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Date of Birth 22 May 1974

Academic Qualifications:

Ph. D (Physics), *University of Kerala, Thiruvananthapuram, India (2004)*
M. Phil (Physics), *University of Kerala, Thiruvananthapuram, India (1999)*
M. Sc (Physics), *M. S. University, Tirunelveli, India (1997)*
B. Sc (Physics), *M. S. University, Tirunelveli, India (1995)*

Professional Background:

Scientist SF, SPL, VSSC	: July 2018 – present
Scientist SE, SPL, VSSC	: July 2012 – June 2018
Scientist SD, SPL, VSSC	: February 2006 – June 2012
<i>Scientist B</i> , ARIES, Nainital	: December 2004 – February 2006
<i>Research Associate</i> , SPL, VSSC	: September 2004 – December 2004
<i>Senior Research Fellow</i> , SPL, VSSC	: August 1999 – July 2004

Area of specialization & Research interests:

Troposphere-Stratosphere coupling Processes, Water vapour, Ozone and Aerosols in the in Upper Troposphere and Lower Stratosphere (UTLS), Turbulence, Tropical cirrus, Stratosphere-Troposphere Exchange (STE) Process, Remote Sensing of the Atmosphere using Lidar, Radar and Satellite

Scientific publications

Peer reviewed Publications in Journals/Proceedings	: 43
Other Proceedings	: 17
Chapters in Books	: 01
Scientific Reports	: 01
Symposium Presentations	: 56

Major Responsibilities:

- Designed and executed direct measurement of water vapour in the UTLS region using ***Cryogenic Frost-point Hygrometers*** (CFH's) along with **Ozonesondes** measuring ozone from a net-work of stations over India as part of GARNETS program. Conducted 92 CFH flights from Thumba, Hyderabad, Kharagpur, Kolkata during the period 2014-2016 [**Principal Investigator**].
- Coordinated and executed simultaneous balloon-borne experiments using VSSC developed Dr. Pisharoty sondes from a net of stations, viz., Thumba, Cochin, Coimbatore
- Designed, coordinated and executed the **Tropical Tropopause Dynamics (TTD) campaigns** under ISRO's **CAWSES-India Phase-II program**. Simultaneous balloon flights from Thumba and Gadanki at 3 hour interval for 3 consecutive days in each month during December 2010- March 2014 and obtained 1300 radiosonde profiles from 40 campaigns [**Principal Investigator**].
- Development of 'Integrated Lidar System' [ILS] capable of probing the atmosphere from 2 to 100 km [*Member, Inter-Centre Experts Committee (ICEC) of ILS*]

Major Scientific Accomplishments:

- New perspective of Tropical Tropopause Layer (TTL) and demonstrated the sub-layers in the TTL
- Global structure of TTL and structure of static stability across their sub-layers over the tropics
- Distribution of water vapour, Ozone, cirrus and deep clouds across the sub-layers of TTL
- Long-term and short-term variabilities of Tropical tropopause and their association with QBO and ENSO
- Characteristics of turbulence in the troposphere and in lower stratosphere and their generations
- Quantification of moisture transport into the lower stratosphere from CFH observations
- Quantification of variability of water vapour in the troposphere based on radiosonde observations.
- Comprehensive study on tropical cirrus and aerosol distribution in the UTLS region over India

All these studies were carried out over the Indian region by integrating lidar and balloon-borne observations with satellite observations of KALPANA-1, CALIPSO and Aura-Microwave Limb Sounder.

Research Supervisor

- a student [ISRO Research Fellow] completed PhD thesis and was awarded PhD by CUSAT
- Two students (ISRO Research Fellows) pursuing doctoral research
- Six students from various universities completed their MSc (Physics) dissertation/project
- Mentoring Two Post Doctoral Fellows

Academic Responsibilities

- Recognized Research Supervisor for Ph.D: University of Kerala and CUSAT
- Member, Academic Committee, SPL
- Member, Doctoral committees of Research Fellows, SPL
- Member, Doctoral Committee of Research Fellows of SRM university, Chennai
- Member, CUSAT Research/Doctoral Committees for Research fellows
- PhD Thesis Evaluator, Jawaharlal Nehru Technical University, Hyderabad
- PhD Thesis Viva voice examiner, CUSAT, 07 August 2017
- Reviewer of Journals: J. Atmos. Solar and Terr. Phys; Indian J. of Radio Space Physics (IJRSP)
- Rapporteur, International Conference on Climate Change, i3CDM, Trivandrum, 26-28 Feb 2015
- Co-chair, National Space Science Symposium-2016, PS2 section, VSSC, Trivandrum, 9-12 Feb. 2016

Membership in National and International bodies

- Member, Stratospheric Processes And their Role in Climate (SPARC), Capacity Development (CD) group in Asia (2015-)
- Executive member, India Meteorological Society (IMS), Thiruvananthapuram Chapter (2014-)
- COSPAR Associate (2008 -)
- Member, Asia Oceania Geosciences Society (2008-)

REFEREED PUBLICATIONS

1. Emmanuel M., **S. V. Sunilkumar**, M. Muhsin, B. Suneel Kumar, N. Nagendra, Geetha Ramkumar, K. Rajeev, and K. Parameswaran, Annual cycle of water vapour in the lower stratosphere over the Indian Peninsula derived from Cryogenic Frost-point Hygrometer observations, *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2018-630>, 2018 (revised for ACP)
2. Emmanuel M, S.V. Sunilkumar, M. Venkat Ratnam, M Muhsin, K. Parameswaran, B.V. Krishna Murthy, Diurnal variation of the tropospheric water vapour over a coastal and an inland station in southern Indian Peninsula, *Journal of Atmospheric and Solar-Terrestrial Physics*, doi: <https://doi.org/10.1016/j.jastp.2018.06.007> (2018).
3. Emmanuel M, S. V. Sunilkumar, M. Muhsin, B. Suneel Kumar, N. Nagendra, P.R. Satheesh Chandran, Geetha Ramkumar, K. Rajeev, Inter-comparison of Cryogenic Frost-point Hygrometer observations with SAPHIR, MLS, COSMIC, radiosonde and reanalysis datasets over Indian Peninsula, *IEEE Transactions on Geoscience and Remote Sensing*, doi: 10.1109/TGRS.2018.2834154 (2018).
4. Muhsin M., S. V. Sunilkumar, M. Venkat Ratnam, K. Parameswaran, B. V. Krishna Murthy, and M. Emmanuel, Effect of convection on the thermal structure of the troposphere and lower stratosphere including the Tropical Tropopause Layer in the South Asian monsoon region, *Journal of Atmospheric and Solar-Terrestrial Physics*, 169, 52-65, doi: <https://doi.org/10.1016/j.jastp.2018.01.016> (2018).
5. Hemanth Kumar Alladi, M Venkat Ratnam, S.V. Sunilkumar, K Parameswaran, B V Krishna Murthy, Cross tropopause flux observed at sub-daily scales over south India monsoon regions. *Atmospheric Research*, 201, 72-85, doi:10.1016/j.atmosres.2017.10.017 (2018).
6. Muhsin, M., S.V. Sunilkumar, M. Venkat Ratnam, B.V. Krishna Murthy and K. Parameswaran, Seasonal and diurnal variations of Tropical Tropopause Layer (TTL) over the Indian Peninsula, *Journal of Geophysical Research-Atmospheres*, 122, doi:10.1002/2017JD027056 (2017).
7. Anurose, T.J., D.B. Subrahmanyam, **S.V. Sunilkumar**, Two years observations on the diurnal evolution of atmospheric boundary layer features over Thiruvananthapuram (8.5 °N, 76.9 °E), India, *Theoretical and Applied Climatology*, doi:10.1007/s00704-016-1955-y, 2017.
8. Mehta, S., M.VenkatRatnam, **S.V. Sunilkumar**, D.N. Rao, B.V. Krishan Murthy, Diurnal variability of the Atmospheric layer height over a tropical station in the Indian Monsoon region, *Atmos. Chem. Phys.*, 17, 531–549, doi:10.5194/acp-17-531-2017, 2017.
9. **Sunilkumar S.V.**, M. Muhsin, M. Venkat Ratnam, K. Parameswaran, B.V. Krishna Murthy, Maria Emmanuel, Boundaries of Tropical Tropopause Layer (TTL): A new perspective based on thermal and stability profiles, *Journal of Geophysical Research*, 122, 741-754, doi:10.1002/2016JD025217, 2017.
10. Rajeev, K., M. K. Mishra, **S.V. Sunilkumar**, S. Sijikumar, Dual polarization micropulse lidar observations of the diurnal evolution of atmospheric boundary layer over a tropical coastal station, *Proc. of SPIE 9879, Lidar remote sensing for Industry and Environment Monitoring XV*, Vol. 98790V, doi:10.1117/12.2228049, 2016.
11. Muhsin M, **Sunilkumar S V**, M. Venkat Ratnam, K. Parameswaran, B. V. Krishna Murthy, Geetha Ramkumar, K. Rajeev, Diurnal variation of turbulence in the troposphere and lower stratosphere derived from simultaneous radiosonde observations at two tropical stations, in the Indian Peninsula, *Atmospheric Research*, 180, 12-23, doi:10.1016/atmosres.2016.04.021, 2016.
12. **Sunilkumar, S V**, Muhsin M, Maria Emmanuel, Geetha Ramkumar, K Rajeev, S Sijikumar, Balloon-borne Cryogenic Frost-point Hygrometer (FPH) observations of water vapour in the tropical upper troposphere and lower stratosphere (UTLS) over India: First results, *J. Atmos. Sol.-Terr. Phys.*, 2016, 140, 86-93, 2016, doi:10.1016/j.jastp.2016.02.014.
13. Hemanth Kumar A., M. Venkat Ratnam, **S.V. Sunilkumar**, K. Parameswaran, B.V. Krishna Murthy, Role of deep convection on the tropical tropopause characteristics at sub-daily scales over the South India monsoon region,

- Atmospheric Research*, 161–162, 14–24, 2015.
14. **Sunilkumar S V**, M. Muhsin, K. Parameswaran, M. Venkat Ratnam, Geetha Ramkumar, K. Rajeev, B. V. Krishna Murthy, K.V. Sambhu Namboodiri, K.V. Subrahmanyam, K. Kishore Kumar, Siddarth Sankar Das, Characteristics of Turbulence in the Troposphere and Lower Stratosphere over the Indian Peninsula, *J. Atmos. Sol.-Terr. Phys.*, **133**, 26-53, doi:10.1016/j.jastp.2015.07.015, 2015..
 15. Ratnam, M.V, **S.V. Sunilkumar**, K. Parameswaran, B.V. Krishna Murthy, Geetha Ramkumar, K. Rajeev, Ghose Basha, S. Ravindra Babu, M .Muhsin, Manoj Kumar Mishra, A. Hemanth Kumar, S.T. Akhil Raj, M. Pramitha, Tropical Tropopause Dynamics (TTD) Campaigns over Indian region: an over-view. *J. Atmos. Sol.-Terr. Phys.*, **121**, 229–239, 2014a.
 16. Ravindra Babu, S., Ratnam, M.V, **S.V. Sunilkumar**, K. Parameswaran, B.V. KrishnaMurthy, Detection of tropopause altitude using Indian MST radar data and comparison with simultaneous radiosonde observations. *J. Atmos. Sol -Terr. Phys.*, **121**, 240–247, 2014b
 17. Geetha Ramkumar, K. V. Subrahmanyam, K. K. Kumar, S.S Das, D. Swain, **S. V. Sunilkumar**, K. V. S. Namboodiri, K.N.Uma, V.S. Babu, S.R. John and Asha Babu, First observational study of eclipse induced variations in the horizontal winds simultaneously in the troposphere-stratosphere-mesosphere-lower thermosphere region over the equatorial station Thumba (8.5° N, 77° E), *Earth Planet & Space*, doi:10.5047/eps.2012.12.007., 2013.
 18. **Sunilkumar, S.V.**, K. Parameswaran, and Asha Babu, Mean structure of the tropical tropopause and its variability over the Indian longitude sector, *Climate Dynamics*, DOI 10.1007/s00382-012-1496-8, 1125-1140, 2013.
 19. Bijoy V Thampi, K. Parameswaran, **S.V. Sunilkumar**, Semitransparent cirrus clouds in the upper troposphere and their contribution to the particulate scattering in the Tropical UTLS region, *J. Atmos. Sol. Terres. Phy.*, doi:10.1016/j.jastp.2011.09.005, **74**, 1–10, 2012.
 20. **Sunilkumar, S. V.**, K. Parameswaran, B. V. Thampi, and G. Ramkumar, Variability in background stratospheric aerosols over the tropics and its association with atmospheric dynamics, *J. Geophys. Res.*, **116**, D13204, doi:10.1029/2010JD015213, 2011.
 21. Subrahmanyam, K.V., Geetha Ramkumar, K.K. Kumar, D. Swain, **S.V. Sunilkumar**, S. S. Das and K.V.S. Namboodiri, Temperature perturbation in the troposphere-Stratosphere at Trivandrum during the Solar Eclipse 2009/2010, *Annales Geophysicae*, **29**, 275-282, 2011.
 22. Parameswaran, K., B. V Thampi, **S. V. Sunilkumar**, Latitudinal dependence of the seasonal variation of particulate extinction in the UTLS over the Indian longitude sector during volcanically quiescent period based on Lidar and SAGE-II observations, *J. Atmos. Sol. Terres. Phy.*, doi:10.1016/j.jastp.2010.06.004, **72**, 1024-1035,2010b.
 23. **Sunilkumar, S. V.**, K. Parameswaran, K. Rajeev, B. V. Krishna Murthy, S. Meenu, Sanjay Mehta, and Asha Babu Semitransparent Cirrus clouds in the Tropical Tropopause Layer during two contrasting seasons, *J. Atmos. Sol. Terres. Phy.*, doi:10.1016/j.jastp.2010.03.020, **72**, 745-762, 2010a.
 24. Thampi B.V., **S.V. Sunilkumar**, K. Parameswaran, Lidar studies of particulates in the UTLS region at a tropical station over the Indian Subcontinent, *J. Geophys. Res.*, **114**, D08204, doi:10.1029/2008JD010556, 2009.
 25. Antonita, T. M., G. Ramkumar, K.K.Kumar and **S.V. Sunilkumar**, Quantification of gravity wave forcing in driving the stratospheric Quasi-biennial Oscillation, *Geophys. Res. Lett.*, L09805, doi:10.1029/2008GL033960, 2008.
 26. Rajeev, K., K. Parameswaran, S. Meenu, **S. V. Sunilkumar**, Bijoy V Thampi, C. Suresh Raju, B. V. Krishna Murthy, K. S. Jagannath, S. K. Mehta, D. N. Rao, and K. G. Rao, Observational assessment of the potential of satellite-based water vapour and thermal IR brightness temperatures in detecting semitransparent cirrus, *Geophys. Res. Lett.*, **35**, L08808, doi:10.1029/2008GL033393, 2008.
 27. **Sunilkumar, S. V.**, K. Parameswaran, Bijoy V Thampi, Interdependence of tropical cirrus properties and its variability, *Annales Geophys.*, **26**, 413-429, 2008.
 28. K. Parameswaran, **S. V. Sunilkumar**, K. Rajeev, C. Suresh Raju, K. S. Jagannath, Tropical cirrus and Tropospheric turbulence, Proc. of the Conference of the International Tropical Atmospheric Radar (INTAR) Colloquium, 110-121, 2007.

29. Moorthy, K. K., S. S. Babu, K.V.S. Badarinath, **S. V. Sunilkumar**, T.R. Kiranchand, Y. Nazeer Ahmed, Latitudinal distributions of aerosol black carbon and its mass fraction to composite aerosols over peninsular India during winter season, *Geophys. Res. Lett.*, **34**, L08802, doi:10.1029/2006GL029150, 2007.
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31. Parameswaran, K., **S.V. Sunilkumar**, K. Rajeev, C. Suresh Raju, D Narayana Rao, Sanjay K Mehta, B. V. Krishna Murthy, S.C. Chakravarthy, Kusuma G. Rao and K. S. Jaganath, Cirrus clouds in the Tropical Tropopause Layer, Proc. on 'Technical and Scientific Aspects of MST Radar (MST11)', Macmillan Advanced Research Series, 552-558, 2006
32. **Sunilkumar, S. V.** and K. Parameswaran, Temperature dependence of tropical cirrus properties and radiative effects, *J. Geophys. Res.*, **110**, D13205, doi:10.1029/2004JD005426, 2005.
33. Moorthy, K. K., **S. V. Sunilkumar**, Preetha S Pillai, K Parameswaran, Prabha Nair, Y Nazeer Ahmed, K Ramgopal, K. Narasimhulu, Rajuru Reddy, V Vinoj, S.K. Satheesh, Kandula Niranjan, B Rao, BS Brahmanandam, Auromeet Saha, K.V.S. Badarinath, T.R. Kiranchand and K Lata, Wintertime spatial characteristics of boundary layer aerosols over peninsular India, *J. Geophys. Res.*, **110**, D08207, doi:10.1029/2004JD005520, 2005.
34. **Sunilkumar, S. V.**, K. Parameswaran, Prabha R Nair, Aerosol properties observed over Arabian Sea during the ARMEX II Experiment, *Mausam*, **56**, 321-326, 2005.
35. Moorthy, K. K., S. S. Babu, **S. V. Sunilkumar**, P. K. Gupta, and B. S. Gera, Altitude profiles of aerosol BC, derived from aircraft measurements over an inland urban location in India, *Geophys. Res. Lett.*, **31**, L22103, doi:10.1029/2004GL021336, 2004.
36. Parameswaran K, **S. V. Sunilkumar**, B. V. Krishna Murthy and K. Satheesan, Lidar observations of high altitude cirrus near the tropical tropopause, *Adv. Space Res.*, **34**, 845-850, doi 10.1016/j.asr.2003.08.64, 2004.
37. Parameswaran K, **S. V. Sunilkumar**, K. Rajeev, Prabha R Nair and K. Krishna Moorthy, Boundary layer aerosols at Trivandrum tropical coast, *Adv. Space Res.*, **34**, 838-844, doi 10.1016/j.asr.2003.08.059, 2004.
38. Nair P. R, K. Parameswaran, **S. V. Sunilkumar**, A. Abraham and S. Jacob, Chemical composition of Atmospheric aerosols over the Indian Ocean: Impact of continental advection, *Adv. Space Res.*, **34**, 828-832, doi:10.1016/j.asr.2003.08.061, 2004.
39. Nair P. R, K. Parameswaran, **S. V. Sunilkumar** and Rekha Rajan, Continental influence on the spatial distribution of particulate loading over the Indian Ocean during winter season, *J. Atmos. Solar and Terr. Phys.*, **66**, 27-38, doi: 10.1016/j.jastp.2003.06.002, 2004.
40. **Sunilkumar, S. V.**, K. Parameswaran, B. V. Krishna Murthy, Lidar Observations of cirrus cloud near the tropical tropopause: General features, *Atmos. Res.*, **66**, 203-227, doi: 10.1016/S0169-8095 (02) 00159-x, 2003.
41. Parameswaran, K., **S. V. Sunilkumar**, B. V. Krishna Murthy, K. Satheesan, and P. R. Nair, Lidar Observations of cirrus cloud near the tropical tropopause: Temporal variations and association with tropospheric turbulence, *Atmos. Res.*, **69**, 29-49, doi: 10.1016/J.atmosres.2003.08.02, 2003.
42. Sasi, M. N, B.V. Krishna Murthy, Geetha Ramkumar, K. Satheesan, K. Parameswaran, K. Rajeev, **S. V. Sunilkumar**, Prabha R. Nair, K. Krishna Moorthy, Y. Bhavanikumar, K. Raghunath, A. R. Jain, P. B. Rao, M. Krishnaiah, S.R. Prabhakaran Nayar, K. Revathy, and S. Devanarayanan, A study of Equatorial wave characteristics using Rockets, Balloons, Lidar and Radar, *Adv. Space Res.*, vol. 32(5), pp 813-818, doi 10.1016/S0273-1177 (03) 00412-5, 2003.
43. Parameswaran K., **S. V. Sunilkumar**, B.V. Krishna Murthy and K. Satheesan, Optical properties of cirrus clouds observed below the tropical tropopause, Proc. of SPIE's International Symposium on Optical Science and Technology, *Lidar remote sensing for Industry and Environment Monitoring II*, Vol. **4484**, 186-197, 2002.

Chapter in Book

1. Sunilkumar, S.V., Parameswaran, K., Thampi, B.V., Distribution of particulates in the tropical UTLS over the Asian Summer Monsoon region and its association with Atmospheric dynamics, Chapter in Book titled "Atmospheric Aerosols: Regional Characteristics - Chemistry and Physics" (ISBN 979-953-307-897-6) Edited by Hayder Abdul-Razzak; Published by Intech, <http://dx.doi.org/10.5772/50552>, PP 114-162, 2012.

Scientific reports

1. **Sunilkumar, S.V.**, and Rajeev, K., Report on the performance of the First Balloon- borne LIDAR Experiment, SPL:SR:001:2009, May 2009.

OTHER PROCEEDINGS

1. Bijoy V. Thampi, K. Rajeev, K. Parameswaran, Manoj Kumar Mishra, S. V. Sunilkumar, Three-dimensional structure and radiative impact of the Southeast Asian smoke aerosols over the Equatorial Indian Ocean during the 2006 fire event, Proc. International Conference on Megha-Tropiques, Bangalore, 95-96, 23-25 March, 2009.
2. K.Rajeev, S.Meenu, K.Parameswaran, Anish Kumar M. Nair, C.Suresh Raju, S.V.Sunilkumar, KALPANA-1-VHRR and CALIPSO observations of semi-transparent cirrus clouds over the Indian subcontinent and surrounding oceans, Proc. International Conference on Megha-Tropiques, Bangalore, 35-36, 23-25 March, 2009.
3. Rajeev, K., K. Parameswaran, S. Meenu, **S.V. Sunilkumar**, Bijoy V. Thampi, C. Suresh Raju, B.V. Krishna Murthy, K.S. Jagannath, S.K Mehta, D N. Rao, and K.G. Rao, Thin semitransparent cirrus clouds observed using KALPANA-1 VHRR and its intercomparison with the Lidar-derived cirrus optical depth, Proc. of CAWSES-India - 2007.
4. Parameswaran, K., **S.V. Sunilkumar**, Bijoy V Thampi, K. Rajeev, C. Suresh Raju, B.V. Krishna Murthy, S.K Mehta, D.N. Rao and K.G Rao, Properties of cirrus clouds in the Tropical Tropopause Layer, Proc. of CAWSES-India - 2007.
5. Bijoy V Thampi, **S.V. Sunilkumar** and K. Parameswaran, Aerosols in the UTLS region at Tropics, Proceedings of conference on Emerging trends in Aerosols: Technology and Applications, *Bulletin of Indian Aerosol Science and Technology Association (IASTA)*, vol. 18, 272-275, November, 2007.
6. K. Parameswaran and **S.V. Sunilkumar**, Climate Sensitivity and Radiative forcing of tropical cirrus, *Proceedings of the 4th Asian Aerosol Conference AAC-2005, Bulletin of Indian Aerosol Science and Technology Association (IASTA)*, Vol. 17, 498-499, December 2005.
7. Prabha R Nair, Susan George, K. Parameswaran, **S.V. Sunilkumar**, Salu Jacob, Annamma Abraham, Chemical composition of aerosols at geographically distinct locations over India, *Proceedings of the 4th Asian Aerosol Conference AAC-2005, Bulletin of Indian Aerosol Science and Technology Association (IASTA)*, Vol. 17, 107-108, December 2005.
8. **Sunilkumar S. V.**, K. Parameswaran and P. R. Nair, Physical properties of near surface aerosols at Trivandrum coast inferred from direct sampling, *Proceedings of the Conference on Aerosol Remote Sensing in Global Change and Atmospheric pollution, Bulletin of Indian Aerosol Science and Technology Association (IASTA)*, Vol. 14, 63-66, September 2002.
9. **Sunilkumar S. V.**, K. Parameswaran, B. V. Krishna Murthy and K. Satheesan, Tropical cirrus properties and its association with turbulence, Proceedings of the Conference on Aerosol Remote Sensing in Global Change and Atmospheric pollution, IASTA Bulletin, Vol. 14, 67-70, September 2002.
10. Nair P. R, K. Parameswaran, **S. V. Sunilkumar**, A. Abraham and S. Jacob, Chemical composition of aerosols over the Indian Ocean during winter, *Proceedings of the Conference on Aerosol Remote Sensing in Global Change and Atmospheric pollution, Bulletin of Indian Aerosol Science and Technology Association (IASTA)*, Vol. 14, 162-166, September 2002.
11. **Sunilkumar S. V.**, K. Parameswaran, B.V. Krishna Murthy and K. Satheesan: Scattering properties of cirrus cloud observed near the tropical tropopause, *Proc. of TROPMET-2001*, 603-610, 2001.
12. Parameswaran K., **S.V. Sunilkumar**, P. R. Nair and R. Rajan, Trends in boundary layer aerosol loading at Trivandrum during last one decade, *Proc. of TROPMET-2001*, 569-576, 2001.
13. **Sunilkumar S. V.**, K. Parameswaran, B. V. Krishna Murthy, K. Satheesan, P. R. Nair, Y. Bhavanikumar and M. Krishnaiah, General features of cirrus clouds observed near the tropical tropopause, *Proc. of Fifth user scientists workshop on MST radar results*, 131-142, 2001.
14. Sasi M. N., B. V. Krishna Murthy, Geetha Ram Kumar, K. Satheesan, K. Parameswaran, K. Rajeev, **S. V. Sunilkumar**, P. R. Nair, K. K. Moorthy, Y. Bhavanikumar, K. Raghunath, A. R. Jain, P. B. Rao, M. Krishnaiah, S. R. P. Nayar, K. Revathy and S. Devanarayanan, A study of equatorial waves in tropospheric, stratospheric and mesospheric winds and temperatures, *Proc. of Fifth user scientists workshop on MST radar results*, 63-70, 2001.
15. Parameswaran K., **S.V. Sunilkumar**, P. R. Nair, B.V. Krishna Murthy, S.R. Prabhakaran Nayar, K. Revathy, G. Mrudula, P.B. Rao, Y. Bhavani Kumar, K. Raghunath, and M. Krishnaiah: Atmospheric temperature and aerosol back scatter profiles from simultaneous observations using Lidar and MST Radar, *Bulletin of Indian Aerosol Science and Technology Association (IASTA)*, vol.13, 171-173, Feb 2000.
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17. Parameswaran K., P. R. Nair, Rekha Rajan and **S.V. Sunilkumar**, Surface aerosol characteristics at Trivandrum coast, *Proc. of National Workshop on Atmospheric Chemistry (NWAC-99)*, 111-118, 1999.