Alex O. Gonzalez

Assistant Scientist
Department of Physical Oceanography
Woods Hole Oceanographic Institution, Woods Hole, MA
alex.gonzalez@whoi.edu, ORCID: https://orcid.org/0000-0001-8001-408X

EDUCATION

2015	Ph.D.	Colorado State University	Atmospheric Science
2011	M.S.	Colorado State University	Atmospheric Science
2008	B.S.	The Pennsylvania State University	Meteorology (Minor: Mathematics)

PROFESSIONAL EXPERIENCE

Assistant Scientist, Jun 2022–Present
Woods Hole Oceanographic Institution, Woods Hole, MA

Assistant Professor, Aug 2018–Jun 2022
Iowa State University of Science and Technology, Ames, IA

Postdoctoral Scholar, Dec 2015–Aug 2018
UCLA/JPL Joint Institute for Regional Earth System Science and Engineering, Los Angeles, CA

Graduate Research Assistant, Jan 2009–Aug 2015
Colorado State University, Fort Collins, CO

Visiting Graduate Student, May–Aug 2011 & 2012
National Center for Atmospheric Research, Boulder, CO

SOARS Protégé, May–Aug 2007–2009
National Center for Atmospheric Research and Colorado State University

HONORS AND AWARDS

2025 James E. and Barbara V. Moltz Early Career Science Fellowship	2025
Top Student Oral Presentation Award at the AMS 19th Conference of Atmospheric and Oceanic Fluid Dynamics	June 2013
2012 Editors' Citation for Excellence in Refereeing for the AGU Journal of Advances in Modeling Earth Systems	Fall 2013
SOARS Scholarship	2009-2015
CMMAP Fellowship	2009-2015

FUNDING

Jun 2025–May 2027: WHOI Independent Study Award, “The impact of cloud-related factors on Inter-Tropical Convergence Zone (ITCZ) biases in atmospheric reanalysis data.” Role: PI. Budget: $79,887.

Jul 2023–Jun 2026: NSF AGS Climate and Large-Scale Dynamics, “The relationship between the trade wind inversion layer and the seasonal development of the southeast Pacific ITCZ.” Role: PI. Budget: $942,102 ($650,456 WHOI).

Nov 2021–Oct 2026: DOE Offshore Wind Energy Atmospheric Science And Project Development, "Improving High Resolution Offshore Wind Resource Assessments and Forecasts Using Observations in the MA/RI Lease Areas." Role: Co-I. Budget: $8,000,000.00 (WHOI). Note: A. O. Gonzalez started involvement in the project after the proposal was awarded, in June 2022.

Jan 2023–Dec 2024: NOAA-OAR-CPO, "Disaster Relief Supplemental Act (DRSA): Profiling Float Observations for the EEOOTT IFC." Role: Co-PI. Budget: $185,000.

Jan–Nov 2023: WHOI Independent Research and Development Program, "The Influence of Atmospheric Circulations and Convective Structure on the Eastward Propagation of the Madden-Julian Oscillation." Role: PI. Budget: $62,079.

May 2020–Jul 2024: NSF AGS Climate and Large-Scale Dynamics, "Nonlinear dynamics of daily-weekly boreal spring ITCZ shifts over the eastern Pacific Ocean." Role: PI (May 2020–Jun 2022), Co-PI (Jul 2022–Apr 2024). Budget: $340,945 (includes supplemental funding on Aug 1, 2023). Original Budget: $315,896.

Sep 2020–Aug 2021: Iowa State University Morehouse Equipment Fund, Grant SG2704281. Role: Co-PI. Budget: $67,843.05.

PAPERS IN PREPARATION (* means a current or former group member, Contribution statements use CRediT Contributer Roles Taxonomy)

Kirincich, A.,…**A. O. Gonzalez**, A. Kinsella*,… and Coauthors, The Wind Forecast Improvement Project 3. *Bull. Amer. Meteor. Soc.*, in prep. *Contributions: conceptualization, data curation, formal analysis, methodology, writing – original draft, review & editing.*

Ganguly, I.*, **A. O. Gonzalez**, and R. Neale, Wind-evaporation-SST feedbacks in the east Pacific ITCZ: Analyzing the impact of daily versus monthly SSTs in forced CAM6 simulations, *J. Adv. Model. Earth Syst*., in prep. *Contributions: conceptualization, data curation, funding acquisition, methodology, project administration, supervision, validation, visualization, writing – review & editing.*

SUBMITTED/IN REVIEW/IN REVISION PUBLICATIONS (* means a current or former group member, Contribution statements use CRediT Contributer Roles Taxonomy)

[19] Fahrin, F.*, **A. O. Gonzalez**, G. V. Cesana, C. A. DeMott, and R. Neale, Representation of stratocumulus and shallow cumulus clouds near the southeast Pacific Ocean ITCZ in ERA5 and MERRA-2 Reanalyses. *Journal of Geophysical Research: Atmospheres*, in review. *Contributions: conceptualization, funding acquisition, methodology, project administration, visualization, supervision, validation, writing – original draft.*

[18] Aurnou, J. M., J. E. Moscoso, S. M. Cavallo, W. J. Church, **A. O. Gonzalez**, J. H. Ruppert Jr., and R. Tripoli (2025), Tabletop atmospheric rivers, *Bull. Amer. Meteor. Soc.*, *Nowcast article*, in review. *Contributions: conceptualization, formal analysis, visualization, writing – original draft, review & editing.*

[17] He, C*., A. Clement, M. Cane, **A. O. Gonzalez**, Y.-O. Kwon, J.-R. Shi, J. Klavans, and L. Murphy (2025), Climate models exaggerate the impact of greenhouse gases on recent interhemispheric

temperature contrast and tropical climate, *Nature Communications,* NCOMMS-25-40073A-Z, in review. *Contributions: funding acquisition, writing – original draft, review & editing.*

REFEREED PUBLICATIONS

[16] **Gonzalez, A. O.**, F. Fahrin*, G. Magnusdottir, A. Kinsella* and I. Ganguly* (2025), We need to simulate more northern ITCZs and less southern ITCZs over the east Pacific Ocean in coupled climate models, *Journal of Geophysical Research: Atmospheres*, accepted. ESS Open Archive: https://doi.org/10.22541/essoar.174017095.57302520/v1. *Contributions: conceptualization, data curation, formal analysis, funding acquisition, methodology, project administration, visualization, writing – original draft, review & editing.*

[15] Fahrin, F.*, **A. O. Gonzalez**, B. Chrisler, and J. P. Stachnik (2024), The influence of convectively coupled tropical waves on the Southern Hemisphere East Pacific ITCZ, *J. Climate*, JCLI-D-23-0398, https://doi.org/10.1175/JCLI-D-23-0398.1. *Contributions: conceptualization, data curation, funding acquisition, methodology, project administration, supervision, validation, visualization, writing – original draft, review & editing.*

[14] **Gonzalez**, **A. O.,** I. Ganguly*, M. Osterloh*, G. V. Cesana, and C. A. DeMott (2024), Dynamical importance of the trade wind inversion in suppressing the southeast Pacific ITCZ, *Journal of Geophysical Research: Atmospheres*, **129**, e2023JD039571. https://doi.org/10.1029/2023JD039571. *Contributions: conceptualization, data curation, formal analysis, funding acquisition, methodology, project administration, visualization, writing – original draft, review & editing.*

[13] Yu, L., Y. Chen, **A. O. Gonzalez**, C. Zhang, and G. R. Foltz (2023), Dry Air Outbreak and Significant Surface Turbulent Heat Loss During Hurricane Ian: Satellite and Saildrone Observations, *Geophys. Res. Lett.*, **50**, e2023GL105583. https://doi.org/10.1029/2023GL105583. *Contributions: validation, writing – review & editing.*

[12] Ganguly, I.*, **A. O. Gonzalez**, and K. B. Karnauskas (2023), On the role of wind-evaporation-SST feedbacks in the sub-seasonal variability of the east Pacific ITCZ. *J. Climate*, https://doi.org/10.1175/JCLI-D-22-0849.1. *Contributions: conceptualization, data curation, funding acquisition, methodology, project administration, supervision, validation, visualization, writing – review & editing.*

[11] **Gonzalez**, **A. O.,** I. Ganguly*, M. C. McGraw, and J. Larson (2022), Rapid dynamical evolution of ITCZ events over the east Pacific, *J. Climate*, **35(4)**, 1197–1213. https://doi.org/10.1175/JCLI-D-21-0216.1. *Contributions: conceptualization, data curation, formal analysis, funding acquisition, methodology, project administration, visualization, writing – original draft, review & editing.*

[10] Heath A.*, **A. O. Gonzalez**, M. Gehne, and A. Jamarillo (2021), Interactions of large-scale dynamics and Madden-Julian Oscillation propagation in multi-model simulations. *Journal of Geophysical Research: Atmospheres*, **126**, e2020JD033988. https://doi.org/10.1029/2020JD033988. *Contributions: conceptualization, data curation, funding acquisition, methodology, project administration, supervision, validation, visualization, writing – review & editing.*

[9] Merryfield, W. J., …**A. O. Gonzalez**,… and Coauthors (2020), Current and Emerging Developments in Subseasonal to Decadal Prediction. *Bull. Amer. Meteor. Soc.*, **101**, E869–E896, https://doi.org/10.1175/BAMS-D-19-0037.1. *Contributions: conceptualization, data curation, formal analysis, writing – review & editing.*

[8] Maloney, E., A. Gettelman, Y. Ming, J. D. Neelin, D. Barrie, A. Mariotti, C.-C. Chen, Y.-H. Kuo, B. Singh, H. Annamalai, A. Berg, J. F. Booth, S. J. Camargo, A. Dai, **A. Gonzalez**, J. Hafner, X. Jiang; X. Jing, D. Kim, A. Kumar, Y. Moon, C. M Naud, A. H Sobel, K. Suzuki, F. Wang; J. Wang, A. Wing, X. Xu, and M. Zhao (2019), A framework for process-oriented evaluation of climate and weather forecasting models, *Bull. Amer. Meteor. Soc.*, **100**, 1665–1686, https://doi.org/10.1175/BAMS-D-18-0042.1. *Contributions: data curation, methodology, visualization, writing – review & editing.*

[7] **Gonzalez, A. O.**, and W. H. Schubert (2019), Violation of Ekman balance in the eastern Pacific ITCZ boundary layer, *J. Atmos. Sci.*, **76**, 2919–2940, https://doi.org/10.1175/JAS-D-18-0291.1. *Contributions: conceptualization, data curation, methodology, formal analysis, visualization, writing – original draft, review & editing.*

[6] **Gonzalez, A. O.**, and X. Jiang (2019), Distinct propagation characteristics of intraseasonal variability over the tropical west Pacific. *Journal of Geophysical Research: Atmospheres*, **124**, https://doi.org/10.1029/2018JD029884. *Contributions: conceptualization, data curation, methodology, formal analysis, visualization, writing – original draft, review & editing.*

[5] **Gonzalez, A. O.**, G. Mora Rojas, W. H. Schubert, and R. K. Taft (2017), Transient aspects of the Hadley circulation forced by an idealized off-equatorial ITCZ, *J. Adv. Model. Earth Syst.*, **9**, https://doi.org/10.1002/2016MS000837. *Contributions: conceptualization, formal analysis, visualization, writing – original draft, review & editing.*

[4] **Gonzalez, A. O.**, and X. Jiang (2017), Winter mean lower tropospheric moisture over the Maritime Continent as a climate model diagnostic metric for the propagation of the Madden-Julian oscillation, *Geophys. Res. Lett.*, **44,** 2588–2596, https://doi.org/10.1002/2016GL072430. *Contributions: conceptualization, formal analysis, visualization, writing – original draft, review & editing.*

[3] **Gonzalez, A. O.**, C. J. Slocum, R. K. Taft, and W. H. Schubert (2016), Dynamics of the ITCZ boundary layer, *J. Atmos. Sci.*, **73**, 1577–1592, https://doi.org/10.1175/JAS-D-15-0298.1. *Contributions: conceptualization, formal analysis, visualization, writing – original draft, review & editing.*

[2] **Gonzalez, A. O.,** and G. Mora Rojas (2014), Balanced dynamics of deep and shallow Hadley circulations in the tropics, *J. Adv. Model. Earth Syst.*, **6**, https://doi.org/10.1002/2013MS000278. *Contributions: conceptualization, formal analysis, visualization, writing – original draft, review & editing.*

[1] W. H. Schubert, L. G. Silvers, M. T. Masarik, and **A. O. Gonzalez** (2009), A filtered model of tropical wave motions, *J. Adv. Model Earth Syst.*, **1**, Art. #3, 11 pp., https://doi.org/10.3894/JAMES.2009.1.3. *Contributions: formal analysis, writing – review & editing.*

INVITED PRESENTATIONS

"Unraveling the Building Blocks of Inaccurate Rainfall Predictions over the Tropical Pacific Ocean," Department of Earth & Environmental Sciences Seminar, Boston College, December 2025.

"We need to simulate more northern ITCZs and less southern ITCZs over the east Pacific Ocean in coupled climate models," Department of Earth, Environmental & Planetary Sciences Lunch Bunch Seminar, Brown University, September 2025.

"We need to simulate more double ITCZs and less southern ITCZs in reanalyses and coupled climate models," Earth and Atmospheric Sciences Department Climate Dynamics Seminar, City College of New York, New York, NY, March 2025.

"We need to simulate more double ITCZs and less southern ITCZs in reanalyses and coupled climate models," NASA GISS Lunch Seminar, NASA Goddard Institute for Space Studies, New York, NY, March 2025.

"Single and double ITCZ problems in reanalyses and coupled climate models," WHOI Department of Physical Oceanography Seminar Series, Woods Hole, MA, August 2024.

"Dynamical importance of the trade wind inversion in suppressing the southeast Pacific ITCZ," Atmosphere, Ocean and Climate Sack Lunch Seminar Series, MIT Department of Earth, Atmospheric, and Planetary Sciences, Cambridge, MA, November 2023.

"Dynamical importance of the trade wind inversion in suppressing the southeast Pacific ITCZ," Topics in Atmospheric and Oceanic Sciences Weekly Seminar Series, School of Marine and Atmospheric Sciences at Stony Brook University, Stony Brook, NY, October 2023.

"Dynamical importance of the trade wind inversion in suppressing the southeast Pacific ITCZ," Atmosphere–Ocean Processes and Predictability Division Weekly Seminar (Virtual), NOAA Physical Sciences Laboratory, Boulder, CO, July 2023.

"Dynamical importance of the trade wind inversion in suppressing the southeast Pacific ITCZ," Department of Atmospheric and Environmental Sciences/Atmospheric Sciences Research Center Joint Colloquium Series, University at Albany, State University of New York, April 2023.

"Wind-Evaporation-SST feedbacks and the southeast Pacific Ocean ITCZ," A Symposium in Honor of Professor Akio Arakawa: Modeling Convection, Clouds and Climate Systems, UCLA, October 2022.

"Interactions of MJO dynamics and propagation in climate model simulations," Atmospheric Sciences at Home Virtual Seminar Series, Institute of Atmospheric Sciences and Climate Change at the National Autonomous University of México (México City), May 2021. In Spanish.

"Weather in the east Pacific ITCZ: The role of nonlinear dynamics in boreal spring submonthly ITCZ shifts," Penn State University Department of Meteorology and Atmospheric Sciences Seminar Series, September 2020.

"The influence of synoptic variability in the ITCZ on climate model biases," University of Wisconsin-Madison Department of Atmospheric and Oceanic Sciences Seminar Series, November 2018.

"Balanced and transient dynamics of deep and shallow Hadley circulations," AGU Annual Fall Meeting, San Francisco, CA, December 2014.

PROFESSIONAL SERVICE

Chair, TCs and Climate session, 11th Northeast Tropical Workshop, August 5, 2025, Albany, NY.

Organizer and Convener, From Observation to Process to Prediction – Bridging Layers of Understanding in Oceanographic Research CINAR Workshop, NCEP College Park, MD (Postponed).

Panel Member, U.S. CLIVAR Process Study and Model Improvement (PSMI) Panel, May 2024–Present

UCLA Do-It-Yourself Dynamics (DIYnamics) Project Core Team Member, Fall 2019–Present

Co-chair, Madden-Julian Oscillation and Intraseasonal Variability, sessions I and II, AMS 36th Conference on Hurricanes and Tropical Meteorology, May 8, 2024, Long Beach, CA

Co-convener, Teaching Atmosphere, Ocean, and Climate Dynamics with Interactive Demonstrations, Earth Educators' Rendezvous, Division of Natural Sciences at Pasadena City College and the Division of Geological and Planetary Sciences at California Institute of Technology, July 10–14, 2023, Pasadena, CA

Chair, 10th Northeast Tropical Workshop, Convection and Tropical Dynamics Session, 5–7 June, 2023, Albany, NY

Student Award Judge, 102nd AGU Fall Meeting, December 12–16, 2022, Chicago, IL

Co-convener, Teaching Atmosphere, Ocean, and Planetary Fluid Dynamic Fundamentals Vividly with Rotating Tanks Workshop, Earth Educators' Rendezvous, Department of Earth and Environmental Sciences at the University of Minnesota, July 11–15, 2022, Minneapolis, MN

Convener, OSPA Liaison, **and Student Award Judge,** Multiscale Processes in the East Pacific Intertropical Convergence Zone I, 101st AGU Fall Meeting, December 13–17, 2021, New Orleans, LA

Co-chair, 9th Symposium on the MJO and Sub-Seasonal Monsoon Variability, 101st Annual AMS Annual Meeting, A Review of the MJO: Progress, Challenges, and Paths Forward/Subseasonal to Seasonal Predictability and Forecasting: Monsoons and the MJO. Part I, January 14, 2021, Virtual

Reviewer, proposals for NSF Climate and Large-Scale Dynamics, NASA Precipitation Science Team, Deutsche Forschungsgemeinschaft, papers for AGU Journal of Advances in Modeling Earth Systems, AGU Geophysical Research Letters, AMS Journal of Climate, AMS Monthly Weather Review, EGU Atmospheric Chemistry and Physics, Quarterly Journal of the Royal Meteorological Society, Progress in Oceanography, MDPI Atmosphere, and MDPI Climate

DEPARTMENT/COLLEGE SERVICE

Co-Chair, ISU Geological and Atmospheric Sciences Diversity, Equity, and Inclusion Committee, Summer 2020–Spring 2022

Co-Chair, ISU Geological and Atmospheric Sciences Department Seminar Series, Summer 2020–Spring 2022

WHOI/ISU/University of Kansas Climate Dynamics Journal Club Lead, Fall 2019, Summer 2020–2023

Watney Scholarship Committee, Summer 2020–Spring 2022

Advisor, ISU Graduate Meteorology Club, Fall 2019–Spring 2022**,** ISU AMS Student Chapter, Fall 2019–Spring 2022

Judge, ISU Meteorology senior thesis presentations, Fall 2018 and Fall 2021

Program of Study Committees (non-advisees)
Ahmad Samman (ISU, Ph.D. Fall 2018), Zachary Hiris (ISU, M.S. Spring 2020), Ezio Mauri (ISU, M.S. Fall 2020), Brian Squitieri (ISU, Ph.D. Spring 2022), Elise Schultz (ISU, Ph.D. Spring 2023), Dylan Dodson (ISU, M.S. expected Spring 2023), Elizabeth Tirone (ISU, Ph.D. expected Spring 2024), Suvadip Mandal (ISU, Ph.D. expected Spring 2024), Rosa Vargas Martes (Wisconsin-Madison, expected Summer 2024), Theo Carr (MIT-WHOI, expected Fall 2024), Brett Chrisler (Kansas, expected Spring 2025), Ashley Schefler (MIT-WHOI, expected Spring 2028)

Postdoc Mentoring Committees
Alex Kinsella (WHOI, 2023–2024)
Lewis Kim (WHOI, 2023–Present)
Christoph Renkl (WHOI, 2023–2025)

OUTREACH ACTIVITIES

Improving Minority Participation in Education and Training in the Underwater Sciences (IMPETUS) – hands-on demonstration of tropical and extratropical cyclones in DIYnamics rotating tanks with three Black Girls Dive Foundation scholars, 9 August, 2024, Woods Hole, MA

WHOI Buoy Lunch presentation, "Do-It-Yourself Dynamics (DIYnamics): Building a community of Scientists, Instructors, and Engineers to Teach Climate Sciences," 17 August 2023, Woods Hole, MA

Black Girls Dive Foundation hands-on demonstration of cyclones in DIYnamics rotating tanks (15–20 students), July 26, 2023, Woods Hole, MA

STEMSEAS hands-on demonstration of cyclones with HBCU faculty on the R/V Armstrong, Jan 3, 2023, Woods Hole, MA (https://stemseas.wordpress.com/2023/01/04/underway-on-the-r-v-armstrong/)

Urbandale HS hands-on weather/climate demonstrations (150 students), May 20, 2022, Urbandale, IA

ADVISING/MENTORING

Research Associate or Postdoc Advisor

Alex Kinsella	January 2025–Present
Chengfei He	June 2024–January 2025

Graduate Student Advisor

Fouzia Fahrin	Fall 2021–Present

Travis Enzensperger	Fall 2021
Indrani Ganguly	Fall 2019–January 2024 (Graduated Spring 2024)
Ashley Heath	Fall 2018–July 2020 (Graduated Summer 2020)

Undergraduate Senior Thesis Mentor

Cassidy Hoium, Jared Schadler, Anna Duhachek	2021
Allysa Dallmann, Kevin Greene	2020
Sara Foernssler, Melissa Piper, Matthew Statz	2019
Afada Al-Hubaishi, Hannah Messier	2018

NSF SOARS Program Research Mentor

Chelone Rio Laws	Summer 2024, Summer 2025

Undergraduate Student Research Mentor

Cassidy Hoium	Spring 2022
Marissa Osterloh	Summer 2021, Spring 2022
Allysa Dallmann	Spring 2021
James Larson	Spring 2020–Fall 2020
Matthew Statz	Spring 2020
Melissa Piper	Spring 2020
Kevin Greene	Fall 2018–Spring 2020
Franchesca Espinosa	May–Aug 2014
Andre Perkins	May–Aug 2011
Rachel Meier	Spring 2010

Middle School/High School Teacher Research Mentor

Katherine Hanson	Summer 2021 (ISU Research Experiences for Teachers Program)

High School Research Mentor

Natalie Kongable	Fall 2019–Spring 2020

TEACHING EXPERIENCE

Course	Semester	Credits	Enrollment
EAPS 860[#] – Climate Variability and Diagnostics[+]	Fall 2024	3	10
EAPS 800[#] – Fluid Dynamics of Atmos. & Ocean[+]	Fall 2024	3	28
Mteor 206 – Intro. to Weather and Climate	Spring 2022	3	102
Mteor 440/540[#] – Tropical Meteorology	Fall 2021	3	18
Mteor 443 – Dynamic Meteorology I	Fall 2021	3	15
Mteor 443 – Dynamic Meteorology I	Spring 2021	3	18
Mteor 543[#] – Advanced Dynamic Meteo.	Fall 2020	3	8
Mteor 443 – Dynamic Meteorology I	Spring 2020	3	11
Mteor 440/540[#] – Tropical Meteorology	Fall 2019	3	24
Mteor 443 – Dynamic Meteorology I	Spring 2019	3	12
Introduction to Meteorology[*]	May 2013	3	~25
Introduction to Meteorology[*]	May 2012	3	~25

[*]Autonomous University of the Yucatán (UADY), Mérida, MX – taught in Spanish

[+]Co-Instructor

[#]Graduate-Level Course