

Julien Emile-Geay

Assistant Professor

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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

- 2008–now **Assistant Professor of Earth Sciences**, University of Southern California, Los Angeles CA
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 at regional to global scales.
multivariate statistics, multiproxy climate reconstruction
forward modeling of climate proxies
low order climate models, paleoclimate modeling, model/data integration.

PUBLICATIONS

Submitted

Partin, J.W., Quinn, T. M., Shen, C-C, Taylor, F.W., **Emile-Geay, J.**, Maupin, C.R., Lin, K., Jackson, C.S., Banner, J.L., Sinclair, D.J., Huh, C.-A., Multi-Decadal Rainfall Variability of the South Pacific Convergence Zone from 1562 to 2005 CE, submitted to *Nature Climate Change*.

In revision

Ault, T., Deser, C., Newman, M. and **Emile-Geay, J.**, Characterizing internal and forced low-frequency temperature variability in the equatorial Pacific during the last millennium, *Geophys. Res. Lett.*

Guillot*, D., Rajaratnam, B., **Emile-Geay, J.**, Paleoclimate reconstruction using graphical models *Journal of the American Statistical Association*, submitted Jan 2012.

In press

Emile-Geay, J., Eshleman, J., Towards a Semantic Web for Paleoclimatology *Geophys. Geochem. Geosys.*, in press.

Peer-reviewed

- 2012 **Emile-Geay, J.**, Cobb, K., Mann, M.E., and Wittenberg, A. T., Estimating Tropical Pacific SST variability over the Past Millennium. Part 1: Methodology and Validation. *J. Clim.*, doi:10.1175/JCLI-D-11-00510.1
- 2012 **Emile-Geay, J.**, Cobb, K., Mann, M.E., and Wittenberg, A. T., Estimating Tropical Pacific SST variability over the Past Millennium. Part 2: Reconstruction and Uncertainties. *J. Clim.*, doi:10.1175/JCLI-D-11-00511.1
- 2011 Khider*, D., L. D. Stott, **J. Emile-Geay**, R. Thunell and D. Hammond, Assessing El Niño Southern Oscillation Variability During the Past Millennium, *Paleoceanography*, doi:10.1029/2011PA002139
- 2011 Thompson*, D. M., T. R. Ault*, M. N. Evans, J. E. Cole, and **J. Emile-Geay**, Comparison of observed and simulated tropical climate trends using a forward model of coral $\delta^{18}\text{O}$, *Geophys. Res. Lett.*, 38, L14706, doi:10.1029/2011GL048224.
- 2010 Dutay, J.C., **J. Emile-Geay**, D. Iudicone, P. Jean-Baptiste, G. Madec and C. Carouge. Helium Isotopic Constraints on simulated ocean circulations. Implications for abyssal theories, *Ocean Modelling*, 257–273, 04 2010.
- 2009 **Emile-Geay, J.** and G. Madec: Geothermal Heating, Diapycnal Mixing and the Abyssal Circulation *Ocean Science*, 5, 203–217, doi:10.5194/os-5-203-2009.
- 2009 **Emile-Geay, J.** and M. A. Cane: Pacific Decadal Variability in the view of linear equatorial wave theory *Journal of Physical Oceanography*, 39:203–218, doi: 10.1175/2008JPO3794.1
- 2008 **Emile-Geay, J.**, R. Seager, M. A. Cane, E.C. Cook, G.H. Haug : Volcanoes and ENSO over the past millennium, *Journal of Climate*. 21(13), 3134–3148.
- 2007 **Emile-Geay, J.**, Cane, M. A., Seager, R. S., Kaplan, A. and P. Almasi. El Niño as a mediator of the solar influence on climate, *Paleoceanography*, 22, 3, doi:10.1029/2006PA001304
- 2007 Herweijer, C., R. Seager, E.R. Cook and **J. Emile-Geay**, North American droughts of the last Millennium from a gridded network of tree-ring data , *Journal of Climate*, 20, 1353-1376
- 2006 Clement, A.C., **J. Emile-Geay**, R. Seager, M. A. Cane and M.N. Evans, America for the last millennium, *PAGES Newsletter*
- 2003 **Emile-Geay, J.**, M. A. Cane, N. Naik, R. Seager, A. C. Clement and A. van Geen 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

Books

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

INVITED SEMINARS AND CONFERENCE PRESENTATIONS IN THE PAST 5 YEARS

AGU Fall meeting, San Francisco, CA – Dec 2012

Four centuries of tropical Pacific sea-surface temperature from coral archives

Harvard University, ClimaTea seminar, Cambridge, MA – Oct 2012

Corals, graphs and tropical Pacific climate

Woods Hole Oceanographic Institution, Woods Hole, MA – Oct 2012

Paleoclimate constraints on Tropical Pacific dynamics

Applied Mathematics seminar, CSU Northridge, Northridge, CA – Oct 2012

The Mathematics of Paleoclimate Reconstructions

Applied Mathematics seminar, San Diego State University, San Diego, CA – Sep 2012

The Mathematics of Paleoclimate Reconstructions

SIAM International Conference on Data Mining, Anaheim, CA – Apr 2012

Probabilistic Models of Past Climate Change

University of Texas Institute for Geophysics, Austin, TX – Nov 2011

Paleoclimate constraints on Tropical Pacific dynamics

Paleoclimate Modeling Intercomparison Project, Villefranche/mer, France – September 2011

Paleoclimate constraints on Tropical Pacific dynamics

Center for Applied Mathematical Sciences, USC – September 2011

The Mathematics of Paleoclimate Reconstructions

International Congress on Industrial and Applied Mathematics, Vancouver, Canada, – July 2011.

New mathematical tools for the analysis of incomplete climate data. Theory and applications

IMAGe Workshop on Bayesian methods for climate field reconstruction, Boulder, CO – March 2011

Paleoclimatic Markov Random Fields: theory and applications (with B. Rajaratnam).

Statistics department seminar, Carnegie Mellon University, Pittsburgh, PA – Fall 2010

Statistics for the Past Millennium The mathematics of climate change reconstructions

Quaternary Paleocology Short Course, University of Minnesota, Minneapolis, MN – Spring 2010

Extracting the dynamical essence from geophysical timeseries

ESE seminar, California Institute of Technology, Pasadena, CA – Spring 2010

ENSO over the past millennium: reconstruction and error estimates

AOS seminar, University of California in Los Angeles, CA – Spring 2010

ENSO over the past millennium: reconstruction and error estimates

HONORS AND AWARDS

Boris Bakhmeteff Fellowship in Fluid Mechanics (academic year 2004/2005)

Faculty Fellow as a Columbia GSAS student

SERVICE & SYNERGISTIC ACTIVITIES

Co-convener of the Fall AGU session “Climate of the Common Era”, 2010, 2011, 2012

(with J. Smerdon, K. Anchukaitis, E. Cook)

Co-convener of the 2007 Fall AGU session PP07 on regional climate change (with Dr. Yemane Asmerom)

Reviews for *Geophysical Research Letters*, *Climate Dynamics*, *Journal of Geophysical Research-Oceans*, *Journal of Climate*, *Climate of the Past*, *Environmental Research Letters*, *Nature Geoscience*, *Nature Education*, *Journal of Physical Oceanography*, *Journal of Marine Research*, *Paleo*³, *National Science Foundation*, *National Oceanographic and Atmospheric Administration*.

CLASSES TAUGHT

USC GEOL 150L “Climate Change”, Spring 2010, 2011, 2012.

General Education class (enrollment:106, 110, 64).

Course grade: 4.36, 4.26, 4.09; Instructor grade: 4.60, 4.35, 4.27

USC GEOL 599 “The Climate of the Common Era”, Spring 2012.

graduate seminar (enrollment:4)

USC GEOL 425L "*Data Analysis in the Earth and Environmental Sciences*", Fall 2011.

Undergraduate class (enrollment:9). Course grade: 4.00; Instructor grade: 4.13

USC GEOL 515 "*Introduction to Atmospheric Science*", Fall 2010.

Graduate class (enrollment:7). Course grade: 4.50; Instructor grade: 4.33

USC GEOL 425L "*Data Analysis in the Earth and Environmental Sciences*", Fall 2009

Co-taught with prof. Thorsten Becker. (enrollment:8). Course grade: 4.00; Instructor grade: 4.29

GaTech EAS 8001 "*The Hockey Stick ; scoring past climate*", Graduate Seminar, Fall 2007.

Co-taught with prof. Kim Cobb.

OUTREACH

University of Southern California

interviews for Annenberg TV news, ABC 7, ScienceNow

Supervised the development of a web-based visualization toolkit for climate of the Common Era

(programmed by Hannah Aizenman with support from the Google Summer of Code,

in collaboration with the Climate Code Foundation, Kevin Anchukaitis and Jason Smerdon). Summer 2011

Lamont Doherty Earth Observatory, Community Outreach

Open House : Designed, constructed and presented various tank experiments and posters to introduce the public to climate and geophysical fluid dynamics (2001 to 2004)

LDEO Web : Supplied content for a web page on **Abrupt Climate Change**, to anticipate questions regarding the motion picture "*The day after tomorrow*".(April 2004).

<http://www.ldeo.columbia.edu/res/pi/arch/main.shtml>