

Publication List (October 2014 to present)

Code Development

- Featherstone, N., An Open-Source, Pseudo-Spectral Convection Code for $O(10^5)$ Cores, DI11A-06, American Geophysical Union Fall Meeting, December 2014.
- Lokavarapu, H., E. Heien, and H. Matsui, Parallelization of the Legendre Transform for a Geodynamics Code, DI11A-4255, American Geophysical Union Fall Meeting, December 2014.
- Lokavarapu, H. and H. Matsui, Optimization of Parallel Legendre Transform using Graphics Processing Unit (GPU) for a Geodynamo Code, GP43B-1253, American Geophysical Union Fall Meeting, December 2015.
- He, Y., M. Billen, and E. Puckett, Local Discontinuous Galerkin (LDG) Method for Advection of Active Compositional Fields with Discontinuous Boundaries: Demonstration and Comparison with Other Methods in the Mantle Convection Code, T31E-07, 2015. American Geophysical Union Fall Meeting, December 2015.
- Rudiger, P., C. Weber, H. Matsui, E. Heien, L. Kellogg, B. Hamann, H. Hagen, Pre-filtering of turbulent vector fields in the geodynamo, VIS 2015, Chicago, IL, October, 2015.

Mantle Convection

- Haynie, K.L. and M.A. Jadamec, Building the Yakutat plateau into models of flat slab subduction in Alaska, GeoPRISMS TEI SCD Meeting, 2015.
- Liu, X. and S.J. Zhong, The long-wavelength geoid from 3-dimensional spherical models of thermal and thermo-chemical mantle convection, *J. Geophys. Res.*, **120**, doi:10.1002/2015JB012016, 2015.
- Stamps, D.S., W. Bangerth, and B. Hager, Regional 3D Numerical Modeling of the Lithosphere-Mantle System: Implications for Continental Rift-Parallel Surface Velocities, T43A-4705, American Geophysical Union Fall Meeting, December 2014.
- Stamps, D.S., W. Bangerth, and B. Hager, Topside Driven 3D Convection Model of the East African Rift System with Comparison to Observed Rift-Parallel Surface Motions, Comparative Tectonics and Geodynamics of Venus, Earth, and Rocky Exoplanets, May, 2015, California.
- Stamps, D.S., W. Bangerth, and B. Hager, Influence of Edge-Driven 3D Convection on Mantle-Lithosphere Interactions in East Africa, XIV International Workshop on Modeling of Mantle and Lithosphere Dynamics, Aug. 2015b, Orleans, France.
- Stamps, D.S., W. Bangerth, B. Hager, C. Kreener, and S. Elfuraha, Kinematics and Dynamics of Observed Along-Rift Surface Motions in the East African Rift System, T44C-08,

American Geophysical Union Fall Meeting, December 2015c.

Geodynamo Benchmarking

- Matsui, H., E. Heien, J. Aubert, J.M. Aurnou, M. Avery, B. Brown, B.A. Buffett, F. Busse, U.R. Christensen, C.J. Davies, N. Featherstone, T. Gastine, G.A. Glatzmaier, D. Gubbins, J.-L. Guermond, Y.-Y. Hayashi, R. Hollerbach, L. J. Hwang, A. Jackson, C.A. Jones, W. Jiang, L.H. Kellogg, W. Kuang, M. Landeau, P. Marti, P. Olson, A. Ribeiro, Y. Sasaki, N. Schaeffer, R.D. Simitev, A. Sheyko, L. Silva, S. Stanley, F. Takahashi, S. Takehiro, J. Wicht, and A.P. Willis, Performance benchmarks for a next generation numerical dynamo model, submitted to *Geochem. Geophys. Geosys.*, 2015.
- Matsui, H. and CIG Geodynamo Working Group, A performance geodynamo benchmark, DI31B-4271, American Geophysical Union Fall Meeting, December 2014.
- Matsui, H., E. Heien, and CIG Geodynamo Working Group, Performance and accuracy benchmarks for a next generation geodynamo simulation, GP43B-1254, American Geophysical Union Fall Meeting, December 2015.

Geodynamo Science

- Buffet, B.A. and H. Matsui, The fluid dynamics of inner-core growth, *Phys. of Earth and Planet. Inter.*, **243**, 22-29, 2015.
- Featherstone, N., The Spectral Amplitude of Stellar Convection and its Scaling in the High-Rayleigh-Number Regime, submitted to *Astrophys. J.*, 2015.
- Herreman, W., C. Nore, L. Cappanera, J.-L. Guermond, Tayler instability in liquid metal columns and liquid metal batteries, *Journal of Fluid Mechanics*, **771**, 79-114, 2015.
- Matsui, H., Thermal structure of the inner core boundary in numerical dynamos, The Earth's Mantle and Core: Structure, Composition, Evolution, November, 2015, Ehime, Japan
- Matsui H., E. King, and B.A. Buffett, Multiscale convection in a geodynamo simulation with uniform heat flux along the outer boundary, *Geochem. Geophys. Geosys.*, **15**, 3212-3225, 2014.
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- Nore, C., J. L'orat, J.-L. Guermond, and A. Giesecke, Mean-Field Model of the VKS Dynamo Experiment Using Soft Iron Impellers, *Physical Review E*, **91**, 013008 1-12, 2015.
- Ribeiro, A., Container-scale hydrodynamic and magnetohydrodynamic modes in liquid metal rotating convection experiments with and without an imposed magnetic field, P41A-2042, American Geophysical Union Fall Meeting, December 2015.
- Ribeiro, A., G. Fabre, J.-L. Guermond, and J. Aurnou, Canonical Models of Geophysical and Astrophysical Flows: Turbulent Convection Experiments in Liquid Metals, *Metals*, **5**, 289335, 2015.