

PEDRO DINEZIO

University of Colorado Boulder | Department of Atmospheric and Oceanic Sciences
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Professional Experience

Associate Professor , Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder, Boulder, Colorado.	2020 – present
Research Scientist , Institute for Geophysics, Jackson School of Geosciences, University of Texas, Austin, Texas.	2019 – 2020
Research Associate , Institute for Geophysics, Jackson School of Geosciences, University of Texas, Austin, Texas.	2016 – 2018
Assistant Researcher , Department of Oceanography, School of Ocean Earth Science and Technology, University of Hawaii, Honolulu, Hawaii.	2015
Visiting Researcher , 2014 Roland Madden Visitor, National Center for Atmospheric Research, Boulder, Colorado.	2014
Young Investigator Fellow , International Pacific Research Center, School of Ocean Earth Science and Technology, University of Hawaii, Honolulu, Hawaii.	2011 – 2013
Research Associate* , Cooperative Institute of Marine and Atmospheric Studies, National Oceanographic and Atmospheric Administration, Miami, Florida	2005 – 2010

Education

University of Miami Ph.D. in Meteorology and Physical Oceanography Dissertation title: Mechanisms of Tropical Pacific Climate Change: Beyond the Bjerknes Feedback Advisor: Prof. Amy Clement	2008 – 2011
University of Miami M.Sc. in Meteorology and Physical Oceanography Thesis title: Climate Response of the Equatorial Pacific to Global Warming Advisor: Prof. Amy Clement	2006 – 2008
Instituto Tecnológico de Buenos Aires Mechanical Engineering	1996 – 2000

Honors & Awards

Roland Madden Visiting Fellowship, National Center for Atmospheric Research, 2014.
SOEST Young Investigator Fellowship, 2012-2013.
RSMAS Walton Smith Prize, Best Ph.D. dissertation, 2011.
RSMAS/MPO best student paper (DiNezio et al. 2009b), 2009.

Service

<i>Member</i> NOAA/CPC ENSO diagnostics panel (http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html).	2011–present
<i>Member</i> UT Science Olympiad Team (https://ig.utexas.edu/students/science-olympiad-at-utig/).	2017–present
<i>Member</i> CLIVAR Large “Initial-Condition” Earth System Model Ensembles.	2018–present
<i>Member</i> NOAA CPC MAPP Drought Task Force.	2014–2019
<i>Contributing author</i> IPCC AR6 Chapter 2: Changing state of the climate system	
<i>Contributing author</i> IPCC AR5 Chapter 5: Information from Paleoclimate Archives.	
<i>Reviewer</i> DOE, NSF, Nature, Nat. Geosci., J. of Climate, Geophys. Res. Lett., Clim. Dyn.	

Invited Talks

Glacial Lessons on Tropical Climate Change, *PMIP30*, 2021.
Aumento de la variabilidad tropical extrema en respuesta al Calentamiento Global, University of Buenos Aires, 2021.

* Technical support position with different responsibilities than UTIG position despite the same title.

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Extreme tropical variability under greenhouse warming, *Colorado State University*, 2021.
Extreme tropical variability under greenhouse warming, *University of Miami*, 2021.
Improving predictions of Indian Ocean climate change using paleoclimate data, *AGU Fall meeting*, 2020.
Glacial lessons on tropical climate change, *Oceanography Seminar, University of Washington*, 2020.
Glacial lessons on tropical climate change, *INSTAAR Seminar, University of Colorado Boulder*, 2020.
How past changes in El Niño could inform its future, *AGU Fall meeting*, 2019.
Unprecedented climate swings in the tropics driven by greenhouse warming, *AGU Fall meeting*, 2019.
Can the tropical oceans amplify climate change? *BASC seminar, U. of California Berkeley*, Sept 11, 2019.
Glacial lessons on tropical climate change, *CGD seminar, NCAR, Feb 2019*.
Could an El Niño happen in the Indian Ocean? *Atmospheric Sciences Seminar, U. of Hawaii*, Sept 5, 2018.
Bridging theory, observations, and models of the El Niño/Southern Oscillation, *Natural Variability in the Pacific Summer School, Princeton U.*, August 15–17, 2018.
Weaker Indian monsoon due to glacial ventilation, *Goldschmidt Conference*, August 13, 17, 2018.
Mechanisms controlling the position of the Inter-Tropical Convergence Zone, *2nd WCRP Grand Challenge Meeting on Monsoons and Tropical Rain Belts*, July 2-5, 2018.
Asymmetries in the predictability of El Niño and La Niña: Implications for TPOS2020, *TPOS2020 workshop*, May 3, 2018.
How early could the current La Niña have been predicted? *International Research Institute for Climate and Society*, April 4, 2018.
Glacial lessons on tropical climate change, *Lamont Doherty Earth Observatory, Columbia University*, April 6, 2018.
How early could the current La Niña have been predicted? *Texas A&M, Oceanography seminar*, Feb 18, 2018.
Prediction of 2-year La Niña in CESM. *CGD Seminar, NCAR*, October 24, 2017.
Glacial lessons on tropical climate change, *Department of Geosciences Colloquium, University of Arizona*, October 12, 2017.
The climate of the Indo-Pacific warm pool at the Last Glacial Maximum. *University of Texas Institute for Geophysics*, 2015.
Simulating the effect of glacial sea level changes on Indo-Pacific climate. *AGU Fall meeting*, 2014.
CMIP5: Uncertainties in tropical climate and carbon uptake. *CLIVAR Carbon Cycle Workshop*, 2014.
The Role of the Ocean in Tropical Pacific Climate Variability and Change. *University of Colorado Boulder*, February 2014.
Mean Climate Controls on the Simulated Response of ENSO to Increasing Greenhouse Gases. *AGU Fall meeting*, 2012.
Non-linear controls on the persistence of La Nina events in CCSM. *CGD Seminar, NCAR*, 30 October 2012.
Glacial-interglacial rainfall dynamics of the warm pool: dynamics and detection in models. *Lake Towuti Drilling Workshop, Indonesia, March 2011*.
Tropical Pacific Climate Change. *Brown U.*, March 2011.
The Role of the Ocean in Tropical Pacific Climate Variability and Change. *University of California LA*, April 2011.
The Response of the Walker Circulation to LGM Forcing: Implications for Detection in Proxies. *AGU Fall meeting*, 2011.
Tropical Pacific Climate Change. *CGD Seminar, NCAR*, 3 May 2011.
Sensitivity of ENSO to Global Warming. *CLIVAR Workshop: New strategies for evaluating ENSO processes in climate models, Paris, France*, 17-19 November 2010.

Selected Publications

2020 – 2022 (CU Boulder)

- Lawman, A. E., **P. N. DiNezio**, J. W. Partin, S. G. Dee, K. Thirumalai, T. M. Quinn, 2022: Unraveling forced responses of extreme El Niño variability over the Holocene. *Sci. Adv.* accepted.
- Wu, X., Y. M. Okumura, and **P. N. DiNezio**, S. G. Yeager, and C. Deser 2022: The equatorial Pacific cold tongue bias in CESM1 and its influence on ENSO forecasts, *J. Climate*, accepted.
- Amaya, D. J., A. M. Seltzer, K. B. Karnauskas, J. M. Lora, X. Zhang, **P. N. DiNezio**, 2022: Air-sea coupling shapes North American hydroclimate response to ice sheets during the Last Glacial Maximum, *Earth Planet. Sci. Lett.*, <https://doi.org/10.1016/j.epsl.2021.117271>.
- Sun, C. T. M. Shanahan, **P. N. DiNezio**, N. P. McKay, P. D. Roy, 2021: Great Plains storm intensity since the last glacial controlled by spring surface warming, *Nat. Geosci.* **14**, 912–917, <https://doi.org/10.1038/s41561-021-00860-8>.
- Chikamoto, M. O. and **P. N. DiNezio**, 2021: Multi-century changes in the ocean carbon cycle controlled by the tropical oceans and the Southern Ocean. *Global Biogeochem. Cy.*, **35** e2021GB007090. <https://doi.org/10.1029/2021GB007090>.

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- Wu, X., Y. M. Okumura, and **P. N. DiNezio**, 2021: Predictability of El Niño duration based on the onset timing, *J. Climate*, **34**(4), 1351-1366, <https://doi.org/10.1175/JCLI-D-19-0963.1>.
- Wu, X., Y. M. Okumura, C. Deser, and **P. N. DiNezio**, 2021: Two-year Dynamical Predictions of ENSO Event Duration during 1954–2015. *J. Climate*, <https://doi.org/10.1175/JCLI-D-20-0619.1>.
- Zhu, J., B. L. Otto-Bliesner, E. C. Brady, C. J. Poulsen, J. E. Tierney, M. Lofverstrom and **P. N. DiNezio**, 2021: Assessment of equilibrium climate sensitivity of the Community Earth System Model version 2 through simulation of the Last Glacial Maximum. *Geophys. Res. Lett.*, **48**, <https://doi.org/10.1029/2020GL091220>
- Dee, S., Y. Okumura, S. Stevenson and **P. N. DiNezio**, 2020: Enhanced North American ENSO teleconnections during the Little Ice Age revealed by paleoclimate data assimilation. *Geophys. Res. Lett.*, **47**, <https://doi.org/10.1029/2020GL087504>.
- Lawman, A. E., J. W. Partin, S. G. Dee, C. A. Casadio, **P. N. DiNezio** and T. M. Quinn, 2020: Developing a coral proxy system model to compare coral and climate model estimates of changes in paleo-ENSO variability. *Paleoceanography and Paleoclimatology*, **35**, <https://doi.org/10.1029/2019PA003836>.
- Deser, C., A. S. Phillips, I. R. Simpson, N. Rosenbloom, D. Coleman, F. Lehner, A. G. Pendergrass, **P. N. DiNezio**, and S. Stevenson, 2020: Isolating the Evolving Contributions of Anthropogenic Aerosols and Greenhouse Gases: A New CESM1 Large Ensemble Community Resource, *J. Climate*, **33** (18), 7835-7858, <https://doi.org/10.1175/JCLI-D-20-0123.1>.
- Deser, C., Lehner, F., Rodgers, K.B. et al, 2020: Insights from Earth system model initial-condition large ensembles and future prospects. *Nat. Clim. Chang.* **10**, 277–286, <https://doi.org/10.1038/s41558-020-0731-2>.
- DiNezio P. N.**, M. Puy, K. Thirumalai, F.-F. Jin, and J. Tierney, 2020: Emergence of an equatorial mode of climate variability in the Indian Ocean under greenhouse warming. *Sci. Adv.* **6**, <https://doi.org/10.1126/sciadv.aay7684>.
- Deser, C., F. Lehner, K. B. Rodgers, T. Ault, T. L. Delworth, T. L., **P. N. DiNezio**, et al. 2020: Insights from Earth system model initial-condition large ensembles and future prospects. *Nat. Clim. Chang.* <https://doi.org/10.1038/s41558-020-0731-2>.
- 2016 – 2019 (UT Austin)**
- Thirumalai, K., **P. N. DiNezio**, J. E. Tierney, M. Puy, and M. Mohtadi, 2019: An El Niño mode in the glacial Indian Ocean? *Paleoceanography and Paleoclimatology*, **34**, <https://doi.org/10.1029/2019PA003669>.
- Wu, X., Y.M. Okumura, and **P.N. DiNezio**, 2019: What Controls the Duration of El Niño and La Niña Events? *J. Climate*, **32**, 5941–5965, <https://doi.org/10.1175/JCLI-D-18-0681.1>.
- D'Arcy, M. K., T. F., Schildgen, J. M. Turowski, and **P. N. DiNezio**, 2019. Inferring the timing of abandonment of aggraded alluvial surfaces dated with cosmogenic nuclides. *Earth Surf. Dynam.*, **7**, 755-771, <https://doi.org/10.5194/esurf-7-755-2019>.
- Windler, G., J. E. Tierney, **P. N. DiNezio**, K. Gibson, and R. Thunell, 2019: Shelf exposure influence on Indo-Pacific Warm Pool climate for the last 450,000 years. *Earth Planet Sci Lett.*, **516**, 66-76, <https://doi.org/10.1016/j.epsl.2019.03.038>.
- DiNezio, P. N.**, J. E. Tierney, B. Otto-Bliesner, A. Timmermann, T. Bhattacharya, N. Rosenbloom, and E. Brady, 2018: Glacial changes in tropical climate amplified by the Indian Ocean. *Sci. Adv.*, **4** (12) <https://doi.org/10.1126/sciadv.aat9658>.
- Erb, M. P., C. S. Jackson, A. J. Broccoli, D. W. Lea, P. J. Valdes, M Crucifix and **P. N. DiNezio**, 2018: Model evidence for a seasonal bias in Antarctic ice cores. *Nat. Comm.* **9**, <https://doi.org/10.1038/s41467-018-03800-0>.
- Lee, S.-K., H. Lopez, E.-S. Chung, **P. N. DiNezio**, S.-W. Yeh and A. T. Wittenberg 2018: On the fragile relationship between El Niño and California rainfall. *Geophys. Res. Lett.* **45**, <https://doi.org/10.1002/2017GL076197>.
- DiNezio P. N.**, C. Deser, A. Karspeck, S. Yeager, J. Caron, N. Rosenbloom, Y. Okumura, G. Danabasoglu, G. Meehl, 2017a: A 2 Year Forecast for a 60–80% Chance of La Niña in 2017–2018. *Geophys. Res. Lett.* **44**, <https://doi.org/10.1002/2017GL074904>.
- Okumura, Y. M., **P. N. DiNezio**, and C. Deser, 2017: Evolving impacts of multi-year La Niña events on atmospheric circulation and US drought. *Geophys. Res. Lett.*, **44**, <https://doi.org/10.1002/2017GL075034>.
- Puy, M., J. Vialard, M. Lengaigne, E. Guilyardi, **P. N. DiNezio**, A. Voltaire, M. Balmaseda, G. Madec, C. Menkes, and M. J. McPhaden, 2017: Influence of Westerly Wind Events stochasticity on El Niño amplitude: the case of 2014 vs. 2015. *Clim Dyn.*, <https://doi.org/10.1007/s00382-017-3938-9>.
- Thirumalai, K., **P. N. DiNezio**, Y. Okumura, and C. Deser, 2017: Extreme April 2016 temperatures in Southeast Asia caused by El Niño and worsened by global warming. *Nat. Commun.*, **8**, <http://dx.doi.org/10.1038/ncomms15531>.
- Bhattacharya, T., J. E. Tierney, and **P. N. DiNezio**, 2017: Glacial reduction of the North American Monsoon via surface cooling and atmospheric ventilation, *Geophys. Res. Lett.*, **44**, 5113–5122, <https://doi.org/10.1002/2017GL073632>.
- DiNezio, P. N.**, C. Deser, Y. Okumura, and A. Karspeck, 2017a: Predictability of 2-year La Niña events in a coupled general circulation model. *Clim. Dyn.*, 866–894, <https://doi.org/10.1007/s00382-017-3575-3>.

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DiNezio, P. N., A. Timmermann, J. E. Tierney, F.-F. Jin, B. Otto-Bliesner, N. Rosenbloom, B. Mapes, R. Neale, R. F. Ivanovic, and A. Montenegro, 2016: Climate response of the Indo-Pacific warm pool to Last Glacial Maximum sea level. *Paleoceanography*, **31**, 866–894, <https://doi.org/10.1002/2015PA002890>.

2013 – 2015 (U. of Hawaii)

DiNezio P. N., L. Barbero, M. Church, N. Lovenduski, and C. Deser, 2015: Anthropogenic changes in the tropical carbon cycle masked by Pacific Decadal Variability? CLIVAR Variations.

Karamperidou C., **P. N. DiNezio**, A. Timmermann, F.-F. Jin, and K. Cobb, 2015: The response of ENSO flavors to mid-Holocene climate: Implications for proxy interpretation. *Paleoceanography*, **30**, 527–547, <https://doi.org/10.1002/2014PA002742>.

Chikamoto Y., A. Timmermann, S. Stevenson, and **P. N. DiNezio**, 2015: Decadal predictability of soil water, vegetation, and wildfire frequency over North America. *Clim. Dyn.*, **28** (5), 1865–1880, <https://doi.org/10.1007/s00382-015-2469-5>.

Stevenson S., A. Timmermann, Y. Chikamoto, S. Langford, and **P. N. DiNezio**, 2015: Stochastically Generated North American Megadroughts. *J. Climate* **28**, 1865–1880, <https://doi.org/10.1175/JCLI-D-13-00689.1>.

Lee, S.-K., **P. N. DiNezio**, E.-S. Chung, S.-W. Yeh, A. T. Wittenberg, and C. Wang, 2014: Spring persistence, transition and resurgence of El Niño. *Geophys. Res. Lett.*, **41** (23), 8578–8585, <https://doi.org/10.1002/2014GL062484>.

DiNezio, P. N., and C. Deser, 2014: Nonlinear controls on the persistence of La Niña. *J. Climate* **27**, 7335–7355, <https://doi.org/10.1175/JCLI-D-14-00033.1>.

Small, J. and coauthors, 2014: A new synoptic scale resolving global climate simulation using the Community Earth System Model. *J. Adv. Model Earth Sy.*, **6**, 1065–1094, <https://doi.org/10.1002/2014MS000363>.

DiNezio P. N., 2014: Climate science: A high bar for decadal forecasts of El Niño. *Nature*, **507**, 437–439, <http://dx.doi.org/10.1038/507437a>.

Clement A. and **P. N. DiNezio**, 2014: The Tropical Pacific Ocean: Back in the Driver's Seat? *Science*, **314**, 976–978, <http://dx.doi.org/10.1126/science.1248115>.

Zhang, H., A. Clement, **P. N. DiNezio**, 2013: The South Pacific Meridional Mode: A Mechanism for ENSO-like variability. *J. Climate*, **27**, 769–783, <https://doi.org/10.1175/JCLI-D-13-00082.1>.

DiNezio, P. N., and J. Tierney, 2013: The impact of sea level on glacial Indo-Pacific climate. *Nat. Geosci.*, **6**, 485–491, <https://doi.org/10.1038/ngeo1823>.

DiNezio, P. N., A. C. Clement, and G. Vecchi, 2013: Detectability of Changes in the Walker Circulation in Response to Global Warming. *J. Climate*, **26**, 4038–4048, <http://dx.doi.org/10.1175/JCLI-D-12-00531.1>.

2009 – 2012 (U. of Miami and AOML)

DiNezio, P. N., B. J. Kirtman, A. C. Clement, S.-K. Lee, G. A. Vecchi, and A. Wittenberg, 2012: Mean Climate Controls on the Simulated Response of ENSO to Increasing Greenhouse Gases. *J. Climate*, **25**, 21, 7399–7420, <https://doi.org/10.1175/JCLI-D-11-00494.1>.

DiNezio, P. N., A. Clement, G. A. Vecchi, B. Soden, A. J. Broccoli, B. L. Otto-Bliesner, and P. Braconnot, 2011: The response of the Walker circulation to Last Glacial Maximum forcing: Implications for detection in proxies. *Paleoceanography*, **26**, PA3217, <http://dx.doi.org/10.1029/2010PA002083>.

Clement A. C., **P. N. DiNezio**, and C. Deser, 2011: Rethinking the Ocean's Role in the Southern Oscillation. *J. Climate*, **24**(15), 4056–4072, <https://doi.org/10.1175/2011JCLI3973.1>.

DiNezio, P. N., and G. Goni, 2011: Direct Evidence of a Changing Fall-rate Bias in XBTs Manufactured During 1986–2008. *J. Atmos. Oceanic Technol.*, **28**(11), 1569–1578, <https://doi.org/10.1175/JTECH-D-11-00017.1>.

Goni, G.J., F. Bringas, and **P. N. DiNezio**, 2011: Observed Low Frequency Variability of the Brazil Current Front. *J. Geophys. Res.*, **116**, C10037, <http://dx.doi.org/10.1029/2011JC007198>.

DiNezio, P. N., A. C. Clement, and G. A. Vecchi, 2010: Reconciling Differing Views of Tropical Pacific Climate Change. *Eos, Trans. AGU*, **91**(16), 141–142, <https://doi.org/10.1029/2010EO160001>.

DiNezio, P. N., and G. J. Goni, 2010: Identifying and Estimating Biases Between XBT and Argo Observations Using Satellite Altimetry. *J. Atmos. Oceanic Technol.*, **27**, 226–240, <https://doi.org/10.1175/2009JTECHO711.1>.

DiNezio, P. N., A. C. Clement, G. A. Vecchi, B. J. Soden, B. J. Kirtman, and S.-K. Lee, 2009b: Climate Response of the Equatorial Pacific to Global Warming. *J. Climate*, **22**, 4873–4892, <https://doi.org/10.1175/2009JCLI2982.1>.

DiNezio, P. N., L. Gramer, W. Johns, C. Meinen, and M. Baringer, 2009a: Observed Interannual Variability of the Florida Current: Wind Forcing and the North Atlantic Oscillation. *J. Phys. Oceanogr.*, **39**, 721–736, <https://doi.org/10.1175/2008JPO4001.1>.