JOSEPH A. BIELLO

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Academic Appointments

UNIVERSITY OF PARIS VI, Paris, France
Visiting Professor — July 2012

CENTRUM WISKUNDE & INFORMATICA , Amsterdam, The Netherlands
NWO Visiting Researcher — February - May 2012

UNIVERSITY OF CALIFORNIA, DAVIS, Davis, CA
Associate Professor — July 2007 - present
Assistant Professor — July 2005 - July 2007

COURANT INSTITUTE, NYU (CIMS), New York, NY
Research Scientist — July 2003 - June 2005

RENSSELAER POLYTECHNIC INSTITUTE (RPI), Troy, NY
Vigre Postdoctoral Fellow — September, 2000 - June 2003

Education

UNIVERSITY OF CHICAGO, Chicago, IL
Ph.D. in Astrophysics — March, 2001

UNIVERSITY OF CAMBRIDGE, Cambridge, United Kingdom
Honours Pass, Part III of the Mathematics Tripos — June, 1995

COLUMBIA UNIVERSITY, COLUMBIA COLLEGE, New York, NY
A.B., Magna Cum Laude, Phi Beta Kappa — May, 1994

Awards and Grants

NSF DMS-1009959, Principal Investigator: J.A. Biello
"Multiscale PDE Asymptotics for Tropical Atmospheric Waves" — 2010-2012

NSF DMS-0604947, Principal Investigator: J.A. Biello
"Multiscale Asymptotics and PDEs for Tropical Atmospheric Dynamics" — 2006-2009

McCormick Fellowship
University of Chicago — 1995-1997

National Science Foundation Graduate Fellowship
Universities of Cambridge and Chicago — 1994-1997

I.I. Rabi Fellowship
Columbia University 1990-1994

Selected Scientific Program Organization/Participation

American Meteorlogical Society
Atmosphere Ocean Fluid Dynamics Meeting , Spokane, WA July 2011

BIRS, Banff, Canada, Organized tropical convection and large-scale circulation Invited speaker May 2011

American Institute of Mathematics, Waves and Multiscale processes in the Tropics, Organizer/Speaker December 2010

Mathematisches Forschungsintitut Oberwolfach, Germany
Mathematical Theory and Modeling in Atmosphere/Ocean Science
Workshop Participant August, 2002, 2004, 2010

NCAR Junior Faculty Forum, Workshop Participant July 2010

IPAM, UCLA, Model and data hierarchies for simulating and understaning climate. Invited participant March 2010

SIAM Annual Meeting, Tropical Convection, Waves and Large Scale dynamics
Minisymposium organizer July 2008

NCAR IMAGE Theme of the Year, Emerging Mathematical Strategies for Multi-scale and Stochastic Modeling of the Atmosphere and Climate,
Workshop Participant 2005, 2006

GFD Summer School, Woods Hole Oceanographic Institution
Visiting Scientist 2001, 2003, 2005
Graduate Assistant 1998
Graduate Fellow 1996
Summer Student Fellow 1994

IPAM, UCLA, Modern Applied Mathematics for Atmosphere Ocean Science,
Postdoctoral Assistant July 2003

SIAM Dynamical Systems, Snowbird Utah
Minisymposium Organizer: Recent Results on the Fermi-Pasta-Ulam Problem
May 2003

Selected Publications

Dorrestijn, J. , D.T. Crommelin, J.A. Biello & S.J. Böing, "A data-driven multicloud model for stochastic parameterization of deep convection." *Phil. Trans. Royal Soc. A*, (in press 2012).

Biello, J.A. & A.J. Majda, "A multi-scale model for the modulation and rectification of the ITCZ", *J. Atmos. Sci*, (in press 2012).

Khouider, B., Y. Han & J.A. Biello, "Convective Momentum Transport in a Simple Multicloud Model for Organized Convection." *J. Atmos. Sci*, **69**, 281–302, (2012).

Biello, J.A. & A.J. Majda, "Intraseasonal multi-scale moist dynamics of the tropical troposphere." *Comm. Math. Sci.*, **8** (2): 519–540 (2010).

Biello, J.A. "Nonlinearly coupled KdV equations describing the interaction of equatorial and midlatitude Rossby waves." *Chinese Annals of Math. Ser. B*, **30** (5), 483–504, (2009).

Khouider, B, J.A. Biello & A.J. Majda, "A stochastic multicloud model for tropical convection." *Comm. Math. Sci.*, **8**(1), 187–216, (2010).

Biello, J.A. & J.K. Hunter, "Nonlinear Hamiltonian waves with constant frequency and surface waves on vorticity discontinuities." *Commun Pur Appl Math*, **63**, 303–336 (2009).

Morrison, P.J., N.L. Lebovitz & J.A. Biello, "The Hamiltonian description of incompressible fluid ellipsoids." *Annals Phys.*, **324** (8), 1747–1762, (2009).

Biello, J.A., A.J. Majda & M.W. Moncrieff, "Meridional momentum flux and superrotation in the multiscale IPESD MJO model" *J. Atmos. Sci.*, **64**, 1636–1651 (2007).

Biello, J.A. & A.J. Majda, "Modulating synoptic scale convective activity and boundary layer dissipation in the IPESD models of the Madden-Julian Oscillation", *Dyn. Atmos. Oceans* **42**, 152-215 (2006).

Biello, J.A. & A.J. Majda , "A new Multiscale Model for the Madden-Julian Oscillation", *J. Atmos Sci.* **62** pp 1694-1721 (2005).

Majda, A.J. & J.A. Biello, "A Multiscale Model for Tropical Intraseasonal Oscillations", *P. Natl. Acad. Sci. USA* **101** pp 4736-4741 (2004).

Biello, J.A. & A.J. Majda, "The Effect of Meridional and Vertical Shear on the Interaction of Equatorial Baroclinic and Barotropic Rossby Waves", *Stud. Appl. Math.* **112** (4) pp 341-390 (2004).

Biello, J.A. & A.J. Majda, "Boundary Layer Dissipation and the Nonlinear Interaction of Equatorial Baroclinic and Barotropic Rossby Waves", *Geophys. Astro. Fluid.* **98** (2), pp 85-127 (2004).

Teaching Experience

Assistant/Associate Professor:
Dep't of Mathematics, University of California, Davis — July 2005 - present

Lecturer:
Dep't of Math. Sciences, RPI — September 2000 - May 2003

Teaching Assistant:
Department of Astronomy, University of Chicago — 1997, 1998

In Progress

- Stochastic parametrization of atmospheric moist convection (with D. Crommelin and J. Dorrestijn, CWI, Amsterdam)
- Tropical/midlatitude interactions (with G. Kiladis, NOAA and postdoc M. Remmel, UC Davis)

- A multiscale theory of the Madden-Julian oscillation (MJO) . Potential vorticity of the MJO (with postdoc M. Remmel, UC Davis and A.J. Majda, NYU)
- Equatorial Superrotation on slowly rotating planets (with J. Mitchell and P. Wang, UCLA)
- Connecting tropical and midlatitude dynamics using matched asymptotic expansions (with A. Majda, NYU and R. Klein, Free University, Berlin)
- Moisture feedback on the multiscale models of the Madden-Julian oscillation. (A.J. Majda, B. Khouider).
- Filamentation in 2D vorticity discontinuities (with J. Hunter, UC Davis)
- Nonlinear steady solutions of 2D viscoelastic flow (with B. Thomases, UC Davis)
- On unified multiple scales approach for the tropical waveguide (with W. Schubert, Colo. State)
- Dirac brackets for the Hamiltonian formulation of incompressible fluid dynamics (with P.J. Morrison, U Texas, N. Lebovitz, U. Chicago)

References

Andrew J. Majda, Morse Professor of Arts and Sciences
Courant Institute of Mathematical Sciences, New York University
majda@cims.nyu.edu

Mitch Moncrieff, Mesoscale & Microscale Meteorology Division
National Center for Atmospheric Research
moncrief@ucar.edu

Rubert Klein, Professor, Free University of Berlin
rupert.klein@zib.de

George Kiladis, Physicist, NOAA, Earth System Research Laboratory,
Physical Sciences Divsion, Boulder, CO
george.kiladis@noaa.gov