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EDUCATION

Institution	Country	Degree	Field
University of Illinois Urbana-Champaign	USA	Ph.D. (Pursuing)	Atmospheric Sciences
Savitribai Phule Pune University & Indian Institute of Tropical Meteorology, Pune	India	M.Sc. 2015	Atmospheric Sciences
Hansraj College, University of Delhi	India	B.Sc. 2013	Physical Sciences

WORK EXPERIENCE

Position	Institution	Department	Years
Research Assistant	University of Illinois Urbana-Champaign	Dept. of Atmospheric Sciences	2016 - Present
Junior Research Fellow	Indian Institute of Tropical Meteorology (IITM), Pune	Center for Advanced Training	August 2015 – January 2016
Trainee Meteorologist	Skymet Weather Services, Noida, India	Forecasting and Research Division	June - July 2015

RESEARCH EXPERIENCE

- Ph.D. research on “Identifying and Characterizing Tropical Mesoscale Cold Pools using Spaceborne Scatterometer, Precipitation, In-Situ Sampling and High-Resolution Regional and Global Model” (Expected to Finish in 2020).
- M.Sc. thesis on “Simulation of Large-Scale Characteristics corresponding to Heavy Rainfall Events over Indian Subcontinent”. Tuned Betts-Miller-Janjić (BMJ) scheme in WRF to get an improved hindcast of deep convective events over India.

LEADERSHIP

- Served as Co-chair of 2nd Midwest Student Conference on Atmospheric Research (MSCAR) from 2017-2018, the annual conference of Department of Atmospheric Sciences, University of Illinois Urbana-Champaign.
- Led a research team of graduate students from 2014-2015 to create a long-term database of heavy rainfall events over Indian subcontinent for the period of 1950-2012 at Indian Institute of Tropical Meteorology, Pune.

SKILLS AND PROFESSIONAL PROFILE

- Demonstrated achiever in coursework on synoptic and mesoscale meteorology, climate sciences, mathematical and numerical modeling, statistical data analysis, oceanography, satellite and radar remote sensing and tropical meteorology.
- Developed a new algorithm to track and identify tropical mesoscale cold pools over oceans using horizontal wind gradient from satellite-based scatterometers.

- Co-Principal Investigator of National Science Foundation's Extreme Science and Engineering Discovery Experiment (XSEDE) STAMPEDE-2 supercomputing proposal titled as 'High-Resolution WRF simulations of Tropical Convection and associated Cold Pools in the Indian Ocean'. Co-Investigators: Prof. Deanna A. Hence (UIUC), Prof. Stephen W. Nesbitt (UIUC), Jeffrey D. Thayer (UIUC).
- Collaborating with University of Utah on understanding cold pools properties using a global cloud-resolving model (DYAMOND) using our newly developed cold pool identification algorithm.
- Working on validating NASA P-3 observed cold pools over Maritime continent during Clouds, Aerosol, and Monsoon Processes-Philippines Experiment (CAMP²Ex) with scatterometer-identified cold pools.
- Peer-reviewer for Journal of Geophysical Research-Atmospheres, International Journal of Climatology and Geophysical Research Letters.
- Well-versed with Python-based machine learning with deep learning algorithms (including persistence check).
Programming: Python, IPyParallel, Dask Parallel, Parallel netCDF, FORTRAN 77/90, C++
Visualization and Statistics: GrADS, Ferret, Climate Data Operators (CDO)
Supercomputing Clusters: DKRZ's Mistral, XSEDE's Stampede-2, UIUC Keeling cluster, IITM's Prithvi and Aditya.
- First-hand experience with:
Satellite Observations: ASCAT, RapidScat, QuikScat, OSCAT, CMORPH, TRMM, GPM-IMERG, CYGNSS, GOES, MODIS
Airborne Observations: NASA P-3 and Learjet cloud probes, wind measurements, APR-3, AMPR
Reanalysis: ERA-Interim, ERA-5, MERRA
Models: WRF, CM1, ICON, MPAS

FIELD CAMPAIGNS

- Lead Tropical meteorological forecaster for CAMP²Ex during August-October 2019.
- Designed the scorecard for the cold pool observations, science and validation with satellites during CAMP²Ex during August-October 2019.
- Operated mobile mesonets and Doppler On Wheels (DOW) X-band radar during RELAMPAGO (Remote sensing of Electrification, Lightning, and Mesoscale/microscale Processes with Adaptive Ground Observations) in Córdoba and Mendoza province of Argentina from November – December 2018.
- Operated Doppler on Wheels (DOW) X-band radar during the Great Plains Irrigation Experiment (GRAINEX) in Lincoln, Nebraska from June-July 2018.

HONORS/AWARDS

- First rank (Gold medal) awarded by the Savitribai Phule Pune University (Formerly University of Pune), India in M.Sc. Atmospheric Sciences in year 2015 for scoring a GPA of 5.6 on 6.
- Indian Council of Scientific and Industrial Research (CSIR) fellowship in Earth, Atmospheric, Oceanic and Planetary Sciences for 2014-2016 (highly selective fellowship by Indian govt.)
- Awarded 'Best Student Oral Presentation' at World Meteorological Organization (WMO)/World Weather Research Program (WWRP) 3rd International Monsoon Heavy Rainfall Workshop at New Delhi, India in 2015.

RECENT CONFERENCE PROCEEDINGS

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, Thayer, Jeffrey D., Hence, Deanna A., 2019: Identification and Characterization of Tropical Atmospheric Cold Pools using Space-borne Scatterometer, Precipitation and Modeling. 18th AMS Mesoscale Processes Conference, Savannah, GA. 29 July-01 August 2019.

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, Thayer, Jeffrey D., Hence, Deanna A., 2019: Identification and Characterization of Tropical Atmospheric Cold Pools using Space-borne Scatterometer, Precipitation and Modeling. NASA International Ocean Vector Winds Science Team Meeting, Portland, ME. 29-31 May 2019.

Nesbitt, Stephen W., **Garg, Piyush**, Lang, Timothy J., Chronis, Themis, 2019: Diurnal Cycle of ASCAT-Identified Cold Pools and associated Convective Systems in the Maritime Continent and South China Sea. NASA International Ocean Vector Winds Science Team Meeting, Portland, ME. 29-31 May 2019.

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, Thayer, Jeffrey D., Hence, Deanna A., 2017: Observed Structure and Characteristics of Cold Pools over Tropical Oceans using Vector Wind Retrievals and WRF simulations. AGU Fall meeting, New Orleans, LA, 11-15 December 2017.

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, Thayer, Jeffrey D., Hence, Deanna A., 2017: Observed Structure and Characteristics of Cold Pools over Tropical Oceans using Vector Wind Retrievals and WRF simulations. 3rd International conference on data science and environment, IMT Atlantique, Brest-Bretagne, France. 3-8 July 2017.

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, Thayer, Jeffrey D., Hence, Deanna A., 2017: Observed Structure and Characteristics of Cold Pools over Tropical Oceans using Vector Wind Retrievals and WRF simulations. NASA International Ocean Vector Winds Science Team Meeting, Scripps Institute of Oceanography, San Diego, CA. 2-4 May 2017.

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, Thayer, Jeffrey D., Hence, Deanna A., 2017: Observed Structure and Characteristics of Cold Pools over Tropical Oceans using Vector Wind Retrievals and WRF simulations. 97th AMS annual meeting, Seattle, WA. 23-26 January 2017.

Garg, Piyush, Nesbitt, Stephen W., Lang, Timothy J., Chronis, Themis, 2016: Understanding Characteristics of Heavy Precipitation Events Over Tropical Oceans using Satellite and Reanalyses products. NERC Advanced training course on Earth Observations for Weather and Climate Studies, University of Reading, UK. 5-9 September 2016.

PUBLICATIONS

Garg, P., Nesbitt, S.W., Lang, T.J., Krueger, S., Priftis, G., Chronis, T., Thayer, J.D., Hence, D.A., 2020, Characterizing Global Tropical Oceanic Cold Pools using Spaceborne Scatterometers, Global Cloud-Resolving Models and WRF-based Regional Model. *In Preparation*.

Garg, P., Nesbitt, S.W., Lang, T.J., Priftis, G., Chronis, T., van den Heever, S., Thornhill, L., 2019, Scatterometer-Validation of Cold Pools observed during CAMP²Ex 2019. *In Preparation*.

Garg, P., Nesbitt, S.W., Lang, T.J., Chronis, T., Priftis, G., 2019, Diurnal Cycle of Scatterometer-Identified Cold Pools and associated Convective Systems. *In Preparation*.

Garg, P., Nesbitt, S.W., Lang, T.J., Chronis, T., Priftis, G., Thayer, J.D., Hence, D.A., 2019, Identifying and Characterizing Tropical Oceanic Mesoscale Cold Pools using Spaceborne Scatterometer Winds. *J. Geophys. Res.-Atmos.*, *In Revision*.

Flynn, W. J., Nesbitt, S. W., Anders, A. M. and **Garg, P.** (2017), Mesoscale precipitation characteristics near the Western Ghats during the Indian Summer Monsoon as simulated by a high-resolution regional model. *Q.J.R. Meteorol. Soc.*, 143: 3070–3084. doi:10.1002/qj.3163

Garg, P., Deshpande, M.S., Bhawar, R.P., 2015, Understanding Large Scale Characteristics corresponding to Heavy Rainfall events over India. *Vayu Mandal* (41), *Bull. of India Met. Soc.* 62-68.