Curriculum Vitae: Matthias Morzfeld

Institute of Geophysics and Planetary Physics
Scripps Institution of Oceanography
University of California, San Diego

mmorzfeld@ucsd.edu
https://igppweb.ucsd.edu/~mmorzfeld/

Education

University of California, Berkeley	Mechanical Engineering	Ph.D.	2011
University of California, Berkeley	Mechanical Engineering	M.Sc.	2009
Technical University Darmstadt (Germany)	Mechanical Engineering	Diplom	2007

Positions

Associate Professor	Scripps Institution of Oceanography, UC San Diego	2019–present
Assistant Professor	Department of Mathematics, University of Arizona	2015–2019
Visiting Professor	Institute de Physique du Globe de Paris (France)	2013, 2014, 2016
Postdoctoral Fellow	Department of Mathematics, University of California, Berkeley	2012–2015
Postdoctoral Fellow	Mathematics Group, Lawrence Berkeley National Laboratory	2011–2012

Awards

Alfred P. Sloan Research Fellowship (2016)

Grants

PI. Office of Naval Research	2021–2024
PI. National Science Foundation	2016–2019
PI. Naval Research Laboratory	2016–2019
PI. Nevada National Security Site	2016–2019
PI. International Research Development Grants,University of Arizona	2016

Editorial boards & professional societies

Associate Editor, SIAM/ASA Journal on Uncertainty Quantification	since 2023
Associate Editor, Monthly Weather Review	2018–2023
American Geophysical Union (Life member)	since 2010

Teaching

Scripps Institution of Oceanography, University of California, San Diego

SIOG 223a – Geophysical data analysis (every fall)
SIOG 235 – Computational Inverse Problems (every other winter)
SIO 112 – Computational Tools and Data Science in Geophysics (every other spring)
SIO 87 – Physics of Surfing (Freshman Seminar)

Department of Mathematics, University of Arizona

Data assimilation and inverse problems I & II
Math 310: Applied Linear Algebra
Math 313: Linear Algebra
Math 125: Calculus 1
Math 129: Calculus 2

Department of Mathematics, UC Berkeley

Math 128b: Numerical Analysis

Graduate advising

Rebecca Gjini, Scripps Institution of Oceanography, University of California, San Diego.
Topic: Numerics of data assimilation.

Former graduate students

Kyle Gwirtz, Scripps Institution of Oceanography, University of California, San Diego.
Topic: Numerics of data assimilation for decadal scale geomagnetic forecasting.
Job after graduation: NASA Postdoctoral Fellowship.

Jordan Pillow, Program in Applied Mathematics, University of Arizona.
Topic: MCMC for quantitative image analysis in the security sciences.
Job after graduation: Postdoc at NNSS.

Travis Harty, Program in Applied Mathematics, University of Arizona.
Topic: Intra-hour cloud index forecasting.
Job after graduation: Scientist at Worldview.

Spencer Lunderman, Mathematics, University of Arizona.
Topic: Feature-based data assimilation and global Bayesian optimization.
Job after graduation: finance (declined JPL postdoc).

Jesse Adams, Program in Applied Mathematics, University of Arizona.
Topic: MCMC for quantitative image analysis in the security sciences.
Job after graduation: Staff scientist at the Nevada National Security Site.

Andrew Leach, Program in Applied Mathematics, University of Arizona, 2017.
Topic: Monte Carlo methods for stochastic differential equations (co-advised with Kevin K. Lin).
Job after graduation: machine learning engineer at Google.

Antonio Lorenzo, College of Optical Science, University of Arizona, 2017.
Topic: Irradiance forecasting (co-advised with Alexander D. Cronin).
Job after graduation: research scientist at the University of Arizona.

Undergraduate advising

Allison, Math & Computer Science, Washington and Lee University, Sunmer 2023 (SURF)
Topic: Modeling and understanding the Bruhnes-Matuyama Reversal.

Cheyenne Ward, Math & Computer Science, Cal State San Bernardino, 2023
Topic: Predicting reversals of Earth's magnetic dipole field.

Travis Davis, Computer Science, UC San Diego, 2020–2022
Topic: Predicting reversals of Earth's magnetic dipole field with machine learning.

Savannah Rae Armstrong, Department of Mathematics, University of Arizona. 2018 – 2019
Topic: Simplified models for Earth's axial dipole and its reversals.

Shivansh Singh Chauhan, Department of Computer Science, University of Arizona. 2018 – 2019
Topic: Learning parameters of chaotic models from data.

Tene Carter, Department of Computer Science, University of Arizona. 2016 – 2018
Topic: Simulation of physical processes.

Rafael Orozco, Department of Computer Science, University of Arizona. 2015 – 2017
Topic: Low-dimensional cloud modeling by delay differential equations.

Christian Pangerl, Mathematics, University of Augsburg, Germany, two three month research visits.
Topic: Implicit particle filtering in continuous time. Funded by German Academic Exchange Fall 2014
Funded by the German Academic Exchange Service (DAAD) through "PROMOS".
Topic: filtering and control in robotics. Funded by DAAD through "Research Internships Summer 2012
in Science and Engineering" (RISE).

INVITED SEMINARS

Lawrence Livermore National Laboratory 2023
Oceans, Animals and Human Impact (Matlab seminar)
University of Arizona (Applied Mathematics Colloquium)
Caltech
Virginia Tech
Colorado State University (Meteorology)
University of Massachusetts (Mathematics)
University of Arizona (Applied Mathematics) 2022
University of Kansas (Mathematics)
IAGA IASPEI Joint Assembly – student event 2021
Joint ECMWF/OceanPredict workshop on Advances in Ocean Data Assimilation
University of Chicago (Committee on Computational and Applied Mathematics, via zoom, COVID-19) 2020
Data assimilation workshop at NRL Monterey (via zoom, COVID-19)
University of Wisconsin-Madison (Mathematics, via zoom, COVID-19)
UC Berkeley (Earth and Planetary Sciences, via zoom, COVID-19)
Geophysics Seminar, IGPP, Scripps Institution of Oceanography (via zoom, COVID-19)
Colloquium, San Diego State University (via zoom, COVID-19)
SIO Institutional Seminar, UC San Diego
Center for Computational Mathematics, UC San Diego
Rosenstiel School of Marine and Atmospheric Science (Miami) 2019
Oregon State University
German Weather Service 2018
Scripps Institution of Oceanography 2017
NASA Jet Propulsion Laboratory
UC San Diego
UC Santa Cruz
NASA Goddard Space Flight Center
Courant Institute of Mathematical Sciences 2016
Arizona State University
University of Arizona
University of Reading (UK)
University of Potsdam (Germany)
GFZ German Research Centre for Geosciences (Germany)
Institute for Computational Engineering and Sciences, ICES University of Texas, Austin
University of California, Merced
Department of Atmospheric Sciences, University of Arizona 2015
Program in Applied Mathematics Brown Bag Seminar, University of Arizona
Modeling and Computation Seminar, Department of Mathematics, University of Arizona

Midwest Mathematics and Climate Conference, University of Kansas
Computational Science Postdoctoral Seminar, Lawrence Berkeley National Laboratory
Department of Mathematics, University of Arizona
Department of Applied Mathematics, University of Washington
Uncertainty quantification Seminar, Sandia National Laboratories
Widely Applied Mathematics Seminar, School of Engineering and Applied Science, Harvard 2014
Aerospace Computational Design Laboratory Seminar, Department of Aeronautics and Astronautics, MIT
CIDER Workshop on Geomagnetic Prediction, Berkeley
CompFest, Stanford
University of Arizona, Tuscon
Geomag Seminar, Institute de Physique du Globe de Paris (France)
Department of Meteorology, University of Reading (UK)
Electrical Engineering and Computer Science, UC Berkeley
Department of Mechanical Engineering, MIT 2013
General Seminar, Institute de Physique du Globe de Paris (France)
University of Pierre et Marie Curie, Paris V (France)
Lapack Seminar, Electrical Engineering and Computer Science, UC Berkeley
Meteorological Seminar, Naval Research Laboratory, Monterey
Department of Energy - Precision Medicine Interdisciplinary Workshop, San Francisco 2012
All talks considered, Berkeley Postdoctoral Association, UC Berkeley (outreach)
Bay Area Scientific Computing Day, Stanford
Oregon State University, Corvallis
Hybrid Systems Seminar, Electrical Engineering and Computer Science, UC Berkeley
Applied Mathematics Seminar, UC Berkeley 2010
Applied Mechanics Seminar, TU Berlin (Germany)
Applied Mechanics Seminar, TU Hannover (Germany)
Applied Mechanics Seminar, TU Darmstadt (Germany)
Student/Postdoc Seminar, Lawrence Berkeley National Laboratory