

Julien Emile-Geay

Assistant Professor

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EDUCATION

Graduate School of Arts and Sciences, Columbia University, New York

2001/2006 : Ph.D. program 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.

Université Paris VI, France / Ecole Normale Supérieure

2000/2001 : M.S., Ocean and Atmosphere Dynamics, with distinction.

Ecole Normale Supérieure, Paris, France

1998/2000 : B.S., Earth Sciences, with honors

Lycée Chaptal, Paris

1996/1998 : Undergrad preparation in Mathematics, Physics and Biology

1996 : A-level, Science major, with honors

RESEARCH INTERESTS

ocean-atmosphere dynamics, tropical climatology, ENSO

low-frequency climate variability at regional to global scales.

high-resolution paleoclimate proxies, multivariate statistics, multiproxy climate reconstruction

forward modeling of climate proxies

low order climate models, paleoclimate modeling, model/proxy integration.

RESEARCH EXPERIENCE

Postdoctoral Fellowship, Georgia Institute of Technology, (2006-2008)

Constraining the tropical Pacific's role in low-frequency climate change of the last millennium

with principal investigators Kim Cobb (GaTech), Michael Mann (Penn State), Martin Hoerling (NOAA CDC)

Nicholas Graham (Hydrological Research Center), Michael Alexander (NOAA CDC)

IMAGES cruise, tropical Pacific, June 2002

Conducted sampling and chemical analysis of deep-sea sediments cores on board the Research Vessel

Marion Dufresne, between San Diego and Panama. Supervisor : Alexander van Geen.

Laboratoire d'Océanographie Dynamique et de Climatologie (LODYC), Paris

April-June 2001 : Master's Thesis research with Gurvan Madec.

title : *Geothermal heating and the abyssal circulation*

Lamont-Doherty Earth Observatory of Columbia University

Feb - Aug 2000 : research project with professor Mark Cane

Warren revisited : atmospheric freshwater fluxes and "Why is no deep water formed in the North Pacific"

Laboratoire de Météorologie Dynamique (LMD), Paris

June 1999 : internship with Jan Polcher

subject : *Impact of climate change on extreme hydrological events*

TEACHING EXPERIENCE

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

Co-teaching with Prof. Kim Cobb.

DEES W4925 " *Introduction to Physical Oceanography*", Fall 2003. Columbia University.

Developed and maintained the class website.

DEES V2100 " *The Climate System*", Spring 2002. Columbia University.

Served in lab sessions and graded lab reports.

OUTREACH EXPERIENCE

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>

Cité des Sciences et de L'industrie, Paris (May 2001)

Worked as a consultant with a photographer and a museologist to assess the strengths and weaknesses of 3 scientific exhibits

PUBLICATIONS

- in prep • Emile-Geay, J., Cobb, K.M., Mann, M.E. : **Low-Frequency Tropical Pacific Sea-Surface Temperature over the Past Millennium : Reconstruction and Error Estimates**, *in prep for Journal of Climate*.
- in revision Emile-Geay, J. and G. Madec :
Geothermal Heating, Diapycnal Mixing and the abyssal circulation, *Ocean Science*.
- submitted • 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*
- 2009 • Emile-Geay, J. and M. A. Cane : **Pacific Decadal Variability in the view of linear equatorial wave theory**, *Journal of Physical Oceanography*, forthcoming .
- 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. 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

ORAL AND POSTER PRESENTATIONS

- **American Geophysical Union**, San Francisco , December 2008.
Low-Frequency Tropical Pacific Sea-Surface Temperature : Reconstruction and Error Estimates
- **European Geosciences Union**, Vienna, Austria, April 2008.
Experimental reconstructions of tropical Pacific sea-surface temperature over the past millennium
- **Leverhulme Climate Symposium**, Cambridge University, England, March 2008.
Experimental reconstructions of tropical Pacific sea-surface temperature over the past millennium (POSTER)
- **American Geophysical Union**, Joint Assembly, Acapulco, Mexico, May 2007.
Volcanoes and ENSO over the past millennium
- **Ecole Normale Supérieure**, Paris, January 2007.
Pacific Decadal Variability in the view of linear equatorial wave theory
- **American Geophysical Union**, San Francisco , December 2006.
Pacific Decadal Variability in the view of linear equatorial wave theory (POSTER)
- **26th IUGG Conference in Mathematical Geophysics**, Sea of Galilee, Israel, June 2006.
Volcanoes and ENSO over the past millennium
- **Georgia Institute of Technology**, Earth and Atmospheric Sciences, May 2006
Volcanoes and ENSO over the past millennium
- **University of Miami**, Rosenstiel School of Marine and Atmospheric Science, May 2006
Volcanoes and ENSO over the past millennium
- **American Geophysical Union**, San Francisco , December 2005.
ENSO as a mediator of the solar influence on climate , session PP53A
- **Cooperative Institute for Climate Applications and Research**, General Meeting, September 2005.
ENSO response to solar and volcanic forcing over the past millennium

- **European Geosciences Union**, Vienna, Austria April 2005.
ENSO response to radiative forcing over the Holocene : a model perspective
- **25th IUGG Conference on Mathematical Geophysics**, New York, June 2004.
Pacific Decadal Variability in the view of linear equatorial wave theory
- **Invited lecture** in Columbia University V2100, "The Climate System", Feb 2004 : *The Gulf Stream*.
- W4925 , "*Introduction to Physical Oceanography*", December 2003.
Warren revisited : atmospheric freshwater fluxes and "Why is no deep water formed in the North Pacific ?"
- **Lamont-Doherty Physical Oceanography seminar**, Jan 2003.
Geothermal heating, diapycnal mixing and the abyssal circulation
- **Geophysical Fluid Dynamics Laboratory**, Princeton, New Jersey. Oceanography seminar, Jan 2002.
Warren revisited : a tropical explanation for "Why is no deep water formed in the North Pacific ?"

HONORS AND AWARDS

Boris Bakhmeteff Fellowship in Fluid Mechanics (academic year 2004/2005)
Faculty Fellow as a Columbia GSAS student

SERVICE

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*.
Organizer, Division of Ocean and Climate Physics seminar series, L-DEO 2003/2004.

LANGUAGES

French : native speaker
English : read, written, spoken (fluent)
Spanish : read, written, spoken
Italian : read, spoken