scales (≥ 1 billion light years), apart from the Hubble expansion of the Universe, there is no other relative motion between its constituents. In this scenario, one can assign these chunks of the expanding Universe what are called comoving coordinates. However, on smaller scales, there may be relative motion between parts of such large chunks. For example, we observers, moving along with the Solar system (sans annual orbital motion of the Earth around the Sun which in any case is cyclic over a year), may have a net motion with respect to our local comoving coordinates, which accordingly is our motion with respect to the distant average Universe. Therefore, if we determine our motion with respect to some of the most distant objects in the Universe, that will be our peculiar motion.

According to the CP, the Universe to a comoving observer should appear isotropic, without any preferred directions. A peculiar motion of the observer, nevertheless, might introduce a dipole anisotropy in some of the observed properties of the Cosmos. A dipole anisotropy has been observed in the Cosmic Microwave Background (CMB), which when interpreted due to a peculiar motion of the solar system, gives a velocity 370 km/s along a certain direction in the sky.

Our peculiar motion, however, should not depend upon what techniques or sources on large scales we employ to determine it. The redshift distribution of distant objects like quasars, according to the CP, should have an isotropic distribution for an observer stationary in the comoving coordinates. However, his/her peculiar motion would introduce a dipole in the apparent redshift distributions. An investigation of the redshift distribution of 1.3 million quasars around the sky, has shown a clear dipole asymmetry which we have used to determine the Solar peculiar motion in the Universe. The observed peculiar motion vector turns out to be not only much larger (by a factor of 4 to 5) than the peculiar motion magnitude estimated from the anisotropy in the CMB, but also nearly in a direction at a right angle to it; in fact, quite unexpectedly, in the direction of the Galactic Centre (Figure 1). The Solar peculiar motion, determined from the redshift distribution of quasars, turning out to be significantly different from that inferred from the CMB anisotropy, raises doubts about the CP, the corner stone of almost all modern cosmology.

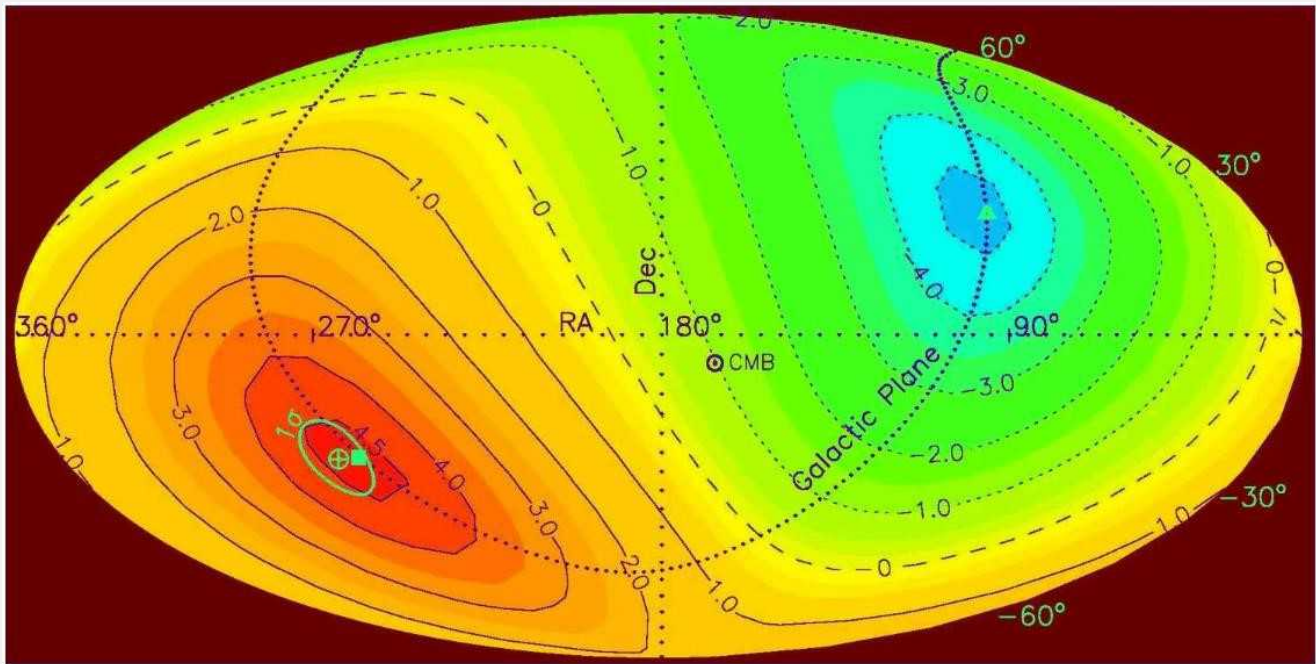


Figure Caption: G: Coloured sky-map of the peculiar velocity estimates, in units of the CMB value of 370 km/s. Redder colour represents higher velocity values. The maximum velocity direction is indicated by the symbol G (in light blue), with 1σ errors shown by an ellipse (in light blue) around it. The symbol indicates the CMB pole position. ■ (in light blue) indicates position of the Galactic Centre while ▲ (in light blue) indicates position of the Galactic Anticentre.

Source/Reference of the Work: <https://rdcu.be/eCY3o>

The Author



A K Sudheer

Upper Ocean Carbon Export Flux Estimation in the East Indian Ocean Using ^{234}Th

(S. Subha Anand, R. Rengarajan, **A. K. Sudheer**, and V. V. S. S. Sarma)

The Biological Carbon Pump (BCP) refers to the process by which marine phytoplankton convert CO_2 into organic carbon and transfer it below the euphotic zone, where it gets stored over extended timescales. In the East Indian Ocean, the strength of the BCP in sequestering atmospheric CO_2 is still uncertain due to limited investigations. In this study, we estimated the export flux of Particulate Organic Carbon (POC) in the Indian Ocean (0–300 m depth), including the East Indian Ocean, by employing ^{234}Th as a proxy for particle flux. Integrated ^{234}Th deficit fluxes for euphotic depth and the estimated POC export flux varied from negligible to $2,025 \pm 87 \text{ dpm m}^{-2} \text{ d}^{-1}$ and negligible to $6.6 \pm 0.6 \text{ mmol C m}^{-2} \text{ d}^{-1}$, respectively. The BCP efficiency varied from negligible (in coastal Arabian Sea) to 14% (near equator), except for the Andaman Sea (0%–80%). Compilation of ^{234}Th based POC export flux and export efficiency for spring intermonsoon season from Joint Global Ocean Flux Studies (JGOFS, 1990–96) and GEOTRACES (2013–14, present study) showed high export flux and efficiency in the open Arabian Sea and in the Equatorial Indian Ocean but low POC export flux and efficiency in the Bay of Bengal, Andaman Sea, East Indian Ocean, and South Indian Ocean. Although low in magnitude, the Equatorial Indian Ocean sequesters atmospheric CO_2 similar to the equatorial – Atlantic and Pacific Oceans. Atmospheric CO_2 increased by 40 ppm in 2 decades but POC export flux in the Indian Ocean region did not vary significantly.

Source/Reference of the Work: <https://doi.org/10.1029/2024GB008374>

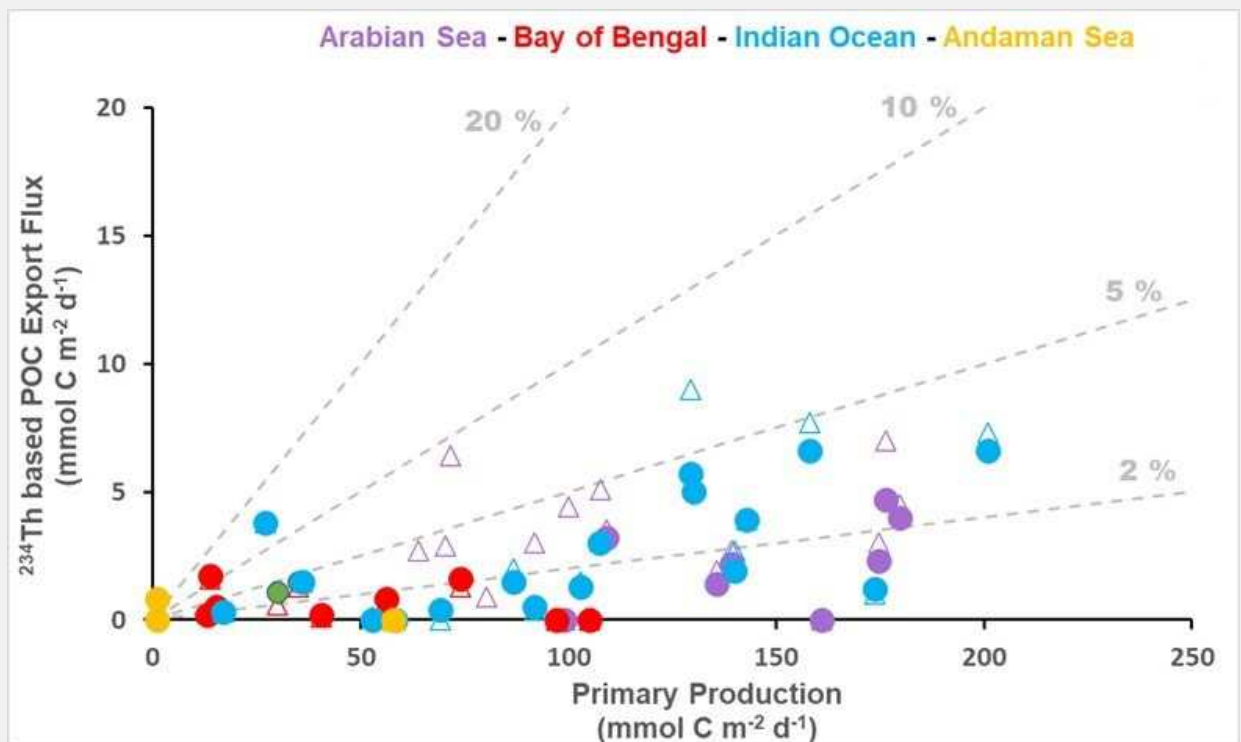


Figure Caption: Relationship between Primary Productivity and ^{234}Th -based Particulate Organic Carbon (POC) export flux.

The Author



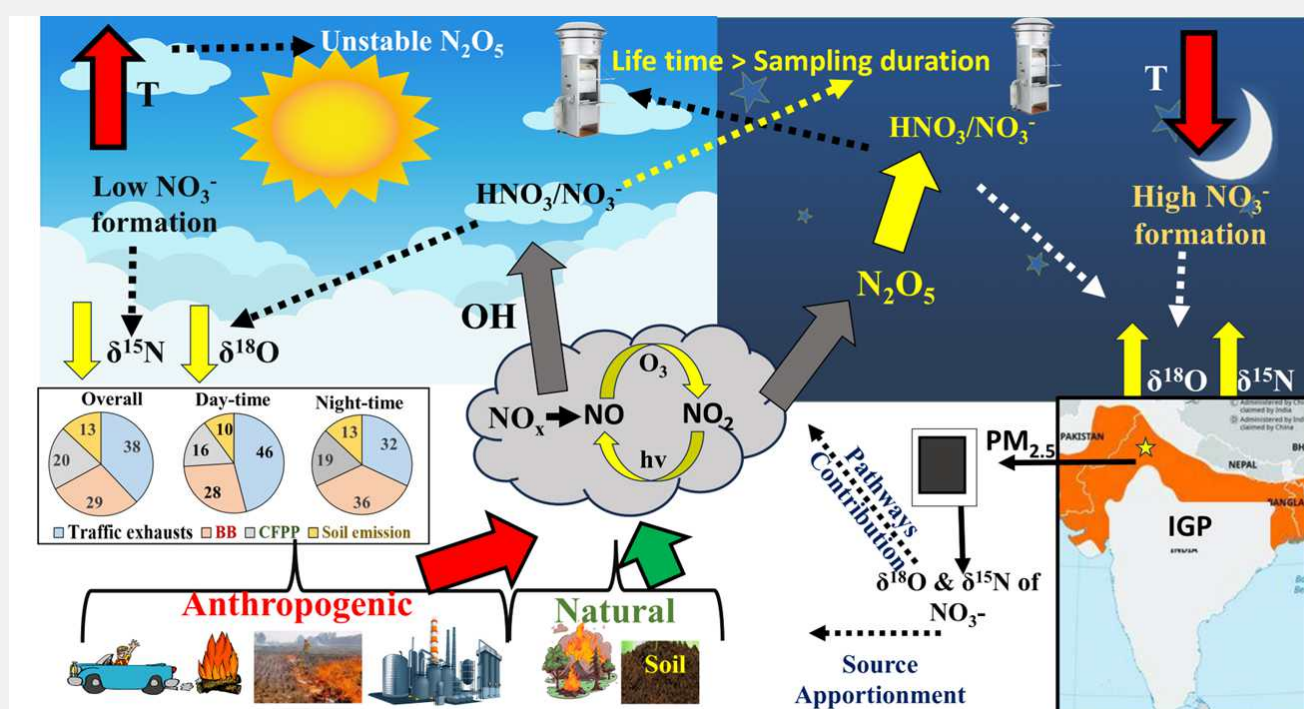
Chandrima Shaw

Formation pathways of particulate NO_3^- and sources of its precursor over the northwest India: Insights through dual isotopes

(Chandrima Shaw, Neeraj Rastogi, Ritwick Mandal, Prasanta Sanyal)

NO_x plays a vital role in tropospheric ozone formation, OH radical recycling, and acts as a precursor to the formation of particulate nitrate (pNO_3^-), a major reactive nitrogen species. pNO_3^- mainly forms via four pathways: oxidation of NO_2 by OH (P1), N_2O_5 hydrolysis (P2), reactions with VOCs (P3), and ClO (P4). However, studies on its sources and formation mechanisms are limited. This study uses dual isotopes ($\delta^{18}\text{O}$ and $\delta^{15}\text{N}$) of NO_3^- to explore the diurnal variations in NO_x sources and NO_3^- formation pathways over Patiala, a semi-urban site in the northwestern Indo-Gangetic Plain (IGP), during a large-scale paddy residue burning. The major formation pathway was P1 ($79.6 \pm 7.2\%$), followed by P2 ($16.1 \pm 7.5\%$), while P3 and P4 were negligible ($<5\%$). Higher $\delta^{18}\text{O}$ at night along with longer atmospheric lifetime of NO_3^- suggested persistence of daytime-formed NO_3^- into night-time samples, while enhanced P2 contribution during night was consistent with theoretical expectations. A strong anti-correlation between temperature and both NO_3^- concentration and nitrate oxidation ratio (NOR), together with a positive correlation between $\delta^{15}\text{N}$ and $\delta^{18}\text{O}$, further supported the dominance of P1 and P2 pathways. Source apportionment indicated traffic ($38 \pm 18\%$), biomass burning ($29 \pm 18\%$), coal-fired power plants ($20 \pm 11\%$), and soil activity ($13 \pm 9\%$) as the major contributors to NO_x . These findings highlight the influence of gas-particle partitioning, temperature, and emission sources on the isotopic signature of NO_3^- , emphasize the role of both fossil fuel combustion and biomass burning in regional NO_x loading, and underline the need for time-resolved isotopic studies of both gaseous and particulate phases to better capture the combined effects of sources, meteorology, and atmospheric chemistry on reactive nitrogen cycling.

Source/Reference of the Work: <https://doi.org/10.1016/j.atmosenv.2025.121426>



The Author



Balan S.

Assessing Dst prediction models for forecasting the geoeffectiveness of ICME structures

(Balan, S., Sarkar, R., and Srivastava, N)

CMEs are well known as the major drivers of space weather disturbances causing intense geomagnetic storms when the interplanetary magnetic field (IMF) carried by the solar wind reconnects with the geomagnetic field. Reconnection is favoured when the IMF is oriented southwards ($B_z < 0$), with stronger negative B_z resulting in more intense storms. CMEs tend to possess enhanced B_z profiles, making them the most geoeffective structures carried by the solar wind. Intensity of a geomagnetic storm is described through various storm indices such as Disturbance storm time (Dst) index and SYM/H. We implemented five semi-empirical Dst prediction models to estimate the storm profile and intensity of two of the most intense geomagnetic storms caused by isolated CME events: the storm of 17 March 2013 (from solar cycle 24, with a peak Dst of -132 nT) and the storm of 24 April 2023 (from solar cycle 25, with a peak Dst of -213 nT). These storms have been characterised as ‘two-step’ storms because of the passage of two distinct ICME structures- their geoeffective sheaths and magnetic clouds. We compare the model-predicted SYM/H profiles in the sheath and cloud regions with the measured SYM/H index recorded in the OMNI database by evaluating the difference in the recorded and predicted SYM/H minima and the time difference between the storm minima. In this study, we defined a new metric, CI, the ‘storm coupling integral’, by integrating a solar wind coupling function over a time interval to quantify its geoeffectiveness. In addition to indicating the geoeffectiveness, CI can be used as a tool to assess and improve the overall performance of forecast models. Our study demonstrates that among the five models evaluated, the Temerin & Li (2006) model excels in predicting the overall storm profile and peak time of geomagnetic storms.

Source/Reference of the Work: <https://doi.org/10.1007/s12036-025-10082-8>

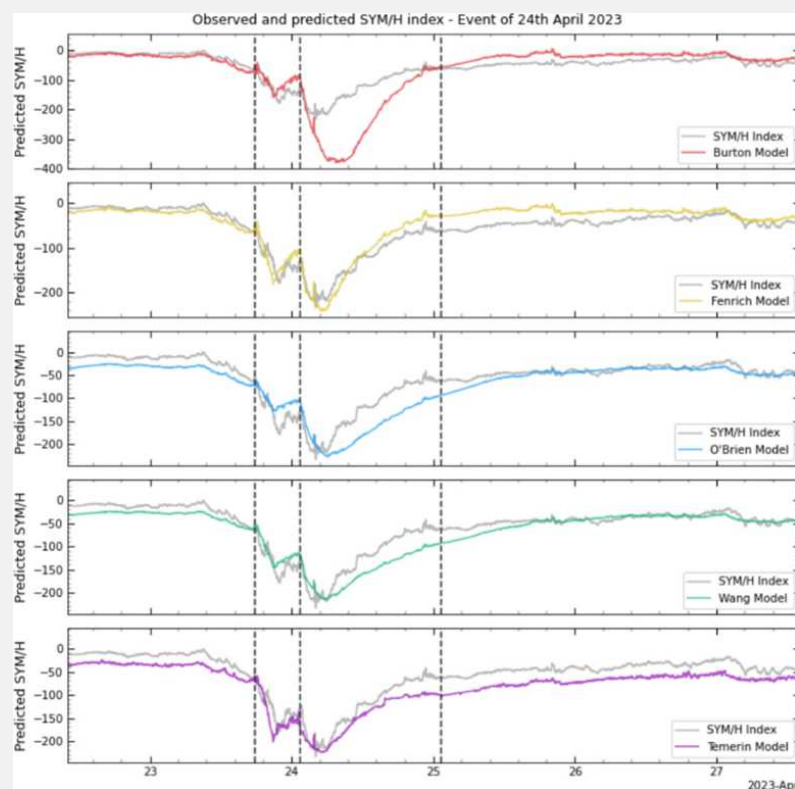


Figure Caption: Observed SYM/H index, with SYM/H predictions using five different Dst forecast models for the period surrounding the geomagnetic storm on 24 April 2023. The strongest geomagnetic storm of the cycle at the time, the storm intensity appears to have been enhanced by the prolonged duration of negative prior to the storm, resulting in two peaks of -179 and -213 nT.

The Author



**Debika
Debnath**

Floquet-engineered diode performance of a topological Josephson junction composed of two Kitaev chains coupled via a quantum dot

(Koustav Roy, Gourab Paul, **Debika Debnath**, Kuntal Bhattacharyya and Saurabh Basul)

When two superconductors are connected through an intermediate weak link, it forms a Josephson junction and Josephson supercurrent can flow through this heterostructure without any external voltage, when a finite superconducting phase difference exists across the leads. Engineering of the Josephson junction to achieve uni-directional current is one of the primary focus of modern condensed matter physics, to obtain energy-efficient switching mechanism via supercurrent control. Following this basic principle of Josephson current, the key context of this work is to use Debika Debnath time-dependent Floquet drive as a tool to engineer Majorana mediated superconducting diode effect in a Josephson junction. We have considered a Josephson junction which is composed of two Kitaev chains, which are essentially p- type unconventional superconductors, and we have coupled the Kitaev chains through a gate-tuneable quantum dot. We have employed the external time-driven electric fields, known as Floquet drive on the two lead superconductors with different frequencies, and we find this external drive breaks the time-reversal symmetry and the inversion symmetry of the Josephson junction and effectively generates a new engineered way for achieving different forward and backward Josephson currents through the heterojunction. We measure the difference between the forward and backward currents as the rectification coefficient of the Josephson junction. We vary the frequencies of the Floquet drive, the chemical potential of the lead Kitaev chains, and the gate voltage of the quantum dot to study the changes in the Josephson currents and the rectification coefficients. We find, our model Josephson junction shows the highest Josephson current and finite nonreciprocity when the lead's chemical potential lies in the topological domain. By modulating different system parameters, we achieve the Josephson diode effect upto~70% in our Josephon junction.

To summarise, in this work, we provide an alternative scenario, replacing the traditional usage of an external magnetic field and spin-orbit coupling effects in a Josephson diode via asymmetrically driven Kitaev leads that entail Majorana- mediated transport. Our model Josephson junction has high potential for experimental realisation and engineering perspectives.

Source/Reference of the Work: <https://doi.org/10.1103/69jq-rscsb>

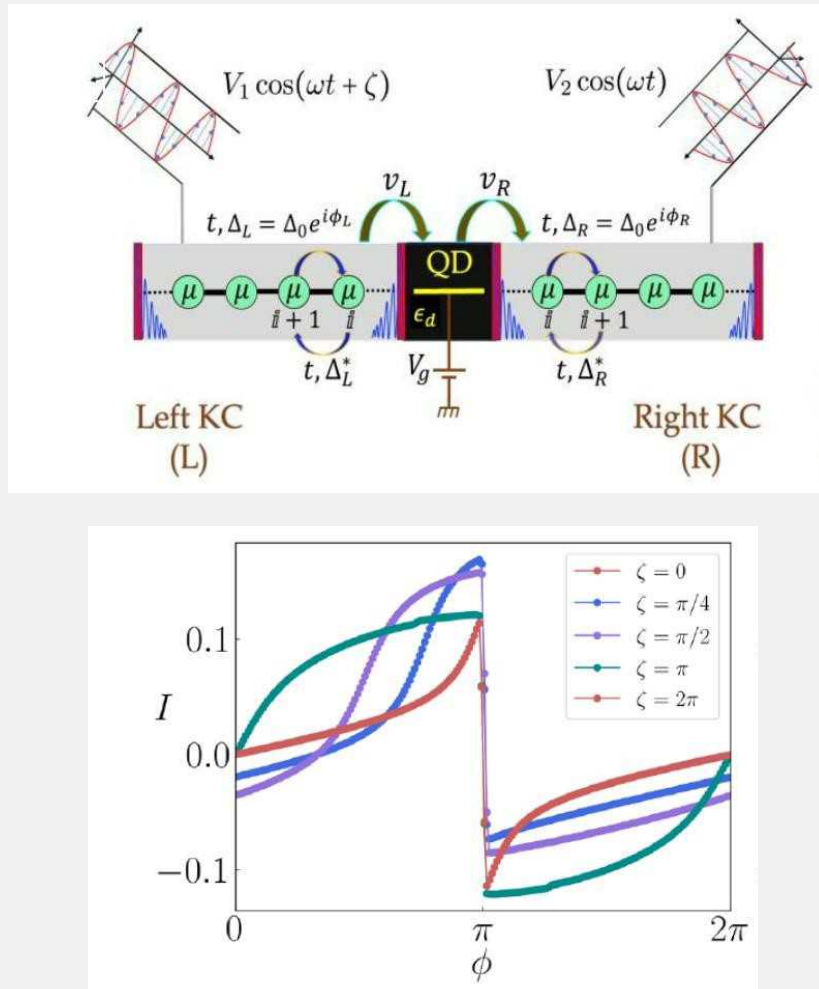


Figure Caption: : Schematic model of Josephson junction, where two p-wave superconductors (Kitaev chains) with chemical potential μ , hopping strength t are connected via a QD-based weaklink (highlighted in black) is presented. The superconducting phase difference $\phi_L - \phi_R = \phi$ is maintained across the junction that generates Josephson current. The energy level of the QD (ϵ) is tuned via an external gate voltage V_g . Two periodic drives with cosine functions with different amplitudes V_1 and V_2 are applied to the left (L) and right (R) Kitaev chains with a Floquet frequency ω accompanied by a finite phase difference ζ . The Majorana modes are localized at the left and right edges of the Kitaev chains and at the interfaces of the QD, which are denoted as red bars with their confined probability densities marked in blue lines.

b) The time-averaged Josephson current I (in units of $2e/h$) vs the superconducting phase difference ϕ is plotted at a particular Floquet frequency $\omega = 3$ for different values of the asymmetric Floquet drive parameter ζ .

4th CNIT Division Nukkad – Chai Pe Byte on “ज्ञानपुनरुत्थान – SPACENET Refresh (Revive, Restore, Relearn)”

The 4th CNIT Division Nukkad – Chai Pe Byte on “ज्ञानपुनरुत्थान – SPACENET Refresh (Revive, Re-store, Relearn)” was held on August 01, 2025 during 14:00hrs to 16:00hrs. This event was held in offline mode both at Main Campus and Thaltej Campus. There were 40 participants attended the session. In the session, 80% discussion was in Hindi and 20% discussion was in English.

The “Chai Pe Byte” initiative by the CNIT Division is designed to foster a culture of knowledge sharing, experience exchange, and collaborative problem-solving. Its core aim is to identify and address IT-related challenges faced by users, while strengthening the connection between the CNIT Division and PRL colleagues. By creating an informal yet focused platform for dialogue, the initiative contributes to enhancing the effectiveness and efficiency of PRL’s IT services and infrastructure.

CNIT has observed that ISRO/DOS SPACENET network services like Sarv-Nabh, Intranet ISRO/DOS center's/Unit's websites browsing are primarily used by PRL fraternity for file sharing within ISRO/DOS or browsing ISRO/DOS internal web services. It's often observed that SPACENET related support requests reach CNIT at the last minutes, largely because these services are not integral part of our daily workflow, leading to infrequent use and over time, reduced familiarity with their functionalities. To bridge this gap, CNIT has taken a new initiative and planned a first live hands-on interactive awareness session “ज्ञानपुनरुत्थान – SPACENET Refresh (Revive, Restore, Relearn)” under the banner of CNIT Nukkad – Chai Pe Byte. The main objective of this initiative is to encourage participants to re-explore, relearn, and restore their connection with SPACENET and use the SPACENET services quickly whenever the need arises.

By combining technical awareness with interactive learning, the session empowered participants to integrate SPACENET into their workflows more effectively, reinforcing the overarching mission of Chai Pe Byte.

Mr. Alok Shrivastava and Mr. Tejas Sarvaiya welcomed all the participants at the Main Campus and Thaltej Campus respectively. All participants at both the locations were briefed on the overall SPACENET infrastructure and its key services, including Sarv-Nabh (ISRO/DOS-wide file sharing), VAST/VISWAS, Office Orders, SPACENET websites of other ISRO/DOS centers and units, and staff contact directories etc. There was discussion on PRL’s web based file transfer service “TempShare” to transfer files between PRL LAN and PRL’s SPACENET network. CNIT team demonstrated live to highlight how to access and utilize these services effectively.

The hands-on session was well coordinated across both the campuses by the following CNIT members.

- Main Campus: Mr. Yagnik Lakum and Mr. Rahul Parmar provided all technical support and guidance to participants. They helped them on how to use “Tempshare” and “ISRO/DOS SarvNabh” facility.
- Thaltej Campus: Mr. Devarshi Brahmhatt, Mr. Tejas Sarvaiya and Mr. Vaibhav Rathore provided all technical support and guidance to participants. They helped them on how to use “Tempshare” and “ISRO/DOS SarvNabh” facility.

All the participants personally carried out hands-on activities on “SarvNabh” and “Tempshare”, giving them to reconnect themselves with the functionalities and usage of SPACENET services. The hands-on activities played a pivotal role in fulfilling the event’s core theme of “Revive, Restore, and Relearn.”

- Revive: Participants revisited SPACENET services, they had previously used but gradually distanced from, reigniting their familiarity.
- Restore: Through guided practice, they reconnect themselves with SPACENET services.
- Relearn: The interactive format allowed them to deepen their understanding, correct misconceptions, and update their knowledge with current best practices.

This immersive experience empowered participants to seamlessly integrate SPACENET services into their workflows, ensuring readiness and efficiency whenever the need arises.

The session proved highly beneficial and given insights of SPACENET services. The attendees overwhelmingly expressed gratitude for the valuable insights and commanded the CNIT division’s new innovative under the “ज्ञानपुनरुत्थान – Revive, Restore, Relearn” CNIT Nukkad – Chai Pe Byte.

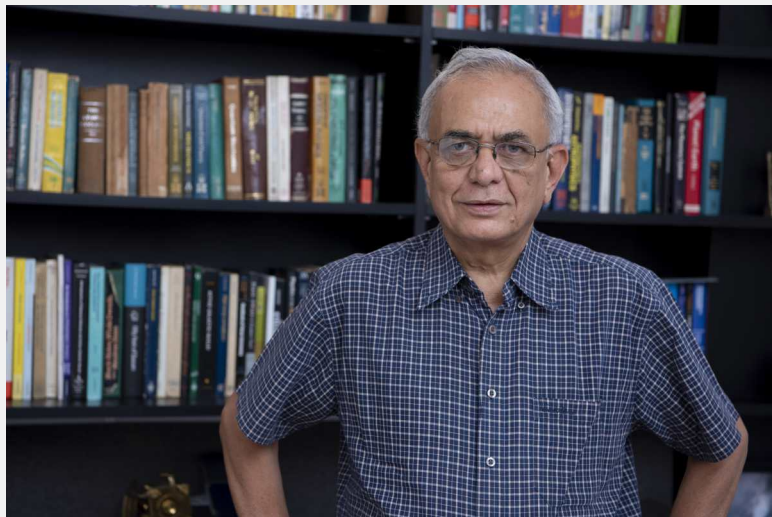
All participants demonstrated enthusiastic engagement throughout the event and sincerely appreciated the dedicated efforts of the CNIT Division. Their active involvement enriched the overall learning experience and made the session truly interactive.

The CNIT members sincerely thanks Director, PRL, for his constant guidance and motivation to initiate such activities in different IT verticals. The CNIT team thank Registrar, PRL, and Dean, PRL for their support. The team also thank Prof. Bijaya Sahoo, Prof. Varun Sheel, Prof. Namit Mahajan, Dr. Shanmugam for their guidance and support in all the IT related activities and projects. From the bottom our hearts, CNIT team thank all the participants who enthusi-astically participated, provided their valuable feedback and encouraged us to conduct similar events in future. CNIT also thank all the PRL users for their cooperation and support.



Glimpses of the Event

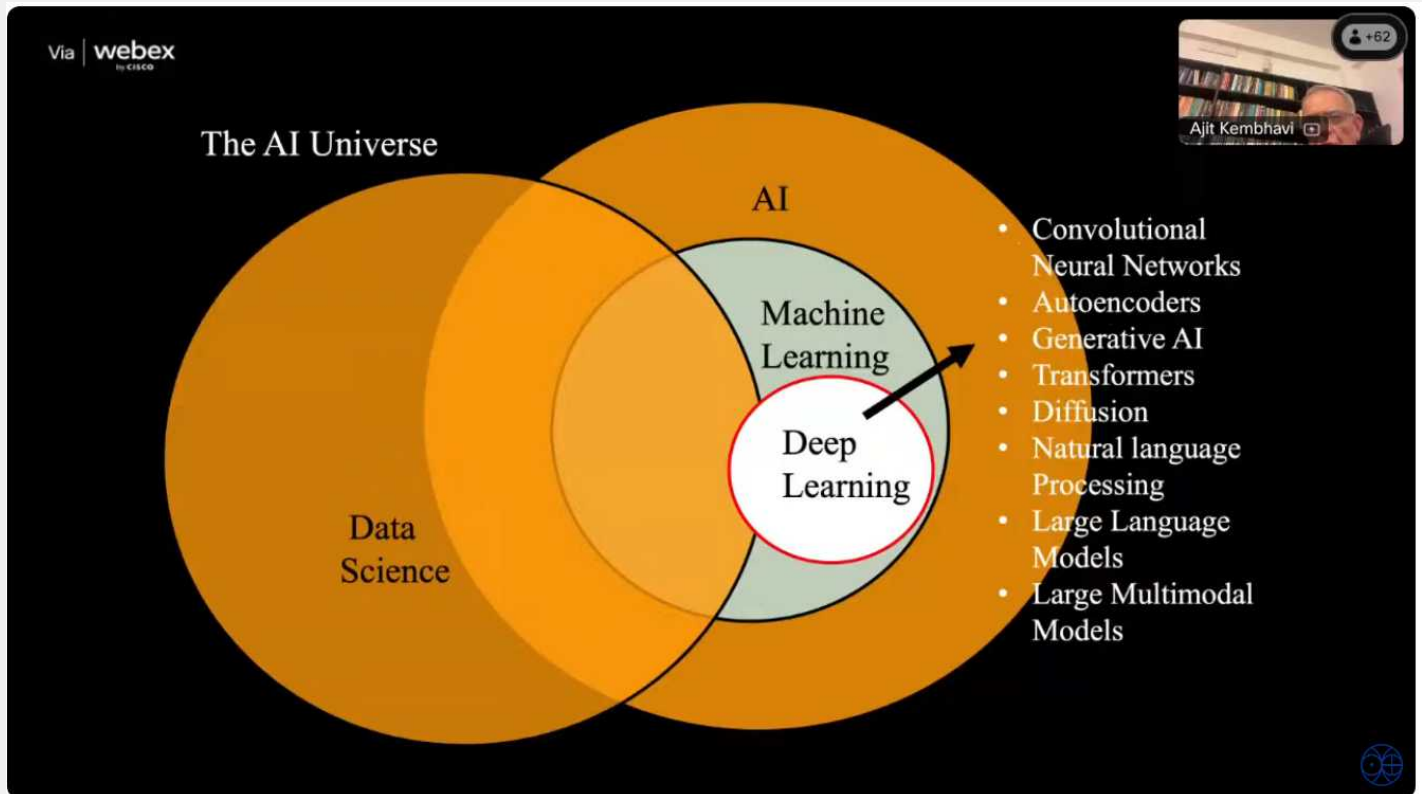
PRL ka Amrut Vyakhyaan - 107



The 107th PRL Ka Amrut Vyakhyaan was delivered on 6 August 2025 by the eminent astro physicist Prof. Ajit Kembhavi, Professor Emeritus at the Inter-University Centre for Astronomy and Astrophysics, Pune. In his Vyakhyaan, titled ‘AI, Astronomy and Citizen Science’, Prof. Kembhavi provided an insightful overview of AI and its applications to astronomical data for unraveling the hidden Universe.”

Prof. Kembhavi began the Vyakhyaan by highlighting the significant contributions of PRL to the development of India’s space programme. He then moved to the topic of Artificial Intelligence (AI) in Astronomy, with a particular focus on data-driven approaches. To illustrate the power of data in shaping scientific understanding, he noted how observational data led to Kepler’s laws of planetary motion, which in turn laid the foundation for Newton’s law of gravitation. He showcased diverse astronomical datasets and multi-wavelength images, discussing how morphological and spectroscopic features observed across the electromagnetic spectrum provide a more complete view of celestial objects. He emphasized the enormous volumes of data produced by surveys and observatories such as SDSS, ASTROSAT, and GMRT, and highlighted the transformative potential of forthcoming facilities like TMT, LIGO-India, and SKA, which will further expand the scale of astronomical data. Prof. Kembhavi stressed that analyzing such vast datasets with machine learning and deep learning methods is key to advancing our understanding of the universe. He provided an overview of widely used algorithms — including artificial neural networks, random forests, support vector machines, autoencoders, convolutional neural networks, generative adversarial networks, and transformers — and outlined their applications in astronomy, ranging from spectral and morphological classification to image deconvolution. He also presented several scientific results from projects in which he has been directly involved that employ AI methods. He further discussed the importance of quality-assurance techniques in AI for ensuring the reliability of predictions. Moving to advanced topics, he spoke about transformative AI and explainable AI, both of which are becoming increasingly vital for addressing complex scientific questions. Toward the end of the Vyakhyaan, he highlighted the role of citizen science programmes, underscoring their value in enabling the public to contribute to the identification of celestial objects and patterns in large astronomical datasets. He also discussed the outcomes of an Indian citizen science programme in which he is actively engaged.

Altogether, Prof. Kembhavi’s Vyakhyaan offered an inspiring perspective on the power of AI in astronomy, highlighting how these tools can unlock new frontiers in our quest to understand the Universe.



Youtube Link: <https://www.youtube.com/live/0dszvWSb9ZU>

National Space Day Celebrations (NSpD) at Udaipur Solar Observatory (USO)

The opening event of USO-PRL's NSpD 2025 celebrations was organized at Mohanlal Sukhadia University (MLSU), Udaipur, on 12 August 2025 (Vikram Jayanti Day). On this occasion, a lecture on the theme "India's Space Journey Towards a Viksit Bharat" was delivered by USO faculty. The program was conducted successfully and was attended by about 200 UG, PG, and Ph.D. students, along with the faculty members of the Department of Physics, MLSU.



Group photo from MLSU (NSpD event of USO, PRL, on 12 August 2025)

On 20 August 2025, USO-PRL, organized a full-day open house programme for a total number of 130 students and 25 teachers from 7 schools and 6 colleges located in Udaipur city as well as in the sub-urban areas of the Udaipur district. This open house programme was arranged in two sessions: the forenoon sessions was exclusively for the school students and the accompanying teachers starting at 9:00 am, whereas the afternoon session was committed for the college students and their teachers which began at 2:00 pm post lunch. USO-PRL, conducted various activities during the open house programme, such as lectures and quiz competition on the development of Indian Space Science Programme, The Sun and the Space Weather and interactions with the students, illustrations of the scientific and technical activities of USO-PRL, through posters and visit to the various solar observing facilities of USO, PRL, viz., the state-of-the-art Multi-Application Solar Telescope (MAST) operational at the Island Observatory inside the lake Fatehsagar, Udaipur and the international Global Oscillation Network Group (GONG) solar optical telescope as well as the Solar Radio Telescope located inside the main office campus of USO.

This programme remained highly successful as the students and teachers enthusiastically participated in our programme and showed keen interest in the scientific and technical activities being carried out by USO, PRL. The participants also appreciated our efforts in giving them the exposure of the journey of Indian Space Science programme from the age of sending the “Aryabhata” satellite into space to the era of Chandrayaan, Mangalyaan, Aadiya L1, and now Gaganyaan. A few photos from this event are being shared herewith. All USO members, viz., Faculty, Engineers, Senior Administrative Officer and staff, Technical staff, Research students, Post-Doctoral Fellows, Technical and Administrative trainees, Telescope Operator Trainees, Project Students, Contractual staff, and Security personnel enthusiastically worked for the event. We also got very good support from State Disaster Response Force (SDRF) of Rajasthan State in remaining vigilant on the transportation of students and teachers across the lake. All these made our event a great success.



Glimpses of the Event

Vikram Sarabhai Jayanti at PRL

Every year we celebrate Vikram Sarabhai Jayanti on 12th August in all the campuses of PRL. This year we celebrated the 106th Birth Anniversary of Prof. Vikram Sarabhai, who is the father of Indian Space Programme and founder of Physical Research Laboratory (PRL), a function was organised in his remembrance at PRL Main and Thaltej Campus.

The function started at PRL Main campus at 09:30 hrs. on Tuesday, 12th August by garlanding the statue of Prof. Vikram Sarabhai by Sarabhai family members along with other dignitaries invited from SAC-ISRO, IIT-RAM etc. and members of PRL.

Thereafter, a tree plantation was organised at PRL Main campus. The Dignitaries and New Joinees including Students, participated in tree plantation with great zeal and enthusiasm. More than 61 plants of various species, like Night-blooming Jasmine, Madhukamini, Jasud, Paras, Gardenia, Tabebuia, Safflower, Ixora, were planted.

Vikram Sarabhai Jayanti was also celebrated at PRL Thaltej Campus at 11:00 hrs by garlanding the bust of Prof. Vikram Sarabhai by Retirees, Senior Faculties of PRL.

Tree Plantation was also organised at PRL Thaltej Campus. Here, more than 43 plants of various species, like Red Karan, White Karan, Chandi, Tecoma, were planted by PRL Retirees, Senior Faculties, New Joinees & Students of Thaltej Campus.

The function concluded, as per the PRL's tradition of distributing Churma Ladoos (made at PRL Canteen) to mark the Birth Anniversary of Prof. Vikram Sarabhai.



Glimpses of the Event

79th Independence Day Celebration

The 79th Independence Day was celebrated with enthusiasm at the Library lawn of PRL Main campus, on Friday, 15th August, 2025.

Dr. Anil Bhardwaj, Director, PRL, hoisted the National flag, which was followed by the National Anthem. In accordance with protocol, a parade was conducted by the CISF, PRL, to symbolize methodology and perseverance. Dr. Anil Bhardwaj, Director, PRL, also delivered an enriching and patriotic speech, highlighting the scientific and other activities carried out by PRL during the past year.

Merit awards were presented to the CISF cadets, and service awards were given to PRL employees who have completed 25 years of service at PRL.

In remembrance of our heroes and freedom fighters who sacrificed their lives for the nation, bringing us freedom, peace, and joy, a fancy dress programme for the Children of PRL employees was organized. Children aged 2 to 12 dressed up as Rani Lakshmi Bai, Subhash Chandra Bose, Shahid Bhagat Singh, Mother Teresa, and Sardar Vallabhbhai Patel. These children also delivered short speeches about the national heroes they portrayed, and Dr. Anil Bhardwaj, Director, PRL, encouraged them by presenting awards.

Additionally, prizes were distributed for various events, including the annual badminton, the annual bridge tournament, and the Rajbhasha Pratibha Puraskar.

To commemorate Independence Day, tri-colored balloons were released by the children, followed by a tree plantation activity by PRL members and their families.



Glimpses of the Event

79th Independence Day Celebration at Udaipur Solar Observatory

The 79th Independence Day was celebrated with great enthusiasm at the Udaipur Solar Observatory / Physical Research Laboratory, Udaipur. The premises were decorated to create a patriotic atmosphere.

The celebration began with the ceremonial hoisting of the National Flag by Dr. Shibu K. Mathew, Head, USO/PRL, Udaipur followed by the singing of the National Anthem, which filled the gathering with pride and unity. On this occasion, Dr. Mathew extended his warm greetings and wished everyone a Happy Independence Day.



Dr. Bhuwan Joshi, Deputy Head, USO/PRL, Udaipur delivered an insightful speech on the history and progress of Indian space science, highlighting its achievements and future potential. Further he also briefed about Udaipur Solar Observatory and its achievement and future goals. Prof. Nandita Srivastava and Dr. Brajesh Kumar, who both completed 25 years of service at USO/PRL shared their experiences and motivated the audience with their reflections.



TA felicitation ceremony was also held, where Mr. Sunil received the Best Security Personnel Award (2024–2025) in recognition of his dedicated service. Prizes were also distributed to the winners of the Yoga Day Competition held on 21st June, encouraging participation in health and wellness activities.



Adding significance to the occasion, family members of staff participated in a plantation drive within the campus, promoting environmental responsibility and the vision of a greener future. The celebration concluded with a vote of thanks, acknowledging the contributions of dignitaries, staff, participants, and organizers. The event strengthened the spirit of patriotism and reinforced the values of unity, service, and commitment to building a sustainable and progressive nation.



Glimpses of the Event



National Space Day (NSpD) 2025 Celebrations at Physical Research Laboratory

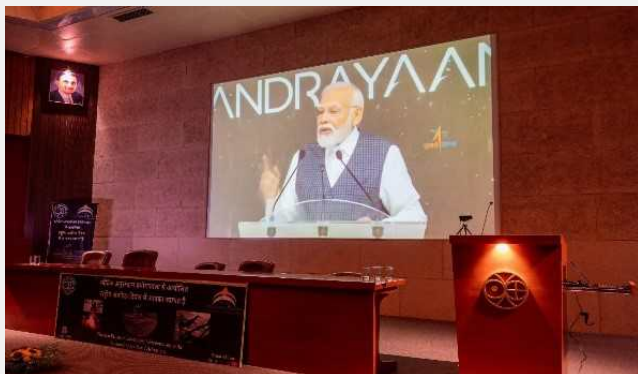
India created history on 23rd August 2023 by becoming the first nation to successfully soft land near the south pole of the Moon. To commemorate this remarkable achievement, the honorable Prime Minister of India, Shri Narendra Modi ji, declared the day as the National Space Day and encouraged everyone to celebrate this unique achievement every year across the country. The Department of Space has organized nationwide celebrations throughout August 2025 to inspire and engage the youth in space science and its applications. In this spirit, the Physical Research Laboratory (PRL) organized various events including the a students workshop, an open house event and lectures and students interections at different educational institutions.

A workshop on the theme “India in Space: Past, Present and Future” has been organized on 20th August 2025 at its Navrangpura campus, Ahmedabad. The workshop focused on highlighting India’s scientific heritage while encouraging the younger generation to look forward towards future opportunities in space exploration. The NSpD workshop was marked by engaging exhibits, insightful talks, and interactive sessions, making it a vibrant occasion for all participants. The workshop began at 8:30 AM with demonstrations of space science and exploration exhibits. PRL scientists delivered insightful talks on planetary and space exploration, meteorite studies, and a virtual tour of the Mt. Abu Observatory. Each talk was followed by interactive question-and-answer sessions with students. Around 300 students and teachers from 8 schools and 2 colleges across Gujarat and Rajasthan actively participated in the workshop.

The Udaipur Solar Observatory (USO) campus of PRL also organized a full-day open house programme for about 130 students and 25 teachers from 7 schools and 6 colleges located in Udaipur city as well as in the sub-urban areas of the Udaipur district. The open house had included various activities such as lectures and quiz competition, engaging interactions with the students, and illustrations of the scientific and technical activities of USO through posters. In addition, visits to the state-of-the-art Multi-Application Solar Telescope (MAST) operational at the Island Observatory inside the lake Fatehsagar, Udaipur and the international Global Oscillation Network Group (GONG) solar optical telescope at USO were arranged. Additionally, a lecture on the theme “India’s Space Journey Towards a Viksit Bharat” was also delivered by a USO faculty at Mohan Lal Sukhadia University (MLSU), Udaipur, on 12 August 2025. This lecture was attended by around 200 UG, PG, and Ph.D. students, along with the faculty members of the Department of Physics, MLSU.

To reach out to maximum number of students, PRL scientists from Ahmedabad, Mt. Abu, and Udaipur campuses visited different schools, colleges and universities across Rajasthan (Mount Abu, Abu Road, Sirohi, and Udaipur) and Gujarat (Ahmedabad, Gandhinagar, Anand, Sihol, Vadodara, and Palanpur), where they delivered lectures and interacted with students on several aspects of space exploration, reaching out to more than 3500 students.

These engaging celebrations would not have been possible without the coordinated contributions of every team, whether in designing exhibits, delivering lectures, guiding students, or managing logistics. The teamwork and passion shown for National Space Day celebration made this event memorable and aligned very well with its spirit.



Glimpses of the Event

Participation of PRL members in National Meet 2.0 and National Space Day at Bharat Mandapam

The "National Meet 2.0" and "National Space Day" were two significant, back-to-back events held at Bharat Mandapam in New Delhi, celebrating India's space prowess and future vision.

The celebrations opened on 22 August 2025 with National Meet 2.0, themed "Leveraging Space Technology and Applications for Viksit Bharat 2047." Designed as a high-level strategic convention, the meet brought together representatives from central ministries, state governments, private industry, academia, and start-ups to outline a roadmap for integrating space technology into every sector of national development. The day featured a vibrant innovation exhibition displaying breakthrough solutions from emerging space start-ups, research laboratories, and student innovators. Ten focused breakout sessions delved into priority areas such as agriculture, disaster management, health, education, infrastructure, climate monitoring, and digital governance—each session generating actionable recommendations for policy and collaboration. Senior ISRO scientists, cabinet ministers, and industry leaders engaged in lively discussions, underlining the crucial role of space-based services in achieving the nation's 2047 development goals.

The following day, 23 August 2025, witnessed the grand celebration of the 2nd National Space Day, commemorating the historic soft landing of Chandrayaan-3 on the lunar surface. With the inspiring theme "Aryabhata to Gaganyaan: Ancient Wisdom to Infinite Possibilities," the event paid tribute to India's centuries-old astronomical heritage while looking toward the boundless opportunities of the future. The programme included keynote addresses by eminent scientists and policy makers, and four dynamic panel discussions that explored the expanding space economy, new frontiers in planetary exploration, the rise of commercial space ventures, and the increasing leadership of women in India's space missions. A highlight was the interactive session with India's first "Gaganyatris," who shared personal insights from their astronaut training and mission preparations, inspiring students and young professionals alike.

Student and public engagement formed a core pillar of the celebrations. Across the country, schools and colleges hosted science fairs, outreach activities, and live interactions with ISRO scientists. Competitive events captured the imagination of youth, including the ISRO Robotic Challenge and the Bharatiya Antariksh Hackathon 2025, both of which attracted nationwide participation and cutting-edge solutions to real-world space challenges. The Union Minister of State felicitated winners during the inaugural session for Space, Dr. Jitendra Singh, who lauded their creativity and problem-solving abilities.

A delegation from the Physical Research Laboratory (PRL) attended the two-day celebration as keen observers. PRL's Director was present during the inaugural session, which featured the release of reports from various ministries, marking a moment that highlighted the collective national effort in space technology and applications. The rest of the delegation focused on gaining first-hand exposure to the wide-ranging technology showcases and thematic discussions. Enriched by these presentations and exhibits, the PRL delegation found the experience highly valuable for broadening perspectives and identifying new possibilities for future research directions.



Glimpses of the Event

PRL Amrut Rajbhasha Vyakhyaan (PARV) - 27



"पीआरएल अमृत राजभाषा व्याख्यान (पर्व)" का 27वां व्याख्यान 27 अगस्त, 2025 को आयोजित किया गया। इस अवसर के प्रमुख वक्ता डॉ. चंद्र प्रकाश सिंह, उप निदेशक, तकनीकी निदेशालय, IN-SPACe थे।

The 27th lecture of "PRL Amrut Rajbhasha Vyakhyaan (PARV)" was held on August 27, 2025. The eminent speaker for the occasion was Dr. Chandra Prakash Singh, Deputy Director, Technical Directorate, IN-SPACe.

डॉ. चंद्र प्रकाश सिंह के पास पृथ्वी अवलोकन (Earth Observation - EO) और भू-स्थानिक अनुप्रयोगों (Geospatial Applications) के क्षेत्र में इसरो (ISRO) और भू-स्थानिक उद्योग में विभिन्न क्षमताओं में कार्य करने का 24 वर्षों से अधिक का अनुभव है। उन्होंने बी.आई.टी. मेसरा, रांची से रिमोट सेंसिंग में एम.टेक. किया है। वर्तमान में वे IN-SPACe के तकनीकी निदेशालय में उपनिदेशक के पद पर कार्यरत हैं। उन्होंने भारत का प्रतिनिधित्व कई अंतरराष्ट्रीय मंचों पर किया है, जिसमें अंटार्कटिका वैज्ञानिक अभियान (2019-20) भी शामिल है। वे सभी प्रकार की पृथ्वी अवलोकन प्रणालियों और भू-स्थानिक अनुप्रयोगों के क्षेत्र में दक्ष हैं, जिनका उद्देश्य "जन और धरती के हित में कार्य करना" है।

Dr. Chandra Prakash Singh has over 24 years of experience in the field of Earth Observation (EO) and Geospatial Applications having worked in various capacities at ISRO and Geospatial Industry. He has done M.Tech in Remote Sensing from BIT Mesra, Ranchi. Presently, he is working as Deputy Director in the Technical Directorate of IN-SPACe. He has represented India on several international forums, including the Antarctica Scientific Expedition (2019-20). He is expert in all types of earth observation systems and geospatial applications with the aim of "working for the benefit of people and planet".

व्याख्यान का शीर्षक था/ The vyakhyaan was titled "भारत में अंतरिक्ष क्षेत्र सुधार की संकल्पना एवं मायने"

व्याख्यान में डॉ. चंद्र प्रकाश ने चर्चा की कि पिछले कुछ वर्षों में भारत के अंतरिक्ष क्षेत्र में अभूतपूर्व परिवर्तन हुए हैं। वर्ष 2020 में भारत सरकार ने इस क्षेत्र को निजी कंपनियों के लिए खोलते हुए पारंपरिक सरकारी प्रभुत्व वाले ढांचे से बाहर निकलने की दिशा में एक ऐतिहासिक कदम उठाया, जिसका उद्देश्य वैश्विक स्तर पर प्रतिस्पर्धा करने योग्य एक सशक्त, सुदृढ़ और सहभागी अंतरिक्ष पारिस्थितिकी तंत्र का निर्माण करना है।

In the Vyakhyaan, Dr. Chandra Prakash discussed that there have been unprecedented changes in India's space sector in the last few years. In the year 2020, the Government of India took a historic step towards moving away from the traditional government-dominated structure by opening up the sector to private companies, which aims to build a strong, robust and participatory space ecosystem that can be competitive at the global level.

उन्होंने आगे बताया कि भारत सरकार द्वारा कई महत्वाकांक्षी योजनाएँ प्रारंभ की गई हैं — जैसे ₹1000 करोड़ का वेंचर कैपिटल फंड, ₹500 करोड़ की तकनीकी सहायता निधि, PPP मॉडल पर आधारित पृथ्वी अवलोकन परियोजनाएँ, स्टार्टअप्स हेतु सीड फंडिंग, SSLV तकनीक का निजी क्षेत्र में हस्तांतरण, और GSaaS, SBaaS जैसे नवाचारी कार्यक्रम। इन प्रयासों के परिणामस्वरूप देश में वर्तमान में लगभग 300 से अधिक निजी अंतरिक्ष स्टार्टअप्स सक्रिय हैं, जो उपग्रह निर्माण, प्रक्षेपण यान, ग्राउंड ऑपरेशंस, डेटा प्रोसेसिंग और अनुप्रयोगों के क्षेत्रों में कार्यरत हैं।

He further addressed that many other ambitious schemes have been started by the Government of India, Such as Venture Capital Fund of ₹1000 crore, Technical Assistance Fund of ₹500 crore, Earth Observation Projects based on PPP model, Seed Funding for Startups, Transfer of SSLV Technology to Private Sector, and Innovative Programmes like GSaaS, SBaaS. As a result of these efforts, there are currently over 300 private space startups active in the country, working in the areas of satellite manufacturing, launch vehicles, ground operations, data processing and applications.

व्याख्यान के बाद एक रोचक प्रश्नोत्तर सत्र हुआ, जिससे श्रोताओं को विषय के बारे में नई और अधिक जानकारी प्राप्त हुई।
Following the lecture, there was an engaging Q&A session that gave the audience fresh insights and more details about the subject.



Via webex by CISCO

Space Sector

+53

- ✓ Promote greater participation of private sector in the value chain of space economy in order to develop robust, innovative and competitive space ecosystem.
- ✓ Formulate a responsive and stable regulatory framework for space activities.

The Government of India,

On 24th June 2020, approved far reaching reforms in the Space sector aimed at boosting private sector participation in the entire range of space activities.



Autonomous Body

For enabling Space activities by Non-Government activities

Single window Nodal Agency with it's own Cadre

+53

PRL Monthly Publications Digest

Atomic, Molecular and Optical Physics [03]

1. Jonas Kordt, Saptarshi Dey, Bodo Bookhagen, Georg Rugel, Johannes Lachner, Carlos Vivo-Vilches, Santunu Kumar Panda, Naveen Chauhan, Rasmus Thiede, 2025, Rapid Late Pleistocene Frontal Fault Growth and Sutlej Drainage Reorganization in the Western Himalaya, Lithosphere, Date of Publication: 25/08/2025, Impact Factor: 1.9
2. Ankit Sharma, Malika Singhal, Naveen Chauhan, Suchinder K. Sharma, 2025, Structure–defect–luminescence correlation in Cr³⁺-doped ZnTiO₄, Materials Science and Engineering: B, Date of Publication: 13/08/2025, Impact Factor: 4.6
3. Anirban Ghosh, Niladri Das, S. Chaitanya Kumar, Kavita Devi, and G. K. Samanta, 2025, Multi-GHz repetition rate, tunable ultrafast mid-IR source, Optics Letters, Date of Publication: 06/08/2025, Impact Factor: 3.6

Astronomy & Astrophysics Division [03]

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2. Singh, V., P. Kumar, A. K. Das, and V. Ojha, 2025, Intra-night Optical Variability and Radio Characteristics of Extremely Radio-loud Narrow-line Seyfert 1 Galaxies, The Astrophysical Journal, Date of Publication: 28/08/2025, Impact Factor: 5.4
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Udaipur Solar Observatory Division [01]

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Awards & Honours

1. Prof. Jayesh P. Pabari, Professor, Planetary Sciences Division, PRL, has been invited as a member of the Research Advisory Council (RAC) of L.D. College of Engineering, Ahmedabad.
2. Prof. D. Pallam Raju, Senior Professor, Space and Atmospheric Sciences Division, and Dean, PRL, has been selected as a Member of the Research Advisory Committee (RAC) of the National Centre for Polar and Oceanic Research (NCPOR), Goa.

Visitors

1. During National Space Day Celebrations held on 20th August 2025, 130 students from various Colleges/Schools and 25 Teachers/Faculties from various Schools/Colleges have visited Udaipur Solar Observatory, Udaipur.
2. During August 2025, about 60 persons visited the Infrared Observatory, PRL, Mount Abu, as part of out-reach activities.

Hearty welcome to our new members



Name MR. KULDEEP SUTHAR
 Designation JUNIOR RESEARCH FELLOW
 Date of Joining 15.07.2025
 Division GEOSCIENCES DIVISION



Name MR. HARIOM MEENA
 Designation ASSISTANT
 Date of Joining 04.08.2025
 Division UDAIPUR SOLAR OBSERVATORY



Name DR. BHAVYA
 Designation POST DOCTORAL FELLOW
 Date of Joining 12.08.2025
 Division ASTRONOMY & ASTROPHYSICS DIVISION



Name DR. KRISHNAPRASAD C
 Designation ASSISTANT PROFESSOR
 Date of Joining 28.08.2025
 Division PLANETARY SCIENCE DIVISION

Compiled, Designed and Published by

The Newsletter Team

Prof. Navinder Singh	Chair
Dr. Amitava Guharay	Co-Chair
Mr. BS Bharath Saiguan	Convener

Data Collection and Proofreading Team

Dr. Satyendra Nath Gupta	Member
Dr. Yogita Uttam Kadlag	Member
Dr. Sanjay Kumar Mishra	Member
Dr. Rohan Eugene Louis	Member
Dr. Paramita Dutta	Member
Mr. Senthil Babu T J	Member
Dr. Manash Ranjan Samal	Member

Formatting and Editing Team

Mr. A Shivam	Member
Dr. Pragya Pandey	Member
Ms. Shreya Pandey	Member
Mr. Kushagra Upadhyay	Member
Mr. BS Bharath Saiguan	Convener
Mr. Jacob Sebastian	Member
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Ms. Purvi Giri	Member
Mr. Vimlesh Kumar	Member
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Ms. Srishti Sharma	Member
Mr. Abhishek Kumar	Member

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Website (English)



Website (Hindi)

Physical Research Laboratory
(A unit of Dept. of Space, Govt. of India)
Navrangpura, Ahmedabad - 380009
Phone: (079) 26314000
Fax: (079) 26314900
E-Mail: director@prl.res.in

भौतिक अनुसंधान प्रयोगशाला
(अंतरिक्ष विभाग की यूनिट, भारत सरकार)
नवरंगपुरा, अहमदाबाद - 380009
दूरभाष: (079) 26314000
फैक्स : (079) 26314900
ई - मेल: director@prl.res.in