

Publication List (October 2019 to present)

Stokes Solvers

Clevenger, T.C., Heister, T., Kanschä, G., and Kronbichler, M., A Flexible, Parallel, Adaptive Geometric Multigrid Method for FEM, *ACM Transactions on Mathematical Software*, **47**, 1-27, DOI:<https://doi.org/10.1145/3425193>, 2020.

Clevenger, T.C., Heister, T., Comparison Between Algebraic and Matrix-free Geometric Multigrid for a Stokes Problem on an Adaptive Mesh with Variable Viscosity, in review, 2020, <https://arxiv.org/abs/1907.06696>

Tectonics

Gouiza, M. and Naliboff, J., Rheological inheritance controls the formation of segmented rifted margins in cratonic lithosphere, *Earth and Space Science Open Archive*, **19**, DOI:10.1002/essoar.10504071.1, 2020

Gouiza, M., Naliboff, J.B., Numerical Investigation of Continental Extension in Heterogeneous Cratonic Lithosphere, Constrained by Observations From the Labrador Sea, American Geophysical Union (AGU) Fall meeting, T011-0014, Dec., 2019, San Francisco, CA.

Heister, T., Naliboff, J.B., and Thieulot, C., Towards robust shear band angle and width in visco-plastic rheology, American Geophysical Union (AGU) Fall meeting, T51C-16, Dec., 2019, San Francisco, CA.

Lee, S., Saxena, A., Song, J-H., Rhie, J., and Choi, E., Geodynamic modeling for stress and seismicity in the southern Korean Peninsula driven by lateral variations of lithospheric thickness and plate kinematics, American Geophysical Union (AGU) Fall meeting, T034-0019, Dec., 2020, in Virtual.

Naliboff, J. B., Glerum, A., Brune, S., Péron-Pinvidic, G., and Wrona, T., Development of 3-D Rift Heterogeneity Through Fault Network Evolution, *Geophysical Research Letters*, **47**, e2019GL086611, DOI:<https://doi.org/10.1029/2019GL086611>, 2020.

Robey, J. M., On the design, implementation, and use of a volume-of-fluid interface tracking algorithm for modeling convection and other processes in the Earth's mantle, *Dissertation*, Proquest Document ID 2309838416, 2020.

Mantle Convection

Dannberg, J., Gassmoeller, R., Lithgow-Bertelloni, C.R., and Stixrude, L.P., Revisiting the Effect of Phase Transitions on Layering of Mantle Convection, American Geophysical Union (AGU) Fall meeting, DI003-03, Dec., 2020, in Virtual.

Dannberg, J., Gassmoeller, R., and Saxena, A., Quantifying the Influence of an Evolving Mineral Grain Size on the Characteristics of Mantle Flow, American Geophysical Union (AGU) Fall meeting, DI013-01, Dec., 2020, in Virtual.

- Dannberg, J., Myhill, R., Cottaar, S., and Gassmoeller, R., The morphology, evolution and seismic visibility of partial melt at the core-mantle boundary: Implications for ULVZs, American Geophysical Union (AGU) Fall meeting, DI32A-06, Dec., 2019, San Francisco, CA.
- Dannberg, J., Gassmoeller, R., and Heron, P., Plume formation across scales: The influence of subducted slabs, chemical heterogeneities and a partially molten boundary layer, American Geophysical Union (AGU) Fall meeting, DI33A-07, Dec., 2019, San Francisco, CA.
- Dannberg, J. and Rudge, J.F., Reconciling the formation of shear-induced melt bands in numerical and laboratory experiments: The effects of surface tension and a porosity-weakening bulk viscosity, American Geophysical Union (AGU) Fall meeting, MR41F-0092, Dec., 2019, San Francisco, CA.
- Gassmoeller, R., Bangerth W., Dannberg, J., Heister, T., Austermann, J., Fraters, M., Glerum, A., and Naliboff, J. The Advanced Solver for Problems in Earth's Convection - Building a sustainable software and community, American Geophysical Union (AGU) Fall meeting, IN037-14, Dec., 2020, in Virtual.
- Gassmoeller, R., Dannberg, J., Bangerth, W., Heister, T., and Myhill., R., Capturing Dynamic Effects of Compressible Mantle Convection: New Formulations and Numerical Methods, American Geophysical Union (AGU) Fall meeting, DI33C-0049, Dec., 2019, San Francisco, CA.

Interface Tracking

- Robey, J. M., On the Design, Implementation, and Use of a Volume-of-Fluid Interface Tracking Algorithm for Modeling Convection and other Processes in the Earth's Mantle, Doctoral dissertation, University of California, Davis, 2019.

Geodynamo

- Kera, T., Katoh, Y., Nishida, Y., and Matsui, H., Investigation of equatorial symmetry of the flow and magnetic fields in numerical dynamos with dipolar reversal, JpGU-AGU Joint Meeting 2020, July, 2020, in Virtual.
- Kera, T., Katoh, Y., Nishida, Y., and Matsui, H., Investigation of equatorial symmetry of flow and magnetic field in reversal and non-reversal dynamo model, SEDI (Study of the Earth's Deep Interior) Online Streaming Platform, July, 2020, In virtual.
- Matsui, H., Thermal structure at the inner core boundary in dynamo simulations with heat equation for the whole core, American Geophysical Union (AGU) Fall meeting, DI006-0023, Dec., 2020, in Virtual.
- Matsui, H., Liao, Y., Kreylos, O., Billen, M.I., and Kellogg, L.H., Application of parallel flow visualization using 3D line integral convolution for geodynamo simulations, American

- Geophysical Union (AGU) Fall meeting, DI33C-0043, Dec., 2019, San Francisco, CA.
- Matsui, H. and Buffett, B.A., An assessment of turbulent/hyper diffusivities in geodynamo simulations, American Geophysical Union (AGU) Fall meeting, NG43A-0898, Dec., 2019, San Francisco, CA.
- Nishida, Y., Katoh, Y., Matsui, H., Matsushima, M., and Kumamoto, A., Effects of thermal boundary conditions on geodynamo with various Rayleigh numbers and inner core radii, JpGU-AGU Joint Meeting 2020, July, 2020, in Virtual.
- Nishida, Y., Katoh, Y., Matsui, H., Matsushima, M., and Kumamoto, A., Investigation of dipolar dominance in geodynamo 1 simulations with different inner core sizes, submitted to *Geophysical Journal International*.
- Buffett, B.A and Matsui H., Equatorially trapped waves in Earth's core, *Geophysical Journal International*, **218(2)**, 1210–1225, 2019.