Sreenath Paleri

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Education

University of Wisconsin Madison **Sep 2018-May 2023**
Ph.D. Atmospheric and Oceanic Sciences

Dissertation: Role of Heterogeneous Ecosystems in Modulating Surface-Atmosphere Transport
Advisor: Dr. Ankur Desai, Ecometeorology Lab

Indian Institute of Technology Madras, Chennai, India **2008-2013**
B. Tech. in Civil Engineering and M. Tech. in Applied Mechanics

Master's Thesis: Interaction of Inertial Particles with Line Plumes in Natural Convection
Advisor: Dr. Baburaj Puthenveetil, Laser Velocimetry and Fluorescence Lab

Research Interests

Measurements and models of the turbulent atmospheric boundary layer involving :
Tower mounted and airborne eddy covariance, large eddy simulations, time-frequency analysis of land-atmosphere interactions and non-local transport in the atmospheric boundary layer over heterogeneous surfaces

Research Experience

Cooperative Institute for Severe and High-Impact Weather Research and Operations, University of Oklahoma **July 2023 - Present**
Research Associate Boulder, CO, USA
Analysis and parameterizations of temporal and spatial variability in heat fluxes to improve representations of surface-atmosphere processes in the High Resolution Rapid Refresh data product

Department of Atmospheric and Oceanic Sciences, UW Madison **Sep 2018 - May 2023**
Research Assistant, with Prof. Ankur Desai. Madison, Wisconsin USA
Chequamegon Heterogeneous Ecosystem Energy-balance Study Enabled by a High-density Extensive Array of Detectors (CHEESEHEAD19)

- Numerical experiment design of the CHEESEHEAD19 airborne campaign using Large Eddy Simulations (model : PALM)
- Surface flux maps and scale-resolved fluxes from aircraft measurements across a heterogeneous mid-latitude domain using the NEON eddy4R family of open source packages for eddy-covariance (EC) raw data processing, analyses
- Diagnosing the effects of surface heterogeneity induced secondary circulations from Large Eddy Simulations of diurnal cycles during the CHEESEHEAD19 field campaign

Institute of Hydrology and Meteorology, Technische Universität Dresden **Feb - Apr 2022**
Visiting Researcher, hosted by Prof. Dr. Matthias Mauder Dresden, Germany
Scale analysis of airborne flux measurements and setting up realistic Large Eddy Simulations using field experiment data

Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science **Feb 2016 - Jul 2018**
Project Scientist, with Prof. Bhat G. S. Bangalore, India
Interaction of Convective Organization and Monsoon Precipitation, Atmosphere, Surface and Sea (INCOMPASS)

- Measurement of insitu surface fluxes using (eddy covariance) CSAT-3 Sonic Anemometers and EC-150 Open path CO_2, H_20 gas analyzer from Campbell Scientifc
- Observations of precipitation intensity and droplet size spectrum using Thies Clima laser precipitation monitors

– Calculated the turbulent boundary layer fluxes for heat, momentum and trace gases from high frequency(20Hz) time series data obtained from June 2016, for wind, temperature, CO_2 and H_2O concentrations
– Studied the spectral characteristics of the boundary layer turbulence within a similarity theory (Monin-Obukhov) framework across the trough of Indian summer monsoon

Department of Fluid Mechanics, IIT Madras **Jan 2012-Mar 2012**
Research Intern, with Dr. Patnaik P. Chennai, India
Comparative study of experiments and simulations for flow past a circular cylinder ($50<Re<5 \times 10^5$)

Publications

Peer reviewed

Space - scale resolved surface-atmospheric fluxes across a heterogeneous midlatitude forested landscape **2022**
Paleri S., *Desai A., Metzger M., Durden D., Butterworth B., Mauder M., Kohnert K., Serafimovich A.*
Journal of Geophysical Research - Atmospheres, DOI:10.1029/2022JD037138

Scaling Land-Atmosphere Interactions: Special or Fundamental? **2022**
Ankur R. Desai, ***Sreenath Paleri,*** *James Mineau, Hawwa Kadum, Luise Wanner, Matthias Mauder, Brian J. Butterworth, David J. Durden, Stefan Metzger*
Journal of Geophysical Research: Biogeosciences, DOI:10.1029/2022JG007097

Drivers of decadal carbon fluxes across temperate ecosystems **2022**
Desai A.R., Murphy B., Wiesner S., Thom J. E. , Butterworth B. J., Koupaei-Abyazani N., Muttaqin A. S., ***Paleri S.****, Talib A., Turner J., Mineau J., Merrelli A., Stoy P. C., Davis K.*
Journal of Geophysical Research - Biogeosciences, DOI:10.1029/2022JG007014

Novel approach to observing system simulation experiments improves information gain of surface-atmosphere field measurements **2021**
S.Metzger, D. Durden, ***S. Paleri****, M. Sühring, B. Butterworth, A. Desai, C. Florian, M. Mauder, D. Plummer, E. Sigel, Z. Wang, L. Wanner, K. Xu*
Atmospheric Measurement Techniques, DOI:10.5194/amt-14-6929-2021

Multi-sensor approach for high space and time resolution land surface temperature
Ankur R. Desai, Anam M. Khan, Ting Zheng, **Sreenath Paleri***, Brian Butterworth, Temple R. Lee, Joshua B. Fisher, Glynn Hulley, Tania Kleynhans, Aaron Gerace, Philip A. Townsend, Paul Stoy, Stefan Metzger* **2021**
Earth and Space Science, DOI:10.1029/2021EA001842

Connecting Land–Atmosphere Interactions to Surface Heterogeneity in CHEESEHEAD19
Butterworth et al. **2020**
Bulletin of the American Meteorological Society, DOI:10.1175/BAMS-D-19-0346.1

Spatial and temporal variability in energy and water vapour fluxes observed at seven sites on the Indian subcontinent during 2017 **2020**
G. S. Bhat, R. Morrison, C. M. Taylor, B. K. Bhattacharya, ***S. Paleri*** *, D. Desai, J. G. Evans, S. Pattnaik, M. Sekhar, R. Nigam, A. Sattar, S. S. Angadi, D. Kacha, A. Patidar, S. N. Tripathi, K. V. M. Krishnan, A. Sisodiya*
Quarterly Journal of the Royal Meteorological Society, DOI:10.1002/qj.3688

Interaction of convective organization with monsoon precipitation, atmosphere, surface and sea: The 2016 INCOMPASS field campaign in India **2020**
A. G. Turner, G. S. Bhat et al.
Quarterly Journal of the Royal Meteorological Society, DOI:10.1002/qj.3633

Book chapter

3 - Here, there, and everywhere: Spatial patterns and scales. In A. L. Hiscox (Ed.), Conceptual Boundary Layer Meteorology (pp. 37–58)., Elsevier **2023**
Paleri S.*,Butterworth, B., Desai, A.R.*
Academic Press, DOI:10.1016/B978-0-12-817092-2.00009-6

Under Review

Impact of Surface Heterogeneity Induced Secondary Circulations on the Atmospheric Boundary Layer
Paleri S., *Wanner L., Sühring M., Desai A., Butterworth B., Mauder M., Metzger S.*

Coupled large eddy simulations of land surface heterogeneity effects and diurnal evolution of late summer and early autumn atmospheric boundary layers during the CHEESEHEAD19 field campaign
Paleri S., *Wanner L., Sühring M., Desai A., Butterworth B., Mauder M.*

Towards Energy-Balance Closure With a Model of Dispersive Heat Fluxes
Wanner L., Jung M., ***Paleri S.****, Kadum H., Desai A., Mauder M.*

Characterizing Energy Balance Closure over a Heterogeneous Ecosystem Using Multi-Tower Eddy Covariance
Butterworth B., Desai A., Durden D., Kadum H., LaLuzerne D., Mauder M., Metzger S., ***Paleri S.****, Wanner L.*

Airborne Measurements of Scale-Dependent Latent Heat Flux Impacted by Water Vapor and Vertical Velocity over Heterogeneous Land Surfaces During the CHEESEHEAD19 Campaign
Lin G., Wang Z., Chu Y., Ziegler C., Hu X., Xue M., Geerts B., ***Paleri S.****, Desai A., Yang K., Deng M., DeGraw J.*

Invited Presentations

- **Interactions between land surface heterogeneity and lower atmospheric response** **Mar. 2022**
  Atmospheres and Oceans seminar,
  Department of Earth and Planetary Sciences, Johns Hopkins
- **Using high resolution observations and realistic LES to study the interactions between land surface heterogeneity and lower atmospheric response** **Nov. 2020**
  Online, Coupling of Land and Atmospheric Subgrid Parameterizations (CLASP) Project Meeting
- **Interactions between land surface heterogeneity and scale transport in the Atmospheric Boundary Layer** **Oct. 2019**
  RUBISCO-Ameriflux Workshop, Lawrence Berkeley National Lab,Berkeley, CA.

Oral Presentations

- **Using Large Eddy Simulations to Study the Interactions Between Land Surface Heterogeneity and Lower Atmospheric Response During the CHEESEHEAD19 Field Campaign.** **Dec. 2022**
  American Geophysical Union, Fall Meeting
- **Diagnosing the Effects of Surface Heterogeneity Induced Secondary Circulations from Large Eddy Simulations of Diurnal Cycles During the CHEESEHEAD19 Field Campaign** **Dec. 2021**
  American Geophysical Union, Fall Meeting
- **Scale resolved, sub-grid surface fluxes across a heterogeneous mid-latitude forested landscape** **June 2021**
  Online, AMS 34th Conference on Agricultural and Forest Meteorology
- **Representativeness of surface heterogeneity induced secondary atmospheric circulations in Large Eddy Simulations** **Dec. 2020**
  Oral Session, Online, American Geophysical Union, Fall Meeting

- **Scale resolved, sub-grid surface fluxes across a heterogeneous mid-latitude forested landscape** **June 2020**
  Online, CHEESEHEAD mini conference, UW Madison
- **Scale resolved flux contributions to surface atmospheric interactions across a mid-latitude, heterogeneous landscape from airborne measurements** **Nov. 2020**
  UW AOSS Department Seminar, Madison, Wisconsin
- **Mesoscale flux contributions to surface-atmosphere interactions across a heterogeneous mid-latitude landscape** **Dec. 2019**
  Oral Session, American Geophysical Union, Fall Meeting

Awards and Fellowships

Financial Awards

- University of Wisconsin-Madison, AOS Travel Grant. ($1,000) **Oct. 2022**
- University of Wisconsin-Madison, AOS Travel Grant. ($1,000) **Oct. 2021**
- Reinhard-Süring-Foundation Travel Scholarship (€700) **Feb. 2020**

Academic Awards and fellowships

- Schwerdtfeger Award for academic excellence, AOS UW Madison **Apr. 2019**
- Research Fellowship, Center for Climate Research, Nelson Institute, University of Wisconsin Madison **Sep. 2018**

Professional Experience

Cognizant Technology Solutions, **July 2013-Feb2016**
Associate, Business Analytics Chennai, India

- Developed statistical models using **logistic regression** and **Principal Component Analysis** on **big data** to predict consumer behavior for multiple marketing analytics projects

Cochin Port Trust, Government of India, **May -July 2011**
Industrial Intern Cochin, India

Professional Service and Outreach

- Editorial Board Member, Boundary Layer Meteorology, **Feb. 23 - Present**
- FLUXNET Data Integration Committee, **June 23 - Present**
- Session co-chair, AMS 34th Agricultural and Forest Meteorology conference: Advances in Spatial and Temporal Scaling of Surface-Atmosphere Fluxes **June 2021**
- Student coach , Meteorology Science Olympiad, **2022-23**
  Hamilton Middle School, Madison WI
- Volunteer, Wisconsin Science Festival, **2022-23**
- Judge, NASA GLOBE Midwest Earth System Science Symposium **May 2021**
- Student Mentor, Atmospheric and Oceanic Sciences Undergraduate Mentorship Program. University of Wisconsin-Madison **2019-Present**
- Organizer, Department Open House, Center for Atmospheric and Oceanic Sciences, Indian Institute of Science **2015,2016**

Workshops and Professional Development

- Selected to participate in Field Experiment on Submesoscale Spatio-Temporal Variability in Lindenberg (FESSTVal) Summer School **2022**
  Scharmützelsee (Brandenburg), near Berlin, MOL-RAO Germany (postponed from 2020 due to COVID-19 and finally cancelled)
- Unlearning Racism in Geosciences (URGE) **Feb.-May 2021**
  University of Wisconsin-Madison
- Reducing Uncertainties in Biogeochemical Interactions through Synthesis and Computation (RUBISCO) Workshop **Oct. 2019**
  University of California, Berkely, CA
- Teaching in Science and Engineering **Sept.-Dec. 2018**
  University of Wisconsin-Madison
- Summer School and Discussion Meeting on Buoyancy Driven Flows **2018**
  International Center for Theoretical Sciences , Bangalore, India

Teaching and Mentoring

- Mentor, Atmospheric and Oceanic Sciences Undergraduate Mentorship Program, University of Wisconsin-Madison **2020 - 2023**
- Teaching Assistant, Introduction to Weather and Climate, Departmnet of Atmospheric and Oceanic Sciences, UW Madison **August -December 2018**
- Teaching Assistant, Engineering Mechanics, Departmnet of Applied Mechanics, IIT Madras **August -December 2012**