CURRICULUM VITAE

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Present Position Professor

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University of Calcutta
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Academic Qualifications:

Examination	Board/University	Year	Class/ Division
Ph.D. (Tech.) in Radio Physics and Electronics	*University of Calcutta*	*2008*	*Equatorial Anomaly Gradient Effects on GPS*
Master of Technology (M.Tech.) in Radio Physics and Electronics	*University of Calcutta*	*1997*	*I*
Bachelor of Technology (B.Tech.) in Radio Physics and Electronics	*University of Calcutta*	*1995*	*I*
Bachelor of Science (B.Sc.) (Physics Honours)	*University of Calcutta*	*1992*	*I*

Scientific employment:

- Professor in the Institute of Radio Physics and Electronics, University of Calcutta, Calcutta, India from July 2014.
- Reader/Associate Professor in the Institute of Radio Physics and Electronics, University of Calcutta, Calcutta, India from July 2008 to July 2014.
- Lecturer in the Institute of Radio Physics and Electronics, University of Calcutta, Calcutta, India from May 2002 to July 2008.
- Senior Research Fellow of the Council of Scientific and Industrial Research (CSIR), Ministry of Human Resource and Development, Government of India under the guidance of Professor Ashish DasGupta at the Institute of Radio Physics and Electronics, University of Calcutta, Calcutta, India from November 1998 to April 2002
- Junior Research Fellow in a project entitled "Studies on *F*-region irregularities as observed with SROSS-C and satellite beacons" sponsored by the Indian Space Research Organization (ISRO), Department of Space, Government of India under the guidance of Professor Ashish DasGupta at the Institute of Radio Physics and Electronics, University of Calcutta, Calcutta, India during July 1997 through October 1998

Total Citations (Google Scholar): 664 (March 10, 2023)
h-index: 16 (March 10, 2023)
i10-index: 25 (March 10, 2023)

Ongoing Research Projects:
1. Name of the Project: ST Radar Facilities at University of Calcutta
Funding Agency: Science and Engineering Research Board (SERB), Govt. of India
Duration: 2015-2022
Grant: Rs.26.99 Crore ($US3860000)

Completed Research Projects:

Sl. No.	Title	Agency	Period	Grant (Rs. in lakhs)
1.	Study of the characteristics of ionospheric irregularities at high and low latitudes through coordinated observations of EISCAT and VHF Radar at Haringhata, India	Plasmasphere Ionosphere Thermosphere Integrated Research Environment and Access services: a Network of Research Facilities (PITHIA-NRF), European Union	April-September 2022	NA
2.	Multi-frequency characterization of equatorial ionospheric Space Weather effects for developing signal outage predictive capability	Asian Office of Aerospace Research and Development (AOARD), AFRL, AFOSR	2018-2021	33.8($US44888)
3.	Multi-technique characterization of near-Earth	International Space Science Institute	2017-2019	

	space environment	(ISSI)		
4.	Impact of Equatorial Ionospheric Characteristics on Distributed GNSS Accuracies	Department of Science and Technology (DST), Govt. of India	2015-2018	56.8 ($US81000)
5.	SCINDA Phase IV	Department of the Air Force, Asian Office of Aerospace Research and Development (AOARD), Japan	2015-2017	$13490.00
6.	SCINDA Phase III	Department of the Air Force, Asian Office of Aerospace Research and Development (AOARD), Japan	2013-2015	3.96(US$7200)
7.	Studies of Space Weather Events with GPS, Satellite Beacon and Backscattered Radar at NARL	Indian Space Research Organization (ISRO)	2010-2014	50.76 ($US72000)
8.	Triggering and Characterization of Equatorial Ionospheric Irregularities	Indian Space Research Organization (ISRO)	2011-2014	27.14 ($US37000)
9.	Electrodynamical Control over the ionization processes near the northern crest of the Equatorial Ionization Anomaly and beyond (Co-Principal Investigator)	Department of Science and Technology	2010-2013	54.05 ($US77000)
10.	Detection of Travelling Ionospheric Disturabnces (TIDs) associated with the solar eclipses of July 22, 2009	Indian Space Research Organization (ISRO)	2009-2011	3.7 ($US5300)

	and January 15, 2010 by GPS TEC monitoring			
11.	SCINDA Phase II	Department of the Air Force, Asian Office of Aerospace Research and Development (AOARD), Japan	2010-2012	2.16(US$4945)
12.	Operation of SCINDA Receiver at the University of Calcutta (Phase I)	Department of the Air Force, Asian Office of Aerospace Research and Development (AOARD), Japan	2008-2010	2.95(US$6900)
13.	Ionospheric Space Weather in relation to Satellite Based Systems	Indian Space Research Organization (ISRO)	2007-2012	46.34 ($US67000)

Research Guidance:

Sl. No.	Name of Student	Title of Thesis
1.	**Tanmay Das (Awarded 2016)**	1. Studies on characteristics of equatorial plasma structures using transionospheric signals in the equatorial region
2.	Bidyut Roy (Delivered pre-doctoral seminar)	2. Effects of GPS signal amplitude and phase scintillations on satellite based navigation system
3.	**Dibyendu Sur (Awarded 2021)**	3. Study of the impact of Equatorial Ionization Anomaly and neutral dynamics on the TEC models at diverse longitudes in the equatorial region
4.	**Krishnendu Sekhar Paul (Awarded 2021)**	4. Characteristics of ionospheric Total Electron Content and irregularities in the low to mid-latitude transition region
5.	**Sumanjit Chakraborty (IIT, Indore) (Awarded 2021)**	5. Study of the effects of Space Weather on low-latitude ionosphere during declining phase of solar cycles
6.	Samiddha Goswami (Delivered pre-doctoral seminar)	6. Ionospheric characterization and reconstruction using multi-frequency and multi-constellation satellite signals around the anomaly crest region
7.	Trisani Biswas (Registered for Ph.D.)	7. Characterization of equatorial

		ionospheric irregularities in terms of its dynamics and effects on satellite based navigation and communication system
8.	Debyendu Jana (Registered for Ph.D.)	8. Atmospheric dynamics in the geophysically sensitive tropical to sub-tropical transition region using ST Radar and other ground-based and satellite data
9.	Anamika Das (Enrolled for Ph.D.)	
10.	Amit Kr. Chakraborty (Enrolled for Ph.D.)	
11.	Dyutis Garai (Enrolled for Ph.D.)	

Research Facilities:

The major research facilities of the Satellite Beacon Group operational at the **Institute of Radio Physics and Electronics in Calcutta** and **at the Ionosphere Field Station (IFS)** of the University of Calcutta (located about 50km north of the city in a low radio frequency interference region) are:

1. ***53 MHz VHF Stratosphere Troposphere (ST) Radar at Ionosphere Field Station, Haringhata funded by Science and Engineering Research Board (SERB), Govt. of India***
2. ***(a) Dual-Frequency GPS receiver at Calcutta and (b) GNU spaced-aerial receiver at VHF under collaboration with US Air Force Research Laboratory (AFRL) under the global SCINtillation Network Decision Aid (SCINDA) program of US Air Force at the Ionosphere Field Station (IFS) of the University of Calcutta, located about 50km north of the city in a low radio frequency interference region.***
3. ***GNSS receiver in collaboration with University Corporation for Atmospheric Research (UCAR), Boulder, CO, USA as part of a global network under COSMIC satellite program.***
4. ***Connected Autonomous Space Environment Sensor (CASES) Global Positioning System (GPS) software-defined receiver operated for ionospheric scintillation studies at Calcutta***
5. ***Indian Regional Navigation Satellite System (IRNSS) triple-band Navigation with Indian Constellation (NavIC) receiver at Institute of Radio Physics and Electronics and Ionosphere Field Station (IFS) of the University of Calcutta for pilot-level tests under collaboration with Space Application Centre (SAC), Ahmedebad***
6. ***Multi-constellation multi-frequency GPS-GLONASS-GALILEO receivers at (a) Calcutta (b) Department of Physics, North Bengal University, Siliguri for application of spatial diversity, frequency diversity and interoperability of constellations during adverse ionospheric conditions to reduce satellite signal outages***
7. ***Coherent Radio Beacon Experiment (CRABEX) receiver at Ionosphere Field Station, Haringhata under collaboration with Vikram Sarabhai Space Centre (VSSC), Indian Space Research Organization (ISRO)***
8. ***Geostationary satellite beacon receiving systems at VHF (250MHz)***

Collaborations:

Sl. No.	Name of the Collaborating Scientist/Institution	Nature of Collaboration/Name of Project
1	Institute for Scientific Research, Boston College, USA	SCIntillation Network Decision Aid (SCINDA) station of the global GPS and GNU VHF spaced-aerial receiver network
2	Space Application Centre (SAC), ISRO, Ahmedabad	Indian Regional Navigational Satellite System (IRNSS) pilot level study
3	Indian Institute of Technology, Indore	GNSS observations

4	National Atmospheric Research Laboratory, India	ST Radar
5	Giant Meterwave Radio Telescope, India	Interferometric observations of radio stars for studies on ionospheric propagation effects
6	Vikram Sarabahai Space Centre (VSSC), India	Coherent RAdio BEacon Experiment (CRABEX)
7	Department of Physics, North Bengal University, India	GNSS observations
8	Frederick University, Cyprus	GNSS observations
9	University Corporation for Atmospheric Research (UCAR), Boulder, USA	COSMIC Radio Occultation ground network station
10	National Institute of Geophysics and Volcanology (INGV), Italy	GNSS, Space Weather studies
11	Institute of Solar Terrestrial Physics, German Aerospace Centre (DLR/SO)	Ionospheric effects and VHF Radar
12	European Incoherent Scatter (EISCAT) Radar, Sweden	Plasmasphere Ionosphere Thermosphere Integrated Research Environment and Access services: a Network of Research Facilities (PITHIA-NRF)

List of Publications

1. Radio signatures of November 1998 Leonid meteor on transionospheric VHF satellite signal, **A. Paul**, S. Ray, A. DasGupta and H. Chandra, *Planet Space Sci.*, 49, 755-759, 2001.
2. First in-situ observations of equatorial ionospheric bubbles by Indian satellite SROSS-C2 and simultaneous multisatellite scintillations, **A. Paul**, S. Ray, A. DasGupta and S.C. Garg, *Radio Sci.*, 37, 5, 1087-1092, 2002.
3. Estimation of minimum separation of geostationary satellites for satellite-based augmentation system (SBAS) from equatorial ionospheric scintillation observations, S. Ray, A. DasGupta, **A. Paul** and P. Banerjee, *J. Navigation*, 56, 137-142, 2003.
4. Errors in position-fixing by GPS in an environment of strong equatorial scintillations in the Indian zone, A. DasGupta, S. Ray, **A. Paul**, P. Banerjee and A. Bose, *Radio Sci.*, 39, RS1S30, doi: 10.1029/2002RS002822, 2004.
5. Estimation of satellite-based augmentation system grid size at low latitudes in the Indian zone, **A. Paul**, A. Das, S.K. Chakraborty and A. DasGupta, *NAVIGATION*, 2005, *52*, 15-22, 2005.
6. Equatorial bubbles as observed with GPS measurements over Pune, India, A. DasGupta, **A. Paul**, S. Ray, A. Das and S. Ananthakrishnan, *Radio Sci.*, *41*, RS5S28, doi:10.1029/2005RS003359, 2006.
7. Equatorial scintillations in relation to the development of ionization anomaly, S. Ray, **A. Paul** and A. DasGupta, *Ann. Geophys.*, *24*, 1429-1442, 2006.
8. Ionospheric Total Electron Content (TEC) studies with GPS in the equatorial region, A. DasGupta, **A. Paul**, and A. Das, *Ind. J. Radio. Space Phys.*, *36*(4), 278-292, 2007.
9. A Study of Precursors to equatorial spread *F* using the Giant Meterwave Radio Telescope, A. DasGupta, **A. Paul**, S. Ray, A. Das and S. Ananthakrishnan, *Radio Sci.*, 43, RS5002, doi:10.1029/2007RS003667, 2008.
10. Ionosphere near the anomaly crest in Indian zone during magnetic storm on 13-14 March 1989, S.K. Chakraborty, R. Hajra and **A. Paul**, *Ind. J. Radio Space Phys.*, *37*, 396-407, 2008.
11. Electrodynamical control of the ambient ionization near the equatorial anomaly crest in the Indian zone during counter-electrojet days, R. Hajra, S.K. Chakraborty and **A. Paul**, *Radio Sci.*, 44, RS3009, doi:10.1029/2008RS003904, 2009.
12. Characteristics of the equatorial ionization anomaly in relation to the day-to-day variability of ionospheric irregularities around the postsunset period, **A. Paul** and A. DasGupta, *Radio Sci.*, 45, RS6001, doi:10.1029/2009RS004329, 2010.

13. Characteristics of SBAS grid sizes around the northern crest of the equatorial ionization anomaly, **A. Paul**, A. Das and A. DasGupta, *J. Atmos. Sol. Terr. Phys.*, 73, 1715–1722, 2011.
14. Characteristics of intense space weather events as observed from a low latitude station during solar minimum, **A. Paul**, B. Roy, S. Ray, A. Das and A. DasGupta, *J. Geophys. Res.*, 116, A10307, doi:10.1029/2010JA016330, 2011.
15. Response of the equatorial ionosphere to the total solar eclipse of 22 July 2009 and annular eclipse of 15 January 2010 as observed from a network of stations situated in the Indian longitude sector, **A. Paul**, T. Das, S. Ray, A. Das, D. Bhowmick and A. DasGupta, *Ann. Geophys.*, 29, 1955–1965, 2011.
16. Impact of equatorial equatorial ionospheric irregularities on transionospheric satellite links observed from a low-latitude station during the minima of solar cycle 24, T.Das, B.Roy, A.DasGupta and **A.Paul,** *Ind. J. Radio Space Phys. (Spl. Issue on Low-Latitude upper atmosphere-ionosphere-plasmasphere system in a record low solar minimum in Asian sector)*, 41, 247-257, 2012
17. Comparison of standard TEC models with a Neural Network based TEC model using multistation GPS TEC around the northern crest of Equatorial Ionization Anomaly in the Indian longitude sector during the low and moderate solar activity levels of the 24th solar cycle, D. Sur and **A. Paul**, *Adv. Space Res.*, 52, 810-820, 2013
18. Impact of space weather events on satellite-based Navigation, B. Roy and **A. Paul**, *Space Weather*, 11, 680–686, doi:10.1002/2013SW001001, 2013
19. Characteristics of equatorial ionization anomaly (EIA) in relation to transionospheric satellite links around the northern crest in the Indian longitude sector, A. Das, K. S. Paul, S. Halder, K. Basu, and **A. Paul**, *Ann. Geophys.*, 32, 91-97, doi:10.5194/angeo-32-91-2014, 2014
20. Observations of ionospheric irregularities around midnight and post-midnight near the northern crest of the Equatorial Ionization Anomaly in the Indian longitude sector: Case studies, T. Das, K.S. Paul and **A. Paul**, *J. Atmos. Sol. Terr. Phys.*, http://dx.doi.org/10.1016/j.jastp.2014.05.001, 2014
21. Effects of transionospheric signal decorrelation on GNSS performance studied from irregularity dynamics around the northern crest of the EIA, T. Das, B. Roy and **A. Paul**, *Radio Sci.*, http://dx.doi.org/10.1002/2014RS005406, 2014.
22. Role of neutral wind in the performance of artificial neural-network based TEC models at diverse longitudes in the low latitudes, *J. Geophys. Res*., D. Sur, S. Ray and **A. Paul,** doi: 10.1002/2014JA020594, 2015
23. Characteristics of post-midnight L-band scintillation in the transition region from the equatorial to mid-latitudes over the Indian longitude sector using COSMIC, C/NOFS and GPS measurements, *Radio Sci.*, **A. Paul**, H. Haralambous and C. Oikonomou, *Radio Sci., 50*, doi:10.1002/2015RS005807, 2015.
24. Characteristics of Total Electron Content (TEC) observed from a chain of stations near the northern crest of the Equatorial Ionization Anomaly (EIA) along 88.5°E meridian in India, *J. Atmos. Sol. Terr. Phys.*, K.S. Paul, A. Das, S. Ray and **A. Paul**, 137, 17-28, 2016
25. Study of the effect of March 17-18, 2015 geomagnetic storm on the Indian longitudes using GPS and C/NOFS, Sarbani Ray, Bidyut Roy, Krishnendu Sekhar Paul, Samiddha Goswami, Christina Oikonomou, Haris Haralambous, Babita Chandel and Ashik Paul, *J. Geophys. Res.*, doi:10.1002/2016JA023127, 2017.
26. Impact of multi-constellation satellite signal reception on performance of satellite-based navigation under adverse ionospheric conditions, A. Paul, K.S. Paul and A. Das, *Radio Sci.*, 10.1002/2016RS006076, 2017.
27. Relation of decorrelated transionospheric GPS signal fluctuations from two stations in the northern anomaly crest region with equatorial ionospheric dynamics, K.S. Paul and A. Paul, *Radio Sci.*, doi:10.1002/2016RS005964, 2017.
28. Response of data-driven artificial neural network-based TEC models to neutral wind for different locations, seasons, and solar activity levels from the Indian longitude sector, D. Sur, S. Haldar, S. Ray and A. Paul, *J. Geophys. Res.*, doi: 10.1002/2016JA023678, 2017
29. Assessment of GPS multi-frequency signal characteristics during periods of ionospheric scintillations from an anomaly crest location, S. Goswami, K.S. Paul and A. Paul, *Radio Sci.*, doi: 10.1002/2017RS006295, 2017.
30. Latitudinal features of Total Electron Content over the African and European longitude sector following the St. Patrick's day storm of 2015, A. Paul, A. Kascheyev, M. Rodriguez-Bouza, K. Pathak, A. Amaral, D. Shetti and J. N.Yao, *Adv. Space Res.*, https://doi.org/10.1016/j.asr.2017.09.012, 2017.
31. Multi-station investigation of spread F over Europe during low to high solar activity, K.S. Paul, H. Haralambous, C. Oikonomou, A. Paul, A. Belehaki, T. Ionna, D. Kouba and D. Buresova, *J. Space Weather Space Clim.*, 2018.

32. Study of Relative Performance of Different Navigational Satellite Constellations Under Adverse Ionospheric Conditions, S. Goswami, A. Paul and S. Halder, *Space Weather*, *16*. https://doi.org/10.1029/2017SW001762, 2018.
33. Inter-frequency performance characterizations of GPS during signal outages from an anomaly crest location, T. Biswas, S. Ghosh, A. Paul, S. Sarkar, *Space Weather*, 17, https://doi.org/10.1029/2018SW002105, 2019.
34. Long-term aspects of nighttime spread F over a low mid-latitude European station, K.S. Paul, H. Haralambous, C. Oikonomou and A. Paul, *Adv. Space Res.*, doi: 10.1016/j.asr.2019.06.020, 2019.
35. Effects of CME and CIR induced geomagnetic storms on low-latitude ionization over Indian longitudes in terms of neutral dynamics, S. Chakraborty, S. Ray, D. Sur, A. Datta and A. Paul, *Adv. Space Res.*, *65,* 198-213, 2020.
36. Multi-wavelength coordinated observations of ionospheric irregularity structures from an anomaly crest location during unusual solar minimum of the 24th cycle, A. Paul, D. Sur and H. Haralambous, *Adv. Space Res.*, *65*, 1402-1413, 2020.
37. Performance of NavIC for studying the ionosphere at an EIA region in India, D. Ayyagari, S. Chakraborty, S. Das, A. Shukla, A. Paul, A. Datta, *Adv. Space Res.*, 65, 1544-1558, 2020.
38. Comparative studies of Ionospheric models with GNSS and NavIC over the Indian Longitudinal sector during geomagnetic activities, S. Chakraborty, A. Datta, S. Ray, D. Ayyagari, A. Paul, *Adv. Space Res.*, 2020.
39. Characteristics of electron content between GPS and IRNSS altitudes studied around the northern anomaly crest location over Indian longitude sector, K.S. Paul and A. Paul, *Radio Sci.*, 2020.
40. Ionospheric response to Strong Geomagnetic Storms during 2000-2005: An IMF clock angle perspective, S. Chakrabaorty, S. Ray, A. Datta and A. Paul, *Radio Sci.*, 2020 (accepted)
41. Degradation of satellite-based navigation performance observed from an anomaly crest location in the Indian longitude sector, S. Goswami, S. Ray and A. Paul, *Radio Sci.*, 2020.
42. Signal-in-space performance under multi-constellation environment from an Indian low latitude station, T. Biswas and A. Paul, *Radio Sci.*, 10.1029/2020RS007119, 2020
43. Investigation of Satellite Trace (ST) and Multi-reflected Echo (MRE) ionogram signatures and its possible correlation to nighttime spread F development from Cyprus over the solar mini-max (2009-2016), K. S. Paul, H. Haralambous, C. Oikonomou and A. Paul, *Adv. Space Res.*, https://doi.org/10.1016/j.asr.2020.12.040, 2020
44. Ionospheric disturbances over the Indian sector during 8 September 2017 geomagnetic storm: plasma structuring and propagation, L. Alfonsi, C. Cesaroni, L. Spogli, M. Regi, A. Paul, S. Ray, S. Lepidi, D. Di Mauro, H. Haralambous, C. Oikonomou, P.R. Shreedevi, A.K. Sinha, *Space Weather*, *19*, e2020SW002607. https://doi.org/10.1029/2020SW002607, 2021
45. Summer Night-Time E-Layer Echoes observed using University of Calcutta ST Radar, T. Das, P. Nandakumar, G. Singh, D. Jana, J. Y. Siddiqui , S. Majumder and A. Paul, Springer Lect. Notes in Networks and Syst., Vol. 147, Chapter 26, ISBN 978-981-15-8365-0), https://doi.org/10.1007/978-981-15-8366-7_26, 2021
46. Lower Atmospheric Wind Profile Studies and Validation Using VHF Doppler Radar of University of Calcutta, T. Das, P. Nandakumar, G. Singh, D. Jana, A. Mitra, A. Ghosh, S. Datta, J. Y. Siddiqui , S. Majumder and A. Paul, Springer Lect. Notes in Networks and Syst., Vol. 147, Chapter 25, ISBN 978-981-15-8365-0), https://doi.org/10.1007/978-981-15-8366-7_25, 2021
47. Impact of CME and HSSW driven geomagnetic storms on thermosphere and ionosphere as observed from mid-latitudes, Dibyendu Sur, Sarbani Ray and Ashik Paul, *Adv. Space Res.*, 68(3), pp. 1441-1460, 2021
48. First results on E region irregularities from a 53 MHz radar experiment from Haringhata, India, A. Paul, P. Pavan Chaitanya, A.K. Patra, P. Nandakumar, Tanmay Das, *Radio Sci.* 10.1029/2021RS007289, 2021.
49. Validation of Wind Measurements From a 53 MHz ST Radar Pilot Array Located at University of Calcutta With Collocated Radiosonde Launches, P. Nandakumar, D. Jana, S. V. Sunilkumar, P. R. Satheesh Chandran, R. Vishnu, T. Das, Maria Emmanuel, G. Singh, S. Majumder, J. Y. Siddiqui, A. Paul, *Radio Sci.*, https://doi.org/10.1029/2020RS007246, 2022.
50. Impact of low latitude ionospheric effects on precise position determination, T. Biswas, P. Banerjee, A. Paul, *Radio Sci.*, https://doi.org/10.1029/2021RS007322, 2022.
51. Ionospheric reconstruction using GNSS signals around an anomaly crest location in Indian longitude sector, Samiddha Goswami, Antara Chaudhuri and Ashik Paul, *Radio Sci.*, https://doi.org/10.1029/2021RS007391, 2022.
52. High and mid-latitude and near subsolar point ionospheric and thermospheric responses to the solar flares and geomagnetic storms during low solar activity periods of 2017 and 2020, Dibyendu Sur,

Sarbani Ray and Ashik Paul, *Adv. Space Res.*, *70*, 157-178, https://doi.org/10.1016/j.asr.2022.04.024, 2022.

53. Multi-frequency observations of post-midnight ionospheric irregularities from an anomaly crest location, Samiddha Goswami, Sayani Ghosh and Ashik Paul, *Radio Sci.*, https://doi.org/10.1029/2022RS007437, 2022.
54. Investigation of the negative ionospheric response of the 8 September 2017 geomagnetic storm over the European sector, C. Oikonomou, H. Haralambous, A. Paul, S. Ray, L. Alfonsi, C. Cesaroni, D. Sur, *Adv. Space Res.*, doi: https://doi.org/10.1016/j.asr.2022.05.035, 2022.
55. Exploring Earth's Ionosphere and its effect on low radio frequency observation with the uGMRT and the SKA, Sarvesh Mangla, Sumanjit Chakraborty, Abhirup Datta, Ashik Paul, *J. Astrophys. Astronomy*, https://doi.org/10.1007/s12036-022-09900-0, 2023.

List of important Conference Proceedings:

1. Long-term L-band scintillations near the crest of the equatorial anomaly in the Indian zone, S. Ray, A. DasGupta and A. Paul, International Beacon Satellite Symposium (BSS'01), Boston College, Boston, USA, June 4-6, 2001.
2. Ionospheric electron content variations and scintillations near the equatorial anomaly crest, A. DasGupta, A. Paul and S. Ray, International Workshop on Space Weather Effects on Communication and Navigation Signals, Boston College, Boston, USA, June 7-8, 2001.
3. Ionospheric total electron content and WAAS in the Indian zone, A. DasGupta, A. Paul and S. Ray, Asian GPS Conference, New Delhi, October 29-30, 2001.
4. Errors in position-fixing by GPS in an environment of strong equatorial scintillations in the Indian zone, A. DasGupta, S. Ray, A. Paul, P. Banerjee and A. Bose, Ionospheric Effects Symposium (IES 2002), Virginia, USA, May 7-9, 2002.
5. Prediction of equatorial ionospheric bubbles in the post-sunset hours, A. Paul, XXVIIth General Assembly of the International Union of Radio Science (URSI GA 2002), Maastricht, Netherlands, August 17-24, 2002.
6. Equatorial bubbles as observed with GPS measurements, A. DasGupta, A. Paul, S. Ray, A. Das and S. Ananthakrishnan, Ionospheric Effects Symposium (IES 2005), Virginia, USA, May 3-5, 2005.
7. Estimation of L-band scintillation intensity from VHF scintillation characteristics, A. Paul, S. Ray, K. Basu and A. DasGupta, 11th International Symposium on Equatorial Aeronomy (ISEA-11), Taipei, Taiwan, May 9-13, 2005.
8. Equatorial scintillations in relation to the development of ionization anomaly, S. Ray, A. Paul and A. DasGupta, CAWSES mini workshop, Taipei, Taiwan, May 14, 2005.
9. Observations of equatorial spread F (ESF) using the Giant Meterwave Radio Telscope (GMRT), Global Positioning System (GPS) and geostationary satellites, A. DasGupta, A. Paul, S. Ray, A. Das and S. Ananthakrishnan, XXVIIIth General Assembly of the International Union of Radio Science (URSI GA 2005), New Delhi, October 23-29, 2005.
10. L-band scintillation morphology in relation to VHF scintillations near the northern crest of the Equatorial Anomaly in the Indian longitude zone, A. DasGupta, A. Paul, D. Hui and S. Ray, *Proc. International Beacon Satellite Symposium 2007 (BSS-2007)*, Boston College, Boston, USA, June 11-15, 2007.
11. Prompt and Delayed Response of Nighttime Equatorial Scintillations to Geomagnetic Disturbances near the Crest of the Equatorial Anomaly in the Indian Longitude Sector, S. Ray, A. DasGupta, D. Hui and A. Paul, *Proc. International Beacon Satellite Symposium 2007 (BSS-2007)*, Boston College, Boston, USA, June 11-15, 2007.
12. Prompt Response of Nighttime Equatorial Scintillations to Geomagnetic Disturbances near the Crest of the Equatorial Anomaly in the Indian Longitude Sector, A. DasGupta, S. Ray, D. Hui and A. Paul, *International CAWSES Symposium, Kyoto*, Japan, October 23-27, 2007.
13. Characteristics of SBAS Grid sizes around the northern crest of the equatorial ionization anomaly, A. Paul, A. Das and A. DasGupta, International Beacon Satellite Symposium, June 07-11, 2010, Barcelona, Spain.
14. GPS Phase Scintillation, A. DasGupta and A. Paul, International Beacon Satellite Symposium, June 07-11, 2010, Barcelona, Spain.
15. Characteristics of Intense Space Weather Events as observed with GPS from a low latitude station, A. Paul and A. DasGupta, SCOSTEP Symposium, July 12-16, 2010, Berlin, Germany.
16. Effects of GPS amplitude and phase scintillation on GNSS performance observed from Calcutta, A. Paul, Workshop on Science Applications of GNSS in Developing countries, April 11-27, 2012, International Centre for Theoretical Physics (ICTP), Trieste, Italy

17. Characterization of the effects of Equatorial Ionospheric Irregularities on Satellite-Based Navigation Around the Northern crest of the Equatorial Ionization Anomaly in the lead-up to the solar maximum, A. Paul, B. Roy, A. Das, T. Das, S. Ray and A. DasGupta, 39th COSPAR Scientific Assembly, July 14-22, Mysore, India.
18. Neural Network Based TEC Model Using Multistation GPS-TEC Around The Northern Crest Of Equatorial Ionization Anomaly, D. Sur and A. Paul, 5th International Conference on Computers and Devices for Communication (CODEC) 2012, Hyatt Regency Kolkata, 17 – 19 December, 2012
19. Impact of intense Space Weather events on SBAS guided navigation, A.Paul, B.Roy and A.DasGupta, International Beacon Satellite Symposium (BSS-13), July 8-12, 2013, University of Bath, Bath, UK.
20. Identification of seeding mechanism of equatorial ionospheric irregularities using the Giant Meterwave Radio Telescope, T.Das, S. Ray, A. Datta and **A. Paul,** Metre Wavelength Sky Conference, NCRA-TIFR, Pune, December 9-13, 2013
21. Proxies to GNSS signal outages from irregularity dynamics around the northern crest of the EIA, T.Das and **A. Paul,** Regional Conference on Radio Science (RCRS-2014), Symbiosis Institute of Technology, Pune, January 2-5, 2014
22. Performance Analysis of Neural Network based TEC Models across Diverse Longitudes, D. Sur and **A. Paul,** Regional Conference on Radio Science (RCRS-2014), Symbiosis Institute of Technology, Pune, January 2-5, 2014
23. Zonal dependence of periodic structures in TEC around the northern crest of EIA, A.Das, B.Roy and **A.Paul,** Regional Conference on Radio Science (RCRS-2014), Symbiosis Institute of Technology, Pune, January 2-5, 2014
24. Frequency Diversity Techniques applied to GNSS under adverse ionospheric conditions, A. Das, T. Das, P. Banerjee, B. Roy, and **A. Paul,** National Space Science Symposium (NSSS-2014), , Dibrugarh University, Dibrugarh, January 29-February 1, 2014
25. Unusual observations of scintillations on the poleward side of Equatorial Ionization Anomaly during late evening and post midnight hours, K.S. Paul, S. Halder and **A. Paul,** National Space Science Symposium (NSSS-2014), , Dibrugarh University, Dibrugarh, January 29-February 1, 2014
26. Impact of Multiple Frequency Scattering on GNSS Performance under adverse ionospheric conditions, A. Das and **A. Paul**, 40th COSPAR Scientific Assembly, Moscow, Russia, August 2-10, 2014
27. Proxies to GNSS signal outages from irregularity dynamics around the northern crest of the Equatorial Ionization Anomaly, T. Das and **A. Paul**, 40th COSPAR Scientific Assembly, Moscow, Russia, August 2-10, 2014
28. Performance Analysis of Artificial Neural Network based TEC Models at Different Longitudes in the Low Latitude Region, D. Sur and **A. Paul**, 31st General Assembly of URSI, Beijing, China, August 16-23, 2014
29. Frequency Diversity Techniques applied to GNSS under adverse ionospheric conditions, A. Das and **A. Paul**, 31st General Assembly of URSI, Beijing, China, August 16-23, 2014
30. Impact of multi-constellation satellite signal reception on performance of SBAS under adverse ionospheric conditions, **A. Paul** and A. Das, Ionospheric Effects Symopsium (IES-2015), Alexandria, USA, May 12-14, 2015.
31. Study of the effect of March 17-18, 2015 geomagnetic storm on the midlatitude ionosphere using the European Digital Ionosonde Network (DIAS), **A. Paul** and H. Haralambous, 2nd URSI Regional Conference on Radio Science, New Delhi, November 16-19, 2015
32. Study of multi-frequency GNSS scintillations and relative robustness of multi-constellation signals under adverse ionospheric conditions from an anomaly crest station, Ashik Paul, Aditi Das, Krishnendu Sekhar Paul, Samiddha Goswami and Tiotama Mitra, 19th International Beacon Satellite Symposium, International Centre for Theoretical Physics, Trieste, Italy, June 27-July 1, 2016
33. Analysis of High-Latitude Ionospheric Processes During the Nov 2015 HSS and CME-Induced Geomagnetic Storm: A Multi-Instrument Observational Approach, Tibor Durgonics, Attila Komjathy, Olga P Verkhoglyadova, Per Hoeg and Ashik Paul, AGU Fall Meeting, San Franciso, December 12-16, 2016
34. Study of the effects of adverse ionospheric condition on relative performances of different navigational satellite constellations, Samiddha Goswami, Ashik Paul, Krishnendu Sekhar Paul, URSI - RCRS 2017 (3rd Regional Conference on Radio Science), National Atmospheric Research laboratory (NARL), Tirupati, India, March 1 - 4, 2017.
35. Post midnight to early morning observation of ionization density depletions from LEO CRABEX measurements from Calcutta, Sayani Ghosh, Krishnendu Sekhar Paul, Ashik Paul, URSI - RCRS 2017 (3rd Regional Conference on Radio Science), National Atmospheric Research laboratory (NARL), Tirupati, India, March 1 - 4, 2017.

36. Study of relative signal characteristics of NavIC and GNSS from a anomaly crest location, P. Banerjee, S. Goswami, A. Sinha, S. Saha, A. Paul, URSI - RCRS 2017 (3rd Regional Conference on Radio Science), National Atmospheric Research laboratory (NARL), Tirupati, India, March 1 - 4, 2017.
37. Studies on relative performance of different satellite-based navigation systems during adverse ionospheric conditions from equatorial ionization anomaly crest location, Ashik Paul and Samiddha Goswami, 32nd General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS 2017), Montreal, Canada, August 19-26, 2017
38. Comparison of equatorial ionization anomaly gradients from multistation GPS TEC and Artificial Neural Network for scintillation prediction in the Indian longitudes, Dibyendu Sur and Ashik Paul, 32nd General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS 2017), Montreal, Canada, August 19-26, 2017
39. Impact of adverse ionospheric events on transionospheric satellite signals, Bidyut Roy, Sarbani Ray and Ashik Paul, 32nd General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS 2017), Montreal, Canada, August 19-26, 2017
40. Study of relative signal characteristics of NavIC and GNSS from a anomaly crest location, P. Banerjee, S. Goswami and A. Paul, 32nd General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS 2017), Montreal, Canada, August 19-26, 2017
41. Testing the conformity of GPS and IRNSS in terms of ionospheric delay and position errors, Trisani Biswas, Parameswar Banerjee and Ashik Paul, 5th International conference on Signal Processing and Integrated Networks (SPIN), Amity University, Delhi-NCR, February 22-23, 2018.
42. Assessment of multi-frequency GNSS signal outages observed from northern Equatorial Ionization Anomaly (EIA) crest locations, Ashik Paul, 14th Solar Terrestrial Physics Symposium (STP-14), York University, Toronto, Canada, July 9-13, 2018.
43. Decorrelation of multi-frequency GNSS signals observed from northern equatorial ionization anomaly (EIA) crest locations, Ashik Paul, Samiddha Goswami and Krishnendu Sekhar Paul, 42nd COSPAR Scientific Assembly, Pasadena, USA, July 14-22, 2018
44. Relative robustness of triple frequency GPS signals observed from anomaly crest locations during periods of ionospheric scintillations, Trisani Biswas, Somrita Sarkar, Ashik Paul, 42nd COSPAR Scientific Assembly, Pasadena, USA, July 14-22, 2018
45. Development and validation of a neural network based model to observe the impact of geomagnetic storm on TEC at Lucknow during 2015-2016, Dibyendu Sur, Ashik Paul, 42nd COSPAR Scientific Assembly, Pasadena, USA, July 14-22, 2018
46. Multi-frequency satellite signal outages observed from a low latitude station, Ashik Paul, Krishnendu Sekhar Paul, Samiddha Goswami, Trisani Biswas and Somrita Sarkar, 4th Australian and New Zealand Workshop on Space Situational Awareness, University of New South Wales, Canberra, Australia, July 25-27, 2018.
47. Relative performance of IRNSS and GPS from an anomaly crest location, Trisani Biswas and Ashik Paul, 15th International Symposium on Equatorial Aeronomy, Physical Research Laboratory, Ahmedabad, India, October 22-26, 2018.
48. Atmospheric dynamics as observed using 53MHz ST Radar at Calcutta (CU-STR), Tanmay Das, P. Nandakumar, Gopal Singh and Ashik Paul, 15th International Symposium on Equatorial Aeronomy, Physical Research Laboratory, Ahmedabad, India, October 22-26, 2018.
49. Study of the impact of St. Patrick's 2013 and 2015 events on the midlatitude ionosphere over Europe, Lucilla Alfonsi, Haris Haralambous, Ashik Paul, Lucilla Alfonsi, Claudio Cesaroni, Christina Oikonomou, Sarbani Ray, 15th European Space Weather Week, Leuven, Belgium, November 5-9, 2018
50. Initial observations on Atmospheric Dynamics and Ionospheric irregularities from the 53MHz ST Radar at Calcutta, IEEE International Symposium on Antennas and Propagation (APSYM), Tanmay Das, P. NandaKumar, Gopal Singh, Debyendu Jana and Ashik Paul, Cochin University of Science and Technology (CUSAT), Kochi, December 3-5, 2018
51. RESOURCE: an International Initiative for Radio Sciences Research on Antarctic Atmosphere, N. Bergeot, L. Alfonsi, J. V. Bageston, A. Burrell, M. Cliverd, E. Correia, P. J. Cilliers, G. De Franceschi, A.M. Gulisano, M. Hernández-Pajares, G. Heygster, P. Høeg, G. Jee, A. Krankowski, C. Lee, M. Lester, J. Lichtenberger, S. Lyatsky, M.F. Marcucci, D. Di Mauro, C. Mitchell, J. Morton, T. Nakamura, M. Negusini, **A. Paul**, M. Pozoga, P. Prikryl, V. Romano, P.T. Jayachandran, A.K. Tiwari, A. Weatherwax, A. Zalizovski and S. Zou, L. Benoit, C. Brescani, J.-M. Chevalier, D. Lombardi, R. Van Malderen, F.J. Meyer, E. Pottiaux, D. Roma-Dollase and L. Spogli, AGU Fall Meeting, Washington D.C. December 10-14, 2018

52. Initial results observed using 53MHz ST Radar at Calcutta during pre-monsoon, monsoon and post-monsoon seasons, Tanmay Das, Debyendu Jana and Ashik Paul, 3rd Conference on India Radar Meteorology (iRad 2019), Indian Institute of Tropical Meteorology (IITM), Pune, January 9-12, 2019
53. Assessment of GLONASS and GALILEO signal characteristics during periods of ionospheric scintillations from an anomaly crest location, Samiddha Goswami and Ashik Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
54. Impact of VHF irregularity dynamics on multi-frequency GNSS signal fading characteristics, Samiddha Goswami, Sayani Ghosh, Keith Groves and Ashik Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
55. Ionospheric Characterization And Reconstruction Using GPS Satellite Signals Around The Anomaly Crest Region, Samiddha Goswami, Tarun Kumar Pant, Ashik Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
56. Lower atmospheric characteristics and Ionospheric backscatter observed using Calcutta University ST Radar (CU-STR), Tanmay Das, P. NandaKumar, Gopal Singh, Debyendu Jana and Ashik Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
57. Spatial distribution of TID signatures on GPS TEC observed in the Eastern Mediterranean longitude sector, K.S.Paul, H. Haralambous, and A. Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
58. Signatures of TIDs and vertical drift of ionization spread F observed over Cyprus during high solar activity period, K.S. Paul, H. Haralambous, C. Oikonomou and A. Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
59. Coordinated Observations of Ionospheric Irregularity Structures at Optical and Radio Wavelengths from an Anomaly Crest Location during the Unusual Solar Minimum Period 2008-2010, Dibyendu Sur, Haris Haralambous and Ashik Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
60. Observations of Storm-Time Thermospheric O/N_2 Ratio and TEC in the Northern Hemisphere during Intense Geomagnetic Storms of 2015-2017, Dibyendu Sur, Sarbani Ray, Ashik Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
61. Interconnection of transitional low to mid latitude ionization density characteristics with spread F from Eastern Mediterranean Longitude sector, K.S. Paul, H. Haralambous and A. Paul, 2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019), New Delhi, India, March 9-15, 2019
62. Multi-technique characterization of ionospheric Space Weather effects, Ashik Paul, International Space Weather Initiative Workshop, International Centre for Theoretical Physics, Italy, May 20-24, 2019
63. Characteristics of GNSS signal outages observed from the Arctic and Antarctic regions, Dibyendu Sur, Claudio Cesaroni, Lucilla Alfonsi and Ashik Paul, International Beacon Satellite Symposium (BSS 2019), Olsztyn, Poland, August 19-23, 2019
64. Relation of multi-frequency GNSS signal scattering with equatorial ionospheric irregularity dynamics at VHF, Ashik Paul and Samiddha Goswami, International Beacon Satellite Symposium (BSS 2019), Olsztyn, Poland, August 19-23, 2019
65. Signal outages during geomagnetic storms from the northern crest of the equatorial anomaly in the Indian longitude sector, B. Roy, S. Ray and A. Paul, International Beacon Satellite Symposium (BSS 2019), Olsztyn, Poland, August 19-23, 2019
66. Degradation of satellite-based navigation system performance observed from an anomaly crest location, Samiddha Goswami, Sarbani Ray and Ashik Paul, International Beacon Satellite Symposium (BSS 2019), Olsztyn, Poland, August 19-23, 2019
67. Signal-in-Space performance of Satellite Based Navigation system in the equatorial and low latitudes, Ashik Paul, AGU Fall Meeting, San Francisco, USA, December 9-13, 2019
68. The results of the magnetosphere-ionosphere coupling on plasma irregularities over India during the September 2017 storm, Alfonsi L., C. Cesaroni, L. Spogli, A. Paul, S. Ray, H. Haralambous, C. Oikonomou, M. Regi, S. Lepidi, D. Di Mauro, AGU Fall Meeting, San Francisco, USA, December 9-13, 2019.
69. Application of Precise Point Positioning Techniques under Adverse Ionospheric Conditions, Trisani Biswas, Parameswar Banerjee and Ashik Paul, URSI RCRS 2020, IIT-BHU, February 12-14, 2020
70. Application of GNSS based Ionospheric Reconstruction for understanding day-to-day variabilities of irregularity dynamics, Antara Chaudhuri, Samiddha Goswami and Ashik Paul, URSI RCRS 2020, IIT-BHU, February 12-14, 2020
71. Features of GNSS signal outages from nearly conjugate polar locations, Ashik Paul and Dibyendu Sur, SCAR Open Science Conference (online), August 3-7, 2020.

72. Ionospheric plasma structuring and propagation over India during 8 September, L. Alfonsi, C. Cesaroni, L. Spogli, M. Regi, A. Paul, S. Ray, S. Lepidi, D. Di Mauro, H. Haralambous, C. Oikonomou, P.R. Shreedevi, A.K. Sinha, AGU Fall Meeting (online), December 1-17, 2020.
73. Impact of equatorial and low latitude ionospheric irregularities observed across a broad spectrum of frequencies, A. Paul, T. Das and S. Goswami, URSI GASS 2021, August 28-September 4, 2021, Italy.
74. The results of the magnetosphere-ionosphere coupling on plasma irregularities over India during the September 2017 storm, L. Alfonsi, C. Cesaroni, L. Spogli, A. Paul, S. Ray, H. Haralambous, C. Oikonomou, M. Regi M., S. Lepidi, D. Di Mauro, URSI GASS 2021, August 28-September 4, 2021, Italy.
75. Features of ionospheric irregularities observed using multi-technique investigations from a low latitude station, Ashik Paul, United Nations/Mongolia Workshop on the Applications of Global Navigation Satellite Systems, 25 - 29 October 2021, Ulaanbaatar, Mongolia.
76. Characterizing the occurrence of ionospheric irregularities using the SCINDA receiver at Calcutta, Anamika Das, Trisani Biswas and Ashik Paul, 21st National Space Science Symposium (NSSS-2022), January 31-February 4, 2022, IISER, Kolkata.
77. Observations of Summer Night-Time FAI Using University of Calcutta ST Radar, Tanmay Das, Arkadeb Kundu and Ashik Paul, 21st National Space Science Symposium (NSSS-2022), January 31-February 4, 2022, IISER, Kolkata.
78. Observations of ionospheric depletions using 150 and 400 MHz beacon from CRABEX near the anomaly crest, Dyutis Garai, Tanmay Das and Ashik Paul, 21st National Space Science Symposium (NSSS-2022), January 31-February 4, 2022, IISER, Kolkata.
79. Characteristics of IRNSS signals as received at Shimla beyond the northern crest of EIA, Babita Chandel, Trisani Biswas and Ashik Paul, 21st National Space Science Symposium (NSSS-2022), January 31-February 4, 2022, IISER, Kolkata.
80. Use of 53MHz VHF Radar of Calcutta University to Quantify the Lower Atmospheric Wind Characteristics during Monsoon, 2021, Debyendu Jana, P. Nandakumar, Tanmay Das, Gopal Singh and Ashik Paul, 21st National Space Science Symposium (NSSS-2022), January 31-February 4, 2022, IISER, Kolkata.
81. Role of relative dynamics of satellite and irregularity structure on GPS signal perturbations, Trisani Biswas and Ashik Paul, 15th Quadrennial Solar-Terrestrial Physics Symposium (STP-15), 21-25 February, 2022, Indian Institute of Geomagnetism (IIG)
82. Studies on Ionization Depletions of Equatorial Plasma Structures on Transionospheric Satellite Signals using GPS, Tanmay Das and A. Paul, 15th Quadrennial Solar-Terrestrial Physics Symposium (STP-15), 21-25 February, 2022, Indian Institute of Geomagnetism (IIG)
83. Three Components of Wind And Lower Atmospheric Turbulence Measurements Using VHF Doppler Radar Of University Of Calcutta To Characterize Lower Atmospheric Dynamics, Debyendu Jana, P. Nandakumar, Tanmay Das, Gopal Singh and Ashik Paul, 15th Quadrennial Solar-Terrestrial Physics Symposium (STP-15), 21-25 February, 2022, Indian Institute of Geomagnetism (IIG).
84. Atmospheric circulation during Indian summer monsoon 2021: A study using 53 MHz VHF radar at Haringhata (22.93°N, 88.50°E), Debyendu Jana, P. Nandakumar and Ashik Paul, Annual Monsoon Workshop and National Symp. Changing Climate and Extreme Events: Impacts, Mitigation and Role of Oceans, Ind. Meteorol. Soc., February 21-23, 2022.
85. Design and Characterization of Phased Array Antennas for ST Radar Operating at 53MHz, J.Y. Siddiqui, P. Nandakumar, K.P. Ray, Ashik Paul, IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, July 10-15, 2022, Denver, USA.
86. Studies of low-latitude Field-Aligned Ionospheric Irregularities observed using University of Calcutta VHF Radar, Ashik Paul, Tanmay Das and P. Nandakumar, 21st International Beacon Satellite Symposium (BSS-22), August 1-5, 2022, Boston College, USA.
87. Multi-wavelength scintillation observations at L- and S-band from an anomaly crest location, Ashik Paul, Trisani Biswas and Jan-Peter Weiss, 21st International Beacon Satellite Symposium (BSS-22), August 1-5, 2022, Boston College, USA.
88. Impact of ionization density depletions on transionospheric satellite links as observed around the northern crest of Equatorial Ionization Anomaly, Tanmay Das and Ashik Paul, 21st International Beacon Satellite Symposium (BSS-22), August 1-5, 2022, Boston College, USA.
89. Ionospheric Response to CIR induced Geomagnetic Storms in Declining Phase of Solar Cycle 24, Sarbani Ray, Anamika Das and Ashik Paul, 21st International Beacon Satellite Symposium (BSS-22), August 1-5, 2022, Boston College, USA.

90. Ionospheric response to a G4 and G1-class geomagnetic storm from an anomaly crest location using GPS/GNSS based Computerized Ionospheric Tomography, Samiddha Goswami, Sripada Haldar and Ashik Paul, 21st International Beacon Satellite Symposium (BSS-22), August 1-5, 2022, Boston College, USA.
91. Observations of multi-scale size ionospheric irregularities at L- and S-band from an anomaly crest location, Ashik Paul and Trisani Biswas, International Workshop on GNSS Ionosphere (IWGI-22), German Aerospace Centre, Neustrelitz, Germany, September 26-28, 2022.
92. Beam Formation of 53 MHz Active Phased Pilot Array ST Radar at University of Calcutta using Radar Controller Software, P. Nandakumar, J.Y. Siddiqui, A. Paul, URSI-RCRS 2022, December 1-4, 2022, IIT Indore
93. Atmospheric Boundary Layer Observations over Haringhata using VHF Active Phased Pilot Array Radar of Calcutta University: Preliminary Results, D. Jana and A. Paul, URSI-RCRS 2022, December 1-4, 2022, IIT Indore

Invited Lectures:

1.	Satellite Based Communication and Navigation	UGC sponsored Refresher Course on Broadband Wireless Communication, June 19, 2009	Jadavpur University, Kolkata
2.	Communication with Astronomical Bodies	December 9, 2009	MBC Institute of Technology, Burdwan
3.	Global Navigation Satellite System (GNSS)	ISRO sponsored 5th Workshop on Foundations of Space Science and Technology, June 5, 2011	Ramakrishna Mission Vivekananda University and Kalpana Chawla Centre for Space and Nano Sciences (KCCSNS)
4.	Session Co-convener	17th National Space Science Sympsoium -NSSS 2012 February 14-17, 2012, S.V. University, Tirupati	Indian Space Research Organization (ISRO)
5.	Satellite Communication	ISRO sponsored national workshop on Foundations of Space Science and Technology, June 14, 2012	Ramakrishna Mission Vivekananda University and Kalpana Chawla Centre for Space and Nano Sciences (KCCSNS)
6.	Equatorial Ionospheric impact on Satellite-Based Communication and Navigation System	Department of Physics, Benares Hindu University, September 23, 2013	Benares Hindu University (BHU) under ISRO Space Science Promotion Scheme (SSPS)
7.	Space Weather Initiatives at University of Calcutta	October 14, 2014	Department of Physics, Sri Sai University, Palampur
8.	Evolution and Issues of Satellite Communication	February 5, 2016	Narula Institute of Technology,
9.	GPS and Space Weather Initiatives at University of Calcutta	One-week workshop on Photonics, Electronics, Nanotechnology, Integrated Circuits and Systems	Department of Electrical Engineering, Tripura University, March 2, 2016

		(PHOENICS-2016) organized by UGC Net working Resource Centre in Physical Sciences	
10.	GPS Studies at University of Calcutta	Three week School on VLSI Design, Communications and Microelectronics (VCOMM-16) organized by UGC Net working Resource Centre in Physical Sciences	Institute of Radio Physics and Electronics, University of Calcutta, April 4, 2016
11.	Space Weather Studies at University of Calcutta	Three week School on VLSI Design, Communications and Microelectronics (VCOMM-16) organized by UGC Net working Resource Centre in Physical Sciences	Institute of Radio Physics and Electronics, University of Calcutta, April 8, 2016
12.	Ionospheric studies at Ionosphere Field Station, Haringhata of University of Calcutta	Three week School on VLSI Design, Communications and Microelectronics (VCOMM-16) organized by UGC Net working Resource Centre in Physical Sciences	Ionosphere Field Station, University of Calcutta, April 9, 2016
13.	Ionospheric Studies using GNSS at University of Calcutta	Seminar on GNSS Aids and Applications	Swissotel Kolkata, September 23, 2016
14.	Ionospheric response of strong earthquakes over the Indian subcontinent using GPS TEC measurements	Ist Triennial Congress of FIGA, 53rd annual convection of IGU & 34th annual congress of AHI	Indian School of Mines-IIT, Dhanbad November 8, 2016
14.	Multi-frequency GNSS amplitude and phase scintillation observations from the anomaly crest region	3rd URSI Regional Conference on Radio Science (RCRS-2017)	National Atmospheric Research Laboratory (NARL), Tirupati, March 1, 2017
15.	Characterization of near-Earth Space Environment using ST Radar and ionospheric instrumentation from University of	ARIES, Nainital	ARIES, Nainital, October 5, 2017

	Calcutta		
16.	Multi-frequency GNSS amplitude and phase scintillation observations from the anomaly crest region	Workshop on Satellite Navigation and Applications of GNSS/NavIC	National Atmospheric Research Laboratory (NARL), Tirupati, April 6, 2018
17.	Multi-frequency GNSS Satellite Signal Outages from an Anomaly Crest Location in India	Workshop on Space Weather Effects on GNSS operations at Low Latitudes	International Centre for Theoretical Physics (ICTP), Trieste, Italy, May 3, 2018
18.	Multi-system characterization of near-Earth Space Environment and ionospheric instrumentation at University of Calcutta	Space Physics Laboratory (SPL), Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram	Space Physics Laboratory, June 26, 2018
19.	Space Situational Awareness and Space Weather Effects	4th International Conference on Electrical Engineering and Information and Communication Technology (iCEEiCT 2018)	Military Institute of Science and Technology (MIST), Dhaka, Bangladesh September 15, 2018
20.	Inter-frequency performance of GNSS signals during periods of scintillations near the EIA crest	15th International Symposium on Equatorial Aeronomy (ISEA-15)	Physical Research Laboratory, Ahmedabad, India, October 25, 2018
21.	Space Situational Awareness and Space Weather Effects	International Conference on 125th Birth Anniversary of Prof. S.N. Bose, Exploring the Universe (EXPUNIV 2018)	S.N. Bose National Centre for Basic Sciences, Kolkata, India, November 14, 2018
22.	Leveraging the research opportunities from a fully-active VHF phased array	IEEE International Microwave and RF Conference (IMARC 2018)	Novotel, Kolkata, November 29, 2018
23.	Space Science Initiatives at University of Calcutta	Brainstorming Meeting at National Atmospheric Research Laboratory (NARL)	National Atmospheric Research Laboratory, December 18, 2018
24.	Decorrelation of GNSS signals during periods of scintillations near the EIA crest	2019 URSI Asia Pacific Radio Science Conference (URSI APRASC 2019)	New Delhi, India, March 13, 2019
25.	Applications of	Workshop on	IIT Palakkad and IEEE APS Kerala Chapter,

	VHF ST Radar at University of Calcutta for understanding Atmospheric Dynamics in the Geophysically sensitive Tropical to Sub-tropical transition region	Antennas for Modern Wireless and Remote Sensing Applications	March 23, 2019
26.	Scintillation and irregularity characterization using GNSS	Workshop on Ionospheric Forecasting for GNSS Operations in Developing Countries: Findings and Challenges	International Centre for Theoretical Physics, Italy, May 27-31, 2019
27.	Characterization of near-Earth Space Environment using ST Radar, Satellite Beacon and GNSS	Research Collaboration	IIT Delhi, July 31, 2019
28.	Ionosphere-Thermosphere-Magnetosphere Science Issues	Brainstorming Meeting	Space Physics Laboratory, Trivandrum, August 13, 2019
29.	Characterization of Neutral and Ionized Atmospheric Features using an Active Phased Array Radar at University of Calcutta	IEEE Recent Advances in Geoscience and Remote Sensing: Technologies Standards and Applications (TENGARSS 2019)	Kochi, Kerala, India October 17-20, 2019
30.	Multi-technique aspect sensitive observations of equatorial ionospheric irregularities	Recent Advances in Space Science	IIT-Indore, November 10, 2019
31.	Effects of Propagation Geometry on Ionospheric Irregularity Observations using University of Calcutta ST Radar and GNSS	URSI RCRS 2020	IIT-BHU, February 12-14, 2020
32.	Lower atmospheric turbulence measurements from University of Calcutta ST Radar	URSI RCRS 2020	IIT-BHU, February 12-14, 2020
33.	University of Calcutta ST Radar		Department of Atmospheric Science, University of Calcutta, February 17, 2020
34.	Application of		Techno India University, July 1, 2020

	high-power active communication devices		
35.	Effects of ionospheric irregularities on GNSS and HF radars	International Colloquium on Equatorial and Low-Latitude Ionosphere (ICELLI 2020)	Centre for Atmospheric Research, National Space Research and Development Agency, Nigeria, September 16, 2020
36.	Laboratory and Data Management Protocol	Ph.D. Coursework in Radio Physics and Electronics	Institute of Radio Physics and Electronics, University of Calcutta, September 26, 2020
37.	Space Weather studies from an Indian low latitude station using GNSS and VHF radar	Webinar on Space Weather: Ionospheric and Technological impact	Doon University, October 6, 2020
38.	Science and Technology intervention in Geosciences	Inauguration of ISTE Student Chapter at Techno India University	Indian Society for Technical Education (ISTE), March 5, 2021
39.	Impact of low-latitude aeronomy on satellite-based precise point positioning	Workshop on Remotely Sensed Data Analysis	IEEE GRSS Kolkata Chapter, March 13, 2021
40.	Multi-scale size ionospheric irregularities impacting signal-in-space performance of satellite-based communication and navigation links	Space Physics Seminar, Space and Atmospheric Science Division	Physical Research Laboratory, April 19, 2021
41.	Application of remote sensing techniques to understand lower atmospheric and ionospheric features at different frequencies		Dept. of Astronomy, Astrophysics and Space Engineering, IIT Indore, November 10, 2021
42.	Features of lower atmospheric winds and ionospheric Field-Aligned Irregularities observed using University of Calcutta ST Radar	21st National Space Science Symposium (NSSS-2022)	IISER Kolkata, January 31, 2022
43.	University of Calcutta ST Radar Project	Collaboration	IIT Hyderabad, March 30, 2022
44.	Studies of low-latitude Ionospheric Irregularities	International Colloquium on Equatorial and Low-Latitude Ionosphere	Centre for Atmospheric Research, National Space Research and Development Agency, Anyigba, Nigeria, September 19-23, 2022

	observed using University of Calcutta VHF Radar and other systems		
45.	DST-SERB National ST Radar Facility: Capabilities and Possibilities	Collaboration	Department of Physics, Sidho Kanho Birsa University, February 9, 2023

Teaching Assignments:

Level	Paper
Bachelor of Technology	***Antennas and Radiowave propagation***
Bachelor of Technology	***Satellite Communication***
Bachelor of Technology	***Microwave and Navigational Electronics***
Bachelor of Technology	***Compulsory Student Project***
Master of Technology	***GNSS Aids and Applications***
Master of Technology	***Radio Astronomy Techniques***
Master of Technology	***Advanced Measurements Laboratory***
Master of Technology	***Compulsory Student Project***

Other important particulars:

1. Recipient of the **URSI Young Scientist Award** and participant at the XXVIIth General Assembly of the International Union of Radio Science (URSI GA 2002) held at Maastricht, Netherlands during August 17-24, 2002.
2. Recipient of **Erasmus Mundas Staff Mobility Scholarship** of European Union at Frederick University, Cyprus during June-September 2015.
3. Member of Scientific Organizing Committee of **21st International Beacon Satellite Symposium** held at Boston College during August 1-5, 2022.
4. Co-Session Convenor at **21st International Beacon Satellite Symposium** Session **Ionospheric Effects on GNSS Augmentation Systems** held at Boston College during August 1-5, 2022.
5. Session Convenor and Session Chair at **URSI GASS 2021** Session G08 on **Ionospheric Space Weather.**
6. Session Convenor and Session Chair at **URSI APRASC 2019** Session G05, G06, G07, G08 on **Ionospheric Effects of Space Weather**
7. Session Convenor at **International Space Weather Initiative Workshop** (ICTP, Italy, 20-24 May, 2019) on **Space Weather Effects**
8. Session Chair at the **International Beacon Satellite Symposium** (BSS-19, Poland, 2019) on **Ionospheric Effects on Satellite Based Navigation System**
9. Visited the **Center for Space Physics, Boston University**, Boston, USA during October 29-December 15, 2006 to undertake training on conducting airglow experiments
10. **Life Member of American Geophysical Union (AGU) and European Geosciences Union (EGU)**
11. **URSI Individual Member**
12. IEEE Member
13. INRASS Member
14. Member of International Space Science Institute (ISSI)-Association
15. Attended and presented papers at URSI GA in 2002, 2005, 2014, 2017 and 2021 (online), URSI AP RASC in 2019.
16. Attended and presented papers at COSPAR Scientific Assembly in 2012 and 2018.
17. Attended and presented papers at ISEA in 2005 and 2018, IES in 2015 and IBSS in 2010, 2013, 2016, 2019, 2022.
18. Attended and presented paper at AGU Fall Meeting 2019
19. Reviewer of AGU, EGU, Elsevier and IEEE journals

(ASHIK PAUL) Date: March 10, 2023 Place: Kolkata, India