Ángel Francisco Adames Corraliza

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Profile

* **Assistant Professor**, Department of Atmospheric and Oceanic Sciences (AOS) University of Wisconsin, Madison, WI
* Research Interests: Tropical Meteorology, General Circulation of the Atmosphere, Atmospheric Dynamics, Climate Dynamics and Change.

Education

2013–2016	Ph.D. in Atmospheric Sciences	
	University of Washington	Seattle, WA, USA
2010–2013	M.S. in Atmospheric Sciences	
	University of Washington	Seattle, WA, USA
2006–2010	B.S. in Physics	
	University of Puerto Rico-Mayagüez	Mayagüez, PR, USA
	– GPA: 3.97/4.0, *Summa Cum Laude*	

Work

2020–present	Assistant Professor	
	University of Wisconsin-Madison	Madison, WI
	– Department of Atmospheric and Oceanic Sciences	
2021–present	Faculty Affiliate	
	University of Wisconsin-Madison	Madison, WI
	– Center for Climatic Research	
2018–2020	Assistant Professor	
	University of Michigan	Ann Arbor, MI
	– Department of Climate and Space Science and Engineering	
2018–2020	Faculty Associate	
	University of Michigan	Ann Arbor, MI
	– Latina/o Studies Program, Department of American Culture	
2016–2018	Visiting Postdoctoral Scientist	
	NOAA GFDL	Princeton, NJ

Honors and Awards

* 2023 UW-Madison Vilas early career award
* 2023 NSF CAREER award recipient
* 2022 Teaching Award, Department of Atmospheric and Oceanic Sciences, University of Wisconsin-Madison
* 2022 Exceptional Service Award, Office of the Provost, University of Wisconsin-Madison
* 2019 Kavli Fellow of the National Academy of Sciences
* 2018 James R. Holton Award, American Geophysical Union
* 2020 Roscoe Braham Jr Distinguished Seminar Speaker at NC State University
* 2020 Robert Dickinson Symposium Keynote Speaker, 99th Annual Conference of the American Meteorological Society, 2020, Boston, MA
* 2019 Midwest Student Conference on Atmospheric Research Keynote Speaker
* NSF Graduate Research Fellowship (NSF-GRFP) Fellow, 2011-2014.

Publications

Submitted / Revised

* Mayta, V.C., and *Á. F. Adames Corraliza*, **The Stirring Tropics. Part I: The Ubiquity of Moisture Modes and Moisture-Vortex Instability**, J. Cli., Submitted
* *Adames Corraliza, Á. F.*, and V.C. Mayta, **The Stirring Tropics. Part II: Theory of Moisture Mode-Hadley Cell Interactions**, J. Cli., Submitted
* Luo, H., *Adames Corraliza, Á. F.*, and R. B Rood: **Energy Budget Perspective on Monsoon Low-Pressure System Growth by Barotropic and Moisture-vortex Instabilities**, J. Atmos. Sci, Revised

2023 / In Press

* *Adames Corraliza, Á. F.*, and V.C. Mayta: **On the Accuracy of the Moist Static Energy Budget when Applied to Large-Scale Tropical Motions**, J. Atmos. Sci, JAS-D-23-0005.1, in press.
* Mayta, V.C., and *Á. F. Adames Corraliza*, **Is the MJO a moisture mode?**, Geophys. Res. Lett., 50, e2023GL103002. https://doi.org/10.1029/2023GL103002
* Vargas Martes, R. M., *Á. F. Adames Corraliza*, and V.C Mayta, **The role of water vapor and temperature in the thermodynamics of east Pacific and African easterly waves**, J. Atmos. Sci, In Press
* Gorchov Negron, A. M., E. A. Kort, Y. Chen, A. R. Brandt, M. L. Smith, G. Plant1, A. K. Ayasse, S. Schwietzke, D. Zavala-Araiza, C. Hausman, *Á. F. Adames Corraliza*, **Excess Methane Emissions from Shallow Water Platforms Elevate the Carbon Intensity of U.S. Gulf of Mexico Oil and Gas Production**, PNAS, 120 (15) e2215275120
* Mayta, V.C., and *Á. F. Adames*, **Moist Thermodynamics of Convectively Coupled Waves over the Western Hemisphere**, J. Cli., 36, 2765–2780

2022

* *Adames, Á.F.*, **The Basic Equations Under Weak Temperature Gradient Balance: Formulation, Scaling, and Types of Convectively-coupled Motions**, J. Atmos. Sci, J. Atmos. Sci, 79(8), 2087-2108
* Mayta, V. C., *Á. F. Adames*, and F. Ahmed: **Westward-propagating Moisture Mode over the Tropical Western Hemisphere**, Geophys. Res. Lett., 49, e2022GL097799
* *Adames, Á.F.*, R. M. Vargas Martes, H. Luo, and R. B. Rood: **Moist Static Potential Vorticity Budget in Tropical Motion Systems**, J. Atmos. Sci, J. Atmos. Sci, 79(3), 763-779
* Snide, C. E., *Á.F Adames* , S Powell and V. C. Mayta: **The role of large-scale moistening by adiabatic lifting in the Madden-Julian Oscillation convective onset**, Journal of Climate, 35(1), 269-284.

2021

* Mayta, V.C. and*Á.F Adames* : **2-Day Westward-Propagating Inertio-Gravity Waves during GoAmazon**, J. Atmos. Sci, 78(11), 3727-3743.
* Luo, Haochang, *Á.F Adames* and R. B. Rood: **A Northern Hemispheric Wave Train Associated with Fluctuations in the Bermuda High During Boreal Summer**, J. Climate, 34(15), 6163-6173.
* Lyu, M., Jiang, X., Wu, Z., Kim, D., & *Á.F Adames* **Zonal-scale of the Madden-Julian Oscillation and its propagation speed on the interannual time-scale**. Geophysical Research Letters, 48, e2020GL091239
* *Adames, Á.F.*, Maloney, E.D. **Moisture Mode Theory's Contribution to Advances in our Understanding of the Madden-Julian Oscillation and Other Tropical Disturbances.** Curr Clim Change Reps (2021) 7:72–85.
* *Adames, Á.F.*: **Interactions Between Water Vapor, Potential Vorticity and Vertical Wind Shear in Quasi-Geostrophic Motions: Implications for Rotational Tropical Motion Systems**, J. Atmos. Sci, 8(3), 903-923.
* *Adames, Á.F.* , S.W. Powell, F. Ahmed, V.C. Mayta and J.D. Neelin: **Tropical Precipitation Evolution in a Buoyancy-Budget Framework**, J. Atmos. Sci., 78(2), 509-528
* Ahmed, F. , J.D. Neelin and *Adames, Á.F.* **Quasi-Equilibrium and Weak Temperature Gradient Balances in an Equatorial Beta-plane Model**, J. Atmos. Sci., 78(1), 209-227

2020

* Jiang, X, et al. **Fifty Years of Research on the Madden-Julian Oscillation: Recent Progress, Challenges, and Perspectives**, J,. Geophys. Res. Atmos.
* Orbe, C. L. L. Van Roekel, *Á.F Adames*, et al.: **Intercomparison of Climate Modes of Variability in 6 U.S. Climate Models**, J. Climate
* Zhang, C., *Adames, Á.F.* , B. Khouider, B. Wang and D. Yang **Four theories of the Madden-Julian Oscillation**, Rev. Geophys.
* Ahmed, F., *Á.F Adames* and J. D. Neelin: **Deep convective adjustment of temperature and moisture**, J. Atmos. Sci.77 (6), 2163-2186
* Inoue, K., *Á.F Adames* and K. Yasunaga: **Vertical Velocity Profiles in Convectively Coupled Equatorial Waves and MJO: New Diagnoses of Vertical Velocity Profiles in the Wavenumber-Frequency Domain**, J. Atmos. Sci, 77 (6), 2139-2162
* Clark, S. K. Y. Ming and *Á.F Adames*, **Monsoon low pressure system like variability in an idealized moist model**, J. Climate, J. Climate, 33, 2051?2074

2019

* *Adames, Á.F.*, D. Kim., S. K. Clark, Y. Ming and K. Inoue **Scale analysis of moist thermodynamics in a simple model and the relationship between moisture modes and gravity waves**, J. Atmos. Sci., 76, 3863?3881
* Rushley, S. S., D. Kim and *Adames, Á.F.*: **Changes in the MJO under the greenhouse gas-induced warming in CMIP5 models**, J. Climate, 32, 803-821
* Maloney, E. D., *Adames, Á.F.*, and H. Bui **Madden-Julian Oscillation Changes under Anthropogenic Warming**, Nature Climate Change 9, 26-33

2018

* Shi, X., D. Kim, J. M. Wallace, *Adames, Á.F.*, and J. Sukhatme **WISHE-moisture mode in an aquaplanet simulation**, J. Adv. Model. Earth. Syst, 10, 2393?2407.
* *Adames, Á.F.* and Y. Ming: **Interactions between water vapor and potential vorticity in synoptic-scale monsoonal disturbances: Moisture vortex instability**, J. Atmos. Sci., 75, 1891-1907
* *Adames, Á.F.* and Y. Ming: **Moisture and moist static energy budgets of South Asian monsoon depressions in GFDL AM4.0**, J. Atmos. Sci., 75, 2107-2123
* Jiang , X., *Á.F. Adames*, M. Zhao, D. Waliser, and E. Maloney: **A Unified Moisture Mode Framework for Seasonality of the Madden-Julian Oscillation** J. Climate, 31,4215-4224
* Zadra, A., K. Williams; A. Frassoni, M. Rixen, *Á.F. Adames*; et al.: **Systematic Errors in Weather and Climate Models: Nature, Origins, and Way Forward**. Bull. Amer. Meteor. Soc., 99, ES67-ES70.

2017

* *Adames, Á.F.*, D. Kim, A. H. Sobel, A. Del Genio, and J. Wu (2017) **Characterization of moist processes associated with changes in the structure and propagation of the MJO with increasing CO2**. J. Adv. Model. Earth Syst, 9
* *Adames, Á.F.*, D. Kim, A. H. Sobel, A. Del Genio, and J. Wu (2017) **Changes in the structure and propagation of the MJO with increasing CO2** , J. Adv. Model. Earth Syst, 9, doi:10.1002/2017MS000913.
* *Adames, Á.F.* and J.M. Wallace (2017). **On the Tropical Atmospheric Signature of El Niño**, *J. Atmos. Sci.*, 74, 1923?1939, doi: 10.1175/JAS-D-16-0309.1
* *Adames, Á.F.* (2017) **Precipitation budget of the Madden-Julian Oscillation**, *J. Atmos. Sci.*, 74, 1799?1817

2016

* *Adames, Á.F.*, J.M. Wallace and J.M. Monteiro (2016). **Seasonality of the structure and propagation characteristics of the MJO**, *J. Atmos. Sci.*, 73, 3511-3526.
* *Adames, Á.F.* and D. Kim (2016). **The MJO as a convectively coupled moisture wave: theory and observations**, *J. Atmos. Sci.*, 73, 913–941

2015

* *Adames, Á.F.* and J.M. Wallace (2015). **Three-dimensional structure and evolution of the moisture field in the MJO**, *J. Atmos. Sci.*, 72, 3733–3754
* *Adames, Á.F.* (2015) **Understanding the Madden-Julian Oscillation**, *Physics Today*, 06-2015, doi:10.1063/PT.5.4014.

2014

* Monteiro, J.M, *Á.F. Adames*, J.M. Wallace and J.S. Sukhatme (2014). **Interpreting the upper-level structure of the MJO**, *Geophys. Res. Lett.*, 1944-8007, doi:10.1002/2014GL062518
* *Adames, Á.F.* and J.M. Wallace (2014). **Three-dimensional structure and evolution of the vertical velocity and divergence fields in the MJO**, *J. Atmos. Sci.*., 71, 4661—4681. JAS-D-14-0091.1
* *Adames, Á.F.* and J.M. Wallace (2014). **Three-dimensional structure and evolution of the MJO and its relation to the mean flow**, 71, 2007-2026. , doi:10.1175/JASD-13-0254.1
* *Adames, Á.F.* , J. Patoux and R.C. Foster (2014). **The contribution of extratropical waves to the MJO wind field**, *J. Atmos. Sci.*, 71, 155—176.

2011

* *Adames, Á.F.* , M. Reynolds, A. Smirnov, D.S. Covert and T.P. Ackerman (2011). **Comparison of MODIS ocean aerosol retrievals with ship-based Sun photometer measurements from the Around the America's expedition**, *J. Geophys. Res.*, 116, D16303

Book Chapters

* *Adames, Á.F.* (2023). **Ch 14: The annual mean circulation of the tropics**, in Wallace, J., et al. (2023). The Atmospheric General Circulation. Cambridge: Cambridge University Press
* *Adames, Á.F.* (2023). **Ch 15: Deep Convection**, in Wallace, J., et al. (2023). The Atmospheric General Circulation. Cambridge: Cambridge University Press
* *Adames, Á.F.* and Xianyao Chen (2023). **Ch 17: El Niño-Southern Oscillation**, in Wallace, J., et al. (2023). The Atmospheric General Circulation. Cambridge: Cambridge University Press
* *Adames, Á.F.* (2023). **Ch 18: Intraseasonal variability of the tropical general circulation**, in Wallace, J., et al.. (2023). The Atmospheric General Circulation. Cambridge: Cambridge University Press
* Yang D., *Adames, Á.F.*, B. Khouider, B. Wang and Zhang, C. **A Review of MJO Theories**, The Multi-Scale Global Monsoon System, World Scientific, 2021
* *Adames, Á.F.*, D. Kim., E.D. Maloney and A. H. Sobel **The moisture mode framework of the Madden-Julian Oscillation**, The Multi-Scale Global Monsoon System, World Scientific, 2021
* *Adames, Á.F.* and J.M. Wallace **The planetary-scale structure of the Madden-Julian Oscillation**, The Global Monsoon Systems, Vol. 4, World Scientific

Recent Invited Talks

* **Moisture's role in shaping large-scale tropical circulations**, MIT, Boston, MA.
* **The importance of water vapor in convectively-coupled tropical motions: Moisture modes and moisture-vortex instability**, Emanuel Symposium, MIT, Boston, MA.

* **The importance of water vapor in convectively-coupled tropical motions**, JPGU 2022.
* **What do weak temperature gradients and moisture modes teach us about tropical weather and climate?**, Department of Geoscience, University of Chicago, 2022, and Scripps Institute of Oceanography, 2022.
* **The weakening of baroclinic instability in vertically-sheared tropical monsoon regions**, AOS Department, Princeton University, 2021
* **A review of recent progress in our understanding of large-scale tropical atmospheric dynamics**, UC Irvine, 2021
* **Interactions between water vapor, potential vorticity, and vertical wind shear in rotational tropical disturbances: Insights from a simple model**, University of Hawaii, 2020
* **Characterization of the processes that lead to the destabilization and onset of deep tropical convection** Presented at: North Carolina State University (Feb 2020) and McGill University (Feb 2020).
* **Water vapor, precipitation, and tropical waves: what can we learn from simple models?**, (April 2019). Presented at: National Center for Atmospheric Research, Boulder, CO, Colorado State University, Fort Collins, CO, and Stanford University, CA. Also presented at Penn State University (October 2019)
* **Dynamics of Moist Tropical Waves: Insights from an idealized framework**, (April 2019), Lamont Doherty Earth Observatory, NY
* **The Madden-Julian Oscillation What have we learned from it and where is our field heading?** (April 2019) US Climate Modeling Summit, Greenbelt, MD.
* **Interactions between water vapor and potential vorticity in synoptic-scale monsoonal disturbances**, (March 2018), Columbia University, NY
* **Moisture-vortex instability**, (February 2018), Stony Brook University, NY

Teaching Experience

Lecturer

* **AOS 801** (Spring 2023): Advanced Tropical Meteorology
* **AOS 630** (Fall 2021): Introduction to Atmospheric and Oceanic Physics University of Wisconsin-Madison
* **AOS 611** (Spring 2021, 2022): Geophysical Fluid Dynamics II, University of Wisconsin-Madison
* **CLIMATE 401** (Fall 2018, Fall 2019): Geophysical Fluid Dynamics, University of Michigan
* **CLIMATE 411** (Winter 2019): Cloud and Precipitation Processes, University of Michigan

Seminar Organizer

* **CLIMATE 749** (Fall 2018, Winter 2019): Climate and Space Science Seminar, University of Michigan.

Mentoring

Current Graduate Students

- Rosa M. Vargas Martes
- Haochang Luo
- Rebecca Hall

Current Postdocs and Research Scientists

- Qiao-Jun Lin
- Víctor R. Chávez Mayta

Previous Students

- Kayleen Torres Maldonado (M.S. UW-Madison)
- Chelsea E. Snide (M.S. UW-Madison)
- Geraldine (Nelly) Emlaw (B.S. U. Michigan)
- Brandon Molina (B.S. U. Michigan)
- Samuel Ephraim (B.S. U. Michigan)

Summer Interns

- Luke Morin (2023)
- Sabrina Gonzalez (2023)
- Juan L. Colón Pérez (2022)
- Idamis Rodríguez Nazario (2022)
- Brittany Wooten (2019)

Informal Mentees

- Kelly M. Núñez Ocasio
- Stephanie Ortiz Rosario
- Arianna B. Ginés Ocasio
- Mittal Parmar
- Juliette Shaheen

Service to Profession

Organizational Leadership

- Academic Ambassador, AMS Committee for Hispanic and Latinx Advancement (CHALA)

Science Leadership

- Co-convener AGU 2022 Fall Meeting Session 158853: The Madden-Julian Oscillation and Convectively Coupled Waves in the Tropics: Observations, Theory, Modeling, and Prediction.
- Session chair. Atmospheric convection and air-sea interaction workshop. Boulder, CO, 2019.
- Co-organizer Seventh Symposium on Prediction of the Madden–Julian Oscillation: Processes, Prediction, and Impact. AMS 2019 Annual Meeting.
- Head of the Outstanding Student Poster Award Committee, 33rd Conference on Hurricanes and Tropical Meteorology, Ponte Vedra, FL.
- Session Chair, Intraseasonal Variability and MJO III, 33rd Conference on Hurricanes and Tropical Meteorology, Ponte Vedra, FL.
- Co-organizer Sixth Symposium on Prediction of the Madden–Julian Oscillation: Processes, Prediction, and Impact. AMS 2018 Annual Meeting, Austin, TX.
  - Session chair for Haurwitz Memorial Lecture

  - Session chair for MJO Impacts on Global Weather and the Energy Sector
  - Session chair for "Dynamics and Physics of the MJO"
  - Poster judge for student awards (both talk and poster)
- Poster Judge: AGU Fall Meeting 2016 for OSPA award
- Member AMS Student Conference Planning Committee (2013-2015)
  - Chair: AMS Student Conference *Session 9a* (2015): "Getting your hands dirty on the field", 2015
  - Member, poster judging subcomittee (2014-2015)
  - Moderator, "Conversations with professionals", 2014-2015

Associate Editor

- Journal of Advances in Modeling Earth Systems (2023-)
- Monthly Weather Review (2020-2021)

Journal Reviewer

- Proceedings of the National Academy of Sciences 2018-Present
- Quarterly Journal of the Royal Meteorological Society 2016-Present
- Geophysical Research Letters 2016-Present
- Climate Dynamics 2016-Present
- Journal of Advances in Modeling Earth Systems 2016-Present
- Journal of the Meteorological Society of Japan 2015-Present
- Journal of the Atmospheric Sciences 2014-Present
- Journal of Climate 2014-Present
- Journal of Geophysical Research—Atmospheres 2014-Present
- Monthly Weather Review 2014-Present
- Nature Scientific Reports 2017-Present

Grant Reviewer

- NASA MAP Predictability panel reviewer (2021)
- Department of Energy Earth and Environmental Systems Modeling panel(2022)
- National Science Foundation (NSF), PREEVENTS review panel member
- National Science Foundation (NSF), USA, Climate and Large-scale dynamics division
- Comisión Nacional de Investigación Científica y Tecnológica (CONICYT), Chile, 2017

Service to University/Department

- University of Wisconsin
  - Co-founder UW-Madison BIPOC in the geoscience affinity group (2022)
  - Chair of Code of Conduct Ad-Hoc Committee (2022)
  - Chair of Diversity, Equity and Inclusion Committee (2021-)

  - Lead, Unlearnig Racism in the Geoscience (URGE), University of Wisconsin Mega Pod (∼38 members) (2021)
  - Member Diversity, Equity and Inclusion Committee (2020-)
  - Member Graduate Program Committee (2021-)
  - Member Website Committee (2021-)
- University of Michigan
  - Member Admissions Committee (2018-2020)
  - Member Curriculum Committee (2018-2020)

Extracurricular

Service to the Community and Outreach

- Lead of three Tropical Meteorology workshops at UPR-Mayagüez (2022)
- Co-host of Podcast "Tiempo, Clima y Tierra" (2020-)
- Professional/outreach facebook page (www.facebook.com/drafadames, mostly in Spanish): educational information about weather and climate and forecast discussions.
- Mentor "Puertorriqueños en las ciencias Atmosféricas y Meteorología (PCAM)" Online Mentoring Program.

Professional Organizations

- American Geophysical Union (AGU), 2009-Present.
- American Meteorological Society (AMS), 2006-Present.

Languages

Spanish (native) English (fluent)