

S. Sijikumar

Scientist/Engineer SF

Space Physics Laboratory

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Research Interests

- Understand the roles of the biospheric and anthropogenic activities on the carbon cycle using inverse modelling by combining atmospheric greenhouse gas measurements and numerical models.
- Monitoring and modelling of climate in the Earth System on a multitude of temporal and spatial scales using observational data and numerical models.

Education

- ***Ph.D in Atmospheric Sciences, 2003***
Cochin University of Science and Technology, Kochi, India
- ***M.Sc. Space Physics, 1994***
Andhra University, Visakapatnam, India
- ***B.Sc. Physics, 1991***
University of Kerala, Thiruvananthapuram, India

Professional Background

- **Scientist** **February 2008 to present**
Scientist at Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram
- **Post Doctoral Fellow** **October 2004 - February 2008**
Post-doctoral Research Fellow at Centre de Recherches de Climatologie, Universite de Bourgogne, Dijon, France.

Academic activities.

Publications in peer reviewed journals - **34**

Presentations in Conference/Seminars - **43**

PhD thesis supervision - **2 (completed) 1 (ongoing)**

Recognised PhD guide at **University of Kerala** and **Cochin University of Science and Technology**.

एस. सिजिकुमार

वैज्ञानिक/ इंजीनियर एस.एफ

अंतरिक्ष भौतिकी प्रयोगशाला

विक्रम साराभाई अंतरिक्ष केंद्र

भारतीय अंतरिक्ष अनुसंधान संगठन

तिरुवनंतपुरम, भारत

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शोध रुचि

• वायुमंडलीय ग्रीनहाउस गैस मापन और संख्यात्मक मॉडलों को मिलाकर प्रतिलोम मॉडलिंग का उपयोग करते हुए कार्बन चक्र पर जैवमंडलीय और मानवजनित गतिविधियों की भूमिकाओं का अध्ययन ।

• प्रेक्षण डेटा और संख्यात्मक मॉडल का उपयोग करते हुए समय और स्थानिक स्तर पर पृथ्वी की जलवायु की निगरानी और मॉडलिंग ।

शिक्षा

- वायुमंडलीय विज्ञान में पीएच.डी, 2003
कोचीन विज्ञान और प्रौद्योगिकी विश्वविद्यालय, कोच्चि, भारत
- एमएससी अंतरिक्ष भौतिकी, 1994
आंध्र विश्वविद्यालय, विशाखापत्तनम, भारत
- बी.एससी. भौतिकी, 1991
केरल विश्वविद्यालय, तिरुवनंतपुरम, भारत

कार्य अनुभव

- वैज्ञानिक फरवरी 2008 से
अंतरिक्ष भौतिकी प्रयोगशाला, विक्रम साराभाई अंतरिक्ष केंद्र, तिरुवनंतपुरम
- पोस्ट डॉक्टरल फेलो अक्टूबर 2004 - फरवरी 2008
पोस्ट-डॉक्टरल रिसर्च फेलो, Centre de Recherches de Climatologie,
Universite de Bourgogne, डिजॉन, फ्रांस ।

शैक्षणिक गतिविधियाँ ।

- Peer reviewed अंतर्राष्ट्रीय पत्रिकाओं में प्रकाशन - 34
- सम्मेलन / संगोष्ठियों में प्रस्तुतियाँ - 43
- पीएचडी थीसिस पर्यवेक्षण - 2 (पूर्णा) 1 (जारी)

केरल विश्वविद्यालय और कोचीन विज्ञान और प्रौद्योगिकी विश्वविद्यालय में मान्यता प्राप्त पीएचडी गाइड ।

प्रकाशन सूची/ List of publications

1. Santanu Halder, Y K. Tiwari, Vinu Valsala, M. G. Sreeush, **S. Sijikumar**, Rajesh J, Shamil Maksyutov “Quantification of Enhancement in atmospheric CO₂ background due to Indian biospheric fluxes and fossil fuel emissions” Journal of Geophysical Research (Atmosphere) <https://doi.org/10.1029/2021JD034545> (2021)
2. Valsala Vinu, Sreeush M. G, Anju M, Sreenivas P, Tiwari Y K, Chakraborty K, **Sijikumar S** “An observing system simulation experiment for Indian Ocean surface pCO₂ measurements” Progress in Oceanography, 194, 102570, DOI:10.1016/j.pocean.2021.102570 (2021)
3. Aneesh S and **Sijikumar S** Existence of ‘mini-break’ like condition during early Indian monsoon onset years, Climate Dynamics 54:2403–2418, doi:10.1007/s00382-020-05121-9, 2020
4. Nalini K, **S. Sijikumar**, Vinu Valsala, Yogesh K. Tiwari, Radhika Ramachandran, Designing surface CO₂ monitoring network to constrain the Indian land fluxes, Atmospheric Environment, 218, <https://doi.org/10.1016/j.atmosenv.2019.117003>, 2019
5. Lavanya S, N.V.P. Kiran Kumar, S. Aneesh, K.V. Subrahmanyam, **S. Sijikumar**, Seasonal variation of rain drop size distribution over a coastal station Thumba: A Quantitative analysis, Atmospheric Research, 229, doi: 10.1016/j.atmosres.2019.06.004, 2019
6. Kavitha M., Prabha R. Nair, I.A. Girach, S. Aneesh, **S. Sijikumar**, R. Renju Diurnal and seasonal variations in surface methane at a tropical coastal station: Role of mesoscale meteorology Science of the Total Environment 631–632, 1472–1485, 2018
7. K. Nalini, K. N. Uma, **S. Sijikumar**, Yogesh K. Tiwari, Radhika Ramachandran Satellite and ground-based measurements of CO₂ over the Indian region: its seasonal dependencies, spatial variability, and model estimates, International Journal of Remote Sensing, 39:22, 7881-7900, DOI: 10.1080/01431161.2018.1479787, 2018
8. Aneesh S and **S. Sijikumar** Changes in the La Nina teleconnection to the Indian summer monsoon during recent period Journal of Atmospheric and Solar-Terrestrial Physics, DOI:10.1016/j.jastp.2017.11.009, 2017
9. Gupta A K, K. Rajeev, **S. Sijikumar** Day-night changes in the altitude distribution, physical properties and radiative impact of low-altitude clouds over the stratocumulus dominated subtropical oceans. Journal of Atmospheric and Solar-Terrestrial Physics 161 118–126, 2017
10. Gupta A K, K. Rajeev, **S. Sijikumar**, Anish Kumar M. Nair, Enhanced daytime occurrence of clouds in the tropical upper troposphere over land and ocean Atmospheric Research 201 133–143, 2017
11. **Sijikumar. S**, S. Aneesh, and K. Rajeev Multi-year model simulations of mineral dust distribution and transport over the Indian subcontinent during summer monsoon seasons, Meteorol Atmos Phys, 128, 453-464, 2016.
12. Aneesh. S and **S. Sijikumar** Changes in the south Asian monsoon low level jet during recent decades and its role in the monsoon water cycle, Journal of Atmospheric and Solar-Terrestrial Physics, 138–139, pp47-53, 2016.
13. Das, S.S., M. V. Ratnam, K. N. Uma, K. V. Subrahmanyam, I.A. Girach, A. K. Patra, S. Aneesh, K.V. Suneeth, K. K. Kumar, A.P. Kesarkar, **S. Sijikumar** and G. Ramkumar, Influence of Tropical Cyclones on Tropospheric Ozone: Possible Implications, Atmospheric Chemistry and Physics, 16, 1-11, 2016.

14. Sunilkumar S.V., M. Muhsin, M. Emmanuel, G. Ramkumar, K. Rajeev, **S. Sijikumar**, Balloon- borne cryogenic frost point hygrometer observations of water vapour in the tropical upper troposphere and lower stratosphere over India: First results, *Journal of Atmospheric and Solar Terrestrial Physics*, 140, 86–93, **2016**.
15. P.M. Muraleedharan, S. Prasanna Kumar, K. Mohanakumar, **S. Sijikumar**, K.U. Sivakumar, Teesha Mathew Observational Evidence of Mixed Rossby Gravity Waves at the Central Equatorial Indian Ocean, *Meteorology and Atmospheric Physics*, 127(4), 407 – 417, **2015**
16. Nair, S.K., Thara Prabhakaran, Neethu Purushothaman, **S. Sijikumar**, N.V.P. Kirankumar, S. Muralidharan, D.B. Subrahmanyam, T.J. Anurose, S.S. Prijith, K.V.S. Namboodiri, "Diurnal variation of low-level jet characteristics during the onset phase of Asian Summer Monsoon over Peninsular India", *Theoretical and Applied Climatology*,. doi:10.1007/s00704-014-1168-1, **2014**
17. **Sijikumar. S**, Liji John and K. Manjusha. Sensitivity study on the role of the Western Ghats in simulating the Asian summer monsoon characteristics, *Meteorology and Atmospheric physics*. DOI: 10.1007/s00703-013-0238-8 **2013**.
18. **Sijikumar. S** and K. Rajeev. Role of Arabian Sea warm pool on the precipitation characteristics during monsoon onset period. *Journal of Climate*, 25, 1890-1899, **2012**.
19. Nair, S. K., **S. Sijikumar** and S. S. Prijith: Impact of continental meteorology and atmospheric circulation in the modulation of Aerosol Optical Depth over the Arabian Sea, *Journal of Earth System Science* 121(2):263 – 272, **2012**
20. Das, S, S., **S. Sijikumar**, and K. N. Uma Further investigation on stratospheric air intrusion into the troposphere during the episode of tropical cyclone: Numerical simulation and MST radar observations *Atmos. Res.*, 101, 928-937, **2011**
21. Aloysius, M., **S. Sijikumar**, S. S. Prijith, M. Mohan, K. Parameswaran, Role of dynamics in the advection of aerosols over the Arabian Sea along the west coast of peninsular India during pre-monsoon season: A case study based on satellite data and regional climate model, *J. Earth Syst. Sci.*, 120, No. 2, 269 – 279, **2011**.
22. Nair, A,K,M., K. Rajeev, **S. Sijikumar** and S. Meenu Characteristics of a persistent “pool of inhibited cloudiness” and its genesis over the Bay of Bengal associated with the Asian summer monsoon *Ann. Geophys*, 29, 1247-1252, **2011**
23. Vigaud. N, P. Roucou, B. Fontaine, **S. Sijikumar**, S. Tyteca WRF/ARPEGE-CLIMAT simulated climate trends over West Africa *Climate Dynamics*, 36, 925-944, **2011**.
24. Subrahmanyam, D.B, Radhika, R., Rani, I. S., **S. Sijikumar**, T. J. Anurose and A. K. Ghosh Location Specific Weather Predictions for Sriharikota (13.72°N, 80.22°E) through Numerical Atmospheric Models during Satellite Launch Campaigns. *Natural Hazards*. 61, 893-910, **2012**.
25. Xavier, P., K. John, V. O., S. A. Buehler, R. S. Ajayamohan, and **S. Sijikumar**, Variability of Indian summer monsoon in a new upper tropospheric humidity data set *Geophys Res Lett*, 37, L05705, doi:10.1029/2009GL041861, **2010**
26. Subrahmanyam, D.B., T. J. Anurose, M. Mohan, M. Santosh, N. V. P. K. Kumar, **Sijikumar. S**, Impact of Annular Solar Eclipse of 15 January 2010 on the Atmospheric Boundary Layer over Thumba: A Case Study, *Pure Appl. Geophys*. 169:741-753, **2012**.
27. Nair, S., K., T. J. Anurose, D.B. Subrahmanyam, N. V. P. K. Kumar, M. Santosh, **Sijikumar. S**, M. Mohan, K. V. S. Namboodiri, Characterization of the Vertical Structure of Coastal Atmospheric Boundary Layer over Thumba (8.5°N, 76.9°E)

- during Different Seasons, *Advances in Meteorology*, Volume 2011, Article ID 390826, doi: 10.1155/2011/390 826, **2011**.
28. Subrahamanyam, D. B, T. J. Anurose, M. Mohan, M. Santosh, N. V. P. K. Kumar, **S. S. Sijikumar**, S. S. Prijith, Marina Aloysius, Atmospheric Surface Layer Response to the Annular Solar Eclipse of 15 January 2010 over Thiruvananthapuram, India, *Boundary-Layer Meteorol.*, doi:10.1007/s10546-011-9627-z, **2011**
 29. Anurose, T. J., D. B. Subrahamanyam, C. B. S. Dutt, N. V. P. K. Kumar, S. R. John, S. K. Nair, M. Santosh, M. Mohan, P. K. Kunhikrishnan, **S. Sijikumar** and S. S. Prijith: Vertical structure of sea-breeze circulation over Thumba (8.5N, 76.9E, India) in the winter months and a case study during W-ICARB Field Experiment, *Meteorology and Atmospheric Physics* 115 (3-4): 113-, 2012.
 30. Fontaine, B., Garcia-Serrano, J., Roucou, P., Losada, B., R., T., Chauvin, F., Gervois, S., **S. Sijikumar**, Ruti. P, Janicot., S Impacts of warm and cold situations in the Mediterranean basins on the West African monsoon: observed connection patterns (1979–2006) and climate simulations *Climate Dynamics*, 35, 95-114, **2010**.
 31. **Sijikumar, S.**, P. Roucou and B. Fontaine: Monsoon onset over Sudan-Sahel: Simulation by the regional scale model MM5, *Geophys. Res. Lett*, 33, L03814, doi:10. 1029/ 2005GL024819, 2006.
 32. Goswami P., **S.Sijikumar** and A. Mandal: Seasonal cycle and intraseasonal oscillations in the interannual variability over the monsoon region, *Geophys. Res. Lett*, 32, L06810, doi:10.1029/2004GL022171, 2005.
 33. Joseph P. V. and **S.Sijikumar**: Intraseasonal Variability of Low Level Jetstream of Asian Summer Monsoon. *J. Climate*, Vol. 17, 1449-1458, 2004.
 34. Annes, V.H., **S.Sijikumar** and K. Mohankumar: Midlatitude-tropics interactions as seen from MST radar observations at Gadanki (13.5N, 79.2E) during winter, *Indian J. Rad. Space Phys.*, 29 ,192-198,2000