Julien Emile-Geay

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Updated October 28, 2025

EDUCATION

2001–2006	**Graduate School of Arts and Sciences, Columbia University, New York**
	2006: Ph.D. in Climate Dynamics.
	Dissertation: ENSO dynamics and the Earth's climate : from decades to Ice Ages.
	advisors: Prof. Mark Cane, Dr. Richard Seager, Prof. Peter DeMenocal.
	2003: M.Phil. in Climate Dynamics.
2000–2001	**Université Paris VI, France / Ecole Normale Supérieure**
	M.S. in Ocean and Atmosphere Dynamics, with distinction.
1998–2000	**Ecole Normale Supérieure, Paris, France**
	B.S. in Earth Sciences, with honors

PROFESSIONAL APPOINTMENTS

2023–now	**Affiliated Faculty**, Information Sciences Institute
2022–now	**Professor of Earth Sciences**, University of Southern California
2016–2022	**Associate Professor of Earth Sciences**, University of Southern California
2008–2016	**Assistant Professor of Earth Sciences**, University of Southern California
2006–2008	**Postdoctoral Fellow**, Georgia Institute of Technology
2001–2006	**Graduate Research & Teaching assistant**, Columbia University

RESEARCH INTERESTS

ocean-atmosphere dynamics; low-frequency climate variability
forward and inverse modeling of climate proxies
low order climate models, paleoclimate modeling
climate informatics, model/data fusion.

PROFESSIONAL AFFILIATIONS

American Geophysical Union
Center for Applied Mathematical Sciences (USC)

RESEARCH SUPERVISION

Postdoctoral Scholars

Deborah Khider (PhD USC, Earth Sciences), principal supervisor, 2016 – 2018. Now a Research Lead at USC's Information Sciences Institute. Awards: EarthCube Distinguished Lecturer.

Michael Erb (PhD Rutgers, Climate Dynamics), principal supervisor, 2016 – 2017.
Now assistant research professor at Northern Arizona Unversity.

Jonathan Lawhead (PhD Columbia, Philosophy), jointly supervised with Ralph Wedgwood, 2014 – 2016.
Now faculty at University of Nevada in Reno. Awards: USC Sustainability postdoctoral fellowship.

Maud Comboul (PhD USC, Civil Engineering), principal supervisor, 2012 – 2015.
Machine Leaning Engineer in Bend, OR.
Awards: Climate Informatics Travel Grant 2013.

Nasim Mirnateghi (PhD UCSB, Electrical Engineering), principal supervisor, 2011– 2012

Dominique Guillot (PhD U. Laval (Quebec), Pure Mathematics), principal supervisor, 2010– 2012
   now associate professor at the University of Delaware (Mathematical Sciences)

Ph.D. students
   Maryam Niati, principal supervisor, 2025 – present.
   Tanaya Gondhalekar, principal supervisor, 2024 – present.
   Jordan Landers, principal supervisor, 2022 – present.
   Alexander James, principal supervisor, 2020 – 2025.
      Thesis: *Hydroclimate in Transition: Multiscale Insights from Holocene to Pleistocene Climate Records*
      current position: Principal Developer, Deep Blue Geophysics.
   Feng Zhu, principal supervisor, 2016 – 2021.
      Thesis: *Seeing the Future through the Lens of the Past: Fusing Paleoclimate Observations and Models*
      current position: Postdoctoral Fellow, National Center for Atmospheric Research, Boulder, CO.
   Jun Hu, principal supervisor, 2014 – 2019.
      Thesis: *Flowstone Ideograms: Deciphering the Climate Messages of Asian Speleothems*
      current position: Associate Professor, Xiamen University
   Sylvia Dee, principal supervisor, 2010 – 2015.
      Thesis: *A multi-model framework for high-resolution paleoclimatology: tracking signals from climate
         to proxy systems via water isotope systematics*
      current position: Assistant Professor, Rice University
      External travel awards obtained while at USC:
         PAGES Workshop: Holocene Climate as Context for Future Climate Change. Oct 2014
         ThinkSwiss Fellowship for NCCR Climate Summer School, Grindelwald, Switzerland, Sep 2013
   Jianghao Wang, principal supervisor, 2010 – 2015.
      Thesis: *Taking the temperature of the Common Era: statistics, patterns and dynamical insights.*
      current position: *Data Scientist at the Mathworks, Inc.*
      External travel awards obtained while at USC:
         PAGES Travel fellowship for the 4th OSM and 2nd YSM, 2013
         NCAR Travel fellowship for the 12th International Meeting of Statistical Climatology, 2013
         PAGES Travel fellowship for Advances in Climate Field Reconstruction Workshop, 2014
         CAS Travel fellowship for the 3rd Asia 2k Workshop, 2014
         NSF Travel fellowship for the 4th International Workshop on Climate Informatics, 2014

Thesis committees
   Daniel Getter (2025–present); Brian Schlaff (2025–present); Nataly Pineda (2025–present).
   Thaomy Vo (2024–present), Obin Sturm (2024–present); Shreya Ramesh (2024–present)
   Stephen Cropper (UCLA, 2025-2026)
   Max Berkelhammer (2010), Pat Horan (2009), Deborah Khider (2009–2011),
   Mengfang Zhu (2009–2012), Michael Cheetham (2009–2012), Haoran Meng (2017).
   Kate Vavra-Musser (Spatial Sciences, 2020 –2022)

Undergraduate students
   <u>Senior Theses</u>
      Shreya Agrawal, 2022-2023 *Model-data fusion for neopaleoclimatology*
      Zeynep Karaibrahim, 2022 *Abrupt Change Detection in the Presence of Noise*
      Tiffany Tsai, 2011 *Development of a tropical coral database for paleoclimate reconstruction*
         now a MS student at the Miami University of Ohio (Mathematics)
      Jill Hardy (Spring 2011 senior thesis), *Beyond the Hockey Stick: new approaches to paleoclimate
         reconstruction*; now a Research Meteorologist with the National Weather Service

   <u>Directed research</u>:
      Albus Shang, (2024–2025); **Shengyu Wang**, (2018–2019); **Adam Vaccaro**, (2013–2015);
      Yuxin Zhou (2013–2014); **Aubree Yeiser** (Fall 2012); **Paige Green** (summer 2009)

REFEREED PUBLICATIONS

Legend: Undergraduate student[⊎], Graduate student[⊛], Postdoc[‡], <u>Senior colleague</u>, Corresponding Author[□]

In preparation

60   **Emile-Geay, J.** & Viens, F.: The Echo Hypothesis: statement, testing, and climate implications. *Phil. Trans. Royal Soc. A*, in prep.

Submitted

61   Landers, J.P.[⊛], **J. Emile-Geay**, A. James[⊛], S.B. Munch and E. Bard (submitted), A causal examination of the solar influence on Holocene climate, *Geophys. Res. Lett.*

Published and in press

────────────────────────────── 2025 ──────────────────────────────

60   A. James[⊛□], **J. Emile-Geay**, J.W. Partin & D. Khider (2025), Global speleothem analysis reveals state-dependent hydrological response to orbital forcing. *Paleoceanography and Paleoclimatology*, 40, e2024PA005098, doi:10.1029/2024PA005098.

59   **Emile-Geay, J.**[□], G. Hakim, F. Viens, F. Zhu, and D. E. Amrhein (2025), Temporal comparisons involving paleoclimate data assimilation: challenges & remedies, *J. Climate*, doi:10.1175/JCLI-D-24-0101.1.

58   A. James[⊛□], Hu, J., **J. Emile-Geay**, J.W. Partin, N. Scroxton, N. Malik, and Y. Gao (2025), Regime shifts in Holocene paleohydrology as recorded by Asian speleothems, *Paleoceanography and Paleoclimatology, 40(1)*, e2024PA004, 974, doi: 10.1029/2024PA004974.

────────────────────────────── 2024 ──────────────────────────────

57   Yang, W., E. Wallace, G. Vecchi, T. Delworth, J. Donnelly, **J. Emile-Geay**, G. Hakim, L. Horowitz, R. Sullivan, R. Tardif, P. van Hengstum, T. Winkler, Last millennium hurricane activity linked to endogenous climate variability, *Nature Communications*, 15(1), 816, doi:10.1038/s41467-024-45112-6.

56   James, A.[⊛], **J. Emile-Geay**, N. Malik, and D. Khider (2024), Detecting Paleoclimate Transitions With Laplacian Eigenmaps of Recurrence Matrices (LERM), *Paleoceanography and Paleoclimatology*, 39(1), e2023PA004, 700, doi:10.1029/2023PA004700.

────────────────────────────── 2023 ──────────────────────────────

55   Cropper, S., C. W. Thackeray, and **J. Emile-Geay** (2023), Revisiting a Constraint on Equilibrium Climate Sensitivity From a Last Millennium Perspective, *Geophysical Research Letters*, 50(20), e2023GL104,126, doi:10.1029/2023GL104126.

54   Zhu, F., **J. Emile-Geay**, G. J. Hakim, D. Guillot, D. Khider, R. Tardif, and W. A. Perkins (2023), cfr (v2023.9.14): a Python package for climate field reconstruction, *Geoscientific Model Development*, 2023, 1–34, doi:10.5194/egusphere-2023-2098.

53   Zhu, F., **J. Emile-Geay**, K. J. Anchukaitis, N. P. McKay, S. Stevenson, and Z. Meng (2023), A pseudoproxy emulation of the PAGES 2k database using a hierarchy of proxy system models, *Scientific Data*, 10(1), 624, doi: 10.1038/s41597-023-02489-1.

────────────────────────────── 2022 ──────────────────────────────

52   Khider, D., **J. Emile-Geay**, F., Zhu[⊛], A.K. James[⊛], J.P. Landers[⊛] (2022), `Pyleoclim`: Paleoclimate Timeseries Analysis and Visualization with Python, *Paleoceanography and Paleoclimatology*, 37, e2022PA004509, doi:10.1029/2022PA004509

51   Manety, S., D. Khider, C. Heiser, N. McKay, **J. Emile-Geay**, and C. Routson (2022), Paleorec: A sequential

recommender system for the annotation of paleoclimate datasets, *Environmental Data Science*,
1, e4, doi:10.1017/eds.2022.3.

50   Zhu, F.[®], **J. Emile-Geay** K. J. Anchukaitis, G. J. Hakim, A.T. Wittenberg, M. Morales and J. M. King,
        A re-appraisal of the ENSO response to volcanism with paleoclimate data assimilation, *Nature Comm.*,
        13(1), 747, doi:10.1038/s41467-022-28210-1.

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49   Feng, X., Q. Ding, L. Wu, C. Jones, I. Baxter, R. Tardif, S. Stevenson, **J. Emile-Geay**, J. Mitchell, L. M. V. Carvalho,
        H. Wang, and E. J. Steig (2021), A multidecadal-scale tropically driven global teleconnection over the past
        millennium and its recent strengthening, *J. Climate*, 34(7), 2549–2565, doi:10.1175/JCLI-D-20-0216.1.

48   Power, S., M. Lengaigne, A. Capotondi, M. Khodri, J. Vialard, B. Jebri, E. Guilyardi, S. McGregor, J.-S. Kug,
        M. Newman, M. J. McPhaden, G. Meehl, D. Smith, J. Cole, **J. Emile-Geay**, D. Vimont, A. T. Wittenberg,
        M. Collins, G.-I. Kim, W. Cai, Y. Okumura, C. Chung, K. M. Cobb, F. Delage, Y. Y. Planton, A. Levine, F. Zhu,
        J. Sprintall, E. D. Lorenzo, X. Zhang, J.-J. Luo, X. Lin, M. Balmaseda, G. Wang, and B. J. Henley (2021),
        Decadal climate variability in the tropical pacific: Characteristics, causes, predictability, and prospects,
        Science, 374(6563), eaay9165, doi:10.1126/science.aay9165.

47   King, J. M., K. J. Anchukaitis, J. E. Tierney, G. J. Hakim, **J. Emile-Geay**, F. Zhu[®], and R. Wilson (2021):
        A data assimilation approach to last millennium temperature field reconstruction using a limited
        high-sensitivity proxy network. *J. Climate*, doi:10.1175/JCLI-D-20-0661.1

46   McKay, N. P.[□], **J. Emile-Geay** and D. Khider (2021), GeoChronR – an R package to model, analyze
        and visualize age-uncertain paleoscientific data, *Geochronology*, doi:10.5194/gchron-2020-25.

45   Vaccaro, A.[ᵁ], **J. Emile-Geay**[□], D. Guillot, R, Verna[ᵁ], C. Morice, J. Kennedy, & B. Rajaratnam, Climate field
        completion via Markov random fields – Application to HadCRUT4.6 (2021), *J. Climate*,
        doi:10.1175/JCLI-D-19-0814.1

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44   Dee, S. G.[®], <u>K. M. Cobb</u>, **J. Emile-Geay**, T. R. Ault, <u>R. L. Edwards</u>, H. Cheng, and <u>C. D. Charles</u> (2020)
        Response to Comment on "No consistent ENSO response to volcanic forcing over the last millennium",
        Science, 369(6509), eabc1733, doi:10.1126/science.abc1733.

43   Brierley, C. M., Zhao, A., Harrison, S. P., Braconnot, P., Williams, C. J. R., Thornalley, D. J. R., Shi, X.,
        Peterschmitt, J.-Y., Ohgaito, R., Kaufman, D. S., Kageyama, M., Hargreaves, J. C., Erb, M. P., **J. Emile-Geay**,
        D'Agostino, R., Chandan, D., Carré, M., Bartlein, P. J., Zheng, W., Zhang, Z., Zhang, Q., Yang, H., Volodin, E. M.,
        Tomas, R. A., Routson, C., Peltier, W. R., Otto-Bliesner, B., Morozova, P. A., McKay, N. P., Lohmann, G., Legrande,
        A. N., Guo, C., Cao, J., Brady, E., Annan, J. D., and Abe-Ouchi, A.: Large-scale features and evaluation of the
        PMIP4-CMIP6 midHolocene simulations, *Clim. Past*, 16, 1847-1872, doi:10.5194/cp-16-1847-2020, 2020.

42   Erb, M. P.[‡□], **J. Emile-Geay**, G. J. Hakim, N. Steiger, and E. J. Steig, Atmospheric dynamics drive
        most interannual U.S. droughts over the last millennium, *Science Advances*, 6(32),
        eaay7268, doi:10.1126/sciadv.aay7268.

41   Kaufman, D., N. McKay, C. Routson, M. Erb, B. Davis, O. Heiri, S. Jaccard, J. Tierney, C. Dätwyler, Y. Axford, T. Brussel,
        O. Cartapanis, B. Chase, A. Dawson, A. de Vernal, S. Engels, L. Jonkers, J. Marsicek, P. Moffa-Sanchez, C. Morrill,
        A. Orsi, K. Rehfeld, K. Saunders, P. S. Sommer, E. Thomas, M. Tonello, M. Toth, R. Vachula, A. Andreev, S. Bertrand,
        B. Biskaborn, M. Bringue, S. Brooks, M. Caniupan, M. Chevalier, L. Cwynar, **J. Emile-Geay**, J. Fegyveresi, A. Feurdean,
        W. Finsinger, M.-C. Fortin, L. Foster, M. Fox, K. Gajewski, M. Grosjean, S. Hausmann, M. Heinrichs, N. Holmes,
        B. Ilyashuk, E. Ilyashuk, S. Juggins, D. Khider, K. Koinig, P. Langdon, I. Larocque-Tobler, J. Li, A. Lotter, T. Luoto,
        A. Mackay, E. Magyari, S. Malevich, B. Mark, J. Massaferro, V. Montade, L. Nazarova, E. Novenko, P. Paril, E. Pearson,
        M. Peros, R. Pienitz, M. Plociennik, D. Porinchu, A. Potito, A. Rees, S. Reinemann, S. Roberts, N. Rolland, S. Salonen,
        A. Self, H. Seppä, S. Shala, J.-M. St-Jacques, B. Stenni, L. Syrykh, P. Tarrats, K. Taylor, V. van den Bos, G. Velle,
        E. Wahl, I. Walker, J. Wilmshurst, E. Zhang, and S. Zhilich (2020), A global database of
        Holocene paleotemperature records, *Scientific Data*, 7(1), 115, doi:10.1038/s41597-020-0445-3.

40   Dee, S. G.[®], <u>K. M. Cobb</u>, **J. Emile-Geay**, T. R. Ault, <u>R. L. Edwards</u>, H. Cheng, and <u>C. D. Charles</u> (2020), No consistent ENSO response to volcanic forcing over the last millennium, *Science*, 367(6485), 1477, doi:10.1126/science.aax2000.

39   Zhu, F.[®], **J. Emile-Geay**[□], Hakim, G.J., King, J. and Anchukaitis, K. (2020), Resolving the differences in the simulated and reconstructed climate response to volcanism over the last millennium, *Geophys. Res. Lett.*, e2019GL086908, 2020.

38   **Emile-Geay, J.**[□], Cobb, K. M., Cole, J. E. and Eliot, M. (2020), Past ENSO variability: reconstructions, models, and implications, in *"El Niño Southern Oscillation in a Changing Climate"*, AGU monograph, (eds: M. McPhaden, A. Santoso, and W. Cai), doi: 10.1002/9781119548164.ch5.

————————————————————————— 2019 —————————————————————————

37   Hu, J.[®□], **J. Emile-Geay**, Tabor, C., Nussbaumer, J. and Partin, J. (2019), Deciphering Chinese speleothem δ^{18}O with an isotope-enabled climate model, *Paleoceanography and Paleoclimatology*, 34(12), 2098–2112, doi: 10.1029/2019PA003741. press highlight

36   Khider, D.[‡□], **J. Emile-Geay**, N. P. McKay, Y. Gil, D. Garijo, V. Ratnakar, M. Alonso-Garcia, S. Bertrand, O. Bothe, P. Brewer, A. Bunn, M. Chevalier, L. Comas-Bru, A. Csank, E. Dassie, K. DeLong, T. Felis, P. Francus, A. Frappier, W. Gray, S. Goring, L. Jonkers, M. Kahle, D. Kaufman, N. M. Kehrwald, B. Martrat, H. McGregor, J. Richey, A. Schmittner, N. Scroxton, E. Sutherland, K. Thirumalai, K. Allen, F. Arnaud, Y. Axford, T. T. Barrows, L. Bazin, S. P. Birch, E. Bradley, J. Bregy, E. Capron, O. Cartapanis, H.-W. Chiang, K. M. Cobb, M. Debret, R. Dommain, J. Du, K. Dyez, S. Emerick, M. P. Erb, G. Falster, W. Finsinger, D. Fortier, N. Gauthier, S. George, E. Grimm, J. Hertzberg, F. Hibbert, A. Hillman, W. Hobbs, M. Huber, A. Hughes, S. Jaccard, J. Ruan, M. Kienast, B. Konecky, G. L. Roux, V. Lyubchich, V. Novello, L. Olaka, J. Partin, C. Pearce, S. Phipps, C. Pignol, N. Piotrowska, M.-S. Poli, A. Prokopenko, F. Schwanck, C. Stepanek, G. E. A. Swann, R. Telford, E. Thomas, Z. Thomas, S. Truebe, L. von Gunten, A. Waite, N. Weitzel, B. Wilhelm, J. Williams, J. Williams, M. Winstrup, N. Zhao, and Y. Zhou (2019), PaCTS v1.0: A Crowdsourced Reporting Standard for Paleoclimate Data, *Paleoceanography and Paleoclimatology*, doi:10.1029/2019PA003632.

35   Neukom, R.[□], L. A. Barboza, M. P. Erb[‡], F. Shi, **J. Emile-Geay**, M. N. Evans, J. Franke, D. Kaufman, L. Lücke, K. Rehfeld, A. Schurer, V. Valler, F. Zhu[®], S. Brönnimann, G. J. Hakim, B. J. Henley, F. C. Ljungqvist, N. McKay, L. von Gunten (2019), Consistent multi-decadal variability in global temperature reconstructions and simulations over the Common Era, *Nature Geoscience*, 12(8), 643-649, doi:10.1038/s41561-019-0400-0.

34   Barboza, L[□], **J. Emile-Geay**, Li, B. and He, W. (2019), Efficient reconstructions of Common Era climate via integrated nested Laplace approximations, *J. Agr. Biol. & Env. Stat.*, doi:10.1007/s13253-019-00372-4

33   Tardif, R., G. J. Hakim, W. A. Perkins, K. A. Horlick, M. P. Erb, **J. Emile-Geay**, D. M. Anderson, E. J. Steig, and D. Noone (2019), Last millennium reanalysis with an expanded proxy database and seasonal proxy modeling, *Clim. Past*, 15(4), 1251–1273, doi:10.5194/cp-15-1251-2019.

32   Zhu, F.[®], **J. Emile-Geay**[□], T. R. Ault, N. P. McKay, G. Hakim, D. Khider, E. J. Steig, S. G. Dee, and J. W. Kirchner (2019), Climate models can correctly simulate the continuum of global-average temperature variability, *Proc. Nat. Acad. Sci.*, 116(18), 8728, doi:10.1073/pnas.1809959116

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31   Hu, J.[®□], **J. Emile-Geay**, J. Nussbaumer, and D. Noone (2018), Impact of convective activity on precipitation δ^{18}O in isotope-enabled general circulation models, *J. Geophys. Research (Atmospheres)*, 123, 13,595–13,610. doi: 10.1029/2018JD029187.

30   Fischer, H., K. J. Meissner, A. C. Mix, N. J. Abram, J. Austermann, V. Brovkin, E. Capron, D. Colombaroli, A.-L. Daniau, K. A. Dyez, T. Felis, S. A. Finkelstein, S. L. Jaccard, E. L. McClymont, A. Rovere, J. Sutter, E. W. Wolff, S. Affolter, P. Bakker, J. A. Ballesteros-Canovas, C. Barbante, T. Caley, A. E. Carlson, O. Churakova (Sidorova), G. Cortese, B. F. Cumming, B. A. S. Davis, A. de Vernal, **J. Emile-Geay**, S. C. Fritz, P. Gierz, J. Gottschalk, M. D. Holloway, F. Joos, M. Kucera, M.-F. Loutre, D. J. Lunt, K. Marcisz, J. R. Marlon, P. Martinez, V. Masson-Delmotte, C. Nehrbass-Ahles, B. L. Otto-Bliesner, C. C. Raible, B. Risebrobakken, M. F. Sanchez-Goni, J. S. Arrigo, M. Sarnthein, J. Sjolte, T. F. Stocker, P. A. Velasquez Alvarez, W. Tinner, P. J. Valdes, H. Vogel, H. Wanner, Q. Yan, Z. Yu, M. Ziegler, and L. Zhou (2018), Palaeoclimate constraints on the impact of 2°C anthropogenic warming and beyond,

Nature Geoscience, doi:10.1038/s41561-018-0146-0.

29 Singh, H. K. A.□, G. J. Hakim, R. Tardif, **J. Emile-Geay**, and D. C. Noone (2018),
Atlantic multidecadal variability from the last millennium reanalysis,
Climate of the Past, 1–25, doi:10.5194/cp-2017-49.

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28 Dee, S. G.®, L. Parsons, G. Loope, T. R. Ault, J. T. Overpeck, and **J. Emile-Geay**,
Improved spectral comparisons of paleoclimate models and observations via proxy system modeling:
implications for multi-decadal variability, *Earth Planet. Sci. Lett.*, 476 (Supplement C),
34–46, doi:10.1016/j.epsl.2017.07.036

27 PAGES 2k Consortium (**Emile-Geay, J.**□, McKay, N., Kaufman, D., von Gunten, L., Wang, J.®, Anchukaitis, K.,
Abram, N., Addison, J., Curran, M., Evans, M., Henley, B., Hao, Z., Martrat, B., McGregor, H., Neukom , R.,
Pederson, G., Stenni, B., Thirumalai, K., Werner, J., Xu, C., Divine, D., Dixon, B., Gergis, J., Mundo, I.,
Nakatsuka, T., Phipps, S., Routson, C., Steig, E., Tierney, J., Tyler, J., Allen, K., Bertler, N., Björklund,
Chase, B., Chen, M., Cook, E., de Jong, R., DeLong, K., Dixon, D., Ekaykin, A., Ersek, V., Filipsson, H., Francus, P.,
Freund, M., Frezzotti, M., Gaire, N., Gajewski, K., Ge, Q., Goosse, H., Gornostaeva, A., Grosjean, M.,
Horiuchi, K., Hormes, A., Husum, K., Isaksson , E., Kandasamy, S., Kawamura, K., Kilbourne, K., Koc, N., Leduc, G.,
Linderholm, H., Lorrey, A., Mikhalenko, V., Mortyn, G., Motoyama, H., Moy, A., Mulvaney, R., Munz, P., Nash,
D., Oerter, H., Opel, T., Orsi, A., Ovchinnikov, D., Porter, T., Roop, H., Saenger, C., Sano, M., Sauchyn, D.,
Saunders, K., Seidenkrantz, M., Severi, M., Shao, X., Sicre, M., Sigl, M., Sinclair, K., St. George, S.,
St. Jacques, J., Thamban, M., Thapa, U., Thomas, E., Turney, C., Uemura, R., Viau, A., Vladimirova, D., Wahl, E.,
White, J., Yu, Z., Zinke, J.), 2017: A global multiproxy database for temperature reconstructions of the Common Era,
Scientific Data, 4, 170,088 EP, doi:10.1038/sdata.2017.88.

26 Gil, Y., D. Garijo, V. Ratnakar, D. Khider, **J. Emile-Geay**, and N. McKay (2017), A controlled crowdsourcing approach
for practical ontology extensions and metadata annotations, in The Semantic Web – ISWC 2017, edited by C. d'Amato,
M. Fernandez, V. Tamma, F. Lecue, P. Cudre-Mauroux, J. Sequeda, C. Lange, and J. Heflin, pp. 231–246,
Springer International Publishing, Cham, doi:10.1007/978-3-319-68204-4 24.

25 Hu, J.®, **J. Emile-Geay**□ and Partin, J. (2017): Correlation-based interpretations of paleoclimate data – where statistics
meet past climates, *Earth Planet. Sci. Lett.*, 459, 362–371, doi:10.1016/j.epsl.2016.11.048

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24 Dee, S.G.®□, Steiger, N.J., **J. Emile-Geay**, and Hakim, G.J. (2016): On the utility of proxy system
modeling in estimating climate states over the Common Era, *Journal of Advances in Modeling Earth Systems*,
8, doi:10.1002/2016MS000677.

23 Hakim, G.J.□,**J. Emile-Geay**, Steig, E.J., Noone, D.C., Anderson, D.M., Tardif, R., Steiger, N.J.
and Perkins, W.A. (2016): The Last Millennium Climate Reanalysis Project: Framework and First Results,
J. Geophys. Res. (Atmos)., 121, 6745–6764, doi:10.1002/2016JD024751.

22 Chen, S., Hoffmann, S., Lund, D.C., Cobb, K.M., **J. Emile-Geay**, and Adkins, J.F. (2016): A High-resolution
Speleothem Record of Western Equatorial Pacific Rainfall: Implications for Holocene ENSO Evolution
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21 McKay, N.P.□ and **J. Emile-Geay**, (2016): Technical Note: The Linked Paleo Data framework
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20 **Emile-Geay, J.**□, Tingley, M.P. (2016): Inferring climate variability from nonlinear proxies.
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19 **Emile-Geay, J.**□, K.M. Cobb, M. Carré, P. Braconnot, J. Leloup, Y. Zhou⊌, S. P. Harrison,
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18   Wang, J.[®], **J. Emile-Geay**[□], Guillot, D.[‡], McKay, N.P., Rajaratnam, B. (2015), Fragility of
     reconstructed temperature patterns over the Common Era: Implications for model evaluation,
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17   Khider, D.[‡□], Huerta, G., Jackson, C., Stott, L.D., **J. Emile-Geay**, (2015) A Bayesian, multivariate
     calibration for Globigerinoides ruber Mg/Ca, *Geophys. Geochem. Geosys.*, doi:10.1002/2015GC005844

16   Comboul, M.[‡□], **J. Emile-Geay**, Hakim, G.J., Evans, M. N. (2015)
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15   Dee, S.G.[®□], **J. Emile-Geay**, Evans, M.N. , Allam, A.[‡], Steig,E., and Thompson, D.M.[‡] (2015),
     PRYSM: an open-source framework for proxy system modeling, with applications
     to oxygen-isotope systems, *J. Adv. Mod. Earth Sys.*, 07, doi:10.1002/2015MS000447

14   Guillot, D.,[‡□] Rajaratnam, B., **J. Emile-Geay**, (2015) Statistical paleoclimate reconstructions using
     Markov random fields, *Ann. Applied. Statist.*, 9 (1), 324–352. doi:10.1214/14-AOAS794

13   Dee, S.G.[®□], Noone, D., Buenning, N.[‡], **J. Emile-Geay**, and Zhou, Y.[ʊ] (2015): SPEEDY-IER: A Fast Atmospheric
     GCM with Water Isotope Physics, *J. Geophys. Res. Atmos.*, 120, 73–91, doi:10.1002/2014JD022194

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12   Comboul, M.[‡□], **J. Emile-Geay**, Evans, M. N., Mirnateghi, N.[‡], Cobb, K. M., and Thompson, D. M.[®] (2014):
     A probabilistic model of chronological errors in layer-counted climate proxies: applications
     to annually-banded coral archives, *Clim. Past*, 10:2, 825–841, doi:10.5194/cp-10-825-2014

11   Wang, J.[®□], **J. Emile-Geay**, Guillot, D.[‡], Smerdon, J., Rajaratnam, B. (2014): Evaluating climate field reconstruction
     techniques using improved emulations of real-world conditions, *Clim. Past.*, 10, 1–19, doi:10.5194/cp-10-1-2014

_____   2013   _____

10   Partin, J.W.[‡□], T.M. Quinn, C-C Shen, **J. Emile-Geay**, F.W. Taylor, C.R. Maupin[®], K. Lin, C.S. Jackson, J.L. Banner,
     D.J. Sinclair, and C.-A. Huh (2013): Multidecadal rainfall variability in the South Pacific Convergence Zone
     as revealed by stalagmite geochemistry, *Geology*, doi:10.1130/G34718.1

9   Ault, T.[‡□], Deser, C., Newman, M. and **J. Emile-Geay** (2013): Characterizing decadal to centennial variability
     in the equatorial Pacific during the last millennium, *Geophys, Res. Lett.* , doi:10.1002/grl.50647

8   **Emile-Geay, J.**[□], Eshleman, J. (2013): Towards a Semantic Web for Paleoclimatology
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7   **J. Emile-Geay**[□], Cobb, K.M., Mann, M.E., and Wittenberg, A. T. (2013): Estimating Tropical Pacific SST variability
        over the Past Millennium. Part 1: Methodology and Validation. *J. Clim.*, 26, 2302–2328,
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6   **J. Emile-Geay**[□], Cobb, K.M., Mann, M.E, and Wittenberg, A. T. (2013): Estimating Tropical Pacific SST variability
        over the Past Millennium. Part 2: Reconstruction and Uncertainties. *J. Clim.*, 26, 2329–2352,
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5   Khider[®□], D., L. D. Stott, **J. Emile-Geay**, R. Thunell and D. Hammond (2011): Assessing El Niño Southern
        Oscillation Variability During the Past Millennium, *Paleoceanography*, doi:10.1029/2011PA002139

4 Thompson ,D. M.^{⊛□}, Ault, T. R., Evans, M. N., Cole, J. E., and **J. Emile-Geay** (2011): Comparison of observed and simulated tropical climate trends using a forward model of coral $\delta^{18}O$, *Geophys. Res. Lett.*, 38, L14706, doi:10.1029/2011GL048224

<center>2010</center>

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3 Dutay, J.C.[□], **J. Emile-Geay**, D. Iudicone, P. Jean-Baptiste, G. Madec and C. Carouge (2010): Helium Isotopic Constraints on simulated ocean circulations. Implications for Abyssal Theories, *Environmental Fluid Mechanics*,10(1), 257–273, 10.1007/s10652-009-9159-y

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2 **Emile-Geay, J.**[□] and G. Madec (2009): Geothermal Heating, Diapycnal Mixing and the Abyssal Circulation *Ocean Science*, 5, 203–217, doi:10.5194/os-5-203-2009

1 **Emile-Geay, J.**[□] and M. A. Cane (2009): Pacific Decadal Variability in the view of linear equatorial wave theory *Journal of Physical Oceanography*, 39:203–218, doi: 10.1175/2008JPO3794.1

·········· Publications prior to USC start date ··········

0 **Emile-Geay, J.**[□], R. Seager, M. A. Cane, E.C. Cook, G.H. Haug (2008): Volcanoes and ENSO over the past millennium, *Journal of Climate*. 21(13), 3134–3148, doi:10.1175/2007JCLI1884.1

-1 **Emile-Geay, J.**[□], Cane, M. A., Seager, R. S., Kaplan, A. and P. Almasi (2007): El Niño as a mediator of the solar influence on climate, *Paleoceanography*, 22, 3, doi:10.1029/2006PA001304

-2 Herweijer, C.[□], R. Seager, E.R. Cook and **J. Emile-Geay** (2007): North American droughts of the last Millennium from a gridded network of tree-ring data , *Journal of Climate*, 20, 1353-1376

-3 **Emile-Geay, J.**[□], M. A. Cane, N. Naik, R. Seager, A. C. Clement and A. van Geen (2003): Warren revisited: Atmospheric freshwater fluxes and "Why is no deep water formed in the North Pacific ?", *Journal of Geophysical Research-Oceans*, 108(C6):3178. doi:10.1029/2001JC001058

OTHER PUBLICATIONS

Articles

O8 McKay, N. P., and **J. Emile-Geay**(2018), Linked paleo data: A resource for open, reproducible, and efficient paleoclimatology, *Past Global Change Magazine*, 26(2), 71–71, doi:10.22498/pages.26.2.71.

O7 **Emile-Geay, J.**, D. Khider[‡], N. McKay, Y. Gil, D. Garijo, and V. Ratnakar (2018), LinkedEarth: supporting paleoclimate data standards and crowd curation, *Past Global Change Magazine*, 26(2), 62–63, doi:10.22498/pages.26.2.62.

O6 **Emile-Geay, J.**, Erb, M. P.[‡], Hakim, G., Steig, E. J. and Noone, D.C. (2017): Climate dynamics with the Last Millennium Reanalysis, *Past Global Changes Magazine*, vol. 25(3), 162, doi:10.22498/pages.25.3.162.

O5 **Emile-Geay, J.**, and McKay, Nicholas P. (2016): Paleoclimate data standards, *Past Global Changes Magazine*, vol. 24(1), 47 doi:10.22498/pages.24.1.47.

O4 Kaufman, D.S. & PAGES 2k Consortium (2014): A Community-Driven Framework for Climate Reconstructions, *Eos, Transactions, American Geophysical Union*, Volume 95, Number 40, 7 October 2014. 361–368, doi: 10.1002/2014EO40

O3 Thompson, D.M[⊛]. T.R.Ault[‡], M.N. Evans, J.E.Cole, **J. Emile-Geay** and A. LeGrande (2013):

Coral-CGCM comparison highlights role of salinity in long-term trends. P. Braconnot, C. Brierley, S.P. Harrison, L. von Gunten (eds). El Niño-Southern Oscillation: observations and modeling, *PAGES news 21(2)*

O2   **Emile-Geay, J.**□ (2012): , What is the outlook for ENSO? *PAGES news*, 20(1)

O1   <u>Clement, A.C.</u>, **J. Emile-Geay**, R. Seager, M. A. Cane and M.N. Evans (2006): America for the last millennium, *PAGES Newsletter*

Public Code Repositories

C7   McKay, N. P. & **J. Emile-Geay**(2022). The Abrupt Change Toolkit in R (Version v0.1.3)
https://github.com/LinkedEarth/actR

C6   **J. Emile-Geay**, Khider, D., & James, A. (2019). PaleoBooks: Doing Science with Pyleoclim (Version v1.1).
https://doi.org/10.5281/zenodo.5771123

C5   Khider, D., **J. Emile-Geay**, & Zhu, F. (2022). Example scientific workflows using Pyleoclim (Version v0.2).
https://doi.org/10.5281/zenodo.6633665

C4   Khider, D., **J. Emile-Geay**, James, A. K., Landers, J. P. & Zhu, F.® (2022).
PyleoTutorials: A gentle introduction to the Pyleoclim package. (Version v0.0.1)
https://doi.org/10.5281/zenodo.6999577

C3   Khider, D., **J. Emile-Geay**, Introduction to Python for the paleosciences (2022),
http://linked.earth/ec_workshops_py/

C2   Khider, D., **J. Emile-Geay**, Zhu, F., & James, A.® (2022). PaleoHack: building coding capacity in the paleogeosciences (Version v3.0). https://doi.org/10.5281/zenodo.6365841

C1   Khider, D., **J. Emile-Geay**, Zhu, F., James, A., Landers, J., Kwan, M., & Athreya, P.® (2022).
Pyleoclim: A Python package for the analysis and visualization of paleoclimate data (Version v0.9.0)
https://doi.org/10.5281/zenodo.1205661.

Monographs

2014 **J. Emile-Geay**, Data Analysis in the Earth & Environmental Sciences, 247pp, Second edition,
http://dx.doi.org/10.6084/m9.figshare.1014336.

2008 **J. Emile-Geay**, El Niño and the Earth's climate: from decades to ice ages, Verlag Dr Müller, 163pp.

Edited volumes

2015 Proceedings of the Fifth International Workshop on Climate Informatics: CI 2015. J. G. Dy, **J. Emile-Geay**, V. Lakshmanan, Y. Liu (Eds.). September 2015. ISBN: 978-0-9973548-0-5

CITATION STATISTICS (AS OF OCT 2025)

94 citations per article (6359 total), based on 67 indexed papers. h-index: 42

INVITED LECTURES AND CONFERENCE PRESENTATIONS OF THE PAST 5 YEARS

Information Sciences Institute, AI seminar, Feb 2023
     Past climates: deep insights from broad data
Woods Hole Oceanographic Institution, Climate Seminar – September 2020
     The Case Against the Meghalayan.
International conference on the Impacts of large volcanic eruptions on climate and societies
University of Geneva, Switzerland – August 2020
     Resolving the differences in the simulated and reconstructed temperature response
     to volcanism over the Last Millennium
Scripps Institution of Oceanography, CASPO Seminar – May 2020
     Climate scaling: what it tells us about the climate system, and its models.

OTHER CONFERENCE PRESENTATIONS

as first or co-author.

2022   3 presentations (2 oral, 1 poster)
2021   1 presentation (oral)
2020   5 presentations (4 oral, 1 poster)
2019   7 presentations (5 oral, 2 posters)
2018   4 presentations (3 oral, 1 poster)
2017   7 presentations (5 oral, 2 poster)

HONORS AND AWARDS

2012   Editors' Citation for Excellence in Refereeing for Journal of Geophysical Research-Atmospheres
2008   Leverhulme Trust postdoctoral travel award for the Leverhulme Climate Symposium (Cambridge, UK)
2004–2005   Boris Bakhmeteff Fellowship in Fluid Mechanics

FUNDING HISTORY

Active Grants

Collaborative Research: P4CLIMATE: Connecting seasonal to millennial timescales through strongly coupled data assimilation
NSF, Paleo Perspectives on Climate Change AGS 2402476 (co-PI)
USC Amount: $269,066, 07/15/2024 – 07/14/2027.

CAIG: PaleoPAL: An AI Research Assistant for Paleoclimatology
NSF, Collaborations in Artificial Intelligence for the Geosciences, ICER 2425885 (co-PI)
USC Amount: $862,240, 01/01/2025 – 12/31/2027.

Collaborative Research: GEO OSE Track 1: FROGS: Facilitating Reproducible Open GeoScience
NSF, Open Geoscience Ecosystems, RISE 2324732 (co-PI)
USC Amount: $311,813, 01/01/2024 – 12/31/2025.

EarthCube Capabilities: PaleoCube: Enabling Cloud-Based Paleoclimatology
   NSF, EarthCube ICER 2126510 (co-PI)
   USC Amount: $877,305, 09/01/2021 – 08/31/2026 (NCE).

Collaborative Research: PReSto: A Paleoclimate Reconstruction Storehouse to Broaden Access and Accelerate Scientific Inference
   NSF, Geoinformatics EAR 1948822 (PI)
   USC Amount: $347,629, 07/01/2020 – 06/30/2026 (NCE).

Completed Grants

Collaborative Research: A Big Data Approach to Fundamental Paleoclimate Questions
   NSF, Paleo Perspectives on Climate Change AGS 2002518 (PI)
   USC Amount: $398,099, 09/01/2020 – 08/31/2024.

Belmont Forum Collaborative Research: Abrupt Change in Climate and Ecosystems: Where are the Tipping Points?
   Belmont Forum via NSF, ICER 1929554 (PI)
   Amount: USC portion = $99,982, 07/1/2019 – 06/30/2022.

Collaborative Research: The global climate response to volcanic eruptions in the Last Millennium Reanalysis
   NOAA Climate Program Office, NA18OAR4310426 (PI)
   Amount: $299,973 (USC portion = $194,489), 09/1/2018 – 08/30/2020.

Collaborative Research: LinkedEarth: Crowdsourcing Data Curation & Standards Development in Paleoclimatology
   NSF EarthCube program ICER 1541029 (PI).
   Amount: $797,793 (USC portion = $684,978), 09/01/2015 – 08/31/2019.

Collaborative Research: Last Millennium Climate Reanalysis Project
  NOAA Climate Program Office, NOAA-OAR-CPO-2014-2003692 (PI)
  Amount: $1,488,473 (USC portion = $254,255), 08/1/2014 – 07/31/2017.

Collaborative Research: GeoChronR - open-source tools for the analysis, visualization
  and integration of time-uncertain geoscientific data,
  NSF, Geoinformatics EAR 1347213 (PI)
  Amount: $566K (USC portion = $196,655), 07/1/2014 – 06/30/2018.

Collaborative Research: Efficient high dimensional Bayesian methods for climate field reconstruction
  NSF, Collaborations in Mathematical Geophysics, DMS 1025464 (PI).
  Amount: $419,188 (USC portion. = $214,002), 10/01/2010 – 09/30/2015.

Collaborative Research: Maximizing the potential of tropical climate proxies through integrated
  climate-proxy forward modeling.
  NOAA, Climate Change Data and Detection, NA10OAR4310115 (PI)
  Amount: $410,791 (USC portion = $278,858), 08/31/2010 – 08/30/2014.

Collaborative Research: Multiproxy Reconstructions as a Missing-Data Problem: New Techniques
  and Their Application to Regional Climates of the Past Millennium
  NSF, Paleo Perspectives on Climate Change, AGS 1003818 (PI).
  Amount: $579,000 (USC portion = $291,582), 05/06/2010 – 05/31/2015.

MEETING COORDINATION

2025	**Co-organizer** of session *Advancing Reproducible and FAIR Science: Tools, Practices, and Incentives* at the Fall 2025 American Geophysical Union (New Orleans, LA)
2024	**Co-instructor** of PyRATES (Python and R analysis of timeseries) in Marina Del Rey, CA (June 2024)
2022	**Co-organizer and instructor** of 1 virtual PaleoHackathon (attendance: 40), and one Town Hall at the International Conference on Paleoceanography, Bergen, Norway (attendance: 50)
2021	**Co-organizer and instructor** of 2 virtual PaleoHackathons, reaching 89 people on 4 continents.
2021 –	**Member** of the World Climate Research Program's US CLIVAR TropiCal Basin Interactions working group.
2021	**Convener** of a session in the *Paleoclimate Model Intercomparison Project 30-year anniversary conference*
2017	**Convener** of the international workshop: *Climate Dynamics with the Last Millennium Reanalysis* Boulder, CO, Oct 2–4.
2016	**Convener** of the international workshop on *Paleoclimate Data Standards* Boulder, CO, June 22–23.
2015	**Program Committee co-chair** Climate Informatics workshop Boulder, CO, Sept 24–25.
2015	**Organizer** of an international workshop on Proxy System Modeling Catalina Island, CA, May 4–6. 30 participants.
2010–2014	**Co-convener** of the yearly Fall AGU sessions "Climate of the Common Era", (with J. Smerdon, K. Anchukaitis, E. Cook)
2007	**Co-convener** of the Fall AGU session PP07 (with Yemane Asmerom)

SERVICE AS ACADEMIC REVIEWER

2024 – now   Associate Editor for the European Geosciences Union's *Climate of the Past*
2018 – 2024   Associate Editor for the Nature Publishing Group's *Scientific Data*
2020   Editor for *Climate of the Past* special issue on PMIP4-CMIP6.

2002 – now   **Article Reviews** for *Geophysical Research Letters, Climate Dynamics, Journal of Climate,*
              Journal of Geophysical Research-Oceans, Climate of the Past, Environmental Research Letters,
              Journal of Geophysical Research-Atmospheres, Earth System Dynamics, PNAS,
              Nature Geoscience, Nature Education, Nature Communications, Nature Scientific Reports, Nature,
              Journal of Physical Oceanography, Journal of Marine Research, Paleo[3], Scientific Reports
              Geochimica and Cosmochimica Acta, Global & Planetary Change,
              Environmental Research Letters, Dendrochronologia, Quaternary Science Reviews,
              International Journal on Geomathematics, Earth & Planetary Science Letters, Geology, EOS

2006 – now   **Proposal Reviews** for the *National Science Foundation* (3-4 per year), the
              National Oceanographic and Atmospheric Administration (1), the European Research Council (1), &
              the UK Natural Environment Research Council (1).

ACADEMIC SERVICE TO THE USC COMMUNITY

Fall '24 - now   Director of Graduate Studies, USC Earth Sciences.
'21-'22   Guest lectures for GEOL599 (The Science of Prediction), EALC130g, SOCI210, ASCJ-420
'21-'22   Earth Science Colloquium Series coordinator
2021   Earth Science faculty merit review committee, Chair
'20 –   Center for Sustainability Solutions, academic board member.
'20-'21   Led search committee for a faculty position in Global Change Research, culminating in the hire
                 of a highly qualified diversity candidate.
2020   Participant in the Sustainability Across the Curriculum initiative (worked with Dan Lainer-Vos, sociology).
'18-'19   Member of the academic Senate Sustainability Committee.
2018   Reviewer for the Graduate School fellowship grant program.
2017   Reviewer for USC research grant program. Member, Earth Science faculty review committee.
2016   panelist for the Electoral Commons on Climate Change
2015   Panel moderator at the USC Know Tomorrow event (10/02).
2015   USC Dornsife Lunch & Lecture: Pope Francis - Environmental Activist?, also recounted here
2015   Guest lectures for Problem without Passports : Ecological Security and Global Politics
2014   Member, Earth Science faculty review committee
2011   Organized Dornsife Commons Event "Carbon Nation" with director Q&A
2011   Wrote the learning objectives of the Earth Science department's undergraduate programs
2009 – 2011   Member, Climate Dynamics Search Committee
2010–   Member, Earth Science Curriculum Committee
2009 –   Member, Computing Committee (chair since 2020)

CLASSES TAUGHT AT USC

GEOL600 " Earth Sciences Colloquium", Fall 2021 + Spring 2022.
   Graduate Journal Club (2 units)
GEOL 515 "Introduction to Atmospheric Science", Fall 2010, Fall 2014, 2018, 2020
   Graduate class (4 units).
GEOL 512 "Introduction to Chemical and Physical Oceanography", Fall 2024.
   Graduate class (2 units; co-taught with S. John).
GEOL 425L "Data Analysis in the Earth and Environmental Sciences"
   Undergraduate class (4 units)
GEOL 351 "Climate Systems", Fall 2015, 25%; Fall 2017, 33%, Spring 2022, 2024, 100%
   Undergraduate class (4 units)
GEOL 157L "The Logic of Climate Change", Spring 2018
   Undergraduate General Education class, 4 units
GEOL 150L "Climate Change", Spring 2010 – 2017, 2021,2023,2025
   Undergraduate General Education class, 4 units
GEOL145L "Lies, Damn lies, and Statistics", Spring 2019, 2020.
   Undergraduate General Education class, 4 units
GEOL 599 "The Climate of the Common Era", Spring 2012.
   graduate seminar
CORE103 "The process of change in Science", Fall 2018, 2020, 2023.
   Undergraduate Thematic Option, 4 units.

OUTREACH

   Wrote article for The Conversation about committed warming (June 2022)
   Featured expert in this USC-produced video.
   Panelist for the USC Climate Forward event, April 2019
   Featured in ATTN video on Extreme Heat Events (>340,000 views), July 2018
   Motivational speech at the Beyond Meat headquarters, El Segundo, CA. (Feb 2018).
   Panelist for STEAM Sound Bytes (Jan 2018).
   Panelist on "Scientifically Speaking" event sponsored by Sense About Science (March 2017).
   Radio interviews for BBC Radio 5, TalkRadio 630 KHOW, Annenberg Media.
   TV interviews for the BBC, Associated Press, ABC 7, Al Jazeera English, ScienceNow,
      History Channel, Sky News, SpectrumNews1.
   Featured in ScienceDaily, The Guardian, the New York Times (2021 2023), the Financial Times, and local press.