PERSONAL INFORMATION Arijit De

EXPERIENCE
Professional

October 2021 – March 2023

Postdoctoral Fellow

Reference Structure: Department of Electromagnetic and Radar, ONERA, The French Aerospace Lab, Toulouse, France.

Lab Head: Dr. Laurent Castanet (DEMR, ONERA).

Research Topics:

- Radio wave propagation and atmospheric models
- Post processing of satellite data
- Gaseous attenuation (Oxygen, water vapor, cloud)
- ERA5 database and Radiosonde data
- Microwave Radiometry
- Microwave systems and meteorological measurements
- Study of millimetre wavelengths for satellite link
- ITU-R models

July 2012-December 2015, and January 2018- September 2021

Teaching Experience

Teaching in Netaji Subhash Engineering College for different subjects like Electromagnetic Theory, Communication Engineering, Satellite Communication, Numerical Methods etc.

EDUCATION AND TRAINING

January 2016-December 2017

PhD with scholarship

Reference Structure: Institute of Radio Physics & Electronics, University of Calcutta, Kolkata, India.

Supervisor: Prof. Animesh Maitra

Area: Radio wave propagation and remote sensing

Project details: Atmospheric Studies in the Geophysically sensitive Tropical to Sub-tropical transition region with ST Radar Facilities at Calcutta University" funded by DST, SERB, India.

PhD thesis: Propagation Studies on Rain and Cloud Attenuation and Tropospheric Scintillations in Tropical Region.

Scope of the PhD: The thesis is focused on the propagation of satellite signals at frequencies greater than 10 GHz in the tropical region, mainly concerning propagation impairments, namely, rain attenuation, cloud attenuation, depolarization, and scintillations. To find the relation between pre-rain scintillations with prevailing meteorological conditions like cloud thickness and CAPE index, and can be significant in assessing the propagation effects in the tropical region. To propose a technique to estimate the diversity gain from the rain decay parameter obtained from rain attenuation and rain rate measurements. His study showed that. Arijit has acquired valuable experience in handling ground-based instruments like Ku-band Satellite Receiving Systems, Microwave Radiometer, Micro Rain Radar, Disdrometer. He has a good understanding of the physics of the subject matter he deals with.

Major subjects covered during PhD activity:

- Atmospheric Microwave propagation
- Tropospheric effects on microwave signal propagation
- Acquaintances with various ground-based instruments and data processing, like satellite receiving system, microwave radiometer, disdrometer, rain gauge, laser precipitation monitor, micro rain radar.
- Long-term statistics
- Rain decay parameter modelling
- Programing in MATLAB environment

2010-2012 Master's degree in Radio Physics and Electronics, University of Calcutta

Subjects covered:Attached is a complete list of the exams taken with the relative marks.

Thesis:"STUDY OF SOME RELATIONSHIP BETWEEN CLOUD EFFECTIVE RADIUS AND AEROSOL: PRELIMINARY INVESTIGATION", under Space science promotion scheme, Indian Space Research Organization, India.

Supervisor: Prof. Animesh Maitra.

PERSONAL SKILLS

Mother tongue(s): Bengali

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Optimal	Optimal	Optimal	Optimal	Optimal

Communication skills: Communication and relational skills based on cultural sensitivity and clear and calm oral expression in English; ability to face and interact with different and multicultural realities, also and above all international, consolidated during the doctoral and research activity.

Organisational / managerial skills

- Ability to organize various workshops, seminars etc.
- Ability to work in a group
- Ability to collaborate with people.

Scientific skills	▪ Microwave earth-space propagation channel modelling ▪ Radiometric measurements with RPG HATPRO ▪ Tropospheric effects of rain, cloud, and brightness temperature. ▪ Scintillation effects due to atmospheric turbulence. ▪ ITU-R statistical for earth-satellite links. ▪ Atmospheric composition and structure. ▪ Rain Drop size distribution modelling. ▪ Simple attenuation model for rain decay parameter modelling ▪ ERA5 data analysis for oxygen, cloud and water vapor attenuation modelling. ▪ Site diversity ▪ Linear regression ▪ Basic knowledge in Antenna simulation. ▪ Basic knowledge in various simulation tool.
Computer skills	▪ Excellent knowledge of Matlab programming. ▪ Basic knowledge of python and Fortran ▪ Excellent knowledge of Microsoft office words, excel, and power point. ▪ Medium knowledge in HFSS, Mathematica, Google earth engine, and Geographic information system (GIS).
Other skills	▪ Knowledge in handling various satellite remote sensing data. ▪ Basic knowledge in simulation tool.

ADDITIONAL INFORMATION

Publications

Journals:

1. **Arijit De**, Arpita Adhikari and Animesh Maitra, "Diversity Gain for Rain Attenuation over Earth-Space Path at a Tropical Location.", Advances in Space Research 57 (2016) 794-801, http://dx.doi.org/10.1016/j.asr.2015.12.001.
2. **Arijit De**, Arpita Adhikari and Animesh Maitra "Pre-rain Scintillations of Ku-band Satellite Signal in Relation to Cloud and Convective Parameters at a Tropical Location", IEEE Geo Remote Sensing Letters, vol 14 no 2 (2017), 252-256,10.1109/LGRS.2016.2637441.
3. Animesh Maitra, **Arijit De** and Arpita Adhikari "Rain and Rain-Induced Degradations of Satellite Links Over a Tropical Location." IEEE Transactions on Antennas and Propagation 67.8 (2019): 5507-5518.
4. **Arijit De**, Animesh Maitra, "Radiometric Measurements of Atmospheric Attenuation over a Tropical Location." Radio Science, vol. 55, no. 10, 1-6, September 2020, https://doi.org/10.1029/2020RS007093.
5. **Arijit De**, Animesh Maitra, "Cloud Attenuation Statistics from Radiometric Measurements over a Tropical Location Kolkata, India." Advances in Space Research, ASR-D-20-00244R2, 67, 290-297, 2021.
6. **Arijit De**, Shreya, S., Sarkar, N., & Maitra, A. (2021). Time Series Trend Analysis of Rainfall and Temperature over Kolkata and Surrounding Region. Atmósfera, http://orcid.org/0000-0001-5487-5310.
7. M. A. Sodunke, J. S. Ojo, K. D. Adedayo, **Arijit De**, "Performance Evaluation of Metric Measures for Converting 30-min GPM Rain data to 1-min for Microwave Applications in Tropical Region of Nigeria: A Multivariate Approach, Advances in Space research, vol. 69, no. 8, pp. 3117-3129.
8. A. Adhikari, **Arijit De**, and A. Maitra, Diurnal Variability of Rain and Rain-induced Propagation Impacts at a Tropical Location: A Seasonal Comparison (AISR-D-21-00767), Advances in Space research, 70 (2022), 1-14.
9. **Arijit De**, Shamitaksha Talukdar, Animesh Maitra, Arpita Adhikari, "Some Characteristics of Pre-monsoon Rain in relation to Atmospheric Parameters over a Tropical Location." Journal of Hydrology, 615 (2022), 128676, https://doi.org/10.1016/j.jhydrol.2022.128676.
10. M. A. Sodunke, J. S. Ojo, K. D. Adedayo, **Arijit De**, M. O. Sulaimon, "Prediction and Analysis of Seasonal Rain attenuation in the South-Western Region of Nigeria for Future Microwave Applications", Advances in Space Research, (accepted in October, 2022), https://doi.org/10.1016/j.asr.2022.10.043.
11. **Arijit De**, Animesh Maitra, Modeling of Rain Drop Size Distribution in Association with Convective and Cloud Parameter over a Tropical Location, TGRS-2022-00396.R3, accepted in IEEE Transaction in Geoscience and Remote Sensing (February 2023).
12. Ojerheghan, Godfrey Ikeozahu and Adimula, I. A. and Olawepo, Olayinka Adeniji and **Arijit De**, and salifu, francis, A New Method of Detecting Irregular Pulsation Type II Using the Wavelet Scalogram of the Magnetic H-Component (January 13, 2023). SSRN: https://ssrn.com/abstract=4332934 or http://dx.doi.org/10.2139/ssrn.4332934.

Book Chapters:

1. Niket Kumar, **Arijit De** and Animesh Maitra, "Cloud and Rain Attenuation Statistics from Radiosonde and Satellite Observations Over a Tropical Location", Computers and Devices for Communication, Springer Nature Singapore Pte Ltd., Chapter 20, 2020.

2. **Arijit De**, Arpita Adhikari and Animesh Maitra, "Characteristics of Raindrop Size Distribution Over a Tropical Location, Kolkata"Computers and Devices for Communication, Springer Nature Singapore Pte Ltd., Chapter 22, 2020.

3. Arpita Adhikari, Joydip Sengupta, and **Arijit De**, "Electro Optical Switches", title of the book: Optical Switching: Device technology and Application in Networks, John Wiley & Sons, Inc abstract accepted).

Conferences:

1. **A. De**, R. Chakraborty, A. Maitra, "Radiometric Measurements of Cloud Attenuation over earth-space path at a Tropical Location", Paper no. 1913, URSI General Assembly and Scientific Symposium (GASS), Montreal, Canada, August 19-26, 2017.
2. **A. De**, A. Adhikari, A. Maitra, "Rain-induced Attenuation and Depolarization of Ku-band Satellite Signal at a Tropical Location ", ICMARS, 14-17 February 2017.
3. **A. De**, A. Maitra, "Study on Rain Induced Propagation Impairments at Ku-band frequency over Kolkata" URSI RCRS, 1-4 March 2017, pp 61.
4. **A. De**, A. Adhikari, A. Maitra., . Pre-rain scintillation of Ku-band satellite signal at a tropical location. In *URSI Asia-Pacific Radio Science Conference (URSI AP-RASC)* (pp. 1552-1554). IEEE, 21-25 August, 2016.
5. **A. De**, A. Adhikari, A. Maitra., "Pre-rain Scintillations of Ku-band Satellite Signal in Relation to Cloud and Convective Activities at a Tropical Location.", CSS-23-5749, 6th International Conference on Computers and Devices for Communication 16th- 18th December, 2015.

6. **A. De**, A. Adhikari, S. Das, A. Maitra.,"Diversity gain of satellite signal under raining condition at tropical location.", Regional Conference on Radio Science (RCRS 2014), organized by INCURSI and Symbiosis Institute of Technology, Pune, 2-5 January 2014, p. 78.

7. **A. De**, S. Das, A. Maitra, "Reverse aerosol indirect effects on cloud properties over Indian subcontinent." poster presentation, 18th National Space Science Symposium (NSSS - 2014), 29th January- 1st February, 2014.

8. **A. De**, R. Chakraborty, A. Maitra, Studies on rain induced scintillation during convective events over Kolkata.", 10TH INTERNATIONAL CONFERENCE ON MICROWAVES, ANTENNA, PROPAGATION AND REMOTE SENSING Technically Co-Sponsored by IEEE-GRSS, USA, URSI Comm. F, Belgium & IETE, ICMARS14366, p. 96, Jodhpur, Rajasthan, INDIA, December 09-12, 2014.

9. P. Ghosh, **A. De**, "Role of Humidity Content on Atmospheric Turbulence and Essay on Earthquake Precursor Studies", Second International Conference on Advanced Computational and Communication Paradigms (ICACCP), 25-28 Feb, pp. 1-6. IEEE, 2019.

10. **A. De**, A. Adhikari, A. Maitra, "Diurnal variations of rain-induced propagation and related atmospheric phenomena over a Tropical Location", URSI Asia-Pacific Radio Science conference (APRASC), 9-15 March, 1-1. IEEE, 2019.

11. **A. De**, A. Maitra, "Radiometric Measurements of Ka-Band Attenuation during Rain Events at a Tropical Location", URSI Asia-Pacific Radio Science conference (APRASC), 9-15 March, pp. 1-4. IEEE, 2019.

12. N. Sirkar, **A. De**, "Latitudinal variation of cloud effective radius and aerosol optical depth from MODIS data," International Geoscience & Remote Sensing Symposium, July 28- August 2, pp. 7939-7941. IEEE, 2019.

13. **A. De**, A. Adhikari and A. Maitra, "Characteristic of rain drop size distribution over a tropical location Kolkata", CSS-45-1344, CODEC 2019.

14. N. Kumar, **A. De**, and A. Maitra, "Cloud and rain attenuation statistics from radiosonde and satellite observations over a tropical location", CSS-42-1482, CODEC 2019.

15. T. P. Singh, **A. De**, A. Maitra, Raindrop Size Distribution Integral parameters Characteristics of Pre-monsoon and Monsoon Rainfall over Kolkata, 2020 URSI Regional Conference, 12- 14 February, 2020, IIT BHU, FO6.7.

16. Shreya Srishty, **A. De**, Neel Sarkar* and Animesh Maitra, "Variability and time series trend analysis of rainfall and temperature over Kolkata", poster presentation in Virtual Symposium on Tropical Meteorology (TROPMET-2020) under the theme **"**Weather and Climate Services over Mountainous Regions" at NESAC, Shillong during 14 – 17 December 2020.

17. Riya Karmakar, Ronit Basak, Upasana Das, Rohit Nag, **A. De**, "Study of Crop Statistics and Vegetation Index and relation to Weather Parameters over West Bengal and Punjab using Satellite Observations", poster presentation in International Conference on Recent Advances in agricultural Science (ICRASS 2021), 16- 17 March, 2021, Amity School of Organic Agriculture.

18. **A. De**, Animesh Maitra, "Study of Propagation Channel Modeling and Comparison of Rain Cell Models over a Tropical Location using Ground based Observations", accepted in Union of Radio science General Assembly and Scientific Symposium (URSI GASS 2021), Rome, Italy, 28 August - 4 September 2021.

19. **A. De**, Abhirup Datta, Animesh Maitra, 'Effect of Atmospheric Parameters on Vegetation Index over Indo Gangetic West Bengal', accepted in Union of Radio science General Assembly and Scientific Symposium (URSI GASS 2021), Rome, Italy, 28 August - 4 September 2021.

20. A. Adhikari, D. Mitra, M. Kundu, and **A. De**, "Seasonal Characteristics of Lightning Activity in Connection with Daily Rainfall over a Tropical Location, Kolkata" accepted in Union of Radio science General Assembly and Scientific Symposium (URSI GASS 2021), Rome, Italy, 28 August - 4 September 2021.

21. **A. De**, Arpita Adhikari, Rohit Chakraborty, "Study of Oxides and aerosols in connection with COVID 19 lockdown scenario over a Metropolitan City, Kolkata" accepted in Union of Radio science General Assembly and Scientific Symposium (URSI GASS 2021), Rome, Italy, 28 August - 4 September 2021.

22. Sodunke, M. A., Ojo, J. S., **A. De**, and Sojobi, O. A. (2021, October). On the conversion of a 3-hour integration time rain rate into one minute rain rate for forecast of attenuation due to rain. In *Journal of Physics: Conference Series* (Vol. 2034, No. 1, p. 012001). IOP Publishing.

23. Sodunke, M.A, Ojo, J.S, Adedayo, K.D, **A. De**, Sulaimon, M.O (2021): Prediction and Seasonal Analysis of Rain Attenuation in the Southwestern Region of Nigeria for Future Microwave Applications, African Geophysical Society Virtual Conference,19th-21st October,2021.

24. **A. De**, Jean-Pascal Monvoisin, Valentin Le Mire, Laurent Castanet, Xavier Boulanger. Excess Attenuation Statistics of Earth-Space Propagation Experiments at Ka-Band over Tropical Locations: Shillong and Hassan, India. *27th Ka and Broadband Communications Conference (Ka) and the 39th International Communications Satellite Systems Conference (ICSSC)*, Oct 2022, Stresa, Italy. ⟨hal-03918946⟩.

25. **A. De**, Sukanta Ghosh, "Comparison of prediction models for time series forecasting over a tropical region", 21st National Space Science symposium, IISER, Kolkata, India, pp. 133.

26. **A. De**, Arpita Adhikari, "Effect of AOD to lightning Flash Rate and relation with NO2 over Kolkata, India", 21st National Space Science symposium, IISER, Kolkata, India, pp. 142.

Honours and awards:
1. Young Scientist Awardee (International Union of Radio Science Asia Pacific Radio Science Conference 2019) and (International Union of Radio Science General Assembly and Scientific Symposium 2021).
2. Recipient of 2nd prize in Young Professional Challenges in IEEE Indian Radio Science Society (INGARSS) (6-10 December 2021).
3. Recipient of 2nd prize in Young Professional Challenges in IEEE Indian Radio Science Society (INGARSS) (6-10 December 2021).

Memberships:
1. IEEE Senior member in 2020.
2. IEEE GRSS Kolkata Chapter Secretary (2019-2020).

Declaration: I hereby declare that the above particulars are true in every respect and nothing has been concealed or withheld by me.