# PENGCHENG ZHANG 张鹏程

Postdoctoral Research Fellow
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## Education

**Ph.D.**, Oceanography, Scripps Institution of Oceanography, UC San Diego. 2020/09 – 2025/07

**Thesis**: Atmospheric Responses to Tropical Ocean Variability: From Planetary Circulations to Asian Monsoon Predictability

**Committee**: Shang-Ping Xie (co-chair), Nicholas J. Lutsko (co-chair), Ian Eisenman, Katharine L. Ricke, and Yuko M. Okumura.

**B.S.**, Atmospheric Sciences, School of Physics, Peking University. 2016/09 – 2020/07

**Thesis**: Dynamics of the Coastal Low-Level Jets

**Advisors**: Yongyun Hu and Eli Tziperman.

## Academic Appointments

**Postdoctoral Research Fellow**, The University of Chicago. 2025/08 – present

**Hosts**: Tiffany Shaw and Da Yang.

## Publications

6. **Zhang, P.**, Lutsko, N.J., Hill, S.A., and Xie, S.-P. (2025). Hadley Cell Dynamics in an Axisymmetric Single-Layer Model: Effects of Parameterized Eddies and Equatorial Heating. *Journal of the Atmospheric Sciences,* In press.

5. Peng, Q., Xie, S.-P., Miyamoto, A., Deser, C., **Zhang, P.**, and Luongo, M.T. (2025). Strong 2023-24 El Niño Generated by Ocean Dynamics. *Nature Geoscience*, 18, 471-478. doi: 10.1038/s41561-025-01700-9

4. Xie, S.-P.[†], Miyamoto, A.[†], **Zhang, P.**[†], Kosaka, Y., Liang, Y., and Lutsko, N. J. (2025). What Made 2023 and 2024 the Hottest Years in a Row? *npj Climate and Atmospheric Science*, 8, 117. doi: 10.1038/s41612-025-01006-y

3. **Zhang, P.**, Xie, S.-P., Kosaka, Y., Lutsko, N.J., Okumura, Y.M., and Miyamoto A. (2024). Why East Asian Monsoon Anomalies Are More Robust in Post El Niño than in Post La Niña Summers. *Nature Communications*, 15, 7401. doi: 10.1038/s41467-024-51885-7

2. **Zhang, P.**, Xie, S.-P., Kosaka, Y., and Lutsko, N.J. (2024). Non-ENSO Precursors for Northwestern Pacific Summer Monsoon Variability with Implications for Predictability. *Journal of Climate*, 37(1), 199-212. doi: 10.1175/JCLI-D-23-0169.1

1. **Zhang, P.** and Lutsko, N.J. (2022). Seasonal Superrotation in Earth's Troposphere. *Journal of the*

[†] Authors contributing equally.

*Atmospheric Sciences*, 79(12), 3297-3314. doi: 10.1175/JAS-D-22-0066.1

## Selected Presentations

### Conference talks:

- American Geophysical Union (AGU) Fall Meeting, Washington, D.C. (December 2024): Hadley Cell Responses to Parameterized Eddies in an Axisymmetric Single-Layer Model.
- 24th Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD), Burlington, VT (June 2024): Hadley Cell Responses to Parameterized Eddies in an Axisymmetric Single-Layer Model.
- CLIVAR/TBI Science Meeting, Guangzhou, China and Online (November 2023): Role of Tropical Basin Interaction on East Asian Summer Monsoon: ENSO and Non-ENSO variability.
- American Geophysical Union (AGU) Fall Meeting, Chicago, IL (December 2022): Non-ENSO precursors for a coherent mode of summer monsoon variability with implications for predictability.
- California Geophysical Fluid Dynamics (CalGFD) Meeting, Pasadena, CA (August 2022): Seasonal Superrotation in Earth's Troposphere.
- California Geophysical Fluid Dynamics (CalGFD) Meeting, online (August 2020): New Insights into the Dynamics of Coastal Low-Level Jets: A Vorticity Perspective.

### Conference posters:

- American Geophysical Union (AGU) Fall Meeting, San Francisco, CA (December 2023): Why are East Asian monsoon anomalies more robust in post El Nino than post La Nina summers?
- American Geophysical Union (AGU) Fall Meeting, Chicago, IL (December 2022): Seasonal Super-rotation in Earth's Troposphere.
- 23rd Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD), Breckenridge, CO (June 2022): Seasonal Superrotation in Earth's Troposphere.
- American Geophysical Union (AGU) Fall Meeting, online (December 2020): Dynamics of Coastal Low-Level Jets.

### Schools and workshops:

- Workshop on Confronting Earth System Model Trends with Observations: The Good, the Bad, and the Ugly. March 2024, Boulder, CO.
- 4th Summer School on Theory, Mechanisms and Hierarchical Modeling of Climate Dynamics: Atlantic Variability and Tropical Basin Interactions at Interannual to Multi-Decadal Time Scales. July – August 2023, Trieste, Italy.

## Teaching

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| Winter 2023 | **Tutor** SIO 217B: Atmospheric and Climate Science II |
| Summer 2022 | **Instructor** Math 7, Math 9 and LaTeX for Math & Computing Workshop |
| Spring 2022 | **Teaching Assistant** SIO 173: Dynamics of the Atmosphere and Climate |

## Department Seminars

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| Autumn 2023 | Climate Journal Club at Scripps Institution of Oceanography |
| Winter 2023 | Climate Journal Club at Scripps Institution of Oceanography |
| Winter 2023 | Physical Oceanography Seminar at Scripps Institution of Oceanography |
| Autumn 2022 | Climate Journal Club at Scripps Institution of Oceanography |
| Autumn 2022 | Scripps Student Symposium at Scripps Institution of Oceanography |

Spring 2022 Climate Journal Club at Scripps Institution of Oceanography

## Selected Awards and Honors

**Regents Fellowship**, Scripps Institution of Oceanography, 2020.
**PKU Scholar in Physics**, Peking University, 2020.
**Merit Student**, Peking University, 2019.
**Founder Scholarship**, Peking University, 2019.
First Prize, **34th Physics Competition for Undergraduates**, China, 2017.
First Prize (Top 100 in China), **32nd Chinese Physics Olympiad, Final**, China, 2015.

## Professional Activities and Service

### Department service:

SIO Graduate Peer Mentor Program: Mentor (2022 – 2023).
SIO Climate Journal Club: Co-organizer (2022 – 2023).
SIO Open House: Student host (2021, 2023).

### Field:

Peer review: *Nature Communications, Earth's Future, npj Climate and Atmospheric Science, Journal of Climate, Geophysical Research Letters, Journal of Geophysical Research: Atmospheres, Atmospheric Science Letters.*
California Geophysical Fluid Dynamics (CalGFD) Meeting Organizing Committee (2023).
24th Conference on Atmospheric and Oceanic Fluid Dynamics, Student Assistant (2024).

## Additional Information

### Languages:

Mandarin (native), English (fluent).

### Programming/Computer Skills:

Python, Julia, NCL, C/C++, FORTRAN; GFDL CM2.1, CESM.