

JUAN MARIO RESTREPO

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Expertise: Uncertainty quantification, scientific computing,
climate dynamics, and oceanography.

EDUCATION

- Ph.D. in Physics, The Pennsylvania State University. December, 1992.
-Dissertation title: “Model for the Formation and Evolution of Sand Ridges on the Continental Shelf”. Dissertation advisor: Prof. Jerry L. Bona.
- M.S. in Engineering Acoustics, The Pennsylvania State University, December 1987.
-Thesis title: “The Covariance of Scalar Fields Scattered by Pressure-release Randomly Rough Surfaces”. Thesis advisor: Prof. Suzanne T. McDaniel.
- Electrical Engineering, Columbia University, 1983-1985.
- B.S. Music, New York University, May 1983.
-Graduation piece: ”Caprice” Piano Concerto. Thesis advisor: Prof. Vladimir Padwa.

EMPLOYMENT

- Mathematics Department, University of Arizona, 2009 to present.
Professor.
- Department of Atmospheric Sciences (voting member), University of Arizona, 2009 to present.
Professor.
- Physics Department, University of Arizona, 2009 to present.
Professor.
- Mathematics Department, University of Arizona, 2003-2008.
Associate Professor.
- Mathematics Department, University of Arizona, 1997 to 2003.
Assistant Professor.
- Mathematics Department, UCLA. Jan 1996-1997.
CAM/PIC Assistant Professor.

- U. S. Department of Energy. Jan 1994-Dec 1996.
ORISE/DOE Distinguished Post-Doctoral Fellow.
- Advanced Photon Source, Argonne National Laboratory. 1994-1995.
Architectural Acoustics Design Engineer.
- Argonne National Laboratory. Sep 1992 to Dec 1993.
Post-Doctoral Fellow.
- The School of the Art Institute of Chicago. Spring 1994 to Fall 1995.
Adjunct Professor.
- The Pennsylvania State University. Spring, 1992.
Instructor.
- Applied Research Laboratories, The Pennsylvania State University. 1985-1992.
Research Assistant.
- CEAM, Ltda. of Bogotá, Colombia. 1985-1986.
Architectural Acoustics Consultant.
- Columbia-Princeton Electronic Music Lab, Columbia University. 1985.
Technician.
- Music Department, New York University. 1984.
Instructor.
- Record Plant Studios, 321 W. 44 St. New York, NY 10021. 1982.
Staff Engineer.
- Soundworks, L.T.D. 254 W. 54 St, New York, NY 10027. 1981.
Staff Engineer.
- Eastern Artist Recording Studios, Inc., 36 Meadow St. East Orange, NJ. 1980-1982.
Engineer.

HONORS AND AWARDS

- **DOE Young Investigator Award**, Department of Energy, 2002-2005.
- **ORISE Distinguished Post-Doctoral Fellow**, Department of Energy, 1994-1997.
- Post-Doctoral Fellow, Department of Energy, 1993-1994.
- August and Ruth Homeyer Graduate Fellowship, 1992.
- Simowitz Research Award, 1992.
- National Hispanic Scholarship Fund, 1989.
- **ONR Graduate Fellowship**, 1985-1992.
- Several awards as a musician and audio engineer.

VISTING POSITIONS

- Aspen Institute of Physics, Summer 2012.
- Statistics and Applied Mathematical Sciences Institute, Spring 2012.
- Mathematical Sciences, Warwick UK, 2011.
- ICES, University of Texas, 2011.
- The Institute for Mathematics and Its Applications, 2009-2010.
- Los Alamos National Laboratory, Summers of 1996-2006.
- Los Alamos National Laboratory, Spring, 2005.
- Statistics and Applied Mathematical Institute, Spring, 2005.
- Pacific Institute of Mathematical Sciences, Fall 2004, Spring 2005.
- Argonne National Laboratory, Summers 1994-1996.

CONSULTING

Consulting in applied mathematics. I also own AEP Acoustics, LLC, a consulting company in computational acoustics and architectural acoustics. I have worked on over 100 projects, nationally and internationally. I am also a technical advisor and collaborator with Kirkegaard and Associates, a world leader in architectural acoustics design and analysis. Presently, working on voice/speech filters in cell phone applications.

SERVICE

Outreach

- UA AGEP Representative, fostering research opportunities for under-represented minority students, as well as graduate training in the Sciences.
- Alliance Postdoctoral Fellowship Mentor, 2010-2013.
- LAGSES (Latino/a Association of Graduate Students in Engineering and Science), Board Member, 2007-2011.
- MGE/MSA Post-doctoral Mentoring Mentor, Panel Member, 2007.
- Panel Member, Computational Science and Engineering: Minorities and Applied Mathematics - Connections to Industry and Government Laboratories, 2005.
- AIMES, University of Arizona. Creator and organizer of the Arizona Internships in Mathematics Engineering and the Sciences. 1997-present.
- MGE/MSA Minority Graduate Education Mentor, 2001-present.
- XI Semana Regional de Investigación y Docencia en Matemáticas. Lecturer and panel member. Series of lectures for Mexican graduate students at the Universidad de Sonora, Hermosillo, Mexico, 2000.

- SACNAS, minority recruitment for the University as well as mentoring and supervising of science students.
- Informal student recruitment contact for all DOE laboratories.
- Panelist, Professional Development, “Effective Job Searching: Do’s and Don’t’s of Landing a Job after Graduate School.” SIAM/2005.

Intramural

- Group Leader, Uncertainty Quantification Group, 2007-present. I created and lead this research group. It consists of 5 faculty members from different departments, 2 government laboratory scientists, 4 post-docs, 8 graduate students, and 1 undergraduate student.
- SIAM Web design committee, 2011-.
- Mathematics Computers and Systems committee, 2012-.
- Mathematics Department, awards committee, 2011-.
- Mathematics Department, hiring committee, 2010-2011.
- Mathematics Department, promotion and tenure committee, 2010-2011.
- Mathematics Department, hiring committee, 2006-2007.
- Mathematics Department, promotion and tenure committee, 2006-2007.
- Mathematics Department, computer committee, 1998-2001.
- Mathematics Department, department head search committee, 2000.
- Mathematics Department, computer proficiency exam, 1998, 2000.
- Program in Applied Mathematics, qualifying exams, 1998-present.
- Program in Applied Mathematics: Research Training Group, 1998, 2000, 2003.
- Participated in university-wide phone recruitment campaigns, 1998.
- Featured speaker at honor student convocation, 1999.
- Applied Mathematics Recruiting Workshop, Spring 1998, Spring 2000, 2007. Gave a presentation titled “Computational Mathematics”
- University of Arizona Telethon, Spring 1998.
- “Study tips for technical courses”. A Lecture Series for students. Department of Mathematics Department, U. Arizona, 1998.
- Wrote Letters for graduate school and internships for nearly thirty students. Wrote recommendation for a senior position in a physics department.
- Co-supervising four undergraduate student interns, working on our experimental investigation of sand dunes, 1998-present.
- Co-organizer, Fluid Mechanics Seminar Series, U Arizona Mathematics Department.

- Co-organizer, Non-Equilibrium Statistical Seminar Series, U Arizona Physics Department.

Extramural

- 2012-2013, King Abdullah University of Science and Technology, Technical Reviewer.
- 2013, Mathematics Department/Computer Science Department reviewer, Universidad de Puerto Rico.
- 2004-present, Consultant in engineering acoustics and owner, AEP Acoustics, LLC.
- 2006, Schlumberger Study Group, Houston TX.
- 2006, 10th PIMS Industrial Problem Solving Workshop, Vancouver, Canada.
- 2006, Oxford Study Group, Fields Institute, Toronto, Canada.
- 1992-2007, Visiting Faculty Researcher, Los Alamos National Laboratory.
- 2009-2010, Visiting Faculty Fellow, IMA.
- 2005, Visiting Faculty Fellow, SAMSI.
- 2004, Distinguished Visiting Faculty, Pacific Institute of Mathematical Sciences.
- 2004, Visiting Researcher, SAMSI.
- 2003-2006, Visiting Faculty Researcher, Los Alamos National Laboratory.
- 2003, Visiting Faculty Researcher, Argonne National Laboratory.
- 2002, Visiting Faculty Researcher, Los Alamos National Laboratory.
- 1993-present, Visiting Faculty Researcher, Argonne National Laboratory.
- 2005, Reviewed tenure case.
- 2002-2004, Board Member, the Museum of Contemporary Art, Tucson AZ.
- 2002-2004, Board Member, KXCI FM, a Tucson AZ public radio station.
- Journal Referee: Monthly Weather Review, Tellus, Journal of Fluids Engineering, Computers and Geosciences, Advances in Neural Information Processing Systems, SIAM Journal of Applied Mathematics, SIAM Journal on Scientific Computing, Journal of Fluid Mechanics, International Journal of Numerical Methods in Engineering, The European Journal of Mechanics, Journal of the Acoustical Society of America, Physica D, Journal of Theoretical Fluid Mechanics, Journal of Physical Oceanography, Physical Review Letters, Physical Review E, Physics of Fluids, European Journal of Physics, American Mathematical Monthly, Advances in Water Resources, International Journal of Computer Mathematics, Ocean Modelling

- Proposal Referee: KAUST programs, KAUST-Stanford 2011, European Commission on Research and Innovation, 2010, Israel Science Foundation Grants, 2010, National Science Foundation, 1998-present, Department of Energy, 1993-present.
- Professional Societies
 - American Physical Society, 2009-
 - Society of Industrial and Applied Mathematics, 1998-
 - American Geophysical Union, 1992-
 - American Mathematical Society, 1990-
 - Acoustical Society of America, 2004-
 - American Institute of Architecture, 2008-2010.
- Book Reviews
 - AMS Mathematics of Computation, 1996. “Mathematics of Climate and Environment,” J. I. Diaz, J. L. Lions, Eds.
 - SIAM Review, 2007. “Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics,” edited by Annalisa Griffa, A.D . Kirwan, Jr., Arthur J. Mariano, Tamay Ozgokmen, and Thomas Rossby. Cambridge University Press, 978-0-521-87018-4, 500 p.
- Conference Co-organizer
 - NOLTA 2013, Annual Meeting, Member of the Scientific Committee.
 - Mini-Symposium on wave-currents, SIAM-geosci 2002.
 - Los Alamos Days, 2000.

GRANTS AND CONTRACTS

- Co-PI (25%): *Front Propagation and Coiling Instabilities*, National Science Foundation, Grant # DMR 9812526 (with R. Goldstein, PI, A. Pesci, and J. Kessler). \$ 60,000.00 (2000-2001).
- Co-PI (33%): *Granular Dynamics and Fluid Dynamics*, National Science Foundation, Grant # DMR 9974095 (with R. Goldstein, A. Pesci). \$38854.00 (1999-2000).
- PI (100%): *Granular Flow Laboratory*, University of Arizona Small Grant # FRS 451836, \$ 5,000.00, (1999).
- PI (50%): *Data assimilation and estimation in meteorology and hydrology*. (with G. Eyink and Shlomo Newman). National Foundation Grant DMS-0113649 \$ 250,000.00 (2001-2003).
- Co-Pi (50%) *Assimilation of GPS Meteorological Data Into Weather and Climate Analyses*. NASA, Goddard Space Flight Center, Grant # NAG5-11163 (With Robert Kursinski, Atmospheric Sciences, U Arizona), \$33,801.00, (2001-2002).
- Co-Pi (33%) NSF/ITR *Free-Boundary Problems in Precipitative Growth*, National Science Foundation, Grant # 0219411 (with R. Goldstein, J.C. Baygents), \$498,000.00 (2002).
- Pi (100%) Department of Energy, Young Investigator Award, DE-FG02-02ER25533. \$300,000.00 (2002).

- PI (100%) *Collaborative Research: CMG: Mathematical Theory and Modeling of Wave-Current Interaction*, National Science Foundation DMS-0327642 \$352,770.00 (2003-2007). UCLA receives separately \$380,591.00 via DMS-327617.
- PI (100 %), “CMG: Dissipative Effects in Wave/Current Interactions,” National Science Foundation, DMS-0304890, \$500,000.00 (2008-2011).
- Pi (100%), ” Data Blending and Hurricane Predictions,” National Science Foundation DMS-1109856 \$250,000 (2011-2014).
- 2011, PI (1 of 64 Pi’s), Gulf of Mexico Research Initiative, ”Center for Advanced Research on Transport of Hydrocarbons in the Environment,” **\$112.5M**. Research Consortia Studying Effects of Deepwater Horizon Oil Spill on Gulf of Mexico.
- 2013-, PI (submitted, Feb 2013), (with S. Venkataramani, R. Bennett, J. McElwaine), ” Small-scale upper mantle convection and GPS geodesy,” NSF, Request, \$200,000 (3 years).
- 2013-, PI (submitted, Feb 2013), (with Ken Melville, Scripps Institute of Oceanography), ”Experimental Design of Subscale Parametrizations of Breaking Waves, ” NSF, Request \$400,000.00 (3 years).

PUBLICATIONS

Note: author order does not reflect relative effort. Papers with () indicate papers were doing under the supervision of thesis advisors.*

Publications: journal articles

*J. M. Restrepo, S. T. McDaniel, “Two Models for the Spatially Covariant Field Scattered by Randomly Rough Pressure-release Surfaces with Gaussian Spectra”, *Journal of the Acoustical Society of America*, **87**, pp 2033-2043 , 1990.

J. M. Restrepo, S. T. McDaniel, “Spatial Coherence in the High Frequency Limit”, *Waves in Random Media*, **2**, pp 183-193, 1991.

J. M. Restrepo, G. K. Leaf, “Wavelet-Galerkin Discretization of Hyperbolic Equations”, *Journal of Computational Physics*, **122**, pp 118-128, 1995.

J.M. Restrepo, J. L. Bona, “Discretization of a Model for the Formation of Longshore Sand Ridges”, *Journal of Computational Physics*, **122**, pp 129-142, 1995.

*J. M. Restrepo, J. L. Bona, “Three-dimensional Model for the Formation of Longshore Sand Ridges on the Continental Shelf”, *Non-linearity*, **8**, pp 781-820, 1995.

J. M. Restrepo, G. K. Leaf, “Inner Product Computations Using Periodized Daubechies Wavelets”, *International Journal of Numerical*

Methods in Engineering, **40**, pp 3557-3578, 1997.

J. M. Restrepo, "Behavior of a Sand Ridge Model", European Journal of Mechanics B/Fluids, **6**, pp 835-861, 1997.

J. M. Restrepo, G. K. Leaf, A. Griewank, "Circumventing Storage Limitations in Variational Data Assimilation", SIAM Journal on Scientific Computing, **19**, pp 1586-1605, 1998.

J. P. Albert, J. L. Bona, J. M. Restrepo, "Solitary-Wave Solutions of the Benjamin Equation", SIAM Journal of Applied Mathematics, **59**, pp 2139-2161, 1999.

J. C. McWilliams, J. M. Restrepo, "The Wave-Driven Ocean Circulation", Journal of Physical Oceanography, **29**, pp 2523-2540, 1999.

G. L. Eyink, J. M. Restrepo, "Most Probable Histories for Nonlinear Dynamics: Tracking Climate Transitions", Journal of Statistical Physics, **101**, pp 459-472, 2000.

J. L. Bona, W. McKinney, J. M. Restrepo, "Stable and Unstable Solitary-Wave Solutions of the Generalized Regularized Long-Wave Equation" Journal of Nonlinear Science, **10**, pp. 603-638, 2000.

D. Kurtze, J. M. Restrepo, "Advective Time Lags in Box Models", Journal of Physical Oceanography, **31**, pp. 1828-1842, 2001.

J. M. Restrepo, "Wave-Current Interactions in Shallow Waters and Shore-Connected Ridges", Continental Shelf Research, **21**, pp. 1331-1360, 2001.

J. M. Restrepo, G. K. Leaf, "Noise Effects on Wave-Generated Transport Induced by Ideal Waves", Journal of Physical Oceanography, **32**, pp. 2334-2349, 2002.

J. M. Restrepo, P. Fischer, G. K. Leaf "Forces on Particles in Oscillatory Boundary Layers", Journal of Fluid Mechanics, **468**, pp. 327-347, 2002.

S. Kim, G. Eyink, J. M. Restrepo, J. F. Alexander, G. W. Johnson, "Ensemble Filtering for Nonlinear Dynamics," Monthly Weather Review, **131**, pp. 2586-2594, 2003.

G. E. Eyink, J. M. Restrepo, J. F. Alexander, "A Mean Field Approximation in Data Assimilation for Nonlinear Dynamics", Physica D, **195**, pp. 347-368, 2004.

G. L. Eyink, J. Restrepo, and F. J. Alexander "A Statistical-Mechanical Approach to Data Assimilation for Nonlinear Dynamics". (also available as a preprint as "A Statistical-Mechanical Approach to

Data Assimilation Using Moment Closures,”, 26 pages) Journal of Statistical Physics, 2003.

J. McWilliams, J. M. Restrepo, Emily Lane, “An Asymptotic Theory for the Interaction of Waves and Currents in Shallow Coastal Waters,” Journal of Fluid Mechanics, **511**, pp. 135-178, 2004.

P. Fischer, G. K. Leaf, J. M. Restrepo, “Influence of Wall Proximity on the Lift and Drag of a Particle in an Oscillatory Flow,” Journal of Fluids Engineering, **127**, pp. 583-594, 2005

J. F. Alexander, G. E. Eyink, J. M. Restrepo, “Accelerated Monte-Carlo for Optimal Estimation of Time Series,” Journal of Statistical Physics, **119**, pp.1331-1345, 2005.

C. Dombrowski, B. Lewellyn, A. I. Pesci, J. M. Restrepo, J. O. Kessler, R. E. Goldstein, “Coiling, Entrainment, and Hydrodynamic Coupling of Decelerated Fluid Jets”, Physics Review Letters, **95** pp.184501 (2005).

S. Peacock, E. Lane, J. M. Restrepo, “A possible sequence of events for the generalized glacial-interglacial cycle,” Journal of Global Biogeochemical Cycles, **20**, GB2010 (2006).

E. Lane, S. Peacock, J. M. Restrepo, “A dynamic-flow carbon-cycle box model and high-latitude sensitivity,” Tellus B, **58**, pp.257-278 (2006).

M. Hasson, J.M. Restrepo, J. M. Hyman, “A Strategy for Detecting Extreme Eigenvalues Bounding Gaps in the Discrete Spectrum of Self-Adjoint Operators,” Computers and Mathematics with Applications, **53**, pp. 1271-1283 (2007).

G. E. Eyink, J. M. Restrepo, J. F. Alexander, “A Statistical-Mechanical Approach to Data Assimilation for Nonlinear Dynamics”, pp 35+12 figures, **accepted, subject to revisions**, Journal of Statistical Physics, September, 2003.

E. Lane, J. M. Restrepo, J. McWilliams, “Wave-Current Interaction: A Comparison of Radiation-Stress and Vortex-Force Representations,” Journal of Physical Oceanography, **37** pp.1122-1141 (2007).

J. M. Restrepo, “Wave Breaking Dissipation in a Wave-driven Circulation,” **37**, Journal of Physical Oceanography, pp 1749-1763 (2007).

M. Hasson, J.M. Restrepo, “Approximating on Disjoint Intervals and its Application to Matrix Preconditioning,” Complex Variables and Elliptic Equations, **52**, DOI: 10.1080/17476930701524222 (2007).

E. Lane, J. M. Restrepo, “Shoreface-connected Ridges under the Action of Currents and Waves,” Journal of Fluid Mechanics, **582**,

DOI:0.1017/S0022112007005794 (2007).

J. M. Restrepo, "A Path Integral Method for Data Assimilation," *Physica D*, **237**, pp. 14-27 (2008).

P. Fischer, G. Leaf, J. M. Restrepo, "Torque Effects on the Lift and Drag of Particles in an Oscillatory Boundary Flow," *Journal of Fluids Engineering*, **130**, 101303, (2008)

J. Barber, J. P. Alberding, J. M. Restrepo, T. Secomb, "Two-Dimensional Computational Models of Red Blood Cell Motion in Microvessel Bifurcations and Flexibility Effects", 2008, *Annals of Biomechanics*, **36**, pp1690-1698, 2008.

P. Krause, J. M. Restrepo, "Lagrangian Data Assimilation Using the Kernel Diffusion Method", *Monthly Weather Review*, **137**, pp. 4386-4400, 2009.

J. M. Restrepo, R. Rael, J. Hyman, "Modeling the influence of polls on elections: a population dynamics approach," *Journal of Public Choice*, Volume 140, pp395-420, 2009.

J. M. Restrepo, R. Choksi, Y. Jiang, J. Hyman, "Improving the damage accumulation in a biomechanical bone remodelling model," *Computer Methods in Biomechanics and Biomedical Engineering*, **12**, pp341-352, 2009.

Y. Uchiyama, J. C. McWilliams, J. M. Restrepo, "Wave-current Interaction in Nearshore Shear Instability Analyzed with a Vortex Force Formalism," *Journal of Geophysical Research*, C06021, doi:10.1029/2008JC005135, 2009.

J.M. Restrepo, J. Ramírez, J.C. McWilliams, M. Banner, "Multi-scale Momentum Flux and Diffusion due to Whitecapping in Wave-Current Interactions," *Dissipation and Diffusion Processes in Wave/Current Interactions*, **41**, pp 837-856. *Journal of Physical Oceanography*, 2011.

S. Schofield, J. M. Restrepo, "Stability of planar buoyant jets in stratified fluids," *Physics of Fluids*, **22**, 053602, doi:10.1063/1.3415493, 2010.

D. Kurtze, J. M. Restrepo, J. Ditmann, "Convective Adjustment in Box Models", *Ocean Modelling*, **34**, pp 92-110 2010.

B. Weir, Y. Uchiyama, E. Lane, J. M. Restrepo, J. C. McWilliams, "A Vortex Force Analysis of the Interaction of Rip Currents and Surface Gravity Waves", **116**, C050001 *Journal of Geophysical Research*, 2011.

J. M. Restrepo, D. E. Moulton, H. Uys, "Stably Precessive Granular Sand Bars Under Steady Shearing", *Physical Review E*, **83**, 031305, 2011.

J. Barber, J. M. Restrepo, T. Secomb, "Simulated Red Blood Cell Motion in Microvessel Bifurcations: Effects of Cell-Cell Interactions on Cell Partitioning," *Cardiovascular Engineering and Technology*, **2**, pp. 349-360, doi: 10.1007/s13239-011-0064-4

N. Balci, A. Mazzucato, J. M. Restrepo, G. R. Sell, "Ensemble Dynamics and Bred Vectors," *Monthly Weather Review*, **140**, pp2308-2334, 2012.

Publications: refereed proceedings

J. M. Restrepo, "Model for the Formation of Longshore Sand Ridges on the Continental Shelf, " *Transactions, American Geophysical Union*, p. 255, October 1993.

J. L. Bona, W. McKinney, J. M. Restrepo, "Numerical Investigation of the Stability of Solutions of the Generalized BBM Equation." *Proceedings, IMACS 14th World Congress*, **1**, pp 344-347. 1994.

H. Kaper, D. Ralley, J. M. Restrepo, S. Tipei, "Additive Synthesis with DIASS on Argonne National Laboratory's IBM POWERparallel System (SP)", *Proceedings, International Computer Music Conference, Banff*, pp 351-352, 1995.

J.M. Restrepo, P. Fischer, G. Leaf, "Lift and drag measurements of a sphere using direct numerical simulation, " *Proceedings, ICTAM 2000, International Union of Theoretical and Applied Mechanics*, 2000.

S. Peacock, E. Lane, J.M. Restrepo, "A possible sequence of events for the generalized Glacial-interglacial cycle," *AGU Fall Meeting*, 2006.

J.M. Restrepo, "A Path Integral Formulation of Data Assimilation," *Proceedings of the 2006 Conference on Neural and Information Processing Systems, Vancouver 2006*.

T. W. Secomb, J. O Barber, J. P. Alberding, J. M. Restrepo, "Computational Simulation of Red Blood Cell Motion in Microvessels and Bifurcations," *XXII ICTAM Conference, August 2008, Adelaide, Australia*.

J. O. Barber, T. W. Secomb, J. P. Alberding, J. M. Restrepo, " Simulated Two-dimensional Red Blood Cell Motion, Deformation and Partitioning in Micro-vessel Bifurcations," *Society for Mathematical*

Biology Conference, July 2008, Toronto, ON, Canada.

J. O. Barber, T. W. Secomb, J. P. Alberding, J. M. Restrepo, " Simulated Two-dimensional Red Blood Cell Motion, Deformation and Partitioning in Micro-vessel Bifurcations," Seventh International Conference on Computational Fluid Mechanics in the Minerals and Process Industry, December, 2009, Melbourne Australia.

Non-Refereed Reports and Proceedings

J. M. Restrepo, "Student Involvement Vital to Climate Modeling Studies", Global Change Scaler, ANL/GCS-2 p. 66-67, 1993.

J. M. Restrepo, J. L. Bona, "Model for the Formation of Longshore Sand Ridges on the Continental Shelf. The Interaction of Internal Waves and the Bottom Topography." ANL Preprint MCS-P407-1293, 1993.

G. Schlossnagle, J. M. Restrepo, G. K. Leaf, "Periodized Wavelets, " ANL Technical Report ANL-93/34, pp 20 + 8 figures, 1993.

J. M. Restrepo, "The Acoustics of the Advanced Photon Source Auditorium and Conference Center," ANL Technical Report ANL/MCS-TM-212, pp 80 + 16 figures, 1995.

J. M. Restrepo, "Principles of Scientific Computing", **electronic course** (non-refereed), pp 500+ figures.

J. M. Restrepo, "Did Exit Polls Elect Reagan? Did a Third Party Affect the Gore/Bush Election?," Arizona Daily Star Guest Opinion, 2012

J. M. Restrepo, "Global Warming, Climate Change, Climate Research," invited blog for MPE2013

Publications: professional software (used by third parties)

J. M. Restrepo, G. K. Leaf, "Connection Coefficients, calculation of inner products using periodized Daubechies wavelets and their derivatives", 1995. Available from the web page.

J. M. Restrepo, G. K. Leaf, Andreas Griewank, "Treeverse.f, software for the evaluation of gradient using a recursive/adjoint algorithm", 1995. Available from the web page.

J.M. Restrepo, C. Chen, "Task Farming Scheduler for Beowulf-class computers", 1999. Available from the web page.

J. M. Restrepo, G. K. Leaf, "General Model for Wave-Current Interactions with Pollution and Sediment Dynamics", 2000. Available only upon request to group users.

N. Chitnis, J. Hyman, J.M. Restrepo, "DSDISP" A Population Dynamics Software Package, 2005. Available from the web page.

WORK SUBMITTED or NEARLY SUBMITTED

J, M. Restrepo, S. Venkataramami, C Dawson, "Nearshore Sticky Waters," , **submitted**, Nature, 2013.

N. Balci, S. Venkatarami, J. M. Restrepo, "Improving Parameter Estimation via Models and Data using Ensemble Bred Vectors," **submitted**, Monthly Weather Review, 2013.

D. Comeau, D. Kurtze, J. M. Restrepo, "Oceanic Transport Effects on the Snowball Earth Hypothesis," **submitted**, J. Climate, 2013.

J.M. Restrepo, S. Venkataramani, D. Comeau, H. Flaschka, "Defining a Trend for a Time Series Using the Intrinsic Time-Scale Decomposition" **submitted**, Proceedings of the Royal Society of London, Series A, 2013.

N. Balci, J. M. Restrepo, S. Venkataramani, A. Mariano, "Data and Model-Driven Wind and Drag Parameter Estimates for Nearshore Wave/Current Interactions using Polynomial Chaos," **submitted**, **March 2013**, Ocean Modeling.

R. Bennett, S. Venkataramani, J. McElwaine, J. M. Restrepo, "Surface Motions Driven by Flows in the Upper Mantle," **in preparation**.

K. Mandli, J. M. Restrepo, R. LeVeque, "Rip Surges," Journal of Physical Oceanography. **in preparation**.

H. Arabhashi, J. M. Restrepo, S. Venkataramani, C. Dawson, "Oil Slick Dynamics in the Nearshore of the Gulf Coast, " **In preparation**.

SCHOLARLY PRESENTATIONS (Invited)

Conferences and Workshops, recent

AGU Annual Meeting, Invited Speaker, '12
Max-Planck Institute, Physics of Complex Systems in Dresden, '12
SACNAS, Invited Speaker, Seattle '12
AIMS Conference, Orlando '12
SIAM, Annual meeting, UQ '12
SAMSU, Invited Speaker, Methodology Workshop, UQ Year, '11
AMS John von Neumann Workshop on Multiscale Methods, '11

IMA/NSF, Invited Speaker, Uncertainty Quantification Workshop, '11
IMA/NSF, Invited Speaker, Societally-Relevant Computing Workshop, '11
SIAM Annual Conference, 2010, Invited Speaker, Conference on Climate Dynamics, '10
Blackwell-Tapia Celebration, '10
IMA/NSF, Workshop on Careers for Minorities and Women in the Mathematical Sciences, keynote speaker, '10
IMA/NSF, Invited Speaker Complex Flows workshop '10
SACNAS Annual Meeting 2008, Plenary Speaker
SIAM, 2007, Mathematical Fluid Dynamics Symposium
MSRI, Mathematical Issues in Stochastic Approaches for Multiscale Modeling, '07
AMS, 2007 Spring Western Section, Invited Speaker '07
Stochastic Dynamical Systems and Climate Dynamics, BIRS Research Station, Banff, Invited Speaker '07
NIPS Conference, Whistler BC, Pascal Invited Speaker '06
Congreso Agronomo XVI, Guanajuato MX, Invited Speaker '06
Encuentro Binacional Arizona/Universidad Autonoma Chapingo, MX, Invited Speaker '06
SIAM National Meeting, New Orleans LA, Invited Topical Speaker '05
SAMSI Workshop on Data Assimilation, NC, Invited Speaker '05

Symposia, recent

AGU meeting, invited speaker, '12
Ocean Sciences Meeting, Contributed Poster '12
Ocean Sciences Meeting, Contributed Talk '12
AGU Meeting, contributed poster, '10
AGU Ocean Meeting, contributed talk, '10
AGU Ocean Meeting, Hawaii HI, Session organizer '06

Conference Organizer, recent

NOLTA 2013, Technical Advisor.
Mathematics of Climate Workshop, 2010, NCAR, Boulder.
Co-organizer IMA/NSF Science Careers for Women and Minorities, 2010.
Uncertainty Quantification Workshop, 2007, University of Arizona.

Colloquia (invited), recent

Applied Mathematics, Colorado, '12
SAMSI Colloquium, '12
University of North Carolina, Applied Mathematics Colloquium, '12
University of Oxford, Numerical Analysis Seminar, '11
University of Reading, Data Assimilation Seminar, '11
ICES, U. Texas, '11
University of Warwick, Applied Mathematics Seminar, '11
Imperial College, London, Climate Dynamics Seminar, '11

Imperial College, London, Fluid Mechanics Seminar, '11
Argonne National Laboratory, '10
University of St Thomas, '10
Carleton College, '10
University of Chicago, '10
University of Michigan, '10
Stanford University, '10
University of Illinois at Chicago, '10
University of Minnesota, '09
University of Texas, ICES, '09
Courant Institute of Mathematical Sciences, '09
UCSD Institute for Scientific Computing, '08
UCSD Mechanical and Aerospace Engineering, '06
U. Washington Applied Mathematics, '07
Scripps Institute of Oceanography, '06