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Area of Specific Research Interests

Regional transport modelling of atmospheric tracers; Lagrangian and Eulerian, Ground and satellite based observations of greenhouse gases, Numerical weather prediction model, and Polar atmospheric research

Educational Qualification

2014-present : Pursuing Ph.D.

Proposed date of submission- August 2019

Proposed Thesis Title: Spatio-temporal variability of atmospheric carbon dioxide over India and design of optimal monitoring network using observations and Lagrangian modelling

Research Supervisor: Dr. Radhika Ramachandran, Director, SPL

2009-2014 : 5 year Integrated M. Sc. in Physics, School of Physical Chemical and Applied Geology, Pondicherry Central University, Pondicherry, India

Computation Skills

Operating systems:

Linux and Windows

Programming Languages:

Matlab, FORTRAN and Python

Graphical User Interface (GUI) Tools:

NCL, GrADS, Gnuplot, QtiPlot, Origin,

Familiarity with different types of data formats:	ASCII, Binary, GRIB, NetCDF, and HDF
Atmospheric models:	Lagrangian particle Dispersion Model-FLEXAPRT Numerical Weather Prediction Model-COSMO NIES transport model

Publications in peer reviewed journals

1. **K. Nalini**, K. N. Uma, S. Sijkumar, Y. K. Tiwari and R. 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 (2018), 39 (22), 7881-7900, <https://doi.org/10.1080/01431161.2018.1479787>.
2. Bala Subrahmanyam, Radhika Ramachandran, **K. Nalini**, Freddy P. Paul and S. Roshny, “Performance Evaluation of COSMO Numerical Weather Prediction Model in Prediction of OCKHI - One of the Rarest Very Severe Cyclonic Storms over the Arabian Sea: A Case Study”, Natural Hazards (2018), <https://doi.org/10.1007/s11069-018-3550-2>.
3. **K. Nalini**, S. Sijkumar, Vinu Valsala, Yogesh K. Tiwari , and Radhika Ramachandran, “Optimal network design for monitoring atmospheric CO₂ concentrations to constrain the Indian land fluxes”, Journal of Geophysical Research (under review)
4. N. Koushik, K.V. Subrahmanyam, Geetha Ramkumar, Karanam Kishore Kumar, I. A. Girach, M. Santosh, **K. Nalini**, M. Nazeer, “Characterization of inertia gravity waves and associated dynamics in the lower stratosphere over the Indian Antarctic station, Bharati during austral summers”, Climate Dynamics (under revision)

Conference presentations

1. **K. Nalini**, K. N. Uma, S. Sijkumar, Y. K. Tiwari and R. Ramachandran, “Quantitative comparison of CO₂ concentration from GOSAT, CT, AIRS and Flask measurements over Indian region”, National Space Science Symposium held at Space Physics Laboratory, VSSC, Trivandrum, Kerala, India- February 09-12, 2016.

2. **K. Nalini**, K. N. Uma, S. Sijikumar, Y. K. Tiwari and R. Ramachandran, “A quantitative Comparison of GOSAT CO₂ Concentration with Carbon Tracker and Flask measurements over Indian region”, 10th SPIE Asia-Pacific Remote Sensing Symposium held at New Delhi, India- April 04-07, 2016.
3. 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) held at National Centre for Polar and Oceanic Research, Goa, India- May 16-17, 2017.
4. D. Bala Subrahmanyam, Radhika Ramachandran, **K. Nalini**, Freddy P. Paul and Roshny S., “Did OKHI Cyclone Cheat the Weather Forecasters of Severe Weather Alerts were Overlooked? Performance Evaluation of a Regional NWP Model COSMO- A Case Study”, National Conference for Polar Sciences (NCPS-2017) held at Banaras Hindu University, Varanasi, India- October 24-27, 2018.

Deputation

“**36th Indian Scientific Expedition to Antarctica**” during December 27, 2016-March 31, 2017. As part of the program I have participated in the following scientific activities.

1. To study the dynamical coupling between the polar troposphere and stratosphere, balloon borne radiosonde and ozonesonde observations were conducted from Bharati station.
2. To study the physical processes governing the variations in ozone and carbon dioxide concentrations over southern ocean (33.55°S 18.26°E to 69.14°S 76.01°E; 69.14°S 76.01°E to 68.17°S 15.26°E; 68.17°S 15.26°E to 33.55°S 18.26°E) and Bharati station (69.24°S 76.11°E), ozone analyser and Fast Greenhouse Gas Analyser were operated on board expedition vessel and Bharati station.
3. Snow sampling at different locations in and around Bharati station (Grovnæs Island and some nearby islands) was carried out to estimate the snow scavenging of aerosols and deposition of soot in ice.

Participation in Seminars/Workshops

1. Training Course in Statistics: Advanced statistical concepts in Atmospheric and Oceanic Sciences held at Indian National Centre for Oceanic information Services- February 23-28, 2015.
2. Asiaflux Training course: Recent advances in micrometeorological instrumentation and the use of LI-COR systems in ecosystem scale flux monitoring held at IITM, Pune- November 22-24, 2015.
3. Asiaflux Workshop on Challenges and significance of ecosystem research in Asia to better understand climate change held at IITM, Pune- November 25-27, 2015.
4. National Training Workshop on GHG measurements, Interpretation and inverse modelling held at IITM, Pune- July 10-14, 2017.
5. Short course on Atmospheric Remote Sensing for Weather and Climate held at IIRS, Dehradun- January 02-12, 2018.
6. Training Workshop on Extreme Weather Events over India: Observations, Assimilation and Modelling with special focus on Tropical cyclones held at IIT, Bhubaneswar- June 18-25, 2018.