

Dr. Anirban Guha

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Date of birth: 12th November, 1978

Education

1. Post-Doc from MIT, USA 2012-13 and 2016-17
2. Ph.D. in Physics, Tripura University, India, 2011
3. CSIR-UGC National Eligibility Test (NET), India, December 2002 and June 2003
4. M.Sc. in Physics, from University of Calcutta, India, 2003
5. B.Sc. in Physics, from University of Calcutta, India, 2000

Professional positions held

Assistant Professor, Department of Physics, Tripura University, India from 7th September, 2006

Associate Professor, Department of Physics, Tripura University, India from 2nd March, 2019

Professor, Department of Physics, Tripura University, India from 2nd March, 2022

Courses taught and other services provided to students and the home institution

Courses taught:

1. Theoretical: Classical and Relativistic Electrodynamics, Magneto-hydrodynamics and Plasma Physics, Digital Electronics, Digital Communication Systems, Microprocessor, Basics of atmospheric science
2. Practical: Advanced Analog and Digital Electronic, Digital Communication, Microprocessor Programming

Services provided to students and the home institution:

1. Ph.D. guidance: Completed – 06, Active – 04
2. Principal Investigator of research projects worth Rs. 460 lakh INR
3. Active collaboration with research institutes and universities in India and abroad
4. Active member for technical and administrative committees, Tripura University, India

Professional honors, awards, and fellowships

1. Young Scientist's Award 2005, URSI, Belgium
2. First position, DST SERC School, 2005 & 2007
3. Sir Jagadish Chandra Bose Award (2011-12), Tripura State Council for Science & Technology, India
4. Fulbright Post-Doctoral Fellow (2012-13), MIT, USA
5. Member, 34th Indian Scientific Expedition (2014-15) to Antarctica
6. INSA Visiting Fellow 2016, Tel Aviv University, Israel
7. Raman Post-Doctoral Fellow (2016-17), MIT, USA
8. Visiting Scientist, MIT, USA, 2014, 2019 and 2022 (1.5 months each)
9. Tripura University Faculty award 2021

Publications

1. C. Price, T. Plotnik, N. V. Ilin, J. Saha and A. Guha, "Revisiting the Link between Thunderstorms and Upper Tropospheric Water Vapor" Accepted in *Journal of Geophysical Research – Atmospheres* (American Geophysical Union), Vol. 128 (24), e2023JD039306, 2023.
2. P. Kaur, P. Dhar, O. Bansal, D. Singh and A. Guha, "Temporal variability, meteorological influences, and long-range transport of atmospheric aerosols over two contrasting environments Agartala and Patiala in India", *Environmental Science and Pollution Research* (Springer Science), Vol. 30, pp. 102687-102707, 2023.
3. J. Saha, C. Price, T. Plotnik, and A. Guha, "Are thunderstorms linked to the rapid Sea ice loss in the Arctic?", *Atmospheric Research* (Elsevier Science), Vol. 294, pp. 106988, 2023.
4. J. Saha, C. Price and A. Guha, "The Role of Global Thunderstorm Activity in Modulating Global Cirrus Clouds", *Geophysical Research Letters* (American Geophysical Union), Vol. 50(12), e2022GL102667, 2023.
5. P. Kaur and A. Guha, "Characterization of atmospheric aerosols by SEM-EDX in a rural-continental environment-a seasonal approach", *Materials Today: Proceedings* (Elsevier Science), <https://doi.org/10.1016/j.matpr.2023.06.144>, 2023.
6. T. Bozóki, G. Sători, E. Williams, A. Guha, Y. Liu, P. Steinbach, A. Leal, M. Herein, M. Atkinson, C. D. Beggan, E. DiGangi, A. Koloskov, A. Kulak, J. LaPierre, D. K. Milling, J. Mlynarczyk, A. Neska, A. Potapov, T. Raita, R. Rawat, R. Said, A. K. Sinha and Y. Yampolski, "Day-To-Day Quantification of Changes in Global Lightning Activity Based on Schumann Resonances", *Journal of Geophysical Research (Atmosphere)* (American Geophysical Union), Vol. 128(11), e2023JD038557, 2023.
7. K. Jeeva, A. K. Sinha, G. Seemala, S. D. Pawar, A. Guha, A. K. Kamra, E. Williams and M. Ravichandran, "The global representativeness of fair-weather atmospheric electricity parameters from the coastal station Maitri, Antarctica", *Journal of Geophysical Research (Atmosphere)*, (American Geophysical Union), Vol. 128(9), e2022JD037696, 2023.
8. A. Patari and A. Guha, "Comparative study on the effects of CME and CIR-induced geomagnetic storms on the ionosphere of northern and southern hemispheric regions during the different phases of solar cycle 24", *Advances in Space Research* (Elsevier Science), Vol. 71(12), pp. 5147-5170, 2023.
9. J. Kalita, A. Guha and M. K. Mishra, "Martian Upper Tropospheric Twilight Clouds: First-time observation from India's First Mars Orbiter Mission (MOM)", *Proceedings 2022 URSI Regional Conference on Radio Science (USRI-RCRS)*, IEEE Xplore, 2023, <https://doi.org/10.23919/URSI-RCRS56822.2022.10118504>.
10. E. Williams, J. Montanya, J. Saha and A. Guha, "Lightning and climate change", Book Chapter in *Lightning Electromagnetics. Volume 2: Electrical processes and effects* (2nd Edition), The Institution of Engineering and Technology, Edited by V. Cooray, F. Rachid, M. Rubinstein, pp. 569-626, 2022.
11. P. Kaur, M. Rahaman and A. Guha, "Elemental characterization and morphological analysis of atmospheric aerosols in a rural-continental environment of Northeast India", *Arabian Journal of Geosciences* (Springer Science), Vol. 15:1752, pp. 1-15, 2022.
12. C. Price and A. Guha, Book chapter entitled "Lightning indicators: A case study in research", in the book entitled "Trusted Partners: 30 years of India Israel Diplomatic Relations", Ananta Centre, Tel Aviv University, 2022.
13. J. Saha, C. Price, T. Plotnik and A. Guha, "Impact of the El Niño–Southern Oscillation on upper-tropospheric water vapor", *Atmospheric Research* (Elsevier Science), Vol. 280 (15), pp. 106422, 2022.
14. J. Kalita and A. Guha, "Impact of Acidalia Strom Track (AST) in Martian atmosphere during MY 33 and 34: A case study over kasei Valles", *International Journal of Engineering Research & Technology*, Vol. 10(7), pp. 59-69, 2022.
15. T. Subba, M. M.Gogoi, K. KrishnaMoorthy, P. K.Bhuyan, B. Pathak, A. Guha, M. K. Srivastava, B. M. Vyas, K. Singh, J. Krishnan, T. V. Lakshmi Kumar and S. S. Babu, "New estimates of aerosol radiative effects over India from surface and satellite observations", *Atmospheric Research* (Elsevier Science), Vol. 276, pp. 106254, 2022.

16. J. Kalita and A. Guha, "Off-season lee wave cloud over the Arsia Mons in Mars: A study based on Mars Colour Camera (MCC)", *Journal of Atmospheric and Solar-Terrestrial Physics (Elsevier Science)*, Vol. 227, pp. 105805, 2022.
17. A. Patari and A. Guha, "Influence of The Remote Celestial Event Like Gamma Ray Bursts GRB 190114C and GRB 110918A on The Total Electron Content of The Earth's Ionosphere: A Case Study", *International Journal of Engineering Research & Technology*, Vol. 10(7), pp. 70-75, 2022.
18. J. Kalita, M. K. Mishra and A. Guha, "Martian Lee-wave cloud near Asraeus Mons during Martian years 33 and 34: a study based on the Mars color camera (MCC) images", *Indian Journal of Physics (Springer Science)*, Vol. 96, pp. 25-41 2022.
19. J. Kalita and A. Guha, "Initial investigation on different types of clouds observed by Mars Color Camera (MCC) from India's first Mars Orbiter Mission (MOM)", *Proceedings of URSI GASS 2021, Rome, Italy, 28 August - 4 September 2021*.
20. T. Plotnik, C. Price, J. Saha and A. Guha, "Transport of water vapor from tropical cyclones to the upper troposphere", *Atmosphere (MDPI)*, Vol. 12, pp. 1506, 2021.
21. J. Kalita, M. K. Mishra and A. Guha, "Martian limb-viewing clouds: A study based on MCC, MCS and MARCI observation", *Planetary and Space Science, (Elsevier Science)*, Vol. 208(15), pp. 105347, 2021.
22. J. Kalita, M. K. Mishra and A. Guha, Book chapter entitled "Lee-Wave Clouds in Martian Atmosphere: A Study Based on the Images Captured by Mars Color Camera (MCC)" in the book entitled "Selected Progresses in Modern Physics (Proceedings of TiMP 2021)", (Springer Science), 2021, ISBN: 978-981-16-5140-3.
23. T. Banik, V. Thandlam, B. K. De, S. S. Kundu, R. B. Gogoi, P. L. N. Raju and A. Guha, "Understanding dynamics of tropical cyclones in the Bay of Bengal using lightning data", *Meteorology and Atmospheric Physics (Springer Science)*, Vol. 133(5), pp. 1505-1522, 2021.
24. K. Saha, A. Guha and T. Banik, "Indian summer monsoon variability over North-East India: Impact of ENSO and IOD", *Journal of Atmospheric and Solar-Terrestrial Physics (Elsevier Science)*, Vol. 221(15), pp. 105705, 2021.
25. Y. Liu, E. Williams, Z. Li , A. Guha, J. Lapierre and M. Stock, "Lightning enhancement in moist convection with smoke-laden air advected from Australian wildfires", *Geophysical Research Letters (American Geophysical Union)*, Vol. 48, pp. e2020GL092355, 2021.
26. N. P. Damase, T. B. Paul, K. Saha, S. Sharma, B. K. De and A. Guha, "Comparative study of lightning climatology and the role of meteorological parameters over the Himalayan region", *Journal of Atmospheric and Solar-Terrestrial Physics (Elsevier Science)*, Vol. 219, pp. 105527, 2021.
27. A. Patari, B. Paul and A. Guha, "Statistics of GPS TEC at the northern EIA crest region of the Indian subcontinent during the solar cycle 24 (2013-2018): comparison with IRI-2016 and IRI-2012 models", *Astrophysics and Space Science (Elsevier)*, Vol. 46, pp. 366, 2021.
28. M. M. Gogoi, S. Babu, B. S. Arun, K. K. Moorthy, A. Ajay, P. Ajay, A. Suryavanshi, A. Borgohain, A. Guha, A. Shaikh, B. Pathak, B. Gharai, B. Ramasamy, G. Balakrishnaiah, H. B. Menon, J. C. Kuniyal, J. Krishnan, K. R. Gopal, M. Maheswari, M. Naja, P. Kaur, P. K. Bhuyan, P. Gupta, P. Singh, P. Srivastava, R. S. Singh, R. Kumar, S. Rastogi, S. S. Kundu, S. K. Kompalli, S. Panda, T. C. Rao, T. Das and Y. Kant, "Response of ambient BC concentration across the Indian region to the nation-wide lockdown: results from the ARFINET measurements of ISRO-GBP", *Current Science*, Vol. 120(2), pp. 341-351, 2021.
29. E. Williams, T. Bozóki, G. Sători, C. Price, P. Steinbach, A. Guha, Y. Liu, C. D. Beggan, M. Neska, R. Boldi and M. Atkinson, "Evolution of Global Lightning in the Transition From Cold to Warm Phase Preceding Two Super El Niño Events", *Journal of Geophysical Research (Atmospheres) (American Geophysical Union)*, Vol. 126(3), pp. e2020JD033526, 2021.
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33. P. Kaur, P. Dhar, B. K. De and A. Guha, "Inter-Comparison of satellite retrieved Aerosol Optical Depth (AOD) from geostationary and polar-orbiting platforms with ground-based measurements over a Semi-continental site of north-eastern India", 2020 URSI Regional Conference on Radio Science (URSI-RCRS), IEEE Xplore, 2020, DOI: 10.23919/URSIRCRS49211.2020.9113426.
34. B. Paul, B. K. De, K. Saha and A. Guha, "A comparative study between two percentages of occurrence methodologies for computing ionospheric scintillation statistics", *Advances in Space Research* (Elsevier Science), Vol. 66(3), pp. 571-590, 2020.
35. K. Saha, B. K. De, B. Paul and A. Guha, "Satellite launch vehicle effect on the Earth's lower ionosphere: A case study", *Advances in Space Research* (Elsevier Science), Vol. 65(11), pp. 2507-2514, 2020.
36. P. Kaur, P. Srinivasan, P. Dhar, B. K. De and A. Guha, "Study of spectral characteristics of black carbon from biomass burning and source apportionment over Agartala in the northeastern India", *Environmental Science and Pollution Research* (Springer Science), Vol. 27, pp. 16584-16598, 2020.
37. A. Guha, Y. Liu, E. Williams, C. Schumann and H. Hunt, Book chapter entitled "Lightning Detection and Warning" in the book entitled "Lightning: Understanding Science, Engineering and Economic Implications for Developing Countries", (Springer Science), Vol. 780, pp. 37-77, 2021.
38. Y. Liu, A. Guha, J. Montanyà, Y. Wang and Z. Fu, "Effects of single impulse current and multiwaveform multipulse currents on aluminum alloy in lightning damage analysis", *IEEE Transactions on Plasma Science*, Vol. 48(4), pp. 1146-1153, 2020.
39. B. Paul, A. Patari, B. K. De and A. Guha, "Response of the Earth's equatorial ionosphere during the severe G4-class geomagnetic storm of 8th September 2017", IOP Publishing, IOP Conf. Series, Journal of Physics: Conf. Series Vol. 1330(012005) 2019.
40. A. Patari, B. K. De, A. Guha and B. Paul, "Conjugate hemispheric response of earth's ionosphere due to geomagnetic storms occurred during two equinox periods", IOP Publishing, IOP Conf. Series, Journal of Physics: Conf. Series Vol. 1330(012004) 2019.
41. K. Saha, N. P. Damase, T. Banik, B. Paul, S. Sharma, B. K. De and A. Guha, "Satellite-based observation of lightning climatology over Nepal", *Journal of Earth System Science* (Springer Science), Vol. 128 (221), 2019.
42. N. Barman, R. Roy, B. Saha, S. S. Kundu, A. Borgohain, B. K. De and A. Guha, "Investigation of seasonal variation of compensation parameter and absorption Ångström Exponent of aerosol after loading correction over a remote station in north-east India", *Atmospheric Environment* (Elsevier Science), Vol. 212, pp. 106-115, 2019.
43. E. Williams, A. Guha, R. Boldi, H. Christian and D. Buechler, "Global lightning activity and the hiatus in global warming", *Journal of Atmospheric and Solar-Terrestrial Physics* (Elsevier Science), Vol. 189, pp. 27-34, 2019.
44. E. Pracser, T. Bozoki, G. Sători, E. Williams, A. Guha and H. Yu, "Reconstruction of global lightning activity based on Schumann Resonance measurements: Model description and synthetic tests", *Radio Science*, (American Geophysical Union), Vol. 54(3), pp. 254-267, 2019.
45. K. A. Nicoll, R. G. Harrison, V. Barta, J. Bor, R. Brugge, A. Chillingarian, J. Chum, A. K. Georgoulas, A. Guha, K. Kourtidis, M. Kubicki, E. Mareev, J. Matthews, H. Mkrtchyan, A. Odzimek, J. P. Raulin, D. Robert, H. G. Silva, J. Tacza, Y. Yair and R. Yaniv, "A global atmospheric electricity monitoring network for climate and geophysical research", *Journal of Atmospheric and Solar-Terrestrial Physics* (Elsevier Science), Vol. 184, pp. 18-29, 2019.
46. B. Paul, B.K. De and A. Guha, "Comments on the percentage of occurrence methodology used in "a study of L band scintillations during the initial phase of rising solar activity at an Indian low latitude station" by H J Tanna, S P Karia and K N Pathak", *Advances in Space Research* (Elsevier Science), Vol. 63, pp. 1227-1233, 2019.
47. K. Saha, B. K. De and A. Guha, "GSLV effect on Earth's lower ionosphere", 2019 URSI Asia-Pacific Radio Science Conference (AP-RASC), pp. 1-1, 2019.

48. B. Paul, A. Patrai, B. K. De and A. Guha, "Ionospheric irregularities observed during the St. Patrick's Day 2015 severe geomagnetic storm over the southern high latitude polar cap region: a case study from Antarctic Circle", 2019 URSI Asia-Pacific Radio Science Conference (AP-RASC), pp. 1-1, 2019.
49. Y. Liu, M. Dai, A. Guha, X Gao and Z. Fu, "Damage characteristics and microstructure response of steel alloy Q235B subjected to simulated lightning currents", IEEE Access, 2019.
50. P. Dhar, T. Banik, B. K De, M. M. Gogoi, S. S. Babu and A. Guha, "Study of aerosol types and seasonal sources using wavelength dependent Ångström exponent over North-East India: ground-based measurement and satellite remote sensing", *Advances in Space Research (Elsevier Science)*, Vol. 62(5), pp. 1049-1064, 2018.
51. B. Paul, B. K. De and A. Guha, "Latitudinal variation of F-region ionospheric response during three strongest geomagnetic storms of 2015", *Acta Geodaetica et Geophysica (Springer Science)*, Vol. 53(4), pp. 579-606, 2018.
52. P. Dhar, A. Guha and B. K. De, "Influence of atmospheric aerosol on near surface fair-weather vertical electric field: A study from Northeast India", *Bulgarian Journal of Physics*, Vol. 45, pp. 285-298, 2018.
53. R. Boldi, E. Williams and A. Guha, "Determination of the Global-Average Charge Moment of a Lightning Flash Using Schumann Resonances and the LIS/OTD Lightning Data", *Journal of Geophysical Research (Atmospheres) (American Geophysical Union)*, Vol. 123(1), pp. 108-123, 2018.
54. A. Guha, E. Williams, R. Boldi, G. Satori, T. Nagy, J. Bor, J. Montanya and P. Ortega, "Aliasing of the Schumann resonance background signal by sprite-associated Q-bursts", *Journal of Atmospheric and Solar Terrestrial Physics (Elsevier Science)*, Vol. 165-166, pp. 25-37, 2017.
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56. A. Guha, K. Saha, B. K. De, K. V. Subrahmanyam and P.R. Shreedevi, "Space weather effects on lower ionosphere: First investigation from Bharati station during 34th Indian scientific expedition to Antarctica", *Advances in Space Research (Elsevier Science)*, Vol. 59, pp. 2007-2018, 2017.
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- spectral optical depth measurements”, *Atmospheric Environment* (Elsevier Science), Vol. 125(B), pp. 461-473, 2016.
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Other professional activities, such as workshops, seminars, and consultations

1. Paper presenters in 46 national and international level conference and workshops
2. Coordinator of 04 seminar, workshop and refresher courses
3. Reviewer of 10 peer-reviewed journals

Membership and activities in professional associations

1. Executive Committee Member, South Asian Lightning Network, Nepal
2. Member, American Geophysical Union, USA
3. Member, National Postdoctoral Association, USA
4. Member, MIT Alumni Association, USA
5. Life Member, Physics Academy of the North-East, India
6. Life Member, Indian Radio Science Society, India

Community services

1. Awareness and safety measures from thunderstorm and lightning
2. IT solutions such as computer hardware, software and cyber security, high performance computing
3. Amateur radio operator, CALLSIGN: VU3XIH