

Short profile- SREEKUMAR HARIDAS

1. Brief self Introduction



Dr. Sreekumar Haridas Joined the Advanced Centre for Atmospheric Radar Research (ACARR), Cochin University of Science and Technology as a University Post-Doctoral Fellow in March 2021. **Research Topic: Multi Instrumental Observations of Ionospheric Plasma Irregularities over Indian Equatorial Sector.** Before joining the ACARR, he was working as a Research Scholar in School of Pure and Applied Physics (SPAP), Mahatma Gandhi University, Kottayam, Kerala, Feb 2016 -May 2019. **Title of Thesis: PLASMA IRREGULARITIES IN THE EQUATORIAL F-REGION IONOSPHERE AND MODELLING OF TEC.**

2. Contact Info

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3. Education

- Ph.D degree in Physics, Mahatma Gandhi University, Kottayam, Kerala, India (2016-2019).
- MSc Physics, Mahatma Gandhi University, Kottayam, Kerala, India (2010-2012).
- BSc Physics, Mahatma Gandhi University, Kottayam, Kerala, India (2007-2010).

4. Experience

Teaching Experience

- 1) Worked as Guest Lecturer in Physics at Department of Physics, N.S.S Hindu College, Changanacherry, Kerala, India, for the period **01/08/2014-31/03/2015.**

Research Experience

- 1) During Ph.D. tenure, he worked as JRF and SRF of DST-SERB major project **(SB/S4/AS-156/2014, dated 04-06-2015)** sanctioned to **Dr. K. Unnikrishnan**, Associate Professor and Research Guide, Department of Physics, N.S.S. Hindu College, Changanacherry, Kottayam (Period:12th June 2015-11th June 2018).

Title: “A study on equatorial ionospheric behavior during magnetically quiet/disturbed periods and neural network modeling using GPS TEC and scintillation data”. My Ph.D. work is associated with this project.

- 2) During Ph.D. work, he collaborated with the InSWIM (Indian network for Space Weather Impact Monitoring) program of Space Physics Laboratory (SPL), Vikram Sarabhai Space Centre (VSSC), ISRO.

5. Awards and Achievements

- Co-author of the article entitled “Artificial Neural Network model for the prediction of TEC over Indian equatorial sector” which won Kerala State Council for Science, Technology & Environment & Springer Award for Best Poster in 30th Kerala Science Congress, 28th-30th January 2018-Thalassery, Kerala, India.

6. Research Interests

- Study of Ionospheric irregularities using Satellites and Radar
- Ionospheric storms
- Magnetosphere-Ionosphere coupling
- Chaotic/ complexity behavior of ionosphere during Solar Eclipse
- Anomalous nighttime enhancement in TEC
- Evolution Characteristics of Equatorial Plasma Bubbles
- Ionospheric Modeling

7. Research Projects

NA

8. Significant Contributions

NA

9. Publications

9.1 Journals

1) A study on the evolution of plasma bubbles using the single station-multisatellite and multistation-single satellite techniques.

Unnikrishnan, K., **Sreekumar Haridas**, Choudhary, R. K., Ashna, V.M., Ambili, K. M., Shreedevi, P. R., & Rao, P. B., Journal of Geophysical Research: Space Physics, 122, doi:[10.1002/2016JA023503](https://doi.org/10.1002/2016JA023503). (2017).

2) Ionospheric daytime and nighttime amplitude scintillations on L1 band.
Sreekumar Haridas, Unnikrishnan, K., Ashna, V.M., Choudhary, R.K., and Sreelatha, K. Indian J.Sci.Res. 18(1): 45-49, 2018, ISSN: 2250-0138(Online), ISSN: 0976-2876 (Print).

3) Neural Network model for the prediction of TEC variabilities over Indian equatorial sector.

Unnikrishnan, K., Sreekumar Haridas. Choudhary, R.K., and Bose, P.D. Indian J.Sci.Res. 18(1): 56-58, 2018, ISSN: 2250-0138(Online), ISSN: 0976-2876 (Print).

4) Characteristics of Equatorial Plasma Bubbles over Changanacherry: Case Studies.

Sreekumar Haridas and K. Unnikrishnan. 2019 IJRAR March 2019, Volume 6, Issue 1, www.ijrar.org (E-ISSN 2348-1269, P-ISSN 2349-5138).

<http://doi.org/10.1729/Journal.19880>.

5) A study on equatorial plasma bubbles over Indian sub-continent using various satellite constellations and techniques.

Sreekumar Haridas., Unnikrishnan, K., Choudhary, R. K., Bose P, D., & Rao, P. B. (2021, July). In *AIP Conference Proceedings* (Vol. 2379, No. 1, p. 020003). AIP Publishing LLC. <https://doi.org/10.1063/5.0058294>.

6) A study on latitudinal variations of daytime and nighttime amplitude scintillations observed by GSATs over Indian sector.

Sreekumar Haridas, Unnikrishnan, K., & Choudhary, R. K. (2021, July). In *AIP Conference Proceedings* (Vol. 2379, No. 1, p. 020001). AIP Publishing LLC.

<https://doi.org/10.1063/5.0058292>.

7) Identifying equatorial plasma bubble evolution with scintillation index—A case study.

Nair, R. S., Unnikrishnan, K., Sreekumar Haridas, & Choudhary, R. K. (2021, July).. In *AIP Conference Proceedings* (Vol. 2379, No. 1, p. 020007). AIP Publishing LLC.

<https://doi.org/10.1063/5.0058301>.

8) A study on seasonal and latitudinal variations of Fresnel frequency and drift velocity of amplitude scintillation over Indian sector.

Soumya, M. S., Unnikrishnan, K., Sreekumar Haridas, Bose, P. D., & Choudhary, R. K. (2021, July). In *AIP Conference Proceedings* (Vol. 2379, No. 1, p. 020005). AIP Publishing LLC. <https://doi.org/10.1063/5.0058299>.

9) Ionospheric nighttime F-region irregularities during geomagnetically quiet conditions as observed with 205 MHz VHF Radar at an equatorial trough station, Cochin.

Rakesh, V., Sreekumar Haridas, Manoj, M.G., Rebello, R., Paul, B., Unnikrishnan, K., Mohanakumar, K. 2022. *Journal of Geophysical Research: Space Physics* 127, no. 6 (2022): e2021JA030129. <https://doi.org/10.1029/2021JA030129>.

10) Impact of the Hunga Tonga-Hunga Ha'apai Volcanic Eruption on the Changes Observed over the Indian near-equatorial Ionosphere.

Rakesh V, Sreekumar Haridas, Sivan C, Manoj MG, Abhilash S, Paul B, Unnikrishnan K, Mohanakumar K, Chandran RS. *Advances in Space Research*. 2022 Jul 8. <https://doi.org/10.1016/j.asr.2022.07.004>.

9.2 Books and Book Chapters

1) A study on amplitude scintillations of L1-band of GSAT-8 and GSAT-10 at a near equatorial station-Trivandrum.

Sreekumar Haridas, K. Unnikrishnan, and V.M. Ashna, in *Advances in Experimental and Theoretical Physics*, Published by N.S.S. Hindu College, Changanacherry – 686102, ISBN-978-81-933197-0-3.

2) A study on ionospheric irregularities over a near equatorial crest station Hyderabad, using GPS data.

K. Unnikrishnan, Sreekumar Haridas, V.M. Ashna, R. K Choudhary, and P.B.Rao, in *Advances in Experimental and Theoretical Physics*, Published by N.S.S. Hindu College, Changanacherry – 686102, ISBN-978-81-933197-0-3.

3) Anomalous nighttime enhancement in ionospheric electron content over equatorial crest station Hyderabad.

V.M. Ashna, K. Unnikrishnan, and Sreekumar Haridas, in *Advances in Experimental and Theoretical Physics*, Published by N.S.S. Hindu College, Changanacherry – 686102, ISBN-978-81-933197-0-3.

9.3 Reports with ISSN/ISBN number

NIL

9.4 Conference Publications

1) Artificial Neural Network model for the prediction of ionospheric storms using TEC over Indian equatorial/low-latitude sector.

Sreekumar Haridas, K. Unnikrishnan, R.K. Choudhary, and Dinil Bose P. 20th National Space Science Symposium (NSSS-2019), 29-31 January 2019, SPPU, IUCAA, and NCRA Pune, India.

2) Multi constellation observations of equatorial plasma bubbles.

Sreekumar Haridas, K. Unnikrishnan, R.K. Choudhary, Dinil Bose P, and P.B. Rao. 15th International Symposium on Equatorial Aeronomy (ISEA-15), 22-26 October 2018, Physical Research Laboratory, Ahmadabad, India.

3) A comparative study on daytime and nighttime amplitude scintillations over Indian latitudes.

Sreekumar Haridas, K. Unnikrishnan, V.M. Ashna, R.K. Choudhary, and K. Sreelatha., 15th International Symposium on Equatorial Aeronomy (ISEA-15), 22-26 October 2018, Physical Research Laboratory, Ahmadabad, India.

4) A case study on the response of the observed ionospheric irregularities due to a geomagnetic storm event using 205 MHz VHF radar at Cochin.

Sreekumar Haridas, Rakesh V., M G Manoj, K. Unnikrishnan , and Binu Paul. International Symposium on Tropical Meteorology “Changing Climate: Consequences and Challenges; INTROMET-C4”. 23rd–26th November 2021, Organized by the Advanced Centre for Atmospheric Radar Research, Cochin University of Science and Technology, Cochin, India in association with the Indian Meteorological Society, Cochin Chapter.

5) A Study on the Potential Application of 205 MHz VHF Radar at Cochin in the Observation of Ionospheric Irregularities during Geomagnetic Storms.

Sreekumar Haridas, Rakesh V., M.G. Manoj, K. Unnikrishnan, and Binu Paul. **The 15th Quadrennial Solar Terrestrial Physics Symposium (STP-15) organized by The Scientific Committee on Solar-Terrestrial Physics (SCOSTEP). 21-25th February 2022 at Indian Institute of Geomagnetism (IIG), Navi Mumbai, 410218, India.** Abstract Number: STP15-ABS-032.

9.5 Popular Articles

NIL

10. Popular Lectures/Invited Talks

1) Delivered a public lecture/talk on the topic " Importance of Ionosphere" in the workshop on Atmospheric studies as part of Tech Talent Programme of State Institute of Educational Technology (SIET Kerala), General Education Department, Government of Kerala held on 08th & 09th of June 2022 organized by SIET, Kerala in association with Cochin University of Science and Technology, at Advanced Centre for Atmospheric Radar Research.

2) Delivered a public lecture/talk on the topic "Introduction to Space Weather and its Impacts," as part of the 'World Space Week' celebrations organized by the postgraduate department of Physics, Bharata Mata College, Thrikkakara, Kochi-21, from 4th -10th of October 2021.

11. Guidance

Phd: (nos)

NA

PG/UG : (nos)

NA

12. Countries Visited as part of Professional Career

NA

13. Expert Member in Research Committees

NA

14. Any other information

- Link to Google Scholar
<https://scholar.google.com/citations?user=NU72HNwAAAAJ&hl=en>
- Link to ResearchGate
<https://www.researchgate.net/profile/Sreekumar-Haridas>
- Link to GitHub
<https://github.com/SreekumarHaridas/PythonSample.git>