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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, "Efficient inversion of 2.5D electrical resistivity data using the discrete adjoint method", submitted to Geophysics.
- 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", in revision, Geophysics.
- D. Domenzain, J. Bradford and J. Mead, "Joint inversion of full-waveform GPR and ER data. Part 1, in revision, Geophysics.
- J. Mead, "Chi-squared tests for Total Variation Regularization Parameter Selection" Inverse Problems and Imaging, in revision.
- J. Ford and J. Mead, "Joint Inversion of Compact Operators", Journal of Inverse and Ill-posed Problems, 2019, doi: <https://doi.org/10.1515/jiip-2019-0068>.
- H. Hetrick and J. Mead, "Geophysical imaging of subsurface structures with least squares estimates", Inverse Problems in Science and Engineering, 2018, p 1-20, doi 10.1080/17415977.2018.1423682.
- 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 Mathe-*

- matics 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 Modelling*, 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

- NSF Division of Mathematical Sciences, \$204,457, 2017-2020
"Algorithms for Assessing and Improving Joint Inversion," co-Pi John Bradford.
- NSF Division of Mathematical Sciences, \$270,000, 2014-2018
"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 biothreat 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, Fall 2016, Spring 2019.
- *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.
- *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.

Service

- **co-Director of PhD in Computing**, Graduate College, 2017-present.
- **Graduate Council**, Graduate College, 2018-present.
- **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: Amrina Ferdous (2021).

PhD. Geophysics (co-Chair): Diego Domenzain (2019).

M.S. Math: James Ford (2017), Erron Kearns (2017), Chad Hammerquist (2012), Alexandra Gertman (2012), Rik Dummar (2011), Garrett Saunders (2009), Shannon Murray (2008), Rayna Treneva (2007).

- **Graduate committee member**

M.S. Math: Samuel Anyaso-Samuel (2019), Sage Shaw (2019), Mintaek Lee (2017), Kathryn Drake (2017), Talin Mirzakhanian (2017), Heather Wilbur (2016), John Hutchins (2013), Mindy Morgan (Washington State U., 2013), Jean Schneider (2012), Joseph Loeheimer (2011), Neil McGrath (2009), Eric Smith (2009)

PhD Geophysics: Zongbo Xu (2020), Joel Gongora (2020), Gabe Gribler (2019), Miguel Alejandro (2018), Mike Morrison (2014), Mike Thoma (2013), Dylan Mikesell (2011), Marc Bursink (2007), Carlyle Miller (2006)

M.S. Geophysics: Matt VonLintig (2018)

- **Undergraduate research/thesis advisor**

B.S. Math: Nicole Clizzie 2019, Jenny Thibodeau 2019, Julia Koeger 2017, Brandon Greenburg 2016, Carrie Smith 2015, Anna Nelson, 2013.

- **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

- **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.