Catherine (Casey) Ivanovich

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EDUCATION

Columbia University, New York, NY
Ph.D. in Earth and Environmental Sciences *July 2024*
Advisors: Dr. Radley Horton and Dr. Adam Sobel
Dissertation Title: *Characterizing the Local, Regional, and Global Drivers of Extreme Humid Heat*
M.Phil. *2022*
M.A. *2021*

Princeton University, Princeton, NJ
B.A. in Geosciences, *summa cum laude* *June 2017*

RESEARCH APPOINTMENTS

NASA Postdoctoral Program Fellow, NASA Goddard Institute for Space Studies, New York, NY *August 2024-Present*
Advisor: Dr. Benjamin Cook and Dr. Sonali McDermid

Graduate Research Assistant, Columbia University, New York, NY *August 2019-July 2024*
Advisors: Dr. Radley Horton and Dr. Adam Sobel

High Meadows Climate Science Fellow, Environmental Defense Fund, Washington, DC *August 2017-August 2019*
Supervisor: Dr. Ilissa Ocko

Research Assistant, Princeton University, Princeton, NJ *June 2017-August 2017*
Advisor: Dr. Gabriel Vecchi

Undergraduate Research Assistant, Princeton University, Princeton, NJ *February 2016-June 2017*
Advisor: Dr. Satish Myneni. Second Reader: Dr. Bryan Just

Undergraduate Research Assistant, Princeton University, Princeton, NJ *September 2015-January 2016*
Advisor: Dr. Tullis Onstott. Second Reader: Dr. Michael Oppenheimer

PUBLICATIONS

*****_denotes student mentee_

In Preparation

18. Bose, D., Tuholske, C., Raymond, C., Benmarhnia, T., **Ivanovich, C.**, Hoteit, I., Cowherd, M., and Nazemi, N. (in preparation). Humid-heat extremes and stickiness in future climates of the Arabian Peninsula. Intended submission to *Environmental Research Letters.*

17. Khapikova, P., **Ivanovich, C.,** and Baldwin, J. (in preparation). Disentangling Temperature and Humidity Contributions to CMIP6 Humid Heat Projections Using Stickiness. Intended submission to *Earth's Future.*

16. *****Velazquez, A., **Ivanovich, C.,** and Garcia Franco, J. (in preparation). The Influence of North American Monsoon Variability on Asynchronous Humid Heat Extremes across Mexico. Intended submission to *Journal of Geophysical Research: Atmospheres.*

In Review

15. Deoras, A., Wilcox, L. J., Samset, B. H., Stjern, C. W., Turner, A. G., **Ivanovich, C. C.,** Birch, C. E., Allen, R. J., and Takemura, T. (in preparation). Greenhouse gases overtake aerosols in driving moist heat variability in India during the summer monsoon. In review at *Nature Climate Change*.

14. Tuholske, C., **Ivanovich, C**., Horton, R., Shukla, S., Brooks, N., Andam, K., Williams, E., and Funk, C. (in preparation). Evidence of Rapidly Increasing Dangerous Humid-Heat Risk in Africa's Great Green Wall. In review at *Science.*

13. **Ivanovich, C**., Cook, B., and McDermid, S. (in review). Global extreme heat seasons are changing asymmetrically. In review at *AGU Advances.*

Published

12. **Ivanovich, C. C.,** Cook, B., and McDermid, S., 2026. Dry versus Humid Heat Seasonality and Drivers in the North American Monsoon Region. *Journal of Geophysical Research: Atmospheres*, 131(11), e2025JD045713.

11. **Ivanovich, C. C.,** Sobel, A. H., Horton, R. M., Nunes, A. M. B., Da Rocha, R. P., and Camargo, S. J., 2025. Physical Drivers of the November 2023 Heatwave in Rio de Janeiro. *Weather and Climate Dynamics,* 6(4), 1857-1874.

10. Matthews, T., Raymond, C., Foster, J., Baldwin, J., **Ivanovich, C.,** Kong, Q., Kinney, P., and Horton, R., 2025. Mortality impacts of the most extreme heat events. *Nature Reviews Earth & Environment*, 6, 193-210.
    - News coverage including PBS Terra, The Independent, ScienceNews, and Cosmos

9. Wilson, A., Bressler, D., **Ivanovich, C.,** Tuholske, C., Raymond, C., Horton, R., Sobel, A., Kinney, P., Cavazos, T., and Shrader, J., 2024. Heat disproportionately kills young people: Evidence from population-level wet-bulb temperature exposure in Mexico. *Science Advances,* 10(49).
    - News coverage including CBS News, NPR, and AP News

8. *****Johnson, S., **Ivanovich, C.,** Horton, R. M., Ting, M., Kornhuber, K., and Lesk, C., 2024. Temporal connections between extreme precipitation and humid heat. *Environmental Research Letters*, *19*(11), 114076.

7. **Ivanovich, C.,** Sobel, A. H., Horton, R. M., and Raymond, C., 2024. Stickiness: A New Variable to Characterize the Temperature and Humidity Contributions toward Humid Heat. *Journal of the Atmospheric Sciences*, 1, 819-837.
    - News coverage including The New York Times, The Wall Street Journal, Eos Magazine, and The Climate Divide

6. **Ivanovich, C.,** Horton, R. M., Sobel, A. H., and Singh, D., 2024. Extreme Humid Heat Variability during the South Asian Summer Monsoon. *Geophysical Research Letters*, 51, e2023GL107382.

5. **Ivanovich, C**., Sun, T., Gordon, D., and I. Ocko, 2023. Future warming from Global Food Consumption. *Nature Climate Change*, 13, 297-302.
    - News coverage including AP News, The Guardian, Vox's The Verge, and Wired

4. **Ivanovich, C.,** Anderson, W., Horton, R., Raymond, C., and Sobel, A., 2022. Influence of the Madden-Julian Oscillation on Extreme Wet Bulb Temperature, *Journal of Climate*, 35(13), 4309-4329.

3. *Speizer, S., Raymond, C., **Ivanovich, C.,** and Horton, R. M., 2022. Concentrated and intensifying humid heat extremes in the IPCC AR6 regions, *Geophysical Research Letters*, 49(5), pp. 1-10.

2. Raymond, C., Matthews, T., Horton, R. M., Fischer, E. M., Fueglistaler, S., **Ivanovich, C.,** Suarez-Gutierrez, L., and Zhang, Y., 2021. On the Controlling Factors for Globally Extreme Humid Heat, *Geophysical Research Letters,* 48(23), pp. 1-11.

1. **Ivanovich, C.,** Ocko, I., Piris-Cabezas, P., and Petsonk, A., 2019. "Climate benefits of proposed carbon dioxide mitigation strategies for international shipping and aviation." *Atmospheric Chemistry and Physics,* 19(23), 14949-14965.

Reports

Greenpeace, 2024. Turning Down the Heat: Pulling the Climate Emergency Break on Big Meat and Dairy. Greenpeace Nordic, Stockholm, Sweden.

HONORS & AWARDS

2nd Place GISS Best Publication Paper of 2025, Early Career Researcher. NASA Goddard Institute for Space Studies, March 2026.

Peter B. Wagner Memorial Award for Women in Atmospheric Sciences 2024. Desert Research Institute, July 2024.

NASA Postdoctoral Program Fellowship. National Aeronautics and Space Administration, 2024.

Columbia Global Center Rio: Climate Hub Rio Award. Columbia University, January 2024.

AGU Outstanding Student Presentation Award (OSPA), for presentation titled "Future Warming from Global Food Consumption." March 2024.

ThinkSwiss Travel Grant, for use at the Swiss Climate Summer School, Office of Science, Technology and Higher Education (OSTHE) at the Swiss Embassy, Washington, D.C., August 2022.

National Science Foundation Graduate Research Fellowship Program Honorable Mention. National Science Foundation, 2021.

1st Place Oral Presentation/Student Paper Award. AMS Ninth Symposium on the Madden-Julian Oscillation and Sub-Seasonal Monsoon Variability, American Meteorological Society, 2021**.**

Dean's Fellowship. Columbia University, 2019.

American Meteorological Society Graduate Fellowship. American Meteorological Society, 2019 *(Declined).*

High Meadows Fellowship. High Meadows Foundation, 2017.

Edward Sampson Prize in Environmental Geosciences, for Senior Thesis, Princeton University, 2017.

Summa Cum Laude, highest honors for both overall coursework and research within concentration, Princeton University Department of Geosciences, 2019.

Election to Membership in the Society of Sigma Xi. Princeton University, 2017.

Elmeryl Davies Memorial Scholarship. New Jersey Licensed Site Remediation Professionals Association (LSRPA), 2016-2017.

Henrietta S. Treen Scholarship. Center for Scholarship Administration, 2016-2017.

TEACHING EXPERIENCE

Columbia University, New York, NY *Spring 2022-Spring 2024*
Guest Lecturer. Sustainability in the Face of Natural Disaster.
Guest Lecturer. Climate Thermodynamics and Energy Transfer.
Guest Lecturer. Climate Impacts in New York City.
Teaching Assistant. Science for Sustainable Development.
Teaching Assistant. Earth's Environmental Systems: The Climate System.

Science Honors Program, **Columbia University,** New York, NY *Fall 2021-Spring 2022*
Co-Lead Teacher. Understanding Earth's Climate System and Climate Change.

Private tutor, grades 6-12 for mathematics and science courses. *Fall 2010-Spring 2021*

SCIENCE COMMUNICATION

Video

- **Weather & Climate Livestream** (June 2026). Presentation titled, "How are extreme heat seasons changing around the world?"
- **PBS Terra – Weathered** (June 2025). Video titled, "When Will Extreme Heat Become Unlivable?"
- **Weather & Climate Livestream** (May 2025). Presentation titled, "Separating the Roles of Temperature and Humidity in Driving Heat Stress Conditions."
- **Ridgewood Public Library Sustainability Series** (November 2020). Lecture titled, "Climate Change 101: Understanding Earth's Past, Present, and Future.

Radio and Podcasts

- **Further Together: The ORAU Podcast** (April 2025). Episode titled, "Extreme humidity events and how to better prepare for them: A NASA Postdoctoral Fellowship conversation."
- **Now, Let's Talk! The Podcast** (August 2024). Episode titled, "Summer in the City: Extreme Heat."
- **The Climate Divide** (August 2024). Episode titled, "New ways to warn about extreme heat, the 'silent killer.'"
- **Green Street Radio** (November 2021). Episode titled, "Smoke, Heat and Humidity with Mary Prunicki and Casey Ivanovich."

Speaking Engagements

- **Storydeep Presents: "The Utopian"** (June 2026)
  - Invited panelist for promotional event for documentary film titled "The Utopian," centered on the work of artist Joaquín Fargas protesting resource extraction and environmental injustice. Shared my perspective on collaborations between art and science in generating environmental action.
- **Alfalfa: The Future of Climate Storytelling** (May 2026)
  - Invited panelist for fundraising event supporting the upcoming eco-noir thriller film ALFALFA. Provided a scientific perspective on the power of storytelling to generate climate action.
- **Hudson River Museum "Duty to Warn: Facing Our Climate Future"** (October 2025)
  - Presentation and panel Q&A on communicating the effects of climate change on humans and ecosystems in collaboration with multidisciplinary artist Erika Harrsch.
- **Maine Summer Camp Winter Workshop** (January 2025)
  - Invited speaker and agenda organizer for workshop on the effects of climate change on summer camps in Maine.
- **Morry Stein Management Conference** (November 2023)
  - Invited speaker to present on the effects of climate change on extreme weather and implications for the future of children's summer camp.
- **Soccer in a Warming World Workshop** (November 2022)
  - Presented on the causes of extreme humid heat with implications for professional and amateur soccer leagues around the globe. Participated in overall half-day workshop presented by the Columbia University Climate School and World Cup winning member of the US Women's National Team, Samantha Mewis.
- **New York Federal Reserve Bank Extreme Heat and Air Quality Virtual Roundtable** (August 2021)
  - Provided expertise during stakeholder roundtable session on the impact of extreme heat on low- and moderate-income communities and communities of color.

Blog Posts

- **Climate411** (October 2017-May 2019)
  - **Ivanovich, C.** "What role do emissions from international shipping and aviation play in the global climate, and what do those sectors need to do to help keep warming below 1.5 degrees Celsius?" May 6, 2019. Link.
  - **Ivanovich, C.** and I. Ocko. "Six takeaways from the new climate report." October 8, 2018. Link.
  - **Ivanovich, C.** "Cherry blossoms: Predicting peak bloom in a warming world with weirder weather." April 9, 2018. Link.
  - **Ivanovich, C.** "The Winter Olympics on hostile terrain – How climate change is harming winter sports." March 6, 2018. Link.

- **Ivanovich, C.** "A look back at 2017: The year in weather disasters – and the connection to climate change." January 3, 2018. Link.
- **Ivanovich, C.** and I. Ocko. "Everything you need to know about climate tipping points." November 1, 2017. Link.
- **Ivanovich, C.** "A real Halloween horror story: The five scariest aspects of climate change." October 30, 2017. Link.

RESEARCH PRESENTATIONS

Invited Presentations

10. **European Geophysical Union Annual Meeting**. Session titled, "Extreme heat: characterization, drivers, prediction and impacts in a warming climate." Presentation titled, "Global extreme heat seasons are lengthening asymmetrically." May 2026.

9. **University of Leeds Humid Heat Extremes in the Global (sub)Tropics (H2X) Project Meeting.** Presentation titled, "Evolving Seasonal Drivers of Extreme Dry and Humid Heat." April 2026.

8. **American Geophysical Union Fall Meeting.** Session titled, "Weather and Climate Extremes over South Asian Monsoon Regions." Presentation titled, "Subseasonal Variability of Humid Heat During the South Asian Summer Monsoon." December 2025.

7. **American Geophysical Union Fall Meeting.** Session titled, "Compound, Consecutive, and Cascading Events: Challenges for Risk Assessment and Management." Presentation titled, "Dry versus Humid Heat Seasonality and Drivers in the North American Monsoon Region." December 2025.

6. **New York University Environmental Studies Departmental Seminar Series.** Presentation titled, "Exploring the Physical and Social Drivers of Climate Variability and Change: A Two-Part Investigation of Changes in Earth's Surface Temperature." August 2025.

5. **Desert Research Institute Peter B. Wagner Memorial Award Ceremony.** Presentation titled, "Stickiness: A New Variable to Characterize the Temperature and Humidity Contributions toward Humid Heat." September 2024.

4. **Princeton University Geosciences Departmental Seminar Series**. Presentation titled, "Subseasonal Variability of Humid Heat Extremes during the South Asian Summer Monsoon." November 2023.

3. **Megalopolitan Coastal Transformation Hub (MACH) Seminar Series**. Presentation titled, "Extreme Humid Heat Variability during the South Asian Summer Monsoon." February 2023.

2. **NASA JPL Center for Climate Sciences (CCS) Friday Seminar Series.** Presentation titled, **"**Extreme Humid Heat Variability during the South Asian Summer Monsoon." January 2023.

1. **NASA GISS Climate Impacts Group Seminar Series.** Presentation titled, "Future Warming from Global Food Consumption." May 2022.

Conference Presentations
***denotes student mentee*

Wilson, A., Bressler, D., **Ivanovich, C.,** Tuholske, C., Raymond, C., Horton, R., Sobel, A., Kinney, P., Cavazos, T., and Shrader, J., January 2025: "Heat disproportionately kills young people: Evidence from population-level wet-bulb temperature exposure in Mexico." *National Bureau of Economic Research: The Determinants of Mortality* (oral).

Ivanovich, C., Sobel. A., Horton., R., and Raymond, C., December 2024: "Stickiness: A New Variable to Characterize the Temperature and Humidity Contributions toward Extreme Humid Heat." *American Geophysical Union Fall Meeting* (oral).

Nunes, A., Rocha, R., Gomes, G., Miranda, B., de Azeredo, I., **Ivanovich, C.,** Sobel, A. H., and Camargo, S. J., December 2024: "Extreme Weather Events in Brazilian Megacities." *American Geophysical Union Fall Meeting* (poster).

Ivanovich, C., Horton, R., Sobel, A., Nunes, A., Rocha, R., and Camargo, S., July 2024: "Physical Drivers of the November 2023 Heatwave in Rio de Janeiro." *Columbia University Extreme Heat Workshop* (oral).

Ivanovich, C., Sobel. A., Horton., R., and Raymond, C., January 2024: "Stickiness: A New Variable to Characterize the Temperature and Humidity Contributions toward Extreme Humid Heat." *American Meteorological Society Annual Meeting* (oral).

Ivanovich, C., Sun, T., Gordon, D., and Ocko, I., December 2023: "Future Warming from Global Food Consumption." *American Geophysical Union Fall Meeting* (oral).

*****Johnson, S., **Ivanovich, C.,** Horton, R. M., Ting, M., Kornhuber, K., and Lesk, C., December 2023: "On the Relationship between Humid Heat and Extreme Precipitation." *American Geophysical Union Fall Meeting* (poster).

Ivanovich, C., Sobel. A., Horton., R., and Raymond, C., April 2023: "Stickiness: A New Variable to Characterize the Temperature and Humidity Contributions toward Extreme Humid Heat." *European Geophysical Union Annual Meeting* (virtual, oral).

Ivanovich, C., Singh, D., Horton, R., and Sobel, H., January 2023: "Extreme Humid Heat Variability during the South Asian Summer Monsoon." *American Meteorological Society Annual Meeting* (virtual, oral).

Ivanovich, C., Singh, D., Horton, R., and Sobel, H., December 2022: "Extreme Humid Heat Variability during the South Asian Summer Monsoon." *American Geophysical Union Fall Meeting* (oral).

Tuholske, C., **Ivanovich, C.,** Horton, R., Shukla, S., Brooks, N., Andam, K., Williams, E., and Funk, C., December 2022: "Evidence of Rapidly Increasing Dangerous Humid-Heat Risk in Africa's Great Green Wall." *American Geophysical Union Fall Meeting* (oral).

Ivanovich, C., Singh, D., Horton, R., and Sobel, H., September 2022: "Extreme Humid Heat Variability during the South Asian Summer Monsoon." *DAMOCLES Compound Events Final Conference* (oral).

Ivanovich, C., Anderson, W., Horton, R., Raymond, C., and Sobel, H., January 2021: "Influence of the Madden-Julian Oscillation on Extreme Wet Bulb Temperature." *American Meteorological Society Annual Meeting* (virtual, oral).

Ivanovich, C., Horton, R., and Sobel, H., December 2021: "Extreme Humid Heat during South Asian Summer Monsoon Breaks." *American Geophysical Union Fall Meeting* (oral).

Ivanovich, C., Anderson, W., Horton, R., Raymond, C., and Sobel, H., December 2020: "Influence of the Madden-Julian Oscillation on Extreme Wet Bulb Temperature." *American Geophysical Union Fall Meeting* (virtual, poster).

Ivanovich, C., Ocko, I., and Gordon, D., January 2020: "Surpassing 2 °C from Diet Alone: Insights into Future Warming via an Improved Greenhouse Gas Emissions Inventory." *American Meteorological Society Annual Meeting*, Boston, MA (poster).

Raymond, C., Fischer, E. M., Fueglistaler, S., Horton, R. M., **Ivanovich, C.,** Matthews, T., Suarez Gutierrez, L., and Zhang, Y., December 2020: "Controlling Factors of Global Heat-Humidity Extremes." *American Geophysical Union Fall Meeting*, Washington, D.C. (oral).

Ivanovich, C. and I. Ocko, December 2018: "Global Food Consumption: Insights into Future Warming via an Improved Greenhouse Gas Emissions Inventory." *American Geophysical Union Fall Meeting*, Washington, D.C. (poster).

Ivanovich, C., May 2017: "Uncovering the Sources of Elevated Arsenic Levels in Classic Maya Human Remains." *Princeton Research Day*, Princeton, NJ (poster).

Ivanovich, C., May 2017: "Uncovering the Sources of Elevated Arsenic Levels in Classic Maya Human Remains." *Princeton Environmental Institute Discovery Day*, Princeton, NJ (poster).

Ivanovich, C., May 2017: "Uncovering the Sources of Elevated Arsenic Levels in Classic Maya Human Remains." *American Chemical Society National Meeting*, San Francisco, CA (poster).

MENTORSHIP & LEADERSHIP

Research Project Supervisor *June 2021-Present*

- Andrea Velazquez (Universidad Nacional Autónoma de México)
  - Senior Thesis research, co-advised with Dr. Jorge Garcia Franco (2024-present)
- Sophie Johnson (Columbia University)
  - Climate & Society Research Assistant, co-advised with Drs. Radley Horton, Mingfang Ting, and Kai Kornhuber (2022-2024)
  - Now Climate Change and Sustainability Manager at ICF International
- Simone Speizer (NOAA Southern Climate Impacts Planning Program (SCIPP))
  - Research assistantship, co-advised with Drs. Radley Horton and Colin Raymond (2021)
  - Now PhD student at University of California, Berkeley
- Diana Milk-Batista (Columbia University)
  - Lamont research assistantship, co-advised with Drs. Radley Horton and Mingfang Ting (Summer 2023)

Early Career Scientists Group Coordinator *June 2025-Present*
NASA Goddard Institute for Space Studies, New York, NY

- Organize professional development and networking events for graduate students, postdoctoral researchers, and Associate Research Scientists at NASA GISS
- Serve as liaison between early career scientists and upper administrators at NASA GISS

Research Mentor, Columbia Summer Undergrad. Res. Experiences in Mathematical Modeling *June 2023-August 2023*
Columbia University, New York, New York

- Supervised two groups of undergraduates on research projects exploring the use of Natural Language Processing (NLP) for modelling the relationship between public sentiment and stock price volatility
- Served as a panelist for students discussing the experience of applying to and navigating graduate school
- Coordinated visit to the Lamont-Doherty Earth Observatory for a day of presentations and lab tours

Board Member, Women in Science at Columbia (WISC) *December 2019-August 2023*
Columbia University, New York, New York.

- Co-founded the WISC Undergraduate Mentoring Program facilitating social and research project based mentoring for Columbia undergraduate students.
- Secured $3900 in funding for programming costs through Student Initiative Grants (Columbia University).
- Matched over 600 undergraduate students with graduate mentors in their field of study.

Lamont Doherty Earth Observatory Open House Volunteer *October 2022-October 2023*
Columbia University, Palisades, New York

Ocean and Climate Physics Division Seminar Coordinator, Lamont-Doherty Earth Observatory *August 2022-July 2023*
Columbia University, New York, New York

- Organized 32 weekly seminars featuring both internal and external visiting scholars to present their research
- Attended by members of the Columbia University, NASA GISS, and International Research Institute communities

Skype a Scientist Volunteer *March 2020-July 2022*

- Two remote Q&A discussions with 8th grade classrooms at Power Middle School in Farmington, Michigan.
- One remote Q&A discussion with 5th grade classroom at Elmhurst Elementary School in Greenville, North Carolina.
- One remote Q&A discussion with 12th grade classroom at Marymount School of New York in New York, New York.

Lamont Summer Mentorship Program Volunteer *June 2020-August 2022*
Columbia University, Palisades, New York

"Girls' Science Day" Volunteer *November 2019*
Columbia University, New York, New York.

WORKSHOPS ATTENDED

"HeatHack," June 2026, National Center for Atmospheric Research, Boulder, Colorado.

"Climes Summer School," June 2025, Uppsala University, Uppsala, Sweden.

"Attribution Science and Climate Law Conference," January 2025, Columbia University, New York, New York.
"Extreme Heat Workshop," July 2024, Columbia University, New York, New York.

"**NASA Summer School on Satellite Observations and Climate Models**," August 2023, *JPL Center for Climate Sciences* and the *Keck Institute for Space Studies,* Pasadena, California.

"**Extreme Weather and Climate: From Atmospheric Processes to Impacts on Ecosystems and Society**," August 2022, *20th Swiss Climate Summer School,* Grindelwald, Switzerland.

"**Communicating Science: Research Matters**," November 2019, *Columbia University,* New York, New York.

"**Workshop in Correlated Extreme Events**," May 2019, *Columbia University,* New York, New York.

"**23rd Summer Course in Climate Time Series Analysis**," August 2018, *Climate Risk Analysis*, Heckenbeck, Germany.

"**Science Talk 2018**," March 2018, *Science Talk*, Portland, Oregon.

SKILLS

Computers: Python (experienced), Matlab (experienced), Fortran (beginner), ArcGIS (beginner); Microsoft Office.

PROFESSIONAL ORGANIZATIONS AND ACTIVITIES

Memberships include: American Geophysical Union, American Meteorological Society, WE ACT for Environmental Justice, RiskKAN, Climate Access, Earth Science Women's Network, and Sharing Science.

Reviewer for peer-reviewed journals including: *Journal of Climate, Geophysical Research Letters, Nature Communications, Climatic Change, npj Climate and Atmospheric Science,* and *International Journal of Climatology.*