JODI L. MEAD

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Academic Experience

Professor, Department of Mathematics, Boise State University, Fall 2009 - present.

Adjunct Faculty, School of Mathematical and Statistical Sciences, Arizona State University, Spring 2012-present.

Associate Dean in Residence, Graduate College, Boise State University, Fall 2019 - Spring 2020.

Visiting Scholar, Department of Computer Science, Portland State University, Spring 2017.

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.

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

D. Domenzain, J. Bradford and J. Mead, "Joint full-waveform GPR and ER inversion applied to field data acquired on the surface", *Geophysics*, Vol. 87, No. 1, 2022, pp. K1-K17.

D. Domenzain, J. Bradford and J. Mead, "Efficient inversion of 2.5D electrical resistivity data using the discrete adjoint method", *Geophysics*, Vol. 86, No. 3, 2021, pp. 1-54.

D. Domenzain, J. Bradford and J. Mead, "Joint inversion of full-waveform GPR and ER data. Part 2: enhancing low frequencies with the envelope transform and cross-gradients", *Geophysics*, Vol. 85, No. 6, 2020, pp. H115–H132.

D. Domenzain, J. Bradford and J. Mead, "Joint inversion of full-waveform GPR and ER data. Part 1", *Geophysics*, Vol. 85, No. 6, 2020, pp. H97–H113.

J. Mead, "Chi-squared tests for Total Variation Regularization Parameter Selection", *Inverse Problems and Imaging*, Vol. 14, No. 3, 2020, pp. 401–421.

J. Ford and J. Mead, "Joint Inversion of Compact Operators", *Journal of Inverse and Ill-posed Problems*, Vol. 28, No. 1, 2020, pp. 105–118.

H. Hetrick and J. Mead, "Geophysical imaging of subsurface structures with least squares estimates", *Inverse Problems in Science and Engineering*, Vol. 26, No. 11, 2018, pp. 1656–1675.

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*, 13(3) 2014.

J. 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.

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. Mead and R. Renaut, "Least squares problems with inequality constraints as quadratic constraints", *Linear Algebra and its Applications* 432 2010, pp. 1936-1949.

J. Mead and R. 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. 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. 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. Mead, "Assimilation of Simulated Float Data in Lagrangian Coordinates", *Ocean Modeling*, Vol 8, Issue 4 pp. 369-394, 2005.

J. 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. Mead, "The Shallow Water Equations in Lagrangian Coordinates", *J. Comp.Phys.*, Vol 200, No. 2 pp. 654-669, 2004.

J. Mead and R. Renaut, "Accuracy, Resolution and Stability Properties of a Modified Chebyshev Method", *SIAM Journal on Scientific Computing*, Vol. 24 No. 1 pp. 143-160, 2002.

J. Mead, R. Renaut and B.D. Welfert, "Stability of a Pivoting Strategy for Parallel Gaussian Elimination", *BIT* 41:2, pp. 633-639, June 2001.

J. Mead and A. 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. Mead and R. Renaut, "Optimal Runge-Kutta Methods for First Order Pseudospectral Operators", *Journal of Computational Physics*, Vol 152, pp. 404-419, 1999.

J. Mead and R. Renaut, "High Order Methods for Problems in Computational Aeroacoustics", *SIAM Mathematical and Numerical Aspects of Wave Propagation*, June 1998.

Funding

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".

Service

- **co-Director of PhD in Computing**, Graduate College, 2017-present.
- **co-Chair, School of Computing exploratory committee**, College of Arts & Sciences and College of Engineering, 2021-present.
- **Graduate Council**, Graduate College, 2018-2021.
- **Vice Chair**, SIAM Activity Group on Geosciences, 2018.
- **Secretary**, SIAM Activity Group on Geosciences, 2017.
- **Director of Graduate Studies**, Department of Mathematics, 2007-2013, 2014-2017.
- **Steering Committee member**, PhD in Computing, 2016-2017.
- **By-Laws committee Chair**, Department of Mathematics, 2013-2016
- **Dean's evaluation committee**, College of Arts and Sciences, 2011.
- **Planning Committee Chair**, Department of Mathematics, 2008.
- **Graduate advisor**
PhD Computing: Patricia Azike (2025, co-Chair), Sandra Babyale (2025, co-Chair), Ibrahim Olalekan Alabi (2024, co-Chair), Evi Ofekeze (2024, co-Chair). *PhD. Geophysics (co-Chair):* Diego Domenzain (2019). *M.S. Math:* MarGhece Barnes (2022), Jenny Thibodeau (2022), Ishrat Zaman (2022), James Ford (2017), Erron Kearns (2017), Chad Hammerquist (2012), Alexandra Gertman (2012), Rik Dummar (2011), Garrett Saunders (2009), Shannon Murray (2008), Rayna Treneva (2007).
- **Journal Reviewer**: Advances in Water Resources, Applied Numerical Mathematics, BIT Numerical Mathematics, Computational and Applied Math, Computational Optimization and Applications, Computers and Mathematics with Applications, International Journal for Numerical and Analytical Methods in Geomechanics, Computational Geosciences, Inverse Problems, Journal of Geophysical Research, Journal of Inverse and Ill-posed Problems, Journal of Inverse Problems in Science and Engineering, Journal of Scientific Computing, Mathematics and Computers in Simulation, Mechanical Systems and Signal Processing, Numerical Algorithms, Numerical Linear Algebra, Numerische Mathematik, Ocean Modelling, SIAM Journal on Imaging, SIAM Journal on Matrix Analysis and Applications, Water Resources Research
- **NSF Reviewer**, annually on panels 2006-present, for programs in Mathematics, Cyberinfrastructure and Geosciences.
- **Association of Women in Mathematics Reviewer**, travel grants 2011-2017, student essays 2011-2015
- **Coach, Mathematical Contest in Modeling**, Boise State University 2001-2005.

Teaching Experience

- *Inverse Theory*, Boise State University Fall 2011, Fall 2016, Spring 2019, Spring 2022.
- *Numerical Methods*, Boise State University Fall 2008-Spring 2009, Fall 2011-Spring 2012, Fall 2016-Spring 2018
- *Applied Mathematics*, Boise State University, Fall 2004, Fall 2006, Spring 2011, Spring 2013, Spring 15, Spring 16.
- *Applied Mathematics for Scientists and Engineers*, Boise State University, Fall 2014, Fall 2015.
- *Dynamical Systems*, Boise State University, Fall 2005.
- *Numerical Methods for Differential Equations* , Boise State University, Fall 2002.
- *Advanced Analysis*, Boise State University Spring 2010.
- *Advanced Calculus*, Boise State University Fall 2009.
- *Mathematical Modeling*, Boise State University, Fall 2001.
- *Computational Mathematics*, Boise State University, Fall 2015, Spring 2018, Fall 2019, Fall 2021.
- *Differential equations with Matrix Theory*, Boise State University, Fall 2000, 2002, Spring 2001, 2008, Summer 2017 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.