Dr. Saurabh Das | Curriculum Vitae April 2026

Personal Information

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Web	http://people.iiti.ac.in/~saurabh.das/ https://scholar.google.com/citations?user=XgMJtTcAAAAJ&hl=en Researcher ID: S-9525-2019; ORCID: 0000-0003-4373-163; Scopus Id 562989720001

Education

2013	PhD, Institute of Radiophysics and Electronics, University of Calcutta, India Title: *Study on effect of rain on signal propagation and rain related parameters for different zones of Indian region,* Supervisor: *Prof. Animesh Maitra*
2006	M.Sc. Physics, Department of Physics, Indian Institute of Technology Roorkee, India
2004	B.Sc. in Physics (Hons.), Asansol B. B. College, University of Burdwan, India,

Experience

since 11/2022	Associate Professor, Department of Astronomy, Astrophysics and Space Engineering, Indian Institute of Technology Indore, India
03/2019 - 11/2022	Assistant Professor, Department of Astronomy, Astrophysics and Space Engineering, Indian Institute of Technology Indore, India
07/2018 - 03/2019	DST INSPIRE Faculty, Department of Astronomy, Astrophysics and Space Engineering, Indian Institute of Technology Indore, India
04/2015 - 06/2018	DST INSPIRE Faculty, Center for Soft Computing Research, Indian Statistical Institute, Kolkata, India
10/2009 – 03/2015	Assistant Professor, Institute of Radiophysics and Electronics, University of Calcutta, India
09/2006 - 10/2009	Junior Research Fellow, Space Applications Centre, ISRO, Ahmedabad, India

Awards and Honors

2026	Best Technology Award, IIT Indore
2025	Team Coordinator, Indian Arctic Expedition (Batch -3)
2025	Best Research Paper Award, IIT Indore
2024	Team Leader, Indian Arctic Expedition (Batch -3)
2023	Team Member, Indian Arctic Expedition
08/2022 – 10/2022	Visiting Scientist, Colorado State University, USA

2022	SERB SIRE Fellowship
2019	Travel grant by IEEE Geoscience and Remote Sensing Society to attend 2019 IEEE Geoscience and Remote Sensing Symposium (IGARSS 2019) in Yokohama, Japan.
2019	Best paper award in 20th National Space Sciences Symposium (NSSS-2019), 29-31 January, 2019
2018	IEEE Senior Member
2016	Young Scientist Award, URSI Asia-Pacific Radio Science Conference, Seoul, South Korea, 2016
2015	DST-INSPIRE Faculty Award, Department of Science and Technology, Govt. of India
2014	Young Scientist Award, URSI GASS 2014, Beijing, China, 2014
2014	First prize, 'Young Scientist award competition', Regional conference in Radio Science (RCRS), Pune, India, 2014
2010	Best paper award, ICMARS 2010, Jodhpur, India, 2010

Research

Key Expertise: Atmospheric Remote Sensing | Satellite Communication (Ka-band) | Machine Learning in Space and Atmospheric Sciences | Precipitation Microphysics | Space Weather & Ionospheric Modeling.

My research focuses on the intersection of atmospheric sciences, satellite communication, and space weather, with a specific emphasis on tropical regions. Since nearly two decades my research is dedicated to the development and application of novel remote sensing techniques for understanding and modeling of the near-earth space environment and atmospheric processes. I leverage multi-sensor observations—including Doppler Weather Radars, NavIC/GPS, in-situ and satellite observations—alongside advanced Machine Learning and Deep Learning frameworks to model complex atmospheric and space weather phenomena. My work aims to improve the predictability of extreme weather events (such as tropical cyclones and intense rainfall), characterize precipitation microphysics, and mitigate the effects of atmospheric and ionospheric disturbances on satellite-based navigation and communication systems with the ultimate goal to enhance the accuracy of atmospheric monitoring and forecasting systems.

Main Contributions

- **Atmospheric & Precipitation Microphysics:** Pioneered studies on the vertical evolution of precipitation and drop size distribution (DSD) in tropical and Arctic environments. This includes unravelling the characteristics of orographic rain and collisional drop breakup as well virga using Ka-band radar and disdrometer observations. These contributions help improve **precipitation estimation from remote sensing observations**.
- **Weather Nowcasting & ML Applications:** Developed robust Machine Learning and Deep Learning models for the near-real-time prediction of intense precipitation, lightning density, and tropical cyclone intensity. Notably demonstrated an end-to-end framework for cyclone estimation in the North Indian Ocean region as well Doppler Weather Radar calibration framework using satellite data. Demonstrated for the first time feasibility of using the differential attenuation in GNSS signal for thunderstorm tracking. These studies improve the **accuracy of real-time weather monitoring and forecasting**.
- **Satellite Communication & Navigation:** Advanced the understanding of Ka-band rain attenuation and tropospheric scintillation. Developed novel algorithms for mitigating ionospheric delay, directly improving the reliability of the Indian Navigation Satellite System (NavIC). These contributions help improve **satellite communication reliability and GNSS accuracy**.
- **Space Weather & Ionospheric Studies:** Conducted extensive research on solar wind propagation, Coronal Mass Ejections (CMEs), and the ionospheric response to terrestrial weather like thunderstorms

and cyclones. These studies contribute to mitigation efforts for space weather hazards and improved understanding of the lower-upper atmospheric coupling processes.

- **Open-Source Software Development:** Another key contribution is the development of algorithms and techniques for weather radar data processing and rainfall prediction Contributed to the scientific community by developing the **Python Indian Weather Radar Toolkit (PYIWR)**, an open-source library for the analysis and visualization of weather radar data.

Since 2019, I have acquired substantial funding for more INR 80 million (~$ 0.9 million) at IIT Indore from DST, ISRO, ANRF, SERB and MoES. I have (co-) led large, coordinated projects such as DST FIST, National Quantum Mission (DST) and Arctic Precipitation Monitoring (NCPOR).

Teaching Statement

I have been involved in teaching since 2009 at the University of Calcutta and since 2018 at IIT Indore. I have a broad repertoire of different lectures within Bachelor and Master programs related to space and atmosphere with emphasis in observational methods including practical aspects. I have also developed several course curricula and programs in both bachelor and master programs. The most important courses are.

- **Masters :** Remote Sensing for Atmospheric and Space Sciences, Microwave Remote Sensing, Spatial Informatics, Astrostatistics, Random process and Applied Kalman filtering, Satellite Based Navigation System, Space weather, Space Engineering Systems, Programming Fundamentals for Data Science, Data Science and Sustainability
- **Bachelor:** High Energy Astronomy or Astrophysical Processes, IoT for Space Applications, Blue Planet, Atmospheric Physics and Remote Sensing, Spatial Informatics

Supervision

Postdocs	Currently advising One postdoc.
Doctoral students	Supervised 6 doctoral students as main advisor who successfully finished at IIT Indore
	Currently advising five PhD students
	Examiner of about 3 PhD theses at Indian universities
Students	Main Supervisor of more than 15 Master and 10 Bachelor students in IIT Indore, University of Calcutta and Indian Statistical Institute Kolkata

Community Service

Membership in Scientific Bodies (selected)

2017 - present	Senior Member, IEEE
2019 - 2022	Founding Branch Councilor, IEEE Student Branch, IIT Indore
2022 – 2025	Founding Advisor, IEEE GRSS Student Branch, IIT Indore
2024 - present	Life Member, Astronomical Society of India
2024 - present	Founding Chair, IEEE Geoscience and Remote Sensing Madhya Pradesh Chapter, India
2025 – present	Member, AOGS

Administrative Position at IIT Indore

2025 - present	Head of Department of Astronomy, Astrophysics and Space Engineering (DAASE)
2025 – present	Chair, Department Budget Advisory Committee, DAASE
2023 – 2024	Member, Department Budget Advisory Committee, DAASE

2022 - 2025	Convener, Department Post Graduate Committee, DAASE
2022 - 2025	M.Tech. Coordinator, Department of Astronomy, Astrophysics and Space Engineering
2019 - 2022	Convener, Department Undergraduate Committee, DAASE

Other Activities

Editorial	Nature Scientific Reports, Editorial Board Member
Journals	Reviews for most important journals in the field, e.g. of American Meteorological Society, American Geophysical Union, Copernicus, Elsevier, Springer Nature Group, IEEE
Organisation	Convener international conferences e.g. latest IPSC 2026, iRAD 2024; Convener of Sessions at International conferences e.g. URSI GASS 2026, APRASC 2025, iRad 2025, RCRS 2024; Organisation of several workshops, e.g. RESO-2024, Faculty Development Program, Summer and Winter Schools.

Publications

My publication record spans a wide range of topics

- Total 63 publications in peer reviewed journals.
- Total 18 publications in conference proceedings.
- Total 3 book chapters and 1 book.
- h-index 18 and i10 index 32 (Google Scholar).
- Total citation count 1100+ (Google Scholar).
- One paper has >100 citations.
- Eight papers have 50+ citations each.
- Twelve papers have 30+ citations each.

The full list of my publications including conference contributions, talks and posters can be found at https://people.iiti.ac.in/~saurabh.das/journal-publications.html

10 most important publications

1. L. Saini, S. Das and N. Murukesh, Development of a Virga Detection Tool and Associated Study of Arctic Virga and Precipitation, Journal of Geophysical Research -Atmospheres, 131(6), e2025JD044204, 2026, https://doi.org/10.1029/2025JD044204
2. V. Tyagi and S. Das, A Probabilistic Algorithm for Mitigating Persistent Ground Clutter in Doppler Weather Radar, Journal of Geophysical Research -Atmospheres, 130, e2025JD043478, 2025, https://doi.org/10.1029/2025JD043478
3. S. Datta, S. Das and S. Sunda, Secondary Gravity Wave Propagation in Tropical Thermospheric Region: Role of Varying Kinematic Viscosity, Journal of Geophysical Research - Space Physics, 129, e2023JA032364, 2024, https://doi.org/10.1029/2023JA032364
4. N. Singh, V. Tyagi, S. Das, U. K. Sahoo and S. S. Kundu, Python Indian Weather Radar Toolkit (pyiwr): An Open-Source Python Library For Analyzing and Visualizing Weather Radar Data, Journal of Computational Science., 81, 102363, 2024, https://doi.org/10.1016/j.jocs.2024.102363
5. R. Hemapriya and S. Das, CNN-Based Deep Learning Model for Solar Wind Forecasting, Solar Physics, 296, 134, 2021, https://doi.org/10.1007/s11207-021-01874-6

6. S. Das, S. Datta and A. K. Shukla, Detection of Thunderstorm Using Indian Navigation Satellite NavIC, IEEE Transactions on Geoscience and Remote Sensing, 58 (5), 3677-3684, 2020, https://doi.org/10.1109/TGRS.2019.2960035

7. S. Das and A. Maitra, Characterization of tropical precipitation using drop size distribution and rain rate-radar reflectivity relation, Theoretical and Applied Climatology, 132(1-2), 275-286, 2018, https://doi.org/10.1007/s00704-017-2073-1

8. S. Das, R. Chakraborty and A. Maitra, A random forest algorithm for nowcasting of intense Precipitation events , Advances in Space Research, 60(6), 1271-1282, 2017, https://doi.org/10.1016/j.asr.2017.03.026

9. S. Das and A. Maitra, Vertical Profile of Rain: Ka band radar Observations at tropical locations, Journal of Hydrology, 534, 31-41, 2016, https://doi.org/10.1016/j.jhydrol.2015.12.053

10. A. K. Shukla, S. Das, N. Nagori, M. R. Sivaraman and K. Bandyopadhyay, Two-Shell Ionospheric Model for Indian Region: A Novel Approach, IEEE Transactions on Geoscience and Remote Sensing, 47(8), 240, 2009, https://doi.org/10.1109/TGRS.2009.2017520

Invited Talks (last 5 years)

2025	Doppler Weather Radar Data Processing: Methods, Challenges, and Applications, Faculty Development Program talk, IIT Palakkad, 30 November 2025
	Arctic Precipitation in Changing Climate - A Microphysical Perspective, Seminar talk, IISER Pune, 19 November 2025
	Unraveling Aerosol-Cloud-Precipitation Dynamics: An Observational and Modeling Study of an Extreme Case in Central India, Invited Talk, INTROMET-2025, IITM Pune, India, November 18, 2025
2024	Remote Sensing of Lower and Upper Atmosphere using GNSS/NavIC, Seminar talk, University of Bologna, May 27, 2024
	GNSS remote sensing of Earth's Atmosphere, Two Day Workshop on "REMOTELY SENSED DATA ANALYSIS FOR SUSTAINABLE ENVIRONMENT", IIIT Bhubaneswar, 10-11 May 2024
	NavIC Non-PVT Applications, 1-day Workshop on "NavIC: Development, Scope, and Applications", 25 January 2024, Online mode
2021	NavIC for Atmospheric Research, FDP on GNSS/NavIC and Applications, 21-25 September, 2021, Burdwan University, Burdwan, India
	GPS/GNSS remote sensing, FDP on GIS & Remote Sensing, 06 -10 July 2021, Devi Ahilya University, Indore, India
	Climate study in the era of Big data and Machine learning, FDP on GIS & Remote Sensing, 06 -10 July 2021, Devi Ahilya University, Indore, India
	Machine learning in Space Science: Sun and Space Weather, IEEE GRSS One day Virtual Workshop On "Remotely Sensed Data Analysis", 13th March, 2021, Kolkata , India