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EDUCATION

2006/06 – 2010/09 Ph.D. Department of Physics, Sri Venkateswara University, Tirupati, INDIA.
2003/06 – 2005/04 M.Sc. Department of Physics, Sri Venkateswara University, Tirupati, INDIA.
2000/06 – 2003/04 B.Sc. Sri Venkateswara Arts College, S V University Tirupati, INDIA.

EMPLOYMENT

2019/03 - present Post-Doctoral Research Fellow RCEC, Academia Sinica, Taiwan.
2015/04 - 2019/03 Research Associate Department of Physics, S V University, Tirupati, INDIA.
2011/09 - 2015/03 Post-Doctoral Research Fellow RCEC, Academia Sinica, Taiwan.
2011/01 - 2011/07 Project Scientist HCL Info. sys. Ltd., Noida, INDIA
2009/04 – 2011/01 CSIR Senior Research Fellow, Dept. of Physics, S V University, Tirupati, India
2006/10 – 2009/03 Jr/Sr Research fellow, ISRO ACAS, S.V. University, Tirupati, INDIA.

HONORS & AWARDS

2016 **Young Scientist award Andhra Pradesh Akademi of Sciences, India**

2018 Biography cited in **Asia Pacific Who's Who**, Vol. XVI

2017 **Outstanding Reviewer** award- by Elsevier, The Netherlands.

2017 **Best paper award** 104th Indian Science Congress, INDIA.

2016 **Best paper award** 2nd A. P. Science Congress, INDIA

2009 **Senior Research Fellowship** Council of Scientific and Industrial Research (CSIR), Govt. of India.

RESEARCH INTEREST

My research in the field of atmospheric sciences started with my Ph.D with special interest on Indian Summer Monsoon (ISM) dynamics using Indian MST radar and collocated measurements at NARL, Gadanki, India. Using wind profiler data a new technique has been proposed to identify the onset

of Indian monsoon over a location, behavior of Hadley circulation with respect to the monsoon activity and the variability of low level jet and tropical easterly jet are widely investigated. In addition, High resolution GPS-radiosonde, satellite and model data are used to investigate the occurrence of atmospheric ducting conditions that induce anomalous wave propagation in the atmosphere.

Further, portable dual polarization lidar system has been developed at RCEC for aerosol and cloud profiling. This system has been widely operated in various field campaigns all over Taiwan. At present the doppler wind lidar is being operated to investigate the boundary layer variability over different complex terrains in Taiwan. New methodologies are being studied. Work is also in progress to develop the DIAL lidar system for tropospheric ozone profiling.

RESEARCH HIGHLIGHTS

1. Doppler wind lidar observations of boundary layer over Central Taiwan

The first time observations of variability in atmospheric boundary layer structure and dynamics using continuous Doppler lidar observation over Taichung, a central Taiwan station is carried out. The vertical velocity variance (σ_w^2) profiles and the Signal to Noise Ratio (SNR) of vertical beam pointing in the lower troposphere are used to identify the convective boundary layer (CBL) and the nocturnal boundary layer (NBL) separately with slightly different threshold conditions. The planetary boundary layer over Taichung is found to be as shallow as 150m during late night and early morning hours and as high as 1500m during mid-day hours. Due to the interlock between the wide coastal belt in the west and extensive mountain range in the east, the boundary layer shows complex dynamical properties with double layered structures of opposite wind flows most of the time. Reference: [1]. MRRaman and WNChen, 2019, ILRC.

2. Development of DIAL lidar for tropospheric Ozone profiling

The project is aimed to develop a portable DIAL Lidar system for tropospheric ozone profiling. Though this technique is not new, we are trying to redesign the system for more efficient SRS conversion of the on and off ozone absorption wavelengths and looking for the alternative latest available technologies for the wide spectrum reception to make use of same system for ozone as well as SO_2 measurements simultaneously. Unlike other existing systems, we are using to use Hydrogen and Methane with Argon and Helium as buffer gas for efficient conversion of 266nm excited to 288 and 299nm. The conversion efficiency of 266 SRS with multiple pressure, gas and laser energy combinations is being tested.

REPRESENTATIVE PUBLICATIONS

1. **M. Roja Raman**, W.N. Chen* (2014), Trends in monthly tropopause characteristics observed over Taipei, Taiwan, J. Atmos. Sci., 71, 4, 1323-1338. Impact Factor:3.16.

2. Wei-Nai Chen, Yu-Chieh Chen, Chung-Yih Kuo, Chun-Hung Chou, Chung-Hao Cheng, Chun-Chieh Huang , Shih-Yu Chang*, **M. Roja Raman**, Wen-Lin Shang, Tzu-Yao Chuang , Su-Ching Liu (2014) . The real-time method of assessing the contribution of individual sources on visibility degradation in Taichung. Sci. Tot. Env., 497-498, 219-228. Impact Factor: 5.589.
3. Manjula. G., **M. Roja Raman***, M. Venkat Ratnam, A.V. Chandra Sekhar and S. Vijaya Bhaskara Rao (2016). Diurnal variation of ducts observed over a tropical station, Gadanki, using high-resolution GPS radiosonde observations. Radio Science, 51, 247-258, DOI:10.1002/2015RS005814. Impact Factor: 1.45.M.
4. **Roja Raman**, Wei-Nai Chen*, Sin-Jie He, Li-Ting Chen, Kai-Hsuan Hsu, Jan-Bai Nee (2016). Investigation on the interlink between optical properties of dusts over Taiwan and Thar Desert, India using CALIPSO data. The European Physical Journal Conferences, 119, 04005, DOI: 10.1051/epjconf/201611904005, Impact Factor: 0.6.
5. Wei-Nai Chen*, Yung-Chang Chen, Hui-Ming Hung, **M. Roja Raman** (2018). Investigating the effect of hygroscopicity of Aerosols on optical profiles of PBL observed by Dual-Wavelength Lidar. The European Physical Journal Conferences, 176, 05059 https://doi.org/10.1051/epjconf/201817605059, Impact Factor: 0.6.
6. M. Venkat Ratnam*, P. Prasad, **M. Roja Raman**, V. Ravikiran, S. Vijaya Bhaskara Rao, B.V. Krishna Murthy, A. Jayaraman (2018). Role of dynamics on the formation and maintenance of the elevated aerosol layer during monsoon season over south-east peninsular India, Atmospheric Environment, 188, pp43-48. Impact Factor: 4.04.
7. P. Prasad, **M. Roja Raman***, M. Venkat Ratnam, Wei-Nai Chen, S. Vijaya Bhaskara Rao, Mukunda M Gogoi, Sobhan Kumar Kompalli, S. Suresh Babu and K. Sarat Kumar (2018) Characterization of atmospheric Black Carbon over a semi-urban site of southeast India: Local sources and long-range transport, Atmospheric Research, 213, pp411-421. Impact Factor: 4.114.
8. A.Narendra Babu, V. Naveen Kumar, P. S. Brahmanandam*, M. Purnachandra Rao, **M. Roja Raman**, K. Sreedhar (2018), Anomalous wind circulation over Taipei, Taiwan during the northern winter seasons of 2004 and 2005- A case study, Satellite Oceanography and Meteorology, Vol.3, Issue.2.
9. Prasad, P., **M. Roja Raman***, Ratnam, M. V., Ravikiran, V., Madhavan, B. L., & Bhaskara Rao, S. V. (2019). Nocturnal, seasonal and intra-annual variability of tropospheric aerosols observed using ground-based and space-borne lidars over a tropical location of India. Atmospheric Environment, 213, 185–198. Impact Factor: 4.04.
10. V Ravikiran*, M Venkat Ratnam, B V Krishna Murthy, Yogesh Kant, Prasad P, **RojaRaman M**, SVB Rao, Lakshmi Kumar TV, Animesh Maitra (2019), An empirical method for source

apportionment of black carbon aerosol: Results from Aethalometer observations at five different locations in India, Environmental Pollution, 254-A, 112932. Impact Factor: 6.15.

Invited Talks:

- "**Climatology of Tropical Easterly Jet**: a multi model analysis in National Space Science Symposium (NSSS – 2019), held at Savitribai Phule Pune University, Pune during 29-31 January, 2019, India.
- "**Lidar remote sensing for climate monitoring**" in National conference on Recent Trends in Climate Change studies, 23-24 July, 2018, Satyabama University, Chennai, India.
- "**Development of Near range Lidar for the atmospheric aerosols and clouds**" in A.P. Science Congress- 2016, Dr. NTR health Univ., Vijayawada, India.

Memberships in Professional Bodies/Societies/Organizations

1. **Elected as Associate Fellow – Andhra Pradesh Akademi of Sciences, India.**
2. **Life member** - India Meteorological Society - LM1831
3. **Life member** – The Indian Science Congress Association – L29285
4. **Elected as Member** – Institute of Electronics and Telecommunication Engineers (IETE) – M500733, India.
5. **Life member** – Indian Laser Association – LM1218
6. **Regular Member -** American Geophysical Union
7. **Regular Member** - European Geosciences Union - 226048
8. **Regular Member -** American Meteorological Society- 411138
9. **Regular Member -** International society for optics and photonics (SPIE) – 3712442

As a Reviewer

- ✓ Remote Sensing of Environment Journal of Geophysical Research – Atmospheres
- ✓ Theoretical and Applied climatology
- ✓ Journal of Applied Remote sensing
- ✓ Dynamics of Atmospheres and Oceans
- ✓ Applied Physics A -Materials science & processing
- ✓ Remote sensing Applications