
Personal information

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Professional appointments

- Oct, 2023 - Sept, 2025 **Marie Skłodowska-Curie Postdoctoral Fellow**,
Host: Geophysical Institute, University of Bergen and Bjerknnes Center for Climate Research, Norway,
Project: Atmospheric blocking under global warming
Advisor: Camille Li
- Sep, 2020 - Aug, 2023 **Postdoctoral Research Associate**,
Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, National Oceanic Atmospheric Administration (NOAA), Physical Sciences Lab (PSL), Boulder,
Research foci: Tropical-extratropical interaction, Madden Julian Oscillation.
Advisors: George Kiladis, Stefan Tulich

Education

- Sep. 2015 - Aug. 2020 **PhD. in Geophysical Sciences**, *The University of Chicago, USA*,
Thesis: Dynamics of extratropical storm tracks on different timescales.
Advisors: Tiffany A. Shaw, Noboru Nakamura
- Jun. 2013 - Apr. 2015 **MSc. in Physics**, *Indian Institute of Technology (IIT), Kanpur, India*,
Thesis: Instabilities and pattern formation in Rayleigh Bénard Convection.
Advisor: Mahendra K. Verma
- Jun. 2010 - Apr. 2013 **BSc. in Physics (Honours)**, *Miranda House, University of Delhi, India*.

Publications

In preparation

- 2023 **Barpanda, P.**, S. Tulich, J.Dias, and G. Kiladis: A simple theory for Rossby-Kelvin coupling in the presence of horizontal wind shear, *in preparation*
- 2023 **Barpanda, P.**, and N. Nakamura: Local wave activity budget of persistent anomalies in the jet stream and their relevance for atmospheric blocking in the Northern Hemisphere winter, *to be submitted in Journal of Climate*. Pre-print available in Chapter 4 of P. Barpanda's PhD dissertation (<http://knowledge.uchicago.edu/record/2556>)

Peer-reviewed

- 2023 **Barpanda, P.**, S. Tulich, J.Dias, and G. Kiladis: The role of subtropical Rossby waves in Amplifying the divergent circulation of the Madden Julian Oscillation, *J. Atmos. Sci.*, 77, 753–779.
- 2020 **Barpanda, P.**, and T. A. Shaw: Surface fluxes modulate the seasonality of zonal-mean storm tracks. *J. Atmos. Sci.*, 77, 753–779.
This study used the idealized aquaplanet experiments using Isca: a version of GFDL atmospheric model with slab ocean and realistic radiation scheme.

- 2019 Paradise, A., C. B. Rocha, **P. Barpanda**, and N. Nakamura: Blocking statistics in a varying climate: Lessons from a “traffic jam” model with pseudostochastic forcing. *J. Atmos. Sci.*, *76*, 3013–3027.
- The main results of this paper emerged from a 7-day hackathon during Rossbypalooza, a student-led summer school at the University of Chicago in June 2018, based on the theme of “Understanding climate through simple models”.*
- 2018 Shaw, T.A., **P. Barpanda**, and A. Donohoe, 2018: A Moist Static Energy Framework for Zonal-Mean Storm-Track Intensity. *J. Atmos. Sci.*, *75*, 1979–1994.
- 2017 **Barpanda, P.**, and T. A. Shaw: Using the Moist Static Energy Budget to Understand Storm-Track Shifts across a Range of Time Scales. *J. Atmos. Sci.*, *74* (8), 2427–2446.

Honours and awards

- 2023 **Marie Skłodowska-Curie Actions Fellowship**, *Two-year research grant from Horizon Europe, 2023*, Host - BCCR, Norway
- 2021 **Early career presentation award**, *International workshop for mid-latitude air-sea interaction, CLIVAR.*
- 2020 **Alternate fellow (waitlist)**, *NOAA C&GC postdoc fellowship, USA.*
- 2014 **Summer Research Fellowship**, *Indian Academy of Sciences.*
- 2013 **Science Quest Award**, *Centre for Science Education and Communication (CSEC), University of Delhi, India.*
- 2011 **Meera Singla Memorial Scholarship**, *for excellence in Mathematical Physics, University of Delhi, India.*
- 2011 - 2015 **KVPY Fellowship**, *Young Scientist Incentive Plan, Department of Science and Technology, Government of India.*

Conference presentations and invited seminars

*** indicates invited seminar, * indicates abstract selected as a talk.*

- 2023 ******The role of subtropical Rossby waves in amplifying divergent circulation of the Madden Julian Oscillation. *University of Colorado, Boulder, Atmospheric and Oceanic Sciences Colloquium (Invited seminar)*
- 2023 *****A simple theory for the coupling of MJO's Kelvin and Rossby Mode circulation components in the presence of a subtropical Jet. *Oral presentation in 103rd Annual meeting, American Meteorological Society*
- 2022 *****The role of subtropical Rossby waves in amplifying divergent circulation of the Madden Julian Oscillation. *Oral presentation in American Geophysical Union, Fall meeting, 2022; Poster in SPARC 7th General Assembly.*
- 2022 *****What causes atmospheric blocks? - A new perspective using the finite amplitude local wave activity theory. *Midlatitude Storm-track workshop, CAES-CNRS site on Oléron Island, France*
- 2022 *****Role of subtropical momentum fluxes in maintaining the Kelvin Mode Circulation component of the Madden-Julian Oscillation. Presented in – *102nd American Meteorological Society (AMS) Annual meeting, 35th AMS Conference on Hurricanes and Tropical Meteorology, 23rd Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD) and PSL Flash Seminar in National Oceanic Atmospheric Administration.*
- 2021 ******What causes atmospheric blocks? - A new perspective using the finite amplitude local wave activity theory. *NYU Courant, Center for Atmosphere Ocean Science, USA (Invited seminar).*
- 2020 What controls the hemispheric asymmetry in the seasonality of extratropical storm track Intensity? - New Insights from the moist static energy budget. *International workshop for mid-latitude air-sea interaction, CLIVAR - Received early-career presentation award.*

- 2020 **What controls the hemispheric asymmetry in the seasonality of extratropical storm track Intensity? - New Insights from the moist static energy budget. *Geophysical Fluid Dynamics Lab, Princeton University, USA (Invited seminar)*.
- 2020 *Surface fluxes modulate the seasonal intensity of zonally symmetric stormtrack. *22nd Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD)*.
- 2019 Blocking statistics in a varying climate: lessons from a 'traffic jam' model with pseudostochastic forcing. *22nd AOFD (Poster)*.
- 2018 Seasonality of zonally symmetric storm tracks. *American Geophysical 2018 Union (AGU) (Poster)*.
- 2018 Surface fluxes control the seasonal intensity of zonally symmetric stormtrack. *Stormtrack workshop, Utö, Stockholm, Sweden*.
- 2017 *Using the moist static energy budget to understand stormtrack shifts across a range of time scales. *AGU 2017 (Poster), 21st conference on AOFD (Oral presentation)*.
- 2014 Physics behind Mantle Convection. *SEG-SPG Convention, National Geophysical Research Institute, India*.
- 2014 Rayleigh-Nusselt number scaling – Implications for heat transport by mantle plume conduits. *Summer Research Symposium, Tata Institute of Fundamental Research and Centre for Interdisciplinary Sciences, Hyderabad, India*.

Professional services

- 2023-present Associate Editor, Journal of Atmospheric Sciences, American Meteorological Society
- 2018-present Reviewer in Journal of Geophysical Research, Journal of Atmospheric Sciences, Journal of Climate, Geophysical Research Letters, Climate Dynamics (Springer) and Quarterly Journal of the Royal Meteorological Society.
- 2022 Chaired a session on Tropical waves, *35th Conference on Hurricanes and Tropical Meteorology*.
- 2021 Coordinator of journal club for the Tropical dynamics group, CIRES/NOAA, PSL.
- 2019 Chaired a session on Waves, mean flow and balances, *22nd AOFD*.
- 2018 Co-convenor of a session on Climate Variability and Seasonality Across Time and Spatial Scales, *European Geophysical Union (EGU) meeting*.
- 2018, 2016 Co-organizer of Rossbypalooza – a student led summer school at the University of Chicago, USA. *As an organizer, I was involved in planning the scientific structure of the 2-week program, budget allocation and inviting guest faculty*.
- 2017-2020 Coordinator of climate journal club in the department of Geophysical Sciences, The University of Chicago.

Relevant course work in graduate school

- 2015 Climate Foundations.
- 2016 Large-Scale Ocean Dynamics.
- 2016 Turbulence and Transport Processes in the Atmosphere and Oceans.
- 2016 Introduction to Numerical Techniques for Geophysical Sciences.
- 2017 Advanced Topics in Climate Dynamics.
- 2018 Radiation.
- 2015-2018 Geophysical Fluid Dynamics I, II and III.

Teaching and supervision

- June. 2022 - Aug. 2022 Co-mentored a summer research intern under the RECCS program (The Research Experience for Community College Students) at CIRES. *The student presented their research in the AGU Fall meeting, 2022 on 'Madden-Julian Oscillation Impact on Hawaiian Waves'*.
- Spring 2018/19 Natural Hazards, *Graduate teaching assistant for undergraduates*.

Fall 2016/18 Climate foundations, *Graduate teaching assistant for graduate students.*
Winter 2015/16/17 Global warming, *Graduate teaching assistant for undergraduates.*

Workshops and summer schools

*** indicates merit-based selection*

- 2022 Midlatitude stormtrack workshop, *CAES-CNRS site on Oléron Island, France (Received partial travel grant of 500€).*
- 2018, 2016 Rossbyalooza summer school, *The University of Chicago, Chicago, USA.*
- 2018 Midlatitude stormtrack workshop, *Utö, Stockholm, Sweden**.*
- 2017 Les Houches School of Physics on Fundamental aspects of turbulent flows in climate dynamics, *Les Houches, France**.*
- 2017 Advanced Climate Dynamic Course on The Dynamics of the Seasonal Cycle, *Rondavassbu, Norway**.*
- 2017 NCAR CESM (National Center for Atmospheric Research, Community Earth System Model) tutorial, *Boulder, Colorado**.*
- 2015 GdR Dynamo, *International Centre for Theoretical Sciences – TIFR, Bangalore, India.*

Public outreach

- 2019 Volunteered in Earth Science Day – a departmental outreach activity for local high school students in collaboration with the Schuler Scholar program at the University of Chicago
 - Showed experiments in the Geophysical Fluid Dynamics Lab.
 - Held an interactive session on climate dynamics research.
- 2018 Outreach talks in the University of Chicago: Climate and Energy lunch and learn, Economics Department, Women and Gender Minorities meeting in Physics (WAGMIP), Physics Department, Journal club, Computational and Applied Mathematics (CAM) Department.
- 2014-2015 Physics and Math teacher at Siksha Sopan - a Non-Governmental Organization, run by students and faculty of Indian Institute of Technology, Kanpur for underprivileged high school students.

Skills

- Coding Most to least proficient: Python, Fortran, MATLAB, C++.
- Climate models Idealized numerical experiments with slab ocean aquaplanet models - Isca and GFDL AM2.

References

- 1 George N. Kiladis, george.n.kiladis@noaa.gov
- 2 Tiffany A. Shaw, tas1@uchicago.edu
- 3 Juliana Dias, juliana.dias@noaa.gov
- 4 Stefan N. Tulich, stefan.tulich@noaa.gov
- 5 Noboru Nakamura, nnn@uchicago.edu