

JODI L. MEAD

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Academic Experience

Professor, Department of Mathematics, Boise State University, August 2009 - present.
Honorary Visiting Professor, National Centre for Groundwater Research and Training, Flinders University Australia, Fall 2013.
Associate Professor, Department of Mathematics, Boise State University, August 2005 - 2009.
Visiting Professor, Department of Mathematics, Arizona State University, Spring 2007.
Assistant Professor, Department of Mathematics, Boise State University, August 2000 - 2005.
Post-doctoral Fellow, College of Oceanic and Atmospheric Sciences, Oregon State University, August 1998 - July 2000.
Graduate Research Fellow, Department of Mathematics, Arizona State University, August 1996 - August 1998.
Teaching Assistant, Department of Mathematics, Arizona State University, August 1992-August 1996.

Education

Ph.D., Computational Mathematics, August 1998, Arizona State University, Tempe, AZ.
Ph.D. Thesis: Numerical Methods for Problems in Computational Aeroacoustics.
M.A., Mathematics, December 1994, Arizona State University, Tempe, AZ.
Master's Thesis: A Study of a Different Pivoting Strategy in Gaussian Elimination.
B.S., Mathematics, May 1989, Syracuse University, Syracuse, NY.

Papers in Refereed Journals

J.L. Mead and C. Hammerquist, "Chi-squared tests for choice of regularization parameter in non-linear inverse problems", *SIMAX*, Vol. 34, No. 3 2013, pp. 1213-1230.
M. Thoma, W. Barrash, M. Cardiff, J. Bradford, and J. Mead, "Estimation of in-situ unsaturated hydraulic properties of a stony sediment sequence from an infiltration experiment using multiple optimization methods, Boise Hydrogeophysical Research Site", *Vadose Zone Journal*, submitted.
J. L. Mead, "Discontinuous parameter estimates with least squares estimators", *Applied Mathematics and Computation*, 219, 2013, pp. 5210-5223.
R. Renaut, I. Hnetynkova and J. Mead, "Regularization Parameter Estimation for Large Scale Tikhonov Regularization Using A Priori Information", *Computational Statistics and Data Analysis*, 54, 2010, pp. 3430-3445..
J.L. Mead and R.A. Renaut, "Least squares problems with inequality constraints as quadratic constraints", *Linear Algebra and its Applications* 432 (2010), pp. 1936-1949.
J.L. Mead and R.A. Renaut, "A Newton root-finding algorithm for estimating the regularization parameter for solving ill-conditioned least squares problems", *Inverse Problems*, Vol. 25, No. 2, 2009.
J.L. Mead, "Parameter estimation: A new approach to weighting a priori information", *Journal of Inverse and Ill-posed Problems*, Vol. 16, No. 2, 2008, pp. 175-194.
J.L. Mead and B. Zubik-Kowal, "An Iterated Pseudospectral Method for Functional Differential Equations", *Applied Numerical Mathematics*, Vol. 55 Issue 2, pp. 227-250, 2005.
J.L. Mead, "Assimilation of Simulated Float Data in Lagrangian Coordinates", *Ocean*

Modelling, Vol 8, Issue 4 pp. 369-394, 2005.

- J.L. Mead and B. Zubik-Kowal, "Pseudospectral iterated method for differential equations with delay terms", *Lecture Notes in Computer Science 3039*, Springer-Verlag, pp. 451-458, 2004.
- J.L. Mead, "The Shallow Water Equations in Lagrangian Coordinates", *J. Comp.Phys.*, Vol 200, No. 2 pp. 654-669, 2004.
- J.L. Mead and R.A. Renault, "Accuracy, Resolution and Stability Properties of a Modified Chebyshev Method", *SIAM Journal on Scientific Computing*, Vol. 24 No. 1 pp. 143-160, 2002.
- J.L. Mead, R.A. Renault and B.D. Welfert, "Stability of a Pivoting Strategy for Parallel Gaussian Elimination", *BIT* 41:2, pp. 633-639, June 2001.
- J.L. Mead and A.F. Bennett, "Towards Regional Assimilation of Lagrangian Data: The Lagrangian form of the Shallow Water Reduced Gravity Model and its Inverse", *Journal of Marine Systems*, 29, pp. 365-384, 2001.
- J.L. Mead and R.A. Renault, "Optimal Runge-Kutta Methods for First Order Pseudospectral Operators", *Journal of Computational Physics*, Vol 152, pp. 404-419, 1999.
- J.L. Mead and R.A. Renault, "High Order Methods for Problems in Computational Aeroacoustics", *SIAM Mathematical and Numerical Aspects of Wave Propagation*, June 1998.

Funding

- NSF Division of Mathematical Sciences, \$270,000, 2014-2017
"Collaborative Research: Computational techniques for nonlinear joint inversion", co-Pi John Bradford.
- NSF Division of Mathematical Sciences, \$8,200, 2012-2013
"Pacific Northwest Numerical Analysis Seminar 2012", PI Donna Calhoun, co-Pi Grady Wright.
- NSF Division of Mathematical Sciences, \$466,803, 2010-2013
"ATD: Data-driven stochastic source inversion algorithms for event reconstruction of bioterror agent dispersion", co-PI Inanc Senocak.
- NSF EPSCoR , BSU portion: \$1,511,853, 2005-2008
"Idaho Grand Challenge Initiative for Water Resources", PI Jim McNamara, co-PIs Molly Gribb and Shawn Benner.
- EPA subcontract, \$50,000, 2005
"Boise State University for developing multi-purpose sensors to detect and analyze environmental contaminants", co-PI Tom Clemo.
- BSU Collaborative Grant Improvement Initiative, \$150,000, 2004-2006
"Development of an Environmental Hydrology Center", co-PIs Jim McNamara and Molly Gribb.
- NSF Interdisciplinary Grants in the Mathematical Sciences , \$99,181, 2003-2004
"Mathematics in Near Sub-Surface Science".
- Office of Naval Research subcontract, \$21,934, 2001
"Assimilation of Lagrangian Data into Regional Models".
- Office of Naval Research postdoctoral fellowship, \$47,000, 1999-2000
"Lagrangian Data Assimilation".
- NSF postdoctoral fellowship, \$43,000, 1998-1999
"Open Ocean Data Assimilation".
- NASA graduate research fellowship, \$32,000, 1996-1998
"Numerical Methods for Problems in Computational Aeroacoustics".

Teaching Experience

- *Inverse Theory*, Boise State University Fall 2011.

- *Advanced Analysis*, Boise State University Spring 2010.
- *Advanced Calculus*, Boise State University Fall 2009.
- *Numerical Analysis*, Boise State University Fall 2008-Spring 2009, Fall 2011-Spring 2012
- *Applied Mathematics*, Boise State University, Fall 2004, Fall 2006, Spring 2011, Spring 2013, Spring 2015.
- *Dynamical Systems*, Boise State University, Fall 2005.
- *Numerical Methods for Differential Equations*, Boise State University, Fall 2002.
- *Mathematical Modeling*, Boise State University, Fall 2001.
- *Computational Mathematics*, Boise State University, Fall 2014.
- *Differential equations with Matrix Theory*, Boise State University, Fall 2000, 2002, Spring 2001, 2008 and Arizona State University Spring 2007.
- *Engineering Statistics*, Boise State University, Spring 2002.
- *Linear Algebra*, Boise State University, Fall 2012.
- *Inverse Methods and Data Assimilation*, Oregon State University, Summer 1999.
- *Multivariable Calculus*, Boise State University, Spring 2003, Fall 2006, 2008
- *Calculus II*, Boise State University, Fall 2000, 2004, 2008, 2009, 2010.
- *Calculus I*, Boise State University, Fall 2001, Spring 2002, 2005.
- *Pre-Calculus and College Algebra*, Arizona State University, Fall 1992-Summer 1996.

Service

- **Secretary**, SIAM Activity Group on Geosciences, 2015-2016.
- **Director of Graduate Studies**, Department of Mathematics, 2007-2013, 2014-present.
- **Honors and awards committee**, College of Arts and Sciences, 2014-2015.
- **By-Laws committee Chair**, Department of Mathematics, 2013-present
- **Dean's evaluation committee**, College of Arts and Sciences, 2011.
- **Planning Committee Chair**, Department of Mathematics, 2008.
- **Graduate advisor**

M.S. Math: Chad Hammerquist (2012), Alexandra Gertman (2012), Rik Dummar (2011), Garrett Saunders (2009), Shannon Murray (2008), Rayna Treneva (2007).

- **Graduate committee member**

Ph.D Geophysics: Hank Hetrick (expected 2015), Miguel Alejandro (expected 2015), Mike Morrison (2014), Mike Thoma (2013), Dylan Mikesell (2011), Marc Bursink (2007), Carlyle Miller (2006)

M.S. Math: John Hutchins (2013), Mindy Morgan (Washington State U., 2013), Jean Schneider (2012), Joseph Loeheimer (2011), Neil McGrath (2009), Eric Smith (2009).

- **Undergraduate research advisor**

Anna Nelson, 2012-2013.

- **Journal Reviewer**: *Advances in Water Resources*, *Applied Numerical Mathematics*, *Computational and Applied Math*, *Computational Optimization and Applications*, *Computers and Mathematics with Applications*, *International Journal for Numerical and Analytical Methods in Geomechanics*, *Journal of Scientific Computing*, *Inverse Problems*, *Journal of Geophysical Research*, *Mathematics and Computers in Simulation*, *Mechanical Systems and Signal Processing*, *Numerical Algorithms*, *Numerische Mathematik*, *Ocean Modelling*, *SIAM Journal on Matrix Analysis and Applications*

- **NSF Reviewer**, annually on panels 2006-present, and papers 2004-present, for programs in Mathematics, Cyberinfrastructure and Geoscience .

- **Association of Women in Mathematics Reviewer**, travel grants 2011-present, student essays 2011-present
- **Coach, Mathematical Contest in Modeling**, Boise State University 2001-2005.