Nizy Mathew

CONTACT INFORMATION

Scientist- SE
Space Physics Laboratory
Vikram Sarabhai Space centre
ISRO Post, Trivandrum-695022
Kerala, India

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RESEARCH AREAS

Microwave remote sensing of surface and atmosphere, radiative transfer modelling surface/atmosphere of Earth and other planets, geo-physical parameter retrieval

RESPONSIBILITIES

* Co-Investigator: Microwave radiometric observations of Venus using GMRT
* Deputy Project Manager: Chandra's Surface Thermo-physical Experiment (ChaSTE)

RESEARCH ACTIVITIES

- ✓ Deep convective cloud studies using Megha-Tropiques (MT)/SAPHIR data
- ✓ Upper tropospheric humidity studies using MT/SAPHIR data
- ✓ Land surface studies using various satellite microwave imager data (MT-MADRAS, TRMM/TMI, SSM/I)
- ✓ Studies of microwave emission from planetary surface/sub-surface
- ✓ Studies of microwave ku-band propagation
- ✓ Microwave radiative transfer computations and geophysical parameter retrieval of Earth and planatary atmospheres

EDUCATION

University of Bremen, Bremen, Germany

1. Ph.D ('Magna-cum-laude'), Microwave Remote Sensing, 19 July 2007
   - Dissertation Topic: 'Retrieval of Surface Emissivity of Sea Ice and Temperature Profiles over Sea Ice from Passive Microwave Radiometers'
   - Advisor: Dr. Georg Heygster, Prof. Justus Notholt
2. Postgraduate Certificate, Environmental Physics, August 2003

Mahatma Gandhi University, Kottayam, Kerala, India

M.Sc., Applied Physics, June, 2001

University of Kerala, Thiruvananthapuram, Kerala, India

B.Sc., Physics, May, 1999

RESEARCH EXPERIENCE

Scientist/Engineer - SE — **July, 2017 - present**
Space Physics Laboratory, VSSC, ISRO

Scientist/Engineer - SD — **July, 2011 - June 2017**
Space Physics Laboratory, VSSC, ISRO

Post Doctral Fellow — **August, 2009 - April, 2010**
University of Bremen, Bremen, Germany

Assistant Scientist — **July, 2003 - September 2007**
University of Bremen, Bremen, Germany

FELLOWSHIPS AND AWARDS

Best Paper Award, Tropmet-2011, Hydrabad
Europian Union Post Doctoral Research Fellowship, 2009
German Research Foundation Graduate Research Fellowship, 2003

Publications

1. Tinu Antony, C. Suresh Raju, R. Renju, Nizy Mathew and K. Krishna Moorthy,"Microwave emissivity of arid regions at 10GHz potential for subsurface studies .", International Journal of Remote Sensing, DOI: 10.1080/01431161.2018.1458345, 2018.
2. R. Renju, Suresh Raju C., M. K. Mishra, N. Mathew K. Rajeev and K. Krishna Moorthy, "Atmospheric Boundary Layer Characterization using Multiyear Ground-Based Microwave Radiometer Observations Over a Tropical Coastal Station.", IEEE Transactions on Geoscience and Remote Sensing, 3. DOI:10.1109/TGRS.2016.2527099 (2017) ,6877 - 6882 2017.
3. R. Renju, Suresh Raju C., Nizy Mathew, N. V. P. Kirankumar and K. Krishna Moorthy, "Tropical Convective Cloud Charactrization Using Ground Based Microwave radiometer observations", IEEE Transactions on Geoscience and Remote Sensing Vo.54, No. 7, 2016
4. R. Renju, Suresh Raju C., Tinu Antony, Nizy Mathew and K. Krishna Moorthy, "Interannual variability of water vapor over an equatorial coastal station using Microwave radiometer observations", J. Geophy. Res. (Atmosphere), DOI:10.1002/2014JD022838.2015.3., 20, 4585 – 4599, 2015.
5. Nizy Mathew, Viju Oommen John, C. Suresh Raju, K. Krishna Moorthy, "Upper Tropospheric Humidity from SAPHIR on board Megha-Tropiques", Current Science, Vol. 108, No. 10, 1915 – 1922, May 2015.
6. Tinu Antony, Suresh Raju C., Nizy Mathew, Krishna Moorthy K, "Flood extent analysis over the major river basins in the Indian subcontinent using satellite microwave radiometric observations", IEEE J. of Selected Topics in Applied Earth Observation and Remote Sensing, 2015, DOI:10.1109/JSTARS.2015.2390036.
7. Nizy Mathew and Suresh Raju C. ,"Distribution of Tropical Deep Convective Clouds from Megha-Tropiques SAPHIR Data ", IEEE Transactions on Geoscience and Remote Sensing, Vol. 54, No. 11, November 2016.
8. Tinu Antony, Suresh Raju C., Nizy Mathew, Korak Saha and K. Krishna Moorthy, "Detailed Analyses on Microwave Land Surface Emissivity of Indian Subcontinent ", IEEE Trans. Geosci. Rem. Sens.doi:10.1109/TGRS.2013.2274010., June, 2014.
9. Suresh Raju C., Renju. R, Tinu Antony, Nizy Mathew and K. Krishna Moorthy, "Microwave radiometric observation of an intense convective system that formed waterspout over the coastal Arabian Sea", IEEE Geosci. & Remote Sens. Letter, 10, 1075 – 1079, doi: 10.1109/LGRS.2012.2229960, 2013.
10. Suresh Raju, C., T. Antony, N. Mathew, K. N. Uma and K. Krishna Moorthy,"MT MADRAS brightness temperature analysis for for terrain characterization land surface microwave estimation", Current science , Special Issuce on Megha-Tropiques, 104 (12), 1643–1649, 2013.
11. Mathew, N., Heygster, G., Melsheimer, C, 2009: "Surface emissivity of Arctic sea ice at AMSR-E frequencies", IEEE Trans. Geosci. Rem. Sens.VOL. 47, No. 12, December,4115 – 4124, 2009, DOI:10.1109/TGRS.2009.2023667.
12. Mathew, N., Heygster, G., Melsheimer, C. and Kaleschke, L., 2008: "Surface emissivity of Arctic sea ice at AMSU window frequencies", IEEE Trans. Geosci. Rem. Sens. 46 (2008), No. 8, 2298 – 2306, FOREX=J.

13. G. Heygster, C. Melsheimer, N. Mathew, L. Toudal, R. Saldo, S. Andersen,R. Tonboe, H.Schyberg, F.T. Tveter, V. Thyness, N. Gustafsson, T. Landeli-us, and P. Dahlgren, 2008: "IOMASA - integrated observation and modeling of the arctic sea ice and atmosphere ", American Meteorological Society, DOI: 10.1175/2008BAMS2202.1.

14. C. Melsheimer, G. Heygster, N. Mathew, and L. Toudal Pedersen, "Retrieval of sea ice emissivity and integrated retrieval of surface and atmospheric parameters over the arctic from AMSR-E data ", J. of the Remote Sens. Soc. of Japan (2008).

15. Mathew, N., 2007: "Retrieval of Surface Emissivity of Sea Ice and Temperature Profiles Over Sea Ice from Passive Microwave Radiometers ", Ph.D thesis, University of Bremen, ISBN 978-3-8325-1701-4

16. Mathew, N., Heygster, G. and Rosenkranz, P. W., 2006: "Retrieval of emissivity and temperature profile in polar regions ". In Proc. IGARSS 2006.