

Santosh Muralidharan

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Research Area & Research interests

Experimental investigation of the Atmospheric Boundary Layer (ABL) and the Lower Troposphere over land and ocean, coupling between ABL and lower troposphere, satellite radio occultation based characterization of ABL, air-sea interaction, sea-breeze land-breeze circulation, effect of convection on marine ABL. This involves devising experimental field campaigns, carrying out the observations using different instruments like sonic anemometer, radiosonde, SODAR, Automatic weather station etc. over land and the ocean surrounding the Indian subcontinent.

Publications

International Journals	:	6
Proceedings	:	7
Conference presentations	:	15

Academic Background

- **M.Tech** – Laser & Electro-Optics, Defense Institute of Advanced Technology, Pune, India, 2008
- **Scientist** at Space Physics Laboratory, ISRO Trivandrum India since 2008

Highlights of Achievements

- 1) Contributed to the 36th Indian Scientific Expedition to Antarctica as a co-investigator and participant during southern hemispheric summer of November, 2016 to February 2017 conducting scientific observations of atmospheric boundary layer and upper atmosphere.
- 2) Co-ordinated and conducted the atmospheric measurements during the South West Tropical Indian Ocean (SWTIO) Expedition on-board *Oceanic Research Vessel Sagar Kanya* in the capacity of **Deputy Chief Scientist of Expedition** in Oct-Nov 2011.
- 3) Conducted ABL observations in 2 (other) ship based campaigns over the Indian Ocean and the Bay of Bengal as part of scientific team for investigating the atmospheric boundary layer and the lower troposphere namely

- i) Tropical Indian Ocean cruise in July-August 2010 conducted by NCAOR, Goa.
- ii) Continental Tropical Convergence Zone (CTCZ) campaign (oceanic segment) over Bay of Bengal during Asian Summer Monsoon 2009 conducted by Dept. of Science and Technology (DST), INDIA

Manpower Development Activities

- 1) Supervision of M.Sc project students **(04)**
- 2) Conducting lectures during orientation course for newly joined research scholars in different stations of NOBLE project in India
- 3) Giving lectures as part of course work every year for newly joined research scholars in SPL, VSSC, ISRO, Trivandrum.

Other Activities

Deputation to Symposia/Workshops/Conferences

- i. National Conference for Polar Sciences (NCPS-2017), 16th-17th May 2017, National Centre for Antarctic and Oceanic Research (NCAOR), Goa, India
- ii. Continental Tropical Convergence Zone (CTCZ) Results Workshop, 5-7 May, 2016, Indian Institute of Science, Bangalore.
- iii. Member of ISRO delegation team to IAA-IISL-KSCSTE International Conference on Climate Change and Disaster Management, February 26-28, 2015, Thiruvananthapuram, India
- iv. National Workshop on GPS-Radio Occultation Technique and Applications, in SRM University Chennai, 16-19 March 2015. Lectures were given by national and international experts in the field of GPS-RO.
- v. International Tropical Meteorology Symposium (INTROMET), 21-24-February, 2014, SRM University, Chennai, India
- vi. Project Review Meeting, *ARFI, ICARB, RAWEX & NOBLE Scientific Progress*, 8-9 January, 2014, Thiruvananthapuram
- vii. National Workshop: Results on the Solar Eclipse, *NaWRoSE*, 2011, Thiruvananthapuram
- viii. National conference on Tropical Tropopause Dynamics, January 2012, VSSC Trivandrum
- ix. National Conference on Advances in Atmospheric Remote Sensing, Weather Prediction and Climate Change, *ARWPCC – 2011*, March 10 – 11, 2011, Gadanki
- x. Workshop on Continental Tropical Convergence Zone (CTCZ)-Initial Results organised by DST at IITM Pune on 29-30 April 2010
- xi. 16th National Space Science Symposium, Saurashtra University, Rajkot, February 24 – 27, 2010
- xii. 5th SERC School on Aviation Weather Hazards-Concepts and Modelling conducted in Armed Forces Administrative College (AFAC), Coimbatore, 07 – 27 December 2009

List of Publications:

(a) International Journals

- 1) KiranKumar, N. V. P., Neethu Purushothaman and [M. Santosh](#) "Response of spectral characteristics of wind and temperature of atmospheric surface layer to the noon time annular solar eclipse", *J. Atmos. Sol. Terr. Phys.*, 97, 91-98, doi:10.1016/j.jastp.2013.02.017.
- 2) Sandhya K. Nair, T. J. Anurose, D. Bala Subrahmanyam, N. V. P. KiranKumar, [M. Santosh](#), S. Sijikumar, Mannil 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", Hindawi Publishing Corporation, *Advances in Meteorology*, Volume 2011, Article ID 390826, 9 pages, doi: 10.1155/2011/390826, 2011
- 3) D. Bala Subrahmanyam, T. J. Anurose, Mannil Mohan, [M. Santosh](#), N. V. P. KiranKumar, 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 Meteorology.*, 141: 325 – 332, 2011
- 4) T. J. Anurose, D. Bala Subrahmanyam, C. B. S. Dutt, N. V. P. KiranKumar, Sherine Rachel John, Sandhya K. Nair, [M. Santosh](#), Mannil 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*, 115,3-4,113-121,DOI:10.1007/s00703-011-0178-0,2012
- 5) D. Bala Subrahmanyam, T. J. Anurose, M. Mohan, [M. Santosh](#), N. V. P. KiranKumar, S. Sijikumar, "Impact of Annular Solar Eclipse of 15 January 2010 on the Atmospheric Boundary Layer over Thumba: A Case Study", *Pure Appl. Geophys.*, 169(4) ,741-753,doi:10.1007/s00024-011-0336-9, 2012
- 6) Sandhya K.Nair, Thara V.Prabha, N.Purushothaman, S.Sijikumar, [M.Santosh](#), N.V.P.Kirankumar, D.B.Subrahmanyam, T.J.Anurose, S.S.Prijith, K.V.S.Namboothiri, "Diurnal variations of Low level Jet over peninsular Indiaduring the onset of Asian summer monsoon", *Theoretical & Applied Climatology*, DOI 10.1007/s00704-014-1168-1, 2014. (<http://dx.doi.org/10.1007/s00704-014-1168-1>)

(b) Proceedings:

1. [M.Santosh](#) and K.Rajeev, "Improved estimation of atmospheric boundary layer height from simulations of atmospheric refractivity over the tropical oceans - a study using DYNAMO-2011 radiosonde data", International Conference on Climate Change and Disaster Management, Thiruvananthapuram, India, Feb 26-28, 2015.
2. [M. Santosh](#), S.S. Prijith, and N.V.P. Kirankumar, "MABL and Upper Air Observations using GPS sonde ascents during CTCZ campaign over Northern Bay of Bengal", Workshop on Continental Tropical Convergence Zone (CTCZ)-Initial Results organised by DST at IITM Pune on 29-30 April 2010
3. G. S. Bhat, Tarun Verma, Deepesh Jain, [Santosh Muralidharan](#) , S.S.Prijith, "Intercomparison of Vaisala and Pisharoty derived atmospheric boundary layer properties over Bay of Bengal during CTCZ pilot", Workshop on Continental Tropical Convergence Zone (CTCZ)-Initial results organised by DST at IITM Pune on 29-30 April 2010
4. KiranKumar N. V. P, [M. Santosh](#), D. Bala Subrahmanyam, T. J. Anurose, S. S. Prijith, Marina Aloysius, S. Sijikumar, Mannil Mohan, "Response of Atmospheric Surface Layer

to Annular Solar Eclipse Event on January 15, 2010”, Proceedings of the National Workshop: Results on the Solar Eclipse, *NaWRoSE*, 162 – 165, 2011

5. Bala Subrahmanyam, D., T. J. Anurose, Mannil Mohan, [M. Santosh](#), N. V. P. KiranKumar, S. Sijikumar, “Impacts of Annular Solar Eclipse of 15 January 2010 on the Atmospheric Boundary Layer Characteristics over Thumba: A Case Study”, Proceedings of the National Workshop: Results on the Solar Eclipse, *NaWRoSE*, 158 – 162, 2011
6. Kiran Kumar N.V.P., P. K. Kunhikrishnan, D. Bala Subrahmanyam, Mannil Mohan, C. B. S. Dutt, [M.Santosh](#), S. S. Prijith, S. Indira Rani, S. Sijikumar, Sandhya K. Nair, Denny P. Alappattu, Marina Aloysius, S. Satyanarayana and R. Gopakumar, “Structure of Thermal Internal Boundary Layer over Thumba during W-ICARB campaign: A case study”, *Proceedings of the Project Review Meeting, ARFI & ICARB Scientific Progress Report – 2010*, Thiruvananthapuram, 9-10 June 2010., 161-167, 2010
7. D. Bala Subrahmanyam, N. V. P. Kiran Kumar, C. B. S. Dutt, T. J. Anurose, P. K. Kunhikrishnan, Mannil Mohan, Sherine Rachael John, S. S. Prijith, S. Indira Rani, S. Sijikumar, Sandhya K. Nair, [M.Santosh](#), Denny P. Alappattu, Marina Aloysius, S. Satyanarayana and R. Gopakumar, “Marine Atmospheric Boundary Layer (MABL) Characteristics over the Bay of Bengal during W-ICARB Field Experiment”, *Proceedings of the Project Review Meeting, ARFI & ICARB Scientific Progress Report – 2010*, Thiruvananthapuram, 9-10 June 2010., 120-133, 2010

(c) Presentations in Symposia /Conferences :

1. [M.Santosh](#), N.Koushik, K.Nalini, Observations of vertical structure of diurnal variability in the atmospheric boundary layer over the Indian station Bharati (69°S, 76°E) a coastal station in East Antarctica during austral summer of 2016-17, National Conference for Polar Sciences (NCPS-2017), 16th-17th May 2017, National Centre for Antarctic and Oceanic Research (NCAOR), Goa, India
2. [M.Santosh](#), Seasonal and diurnal variability of atmospheric boundary layer height over the tropical oceans – A study using in situ and satellite data, *National Space Science Symposium 9-12 February, 2016, Vikram Sarabhai Space Centre, Trivandrum.*
3. [M.Santosh](#) and K.Rajeev, “Improved estimation of atmospheric boundary layer height from simulations of atmospheric refractivity over the tropical oceans - a study using DYNAMO-2011 radiosonde data”, International Conference on Climate Change and Disaster Management, Thiruvananthapuram, India, Feb 26-28, 2015.
4. [M.Santosh](#) and K. Rajeev, “Characteristics of the Marine Atmospheric Boundary Layer (MABL) over the Bay of Bengal, the Arabian Sea and the Tropical Indian Ocean under contrasting cloudiness and convective conditions”, Proceedings of the ARFI, ICARB, RAWEX and NOBLE project review meeting, 8-9 January 2014, 269-272.
5. [M.Santosh](#), K.Rajeev “Role of convection and clouds in regulating the structure of marine atmospheric boundary layer”, INTROMET-2014, Chennai, Feb 21-24, 2014,
6. [M.Santosh](#), S.Meenu, K.Rajeev, N.V.P.KiranKumar, S. Sijikumar, D.B.Subrahmanyam, Sandhya K Nair, S.V.Sunilkumar, “Contrasting behaviour of tropical tropopause within and outside ITCZ over the Indian Ocean”, 7th National Space Science Symposium, S.V,University, Tirupati, February 14-17, 2012
7. [M. Santosh](#) and N.V.P. KiranKumar, “Surface and upper air observations during the Tropical Indian Ocean Campaign”, 7th National Space Science Symposium, S.V,University, Tirupati, February 14-17, 2012

8. [M.Santosh](#), S.Meenu, K.Rajeev, N.V.P.KiranKumar, S. Sijikumar, D.B.Subrahmanyam, Sandhya K Nair, S.V.Sunilkumar, “Contrasting behaviour of tropical tropopause within and outside ITCZ over the Indian Ocean”, National Workshop on Tropical Tropopause Dynamics, VSSC Trivandrum, January 24-25, 2012
9. [M. Santosh](#), N. V. P. KiranKumar, Mannil Mohan and Denny P. Alappattu, “Atmospheric boundary layer characteristics during the Tropical Indian Ocean (TIO) Campaign”, National Conference on Advances in Atmospheric Remote Sensing, Weather Prediction and Climate Change, *ARWPCC – 2011*, Gadanki, March 10–11, 2011.
10. [M.Santosh](#), S.S. Prijith, and N.V.P. KiranKumar, “MABL and Upper Air Observations using GPS sonde ascents during CTCZ campaign over Northern Bay of Bengal” 6th National Space Science Symposium, Saurashtra University, Rajkot, February 24-27, 2010.
11. [M.Santosh](#), S.S. Prijith, and N.V.P. Kirankumar , “MABL and Upper Air Observations using GPS sonde ascents during CTCZ campaign over Northern Bay of Bengal” , Workshop on Continental Tropical Convergence Zone (CTCZ)-Initial Results organised by DST at IITM Pune on 29-30 April 2010.
12. G.S.Bhat, T. Verma, D. Jain, [M. Santosh](#), S. S. Prijith, “Intercomparison of Vaisala and Pisharoty derived atmospheric boundary layer properties over Bay of Bengal during CTCZ pilot”, Workshop on Continental Tropical Convergence Zone (CTCZ)-Initial Results organised by DST at IITM Pune on 29-30 April 2010.
13. Kirankumar N.V.P, Neethu Purushottaman, [M.Santosh](#), Anurose, D.Bala Subrahmanyam , Sandhya.K.Nair, “Response of spectral characteristics of surface meteorological parameters to the Annular Solar Eclipse of 15 January 2010 over a coastal station Thumba”, Scientific Progress Report, Proceedings of the Project Review Meeting 20-21 June 2012, Trivandrum
14. Neethu Purushottaman, Kirankumar.N.V.P, [M.Santosh](#), Sandhya.K.Nair, ”Spectral characteristics of surface layer turbulence at coastal station Thumba” Scientific Progress Report, Proceedings of the Project Review Meeting 20-21 June 2012, Trivandrum
15. T.J.Anurose, D.Bala Subrahmanyam, Sandhya.K.Nair, S.Sijikumar, [M.Santosh](#), ”Characterization of Sea Breeze Circulation over Thumba Coast during Winter Monsoon”, Scientific Progress Report, Proceedings of the Project Review Meeting 20-21 June 2012, Trivandrum