Diego Domenzain

Boise State University
Geophysics - Department of Geosciences
1910 University Drive
Boise, Idaho 83725-1536. USA.

diegodomenzain@u.boisestate.edu
https://github.com/diegozain
https://diegozain.github.io

Selected attributes

Programming experience in Matlab, Python, PyTorch, Bash, C and **parallel and scientific computing**.

Algorithm development of novel imaging techniques using radar and DC currents. From numerical discretization of Maxwell's equations to **joint non-linear optimization**.

Data analysis of electromagnetic & seismic data in the time and frequency domain.

Application and development of **iterative image processing** techniques.

Education

Boise State University (BSU)
Ph.D. Geophysics
Disertation: *Joint inversion using electromagnetic waves and steady currents*

Michigan Technological University (MTU)
MSc. Discrete Mathematics
Disertation: *Maximal arcs, above and beyond*

Universidad Nacional Autónoma de México (UNAM)
BSc. Mathematics
Disertation: *Surface codes for quantum computing*

Professional activities

Teaching assistant. Fall 2018 - Spring 2019. Full teaching assistant for the graduate course Statistical Methods and the undergraduate course Geophysical Methods at BSU.

Visiting scholar. February - August 2018. Academic visit to TU-Delft under the supervision of Evert Slob and Dominique Ngan-Tillard.

Research assistant. August 2015-present. National Science Foundation (NSF) fully funded project for the development of a joint inversion algorithm using *ground penetrating radar* (GPR) and *electrical resistivity* (ER) data for imaging electrical properties in the Earth's subsurface.

Seismic hazards intern. Developed seismic tomography software for the 5400m tall mexican volcano Popocatépetl at the mexican *National Center for Disaster Prevension*, CENAPRED in spanish.

Teaching assistant. Full teaching assistant scholarship for my master degree (MTU) teaching calculus in the undergraduate level.

Publications

Joint inversion of full-waveform inversion GPR and ER data. Part 1. Geophysics - In review. Diego Domenzain, John Bradford, Jodi Mead.

Joint inversion of full-waveform inversion GPR and ER data. Part 2. Geophysics - In review. Diego Domenzain, John Bradford, Jodi Mead.

Scholarships

Teaching assistantship. Boise State University. Teaching assistant for graduate course of Statistical Methods covering tuition and stipend.

Research assistanship. Boise State University. Graduate research assistant for the Applied Mathematics NSF funded project DMS-1418714 covering tuition and stipend.

Research assistanship. Boise State University. Graduate research assistant for the Applied Mathematics NSF funded project DMS-1720472 covering full tuition and stipend.

Teaching assistantship. Michigan Tech. Teaching assistant for undergraduate course of Calculus I-IV covering full tuition and stipend.

Attended workshops

Image Reconstruction from Millimeters to the Globe. Summer 2018. Lorentz Center, Leiden University, NL.

17th International Conference on Ground Penetrating Radar. Summer 2018. Rapperswil, Switzerland.

Inverse problems. Summer 2016. Colorado State University, USA.

Computational and Analytical Aspects of Image Reconstruction. Summer 2015. ICERM, Brown University, USA.

Conferences & proceedings

Diego Domenzain, John Bradford, Jodi Mead. *Joint inversion of GPR and ER data using the adjoint method*. AGU Fall meeting 2018.

Diego Domenzain, John Bradford, Jodi Mead. *Joint inversion of GPR and ER data*. SEG Technical Program Expanded Abstracts 2018: pp. 4763-4767. SEG Fall meeting 2018.

Diego Domenzain, John Bradford, Jodi Mead. *Forward modeling of ground penetrating radar (GPR) and electric resistivity tomography (ERT) using finite difference time domain and finite volume methods, first steps for a joint inversion*. AGU Fall meeting 2016.

Diego Domenzain, John Bradford, Jodi Mead. *Imaging by joint inversion of electromagnetic waves and DC currents*. SAGEEP 2017.

Diego Domenzain, John Bradford, Jodi Mead. *Imaging by joint inversion of electromagnetic waves and DC currents*. SIAM-Geosciences meeting 2017.

Leadership

NOSOTROS-MTU. President of the student organization NOSOTROS at MTU. Organized an entire year of activities, mostly camping around the Keweenaw.

SEG-BSU Student Chapter. President. Directed Python and Git coding workshop. Lead geophysics field survey at the old Idaho Penitentiary cemetery. We found some dead bodies there.

Outreach

Climate change communicator. BSU lead in educational project between SEG Student Chapters at BSU and TU-Delft informing younger generations about climate change challenges and the use of geophysics to solve them.

Didactic inventor. Fulfillment of my social service requirement at UNAM's science museum *Universum* designing new activities for teaching high mathematical subjects to elementary school children.

References

John Bradford
Department of Geosciences
Boise State University
jbradford@mines.edu

Jodi Mead
Department of Mathematics
Boise State University
jmead@boisestate.edu

T. Dylan Mikesell
Department of Geosciences
Boise State University
dylanmikesell@boisestate.edu

Donna Calhoun
Department of Mathematics
Boise State University
donnacalhoun@boisestate.edu