

# CURRICULUM VITAE

## DR. JESSICA E. TIERNEY

### Address

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### Appointments

UNIVERSITY OF ARIZONA Tucson, AZ  
**May 2018**– Associate Professor with tenure

UNIVERSITY OF ARIZONA Tucson, AZ  
**May 2015**–**April 2018** Associate Professor

WOODS HOLE OCEANOGRAPHIC INSTITUTION Woods Hole, MA  
**July 2012**–**April 2015** Assistant Scientist

LAMONT-DOHERTY EARTH OBSERVATORY OF COLUMBIA UNIVERSITY New York, NY  
**2010**–**2012** NOAA/UCAR Climate and Global Change Postdoctoral Fellow

### Education

BROWN UNIVERSITY Providence, RI  
**2010** Ph.D., Geology. Specialty: Paleoclimatology and Organic Geochemistry

BROWN UNIVERSITY Providence, RI  
**2008** M.Sc., Geology

BROWN UNIVERSITY Providence, RI  
**2005** B.A., (*Magna cum Laude*) Geology

### Peer-Reviewed Publications

(\*student, †postdoc)

55. Feakins, S. J., H. M. Liddy, L. Tauxe, V. Galy, X. Feng, **J. E. Tierney**, Y. Miao, and S. Warny (2020). Miocene C<sub>4</sub> grassland expansion as recorded by the Indus Fan. *Paleoceanography and Paleoclimatology*, accepted.
54. Crampton-Flood, E. D., **J. E. Tierney**, F. Peterse, F. M. S. A. Kirkels, and J. S. Sinninghe Damsté (2020). BayMBT: A Bayesian calibration model for branched glycerol dialkyl glycerol tetraethers in soils and peats. *Geochimica et Cosmochimica Acta*, 268, 142–159.

53. **Tierney, J. E.**, S. B. Malevich<sup>†</sup>, W. Gray, L. Vetter, K. Thirumalai (2019). Bayesian Calibration of the Mg/Ca Paleothermometer in Planktic Foraminifera, *Paleoceanography and Paleoclimatology*, <https://doi.org/10.1029/2019PA003744>.
52. Zhu, J., C. J. Poulsen, and **J. E. Tierney** (2019). Simulation of Eocene extreme warmth and climate sensitivity through low cloud feedbacks. *Science Advances*, 5, eaax1874, <https://doi.org/10.1126/sciadv.aax1874>.
51. **Tierney, J. E.**, A. M. Haywood, R. Feng, T. Bhattacharya<sup>†</sup> & B. L. Otto-Bliesner (2019). Pliocene warmth consistent with greenhouse gas forcing. *Geophysical Research Letters*, , 46, 9136–9144, <https://doi.org/10.1029/2019GL083802>
50. Thirumalai, K., P. N. DiNezio, **J. E. Tierney**, M. Puy, M. Mohtadi (2019). An El Niño mode in the glacial Indian Ocean? *Paleoceanography and Paleoclimatology*, 34, 1316–1327, <https://doi.org/10.1029/2019PA003669>.
49. Hollis, C. J., T. Dunkley Jones, E. Anagnostou, P. Bijl, M. J. Cramwinckel, Y. Cui, G. R. Dickens, K. M. Edgar, Y. Eley, D. Evans, G. L. Foster, J. Frieling, G. N. Inglis, E. M. Kennedy, R. Kozdon, V. Laurentano, C. H. Lear, K. Littler, N. Meckler, B. D. A. Naafs, H. Pälike, R. D. Pancost, P. Pearson, D. L. Royer, U. Salzmann, B. Schubert, H. Seebeck, A. Sluijs, R. Speijer, P. Stassen, **J. E. Tierney**, A. Tripathi, B. Wade, T. Westerhold, C. Witkowski, J. C. Zachos, Y. Zhang, M. Huber, and D. J. Lunt. (2019) The DeepMIP contribution to PMIP4: methodologies for selection, compilation and analysis of latest Paleocene and early Eocene climate proxy data, incorporating version 0.1 of the DeepMIP database. *Geoscientific Model Development*, 12, 3149-3206. <https://doi.org/10.5194/gmd-2018-309>.
48. Malevich, S. B.<sup>†</sup>, L. Vetter, and **J. E. Tierney** (2019). Global Core Top Calibration of  $\delta^{18}\text{O}$  in Planktic Foraminifera to Sea Surface Temperature. *Paleoceanography and Paleoclimatology*, 34, <https://doi.org/10.1029/2019PA003576>
47. Windler, G.\* , **J. E. Tierney**, P. N. DiNezio, K. Gibson, R. Thunell (2019). Shelf exposure influence on Indo-Pacific Warm Pool climate for the last 450,000 years. *Earth and Planetary Science Letters*, 516, 66–76. <https://doi.org/10.1016/j.epsl.2019.03.038>
46. Feakins, S. J., M. S. Wu, C. Ponton, **J. E. Tierney** (2019). Biomarkers reveal abrupt switches in hydroclimate during the last glacial in southern California. *Earth and Planetary Science Letters*, 515, 164–172. <https://doi.org/10.1016/j.epsl.2019.03.024>
45. Martínez-Sosa, P\* and **J. E. Tierney** (2019). Lacustrine branched GDGT response to microcosm and mesocosm incubations. *Organic Geochemistry*, 127, 12–22, <https://doi.org/10.1016/j.orggeochem.2018.10.011>.
44. DiNezio, P. N., **J. E. Tierney**, B. L. Otto-Bliesner, A. Timmermann, T. Bhattacharya, N. Rosenbloom, E. Brady (2018). Glacial changes in tropical climate amplified by the Indian Ocean. *Science Advances*, 4, eaat9658.
43. Bhattacharya, T.<sup>†</sup>, **J. E. Tierney**, J. A. Addison, and J. W. Murray (2018). Ice sheet modulation of deglacial North American Monsoon intensification. *Nature Geoscience*, 11, 848–852 <https://doi.org/10.1038/s41561-018-0220-7>.
42. **Tierney, J. E.** and M. P. Tingley (2018). BAYSPLINE: a new calibration for the alkenone paleothermometer. *Paleoceanography and Paleoclimatology*, 33, 281–301, <https://doi.org/10.1002/2017PA003201>.

41. Ummenhofer, C. C., M. Kuliike and **J. E. Tierney** (2018). Extremes in East African hydroclimate and links to Indo-Pacific variability on interannual to decadal timescales, *Climate Dynamics*, 50, 2971–2991. <https://doi.org/10.1007/s00382-017-3786-7>.
40. Smerdon, J. E., J. Luterbacher, S. J. Phipps, K. J. Anchukaitis, T. Ault, S. Coats, K. M. Cobb, B. I. Cook, C. Colose, T. Felis, A. Gallant, J. H. Jungclauss, B. Konecky, A. LeGrande, S. Lewis, A. S. Lopatka, W. Man, J. S. Mankin, J. T. Maxwell, B. L. Otto-Bliesner, J. W. Partin, D. Singh, N. J. Steiger, S. Stevenson, **J. E. Tierney**, D. Zanchettin, H. Zhang, A. R. Atwood, L. Andreu-Hayles, S. H. Baek, B. Buckley, E. R. Cook, R. D'Arrigo, S. G. Dee, M. Griffiths, C. Kulkarni, Y. Kushnir, F. Lehner, C. Leland, H. W. Linderholm, A. Okazaki, J. Palmer, E. Piovano, C. C. Raible, M. P. Rao, J. Scheff, G. A. Schmidt, R. Seager, M. Widmann, A. P. Williams, E. Xoplaki (2017). Comparing proxy and model estimates of hydroclimate variability and change over the Common Era, *Climate of the Past*, 13, 1851–1900, <https://doi.org/10.5194/cp-13-1851-2017>.
39. **Tierney, J. E.**, P. B. deMenocal and P. D. Zander (2017). A climatic context for the out-of-Africa migration. *Geology*, 45, 1023–1026. <https://doi.org/10.1130/G3947.1>.
38. **Tierney, J. E.**, J. S. Sinninghe Damsté, R. D. Pancost, A. Sluijs, and J. C. Zachos. (2017). Eocene temperature gradients. *Nature Geoscience*, 10, 538-539.
37. Lee, H., S. J. Feakins, Z. Lu, A. Schimmelmann, A. Sessions, **J. E. Tierney** and T. J. Williams (2017). Comparison of three methods for the methylation of aliphatic and aromatic compounds, *Rapid Communications in Mass Spectrometry*, 31, 1633-1640.
36. PAGES2k Consortium (2017). A global multiproxy database for temperature reconstructions of the Common Era. *Scientific Data* 4:170088 <https://doi.org/10.1038/sdata.2017.88>.
35. Bhattacharya, T.†, **J. E. Tierney**, and P. N. DiNezio (2017). Glacial reduction of the North American Monsoon via surface cooling and atmospheric ventilation, *Geophysical Research Letters*, 10, 5113–5122. <https://doi.org/10.1002/2017GL073632>.
34. Lunt, D. J., M. Huber, E. Anagnostou, M. L. J. Baatsen, R. Caballero, R. DeConto, H. A. Dijkstra, Y. Donnadieu, D. Evans, R. Feng, G. L. Foster, E. Gasson, A. S. von der Heydt, C. J. Hollis, G. N. Inglis, S. M. Jones, J. Kiehl, S. Kirtland Turner, R. L. Korty, R. Kozdon, S. Krishnan, J.-B. Ladant, P. Langebroek, C. H. Lear, A. N. LeGrande, K. Littler, P. Markwick, B. Otto-Bliesner, P. Pearson, C. J. Poulson, U. Salzmann, C. Shields, K. Snell, M. Starz, J. Super, C. Tabor, **J. E. Tierney**, G. J. L. Tourte, A. Tripathi, G. R. Upchurch, B. S. Wade, S. L. Wing, A. M. E. Winguth, N. M. Wright, J. C. Zachos and R. E. Zeebe (2017). The DeepMIP contribution to PMIP4: experimental design for model simulations of the EECO, PETM, and pre-PETM (version 1.0) *Geoscientific Model Development*, 10, 889–901.
33. **Tierney, J. E.**, F. S. R. Pausata, and P. B. deMenocal (2017). Rainfall regimes of the Green Sahara, *Science Advances*, 3, e1601503.
32. Richey, J. N. and **J. E. Tierney** (2016). GDGT and alkenone flux in the northern Gulf of Mexico: Implications for the TEX<sub>86</sub> and U<sub>37</sub><sup>K'</sup> paleothermometers, *Paleoceanography*, 31, 1547–1561. doi: 10.1002/2016PA003032.
31. Abram, N. J., H. V. McGregor, **J. E. Tierney**, M. N. Evans, N. P. McKay, D. S. Kaufman, and the PAGES 2K Consortium (2016). Early onset of industrial–era warming across the oceans and continents, *Nature*, 536, 411–418.
30. DiNezio, P. N., A. Timmermann, **J. E. Tierney**, F.-F. Jim, B. Otto-Bliesner, N. Rosenbloom, B. Mapes, R. Neale, R. F. Ivanovic and A. Montenegro (2016). The climate response of the Indo-Pacific warm pool to glacial sea level, *Paleoceanography*, 31, 866–894.

29. Rose, C., P. J. Polissar, **J. E. Tierney**, T. Filley, and P. B. deMenocal (2016). Changes in northeast African hydrology and vegetation associated with Pliocene-Pleistocene sapropel cycles, *Philosophical Transactions of the Royal Society B*, 371, 20150243.
28. Liddy, H., Feakins, S. J. and **J. E. Tierney** (2016). Cooling and drying in northeast Africa across the Pliocene, *Earth and Planetary Science Letters*, 449, 430–438.
27. Toomey, M. R., J. P. Donnelly and **J. E. Tierney** (2016). South Pacific hydrologic and cyclone variability during the last 3,000 years, *Paleoceanography*, 31, 491–504. doi: 10.1002/2015PA002870.
26. Fleming, L.\* and **J. E. Tierney** (2016). An automated method for the determination of the TEX<sub>86</sub> and U<sub>37</sub><sup>K'</sup> paleotemperature indices, *Organic Geochemistry*, 92, 84–91. doi: 10.1016/j.orggeochem.2015.12.011.
25. **Tierney, J. E.**, F. S. R. Pausata, and P. B. deMenocal (2016). Deglacial Indian monsoon failure and North Atlantic stadials linked by Indian Ocean surface cooling, *Nature Geoscience*, 9, 46–50. doi: 10.1038/ngeo2603.
24. **Tierney, J. E.**, C. C. Ummenhofer, and P. B. deMenocal (2015). Past and future rainfall in the Horn of Africa, *Science Advances*, 1, e1500682, doi: 10.1126/sciadv.1500682.
23. **Tierney, J. E.** and M. P. Tingley (2015). A TEX<sub>86</sub> surface sediment database and extended Bayesian calibration, *Scientific Data*, 2, No. 150029, doi: 10.1038/sdata.2015.29.
22. **Tierney, J. E.**, N. J. Abram, K. J. Anchukaitis, M. N. Evans, C. Giry, K. H. Kilbourne, C. P. Saenger, H. C. Wu and J. Zinke (2015), Tropical sea-surface temperatures for the past four centuries reconstructed from coral archives, *Paleoceanography*, 30, 226–252. doi: 10.1002/2014PA002717.
21. **Tierney, J. E.**, Biomarker-based inferences of past climate: the TEX<sub>86</sub> paleotemperature proxy (2014), in “Volume 12: Organic Geochemistry,” *Treatise on Geochemistry, second edition*, 379–393.
20. Dubois, N., D. W. Oppo, V. V. Galy, M. Mohtadi, S. van der Kaars, **J. E. Tierney**, Y. Rosenthal, T. I. Eglinton, A. Lückge, and B. K. Linsley (2014), Indonesian vegetation response to changes in rainfall seasonality over the past 25,000 years, *Nature Geoscience*, 7, 513–517. doi: 10.1038/ngeo2182.
19. **Tierney, J. E.** and M. P. Tingley (2014), A Bayesian, spatially-varying calibration for the TEX<sub>86</sub> proxy, *Geochimica et Cosmochimica Acta*, 127, 83–106. doi: 10.1016/j.gca.2013.11.026.
18. **Tierney, J. E.** and P. B. deMenocal (2013), Abrupt shifts in Horn of Africa hydroclimate since the Last Glacial Maximum, *Science*, 342, 843–846. doi: 10.1126/science.1244809.
17. DiNezio, P. N. and **J. E. Tierney** (2013), The effect of sea level on glacial Indo-Pacific climate, *Nature Geoscience*, 6, 485–491. doi: 10.1038/ngeo1823.
16. **Tierney, J. E.**, J. E. Smerdon, K. J. Anchukaitis, and R. Seager (2013), Multidecadal variability in East African hydroclimate controlled by the Indian Ocean, *Nature*, 493, 389–392. doi: 10.1038/nature11785.
15. Anchukaitis, K. J. and **J. E. Tierney**, (2013), Identifying coherent spatiotemporal modes in time-uncertain proxy paleoclimate records, *Climate Dynamics*, 41(5–6), 1291–1306. doi: 10.1007/s00382-012-1483-0
14. **Tierney, J. E.**, D. W. Oppo, A. N. LeGrande, Y. Huang, Y. Rosenthal and B. K. Linsley, (2012), The influence of Indian Ocean atmospheric circulation on Warm Pool hydroclimate during the Holocene epoch, *Journal of Geophysical Research–Atmospheres*, 117, D19108, doi:10.1029/2012JD018060.

13. deMenocal, P. B. and **Tierney, J. E.**, (2012), Green Sahara: African Humid Periods paced by Earth's orbital changes, *Nature Education Knowledge*, 3(10):12.
12. **Tierney, J. E.**, GDGT Thermometry: Lipid tools for reconstructing paleotemperatures (2012), in: "Reconstructing Earth's Deep Time Climate", *The Paleontological Society Papers* 18, 115–131.
11. **Tierney, J. E.**, S. Schouten, A. Pitcher, E. C. Hopmans and J. S. Sinninghe Damsté (2012), Core and intact polar glycerol dialkyl glycerol tetraethers (GDGTs) in Sand Pond, Warwick, Rhode Island (USA): Insights into the origin of lacustrine GDGTs, *Geochimica et Cosmochimica Acta*, 77, 561-581, doi:10.1016/j.gca.2011.10.018.
10. **Tierney, J. E.**, S. C. Lewis, B. I. Cook, A. N. LeGrande and G. A. Schmidt (2011), Model, proxy and isotopic perspectives on the East African Humid Period, *Earth and Planetary Science Letters*, 307,103-112, doi: 10.1016/j.epsl.2011.04.038.
9. **Tierney, J. E.**, J. M. Russell, J. S. Sinninghe Damsté, Y. Huang and D. Verschuren (2011), Late Quaternary behavior of the East African monsoon and the importance of the Congo Air Boundary, *Quaternary Science Reviews*, 30(7-8), 798-807, doi: 10.1016/j.quascirev.2011.01.017.
8. **Tierney, J. E.**, J. M. Russell, H. Eggermont, E. C. Hopmans, D. Verschuren and J. S. Sinninghe Damsté (2010), Environmental controls on branched tetraether lipid distributions in tropical East African lake sediments, *Geochimica et Cosmochimica Acta*, 74(17), 4902-4918, doi: 10.1016/j.gca.2010.06.002.
7. **Tierney, J. E.**, M. T. Mayes, N. Meyer, C. Johnson, P. W. Swarzenski, A. S. Cohen and J. M. Russell (2010), Late-twentieth-century warming in Lake Tanganyika unprecedented since AD 500, *Nature Geoscience*, 3(6), 422-425, doi: 10.1038/NGEO865.
6. **Tierney, J. E.**, D. W. Oppo, Y. Rosenthal, J. M. Russell and B. K. Linsley (2010), Coordinated hydrological regimes in the Indo-Pacific region during the past two millennia, *Paleoceanography*, 25, PA1102, doi: 10.1029/2009PA001871.
5. **Tierney, J. E.**, J. M. Russell and Y. Huang (2010), A molecular perspective on Late Quaternary climate and vegetation in the Lake Tanganyika basin, East Africa, *Quaternary Science Reviews*, 29(5-6), 787-800, doi: 10.1016/j.quascirev.2009.11.030.
4. **Tierney, J. E.** and J. M. Russell (2009), Distributions of branched GDGTs in a tropical lake system: Implications for lacustrine application of the MBT/CBT paleoproxy, *Organic Geochemistry*, 40(9), 1032-1036, 10.1016/j.orggeochem.2009.04.014.
3. Agnihotri, R., M. A. Altabet, T. D. Herbert and **J. E. Tierney** (2008), Subdecadally resolved paleoceanography of the Peru margin during the last two millennia, *Geochemistry, Geophysics, Geosystems*, 9, Q05013, doi: 10.1029/2007GC001744.
2. **Tierney, J. E.**, J. M. Russell, Y. Huang, J. S. Sinninghe Damsté, E. C. Hopmans and A. S. Cohen (2008), Northern Hemisphere controls on tropical southeast African climate during the past 60,000 years, *Science*, 322(5899), 252-255, doi: 10.1126/science.1160485.
1. **Tierney, J. E.** and J. M. Russell (2007), Abrupt climate change in southeast tropical Africa influenced by Indian monsoon variability and ITCZ migration, *Geophysical Research Letters*, 34(15), L15709, doi: 10.1029/2007GL029508.

*Works in Progress*

10. **J. E. Tierney**, J. Zhu, J. King\*, S. B. Malevich<sup>†</sup>, G. J. Hakim, C. J. Poulsen (under review). Glacial cooling and climate sensitivity revisited. EarthArXiv preprint: <https://eartharxiv.org/me5uj/>.
9. **J. E. Tierney**, C. J. Poulsen, I. P. Montañez, T. Bhattacharya, R. Feng, H. L. Ford, B. Hönisch, G. N. Inglis, S. V. Petersen, N. Sagoo, C. R. Tabor, K. Thirumalai, J. Zhu, N. J. Burls, Y. Goddérís, G. L. Foster, B. T. Huber, L. C. Ivany, S. K. Turner, D. J. Lunt, J. C. McElwain, B. J. W. Mills, B. L. Otto-Bliesner, A. Ridgwell, Y. G. Zhang (under review). Past climates inform our future. *Science*.
8. Inglis, G. N., F. Bragg, N. Burls, D. Evans, G. L. Foster, M. Huber, D. J. Lunt, N. Siler, S. Steinig, R. Wilkinson, E. Anagnostou, M. Cramwinckel, C. J. Hollis, R. D. Pancost and **J. E. Tierney** (under review). Global mean surface temperature and climate sensitivity of the EECO, PETM and latest Paleocene. *Climate of the Past*.
7. Kageyama, M., S. P. Harrison, M.-L. Kapsch, M. Löffverström, J. M. Lora, U. Mikolajewicz, S. Sherriff-Tadano, T. Vadsaria, A. Abe-Ouchi, N. Bouttes, A. N. LeGrande, F. Lhardy, G. Lohmann, P. A. Morozova, R. Ohgaito, A. Quiquet, D. M. Roche, X. Shi, A. Schmittner, **J. E. Tierney**, E. Volodin (under review). The PMIP4-CMIP6 Last Glacial Maximum experiments: preliminary results and comparison with the PMIP3-CMIP5 simulations. *Climate of the Past*
6. McClymont, E. L., H. L. Ford, S. L. Ho, J. C. Tindall, A. M. Haywood, M. Alonso-Garcia, I. Bailey, M. A. Berke, K. Littler, M. Patterson, B. Petrick, F. Peterse, A. C. Ravelo, B. Risebrobakken, S. De Schepper, G. E. A. Swann, K. Thirumalai, **J. E. Tierney**, C. van der Weijst, and S. White (under review). Lessons from a high CO<sub>2</sub> world: an ocean view from ~ 3 million years ago. *Climate of the Past*.
5. Lunt, D. J., F. Bragg, W.-L. Chan, D. K. Hutchinson, J.-B. Ladant, I. Niezgodzki, S. Steinig, Z. Zhang, J. Zhu, A. Abe-Ouchi, A. M. de Boer, H. K. Coxall, Y. Donnadieu, G. Knorr, P. M. Langebroek, G. Lohmann, C. J. Poulsen, P. Sepulchre, **J. E. Tierney**, P. J. Valdes, T. Dunkley Jones, C. J. Hollis, M. Huber, and B. L. Otto-Bliesner (under review). DeepMIP: Model intercomparison of early Eocene climatic optimum (EECO) large-scale climate features and comparison with proxy data. *Climate of the Past*.
4. Inglis, G. N. and **J. E. Tierney**. “TEX<sub>86</sub>”, in *Geochemical Tracers in Earth System Science* (under review).
3. Martínez-Sosa, P.\* , **J. E. Tierney**, L. K. Meredith (under review). Controlled lacustrine microcosms show a brGDGT response to environmental perturbations. *Organic Geochemistry*.
2. Stokke, E. W., M. Jones, **J. E. Tierney**, H. Svensen, J. H. Whiteside (under review). Temperature changes across the Palaeocene-Eocene Thermal Maximum – a new high-resolution TEX<sub>86</sub> temperature record from the North Sea.
1. Johnson, K. R., M. L. Griffiths, T. Bhattacharya<sup>†</sup>, A. Borsato, F. Silvia, G. M. Henderson, A. N. LeGrande, M. Lewis, A. Mason, S. Syed, **J. E. Tierney**, J. K. Wang, H. Yang. (in revision) Asian Monsoon and Southeast Asian rainfall response to orbital forcing and abrupt climate change. *Nature Geoscience*.

## Fellowships and Awards

*Packard Fellowship in Science and Engineering*, 2015–2020

*University of Arizona College of Science Galileo Circle Curie Award*, 2019

*University of Arizona Department of Geosciences Outstanding Faculty Award*, 2019

*Editor’s Citation for Excellence in Refereeing - Paleoceanography and Paleoclimatology*, 2018

*University of Arizona Honors College Excellence in Teaching Award, 2017*

*Pieter Schenck Award* (European Association of Organic Geochemists), given “to a scientist normally under 35 years of age who has made a major contribution in any specific area of organic geochemistry or a related field,” 2015

*James B. Macelwane Medal* (American Geophysical Union), “for significant contributions to the geophysical sciences by an outstanding early career scientist,” 2014

*Fellow of the American Geophysical Union, 2014*

*NOAA/UCAR Climate and Global Change Postdoctoral Fellowship, 2010–2012*

*Sigma Xi Outstanding Graduate Student Award, Brown University 2010*

*National Defense Science and Engineering Graduate Fellowship, 2006–2009*

### **Current Research Grants**

American Chemical Society Petroleum Research Fund, \$110,000; 1/1/20–1/1/22; “Determination of Ancient Depositional Environments via Multivariate Analyses of Glycerol Ether Lipids.”

NSF AGS-1903171, \$62,899; 8/14/19–7/31/22; “Collaborative Research: A Paleoclimate Perspective on the Response of Southwest North American Rainfall to Elevated Greenhouse Gases.”

NSF EAR-1812525, \$203,536; 8/15/18–7/31/23; “Collaborative Research: Anatomy of a Greenhouse World: The Early Eocene of the Green River Basin, Wyoming.”

NSF OCE-1651034, \$436,575; 5/1/17–4/30/22; “Molecular views of past changes in the North American monsoon.”

NSF AGS-1602301, \$345,604; 8/1/16–6/30/20; co-PIs: G. Hakim, D. Battisti “Collaborative Research: Paleoclimate Reanalysis: New views of past climates.”

Heising-Simons Foundation, \$598,231; 6/1/16–5/30/21; co-PIs: G. Hakim, L. Kump, A. Ridgwell, C. Poulsen. “Paleoclimate data assimilation for deep time.”

Packard Foundation Fellowship, \$875,000; 10/15/15–10/14/20.

### **Previous Research Grants**

NSF EAR-1451818, \$224,947; 9/1/15–8/1/19; co-PI: Isla Castañeda. “Collaborative Research: Validation of the Lacustrine Branched GDGT Paleothermometer”.

National Geographic Society, \$20,480; 1/1/16–12/31/17; “Biomarker views of Kalahari climate change.”

NSF OCE-1203892, \$336,514; 8/15/12–8/14/16; co-PIs: C. Ummenhofer, V. Galy, and P. deMenocal. “Collaborative Research: A combined proxy and model investigation of Late Holocene paleoclimate in the Horn of Africa.”

NSF AGS-1443176, \$75,894; 6/15/14–6/14/16; “EAGER: Development of a multivariate biomarker analysis technique for paleoclimate reconstruction.”

NSF EAR-1412195, \$48,279; 12/1/13–11/30/14; “RAPID: Analyzing  $\delta D_{wax}$  in the Dead Sea DSDDP Core as an indicator of aridity and a stratigraphic aide.”

## Invited Presentations [last two years]

The Last Glacial Maximum revisited, University of California, Irvine, Department of Earth System Science, Irvine, CA, January 2020.

Last Glacial Maximum cooling and climate sensitivity revisited, AGU Fall Meeting 2019, San Francisco, CA, December 2019.

A new view of the Eocene greenhouse world from paleoclimate data assimilation, AGU Fall Meeting 2019, San Francisco, CA, December 2019.

New views of past climates from paleoclimate data assimilation, University of California Berkeley, Department of Earth and Planetary Science, October 2019.

New views of warm worlds from paleoclimate data assimilation, Goldschmidt 2019, Barcelona, Spain, August 2019.

Earth's climate trajectory: Past, present, future [public talk], Aspen Institute for Global Change, Aspen, CO May 2019.

Revisiting the Pliocene ocean as an analog of near-term climate change, *Purdue University, Department of Earth, Atmospheric, and Planetary Sciences*, West Lafayette, IN April 2019.

Revisiting the Pliocene ocean as an analog of near-term climate change, *Baylor University, Department of Geosciences*, Waco, TX February 2019.

Patterns of warmth in the Pliocene past and imminent future, *AGU Fall Meeting*, Washington, DC, December 2018.

Revisiting the Pliocene ocean as an analog of near-term climate change, *University of Arizona, Department of Geosciences*, Tucson, AZ, September 2018.

Humans, drought & pirate-mud: the biomarker record of Horn of Africa climate, *University of California, Santa Cruz, Department of Ocean Sciences*, Santa Cruz, CA, May 2018.

Revisiting the Pliocene ocean as an analog for near-term climate change, *Stanford University, School of Earth, Energy & Environmental Sciences*, Palo Alto, CA, May 2018.

Ice ages and the latent dynamics of the Indian Ocean, *New York University, Courant Institute*, New York, NY, March 2018.

Glacial tropical climate revisited, *Harvard University, Department of Earth and Planetary Sciences*, Cambridge, MA, February 2018.

## Teaching

THE UNIVERSITY OF ARIZONA

Tucson, AZ

### Graduate classes

*Organic Geochemistry (GEOS 486/586)*

*The Dynamics of Warm Climates Seminar (GEOS 596H)*

*Climate & Tectonics Seminar (GEOS 596E)*



## **Undergraduate classes**

*History of Earth's Climate (GEOS 342)*

*Ocean Sciences (GEOS 412A and 412B)*

## **Advising**

*Postdoctoral Scholars (University of Arizona)*

Matthew Osman (2019–)

Lauren O'Connor (2019–)

Steven Brewster Malevich (2017–2019) Current position: Analyst, Rhodium Group

Tripti Bhattacharya (2016–2018) Current position: Assistant Professor in the Department of Earth Sciences, Syracuse University

*Graduate Students (University of Arizona)*

Grace Windler (2016-present; Primary advisor)

Pablo Martinez Sosa (2016-present; Primary advisor)

Dervla Meegan Kumar (2018-present; Primary advisor)

Jonathan King (2018-present; co-Primary advisor)

Emma Reed (2019-present; Dissertation advisor)

Elizabeth Patterson (2017-2018; Masters' Thesis advisor)

Jessie Pearl (2015-2019; Dissertation advisor)

Mathew Fox (2016-present; Dissertation advisor)

Jennifer Kielhofer (2016-present; Dissertation advisor)

Jhon Sebastian Jimenez (2017-present; Dissertation advisor)

Gloria Jimenez (2018; Dissertation advisor)

Connor Nolan (2019; Dissertation advisor)

*Undergraduate Students*

THE UNIVERSITY OF ARIZONA

Jeshua Case Gonzalez (2016-2017), Nicholas Montiel (2016-2018), Mikayla Gerdes-Morgan (2016-2018), Mary Kavanaugh (2017), Julia Huls (2017), Natasha Rapp (2017), Tianshu Kong (2017), Richard Marcelain (2017-2018), Leah Ortega (2017-2019), Andrea Mason (2018-2019), Matt Banaszynski (2018-2019), Katherine Graves (2018-present), Logan McCarty (2019-present)

WOODS HOLE OCEANOGRAPHIC INSTITUTION (*Northeastern University Cooperative Guest Students*)

Laura Fleming (2013-2015), Anastasia Maydanov (2015), Natalie Grace Schulz (2014), Hope Ianiri (2014), Brecia Douglas (2013)

LAMONT-DOHERTY EARTH OBSERVATORY OF COLUMBIA UNIVERSITY (*Summer REU student*)

Richard Taylor (2012)

BROWN UNIVERSITY

Jena Johnson (2009), Marc Mayes (2008-2009), Natacha Meyers (2009), Jesse Farmer (2009)

## **Service**

### ***Professional service at the University of Arizona [Department in brackets]***

*Search committee chair*, Paleoclimatology Hire, Spring 2018; Paleontology Lecturer Hire, Spring 2016. [Geosciences]

*Search committee member*, Gem Science Hire, Fall 2019; Marine Geosciences Hire, Spring 2018 [Geosciences]; Physical Meteorology Hire, Spring 2016 [Hydrology and Atmospheric Sciences].

*Committee member*, 2018-present, Graduate admissions [Geosciences]

*Head Judge*, GeoDaze, Spring 2018. [Geosciences]

*Guest Lecturer*, The University of Arizona Osher Lifelong Learning Institute

*Board member*, 2018-present, Institute for the Environment Faculty Advisory Board

*Committee member*, 2018-present, College of Science Climate Committee

### ***Professional service outside the University of Arizona***

Committee Member, CESM Scientific Steering Committee, National Center for Atmospheric Research (NCAR).

*Lead Author*, Intergovernmental Panel on Climate Change Sixth Assessment Report, Working Group I

*Associate Editor*, Geochimica et Cosmochimica Acta, 2018-present.

*AGU Fellows Selection Committee*, Paleoceanography & Paleoclimatology, 2019-present.

*Theme Leader & Session convener*, Goldschmidt 2019.

*Instructor*, Advanced Climate Dynamics Course, Fall 2018, 2019.

*Instructor*, Urbino Summer School in Paleoclimatology, Summer 2016, 2017.

*Group Leader*, the PAGES (Past Global Changes) Ocean2K high-resolution synthesis group, 2012–2015.

*Panel Reviewer*, NSF EAR Geobiology and Low-Temperature Geochemistry Program, NSF EAR Sedimentology and Paleobiology Program, NSF Paleo Perspectives on Climate Change (P2C2).

*Geochronology, Geophysics, and Geochemistry Councilor*, American Quaternary Association, 2012–2016.

*Participant*, The Expert Witness Training Academy, William Mitchell Law School, 2013.

*Scientific committee member*, International Meeting of Organic Geochemistry (IMOG) 2015.

*Session convener*, Fall American Geophysical Union Meeting (2009, 2013, 2015, 2017); Goldschmidt (2015); AMQUA (2012).

*Professional Reviewer* of journal manuscripts for *Science*, *Science Advances*, *Nature*, *Nature Geoscience*, *Nature Communications*, *Proceedings of the National Academy of Sciences USA*, *Climate of the Past*, *Organic Geochemistry*, *Geochimica et Cosmochimica Acta*, *Geophysical Research Letters*, *Earth and Planetary Science Letters*, *Quaternary Science Reviews*, *The Holocene*, *Journal of Geophysical Research-Biogeosciences*, *Geology*, and *Paleoceanography and Paleoclimatology*.

*Proposal Reviewer* for the US NSF, the Swiss NSF and UK NERC.

*Professional Affiliations* with the American Geophysical Union, Geological Society of America, European Association of Organic Geochemists, American Quaternary Association, and PAGES.

### **Public Outreach**

*Guest Lecturer* “Cool Summer Nights” series, the Arizona-Sonora Desert Museum

*Speaker* Saddlebrooke Science Cafe series

*Ongoing educational collaboration* with the Arizona-Sonora Desert Museum involving high school Junior Docents in research on plant leaf wax compounds. The students collect leaf samples from Sonoran Desert plants every two weeks, learning species names and identification techniques. These samples are analyzed in the lab by undergraduate students, and then results are presented back to the Junior Docents. We discuss what the results imply about how plants adapt and survive in the desert environment, and interactively discover how chemical signatures of leaf wax compounds record climate change.

#### *Selected Media features*

“Ocean’s floor could provide weather clues,” *Cronkite News*, Nov 2, 2018 [https://www.youtube.com/watch?v=\\_dEt5aT6Z5U](https://www.youtube.com/watch?v=_dEt5aT6Z5U). This TV spot features our paleoclimate work on the North American monsoon and implications for future climate prediction.

“The Sahara wasn’t always covered in sand dunes,” *The Show*, KJZZ radio station, Feb 10, 2017. <http://theshow.kjzz.org/content/434136/sahara-desert-wasnt-always-covered-sand-dunes>. In this episode of *The Show* on Phoenix’s KJZZ, I discuss our Green Sahara research with Mark Brodie.

“The fats that take scientists back in time,” Feb 2, 2017. <https://www.chemistryworld.com/feature/chemical-fossils/2500243.article>. This online feature piece in *Chemistry World* by reporter Andy Extance featured my research based on using fossil fats to reconstruct climate change.

“Scientist loves climate history – and her tattoo proves it,” Oct 31, 2015. [http://tucson.com/news/blogs/scientific-bent/scientist-loves-climate-history-and-her-tattoo-proves-it/article\\_7b687698-9a94-5ba6-9040-ca520d11f88d.html](http://tucson.com/news/blogs/scientific-bent/scientist-loves-climate-history-and-her-tattoo-proves-it/article_7b687698-9a94-5ba6-9040-ca520d11f88d.html). This piece in the *Arizona Daily Star* by reporter Tom Beal highlights my African climate change research, my Packard Fellowship, and my scientific tattoo.

*Twitter*: @leafwax. Maintain ca. 5,000 followers.