

Juliane Dannberg

⌘ Education

2007 – 2012	Diplom (B.Sc. & M.Sc.), Geophysics, Friedrich-Schiller-University Jena, Germany (Grade 1.0)
2012 – 2016	Ph.D. in Geophysics, GFZ German Research Centre for Geosciences/University of Potsdam, Germany, on “Dynamics of mantle plumes: Linking scales and coupling physics” Advisors: Stephan V. Sobolev and Volker John

⌘ Professional Appointments

2015 – 2016	Research Assistant at Texas A&M University, College Station, USA
2016 – 2017	Postdoctoral Research Associate at Texas A&M University, College Station, USA
2017 – 2018	Postdoctoral Fellow at Colorado State University, Fort Collins, USA
2018 – 2019	Assistant Project Scientist at University of California, Davis, USA
7/2018 – 9/2018	Visiting Scholar at Cambridge University, UK
since 8/2019	Assistant Professor at University of Florida, Gainesville, USA

⌘ Publications in Refereed Journals

2015	Dannberg, J. , Sobolev, S.V. Low-buoyancy thermochemical plumes resolve controversy of classical mantle plume concept. <i>Nature Communications</i> 6 .
2016	Gassmöller, R., Dannberg, J. , Bredow, E., Steinberger, B., Torsvik, T.H. Major influence of plume-ridge interaction, lithosphere thickness variations, and global mantle flow on hotspot volcanism —The example of Tristan. <i>Geochem. Geophys. Geosyst.</i> , 17 , 1454-1479.
2016	Dannberg, J. , Heister, T. Compressible magma/mantle dynamics: 3-D, adaptive simulations in ASPECT. <i>Geophys. J. Int.</i> , 207(3) , 1343-1366.
2017	Heister, T., Dannberg, J. , Gassmöller, R., Bangerth, W., High Accuracy Mantle Convection Simulation through Modern Numerical Methods. II: Implications from Solving Realistic Problems. <i>Geophys. J. Int.</i> , 210(2) , 833-851.
2017	Dannberg, J. , Eilon, Z., Faul, U., Gassmöller, R., Moulik, P., Myhill, R., The Importance of Grain Size to Mantle Dynamics and Seismological Observations (<i>Geochem. Geophys. Geosyst.</i> , 18 , 3034-3061).
2017	Bredow, E., Steinberger, B., Gassmöller, R., Dannberg, J. , How plume-ridge interaction shapes the crustal thickness pattern of the Réunion hotspot track (<i>Geochem. Geophys. Geosyst.</i> , 18 , 2930–2948).

2018	Dannberg, J. , Gassmöller, R., Chemical trends in ocean islands explained by plume– slab interaction (<i>Proceedings of the National Academy of Sciences</i> , 115 (17), 4351-4356).
2019	Dannberg, J. , Gassmöller, R., Grove, R., Heister, T. A new formulation for coupled magma/mantle dynamics (<i>Geophys. J. Int.</i> , 219 (1), 94-107).
2020	Gassmöller, R., Dannberg, J. , Bangerth, W., Heister, T., Myhill, R. (2019) “On Formulations of Compressible Mantle Convection” (<i>Geophys. J. Int.</i> , <i>accepted</i>).
2020	Leshner, C., Dannberg, J. , et al. “Iron isotope fractionation at the core-mantle boundary by thermodiffusion” (<i>Nature Geoscience</i> , <i>accepted</i>).
<hr/> ⌘ Other Publications <hr/>	
2012	Dannberg, J. , Goepel, A., Jahr, T., Ude, M. und Viereck, M. “Geomagnetic characterization of the Volcanic Complex Gompertshausen in the Heldburger Gangschar“, <i>commemorative publication on occasion of the 25th anniversary of the German Volcanological Society</i> .
2016	Bangerth, W., Dannberg, J. , Gassmöller, R., & Heister, T. Computational Modeling of Convection in the Earth’s Mantle, <i>SIAM News</i> , 49 , 2.
2017	Dannberg, J. , Shephard, G. “On the influence of grain size in numerical modelling”, <i>blog of the Geodynamics Division of the European Geosciences Union</i> . (https://blogs.egu.eu/divisions/gd/2017/11/29/on-the-influence-of-grain-size-in-numerical-modelling/)
2018	Bangerth, W.; Dannberg, J. ; Gassmoeller, R.; Heister, T., ASPECT v2.0.0 [software], doi: 10.5281/zenodo.1244587 .
2018	<i>As member of the CTSP Writing Committee. Whitepaper Reporting Outcomes from NSF-Sponsored Workshop: ‘CTSP: Coupling of Tectonic and Surface Processes’.</i> (https://csdms.colorado.edu/mediawiki/images/CTSP_WhitePaper_Final.pdf)
2019	Bangerth, W., Dannberg, J. , Gassmöller, R., & Heister, T. ASPECT v2.1.0 [software]. https://doi.org/10.5281/zenodo.2653531 .
2019	Dannberg, J. “Geodynamics 101: Magma dynamics”, <i>blog of the Geodynamics Division of the European Geosciences Union</i> . (https://blogs.egu.eu/divisions/gd/2019/09/25/magma-dynamics/)
<hr/> ⌘ Funded Research <hr/>	
3/2014, 2015, 2016	Project “ Plume-Plate interaction in 3D mantle flow – Revealing the role of internal plume dynamics on global hot spot volcanism ” and two continuation proposals at the North-German Supercomputing Alliance Computing time in CPU hours: 4.8 million (103,000 Euro), 3.3 million (70,460 Euro), 3.7 million (79,300 Euro)

9/2014	Cooperative Institute for Dynamic Earth Research (NSF CIDER) for the project “Investigating mantle dynamics using a composite rheology with grain size evolution, tested using seismology” , \$3700
12/2019	Principal Investigator of “Collaborative Research: Development and Application of a Framework for Integrated Geodynamic Earth Models” (NSF-FRES) \$972,862
<hr/> ⌘ Awards <hr/>	
12/2013	AGU Student Travel Grant Awardee for students whose abstracts show scientific merit to application reviewers in applicable fields
4/2014	Best poster in the category “EGU Posters” at the PhD Day of the GFZ German Research Centre for Geosciences
10/2017	KlarText – Prize for Science Communication awarded by the German foundation Klaus Tschira Stiftung
6/2018	UC Davis Academic Federation Travel Grant Awardee
<hr/> ⌘ Invited Talks <hr/>	
11/2012	“Numerical modeling of thermo-chemical mantle plumes and their influence on dynamic topography” at the certificate award ceremony of the faculty of Chemistry and Earth Sciences of the University of Jena, Germany, awarded for the best diploma thesis of the year
4/2014	“Geodynamic modeling of eclogite-bearing mantle plumes using ASPECT” in the CIG webinar as part of the presentation about “ASPECT: Science highlights”
6/2014	“State of the art mantle convection modelling with ASPECT” in the seminar series of the GeoComputing group of LMU München, Germany
5/2016	“Magma dynamics and grain size evolution in mantle convection models: Numerical methods and applications” in the GFD seminar series at ETH Zürich, Switzerland
6/2016	“3D Numerical Modelling of Compressible Coupled Magma/Mantle Dynamics With Adaptive Mesh Refinement” as part of the Melt in the Mantle programme at the Isaac Newton Institute for Mathematical Science in Cambridge, UK
1/2017	“Coupling of computational thermodynamics and fluid dynamics – a magma/mantle dynamics perspective” at the CIDER Workshop on interoperability of modeling tools in Honolulu, USA
4/2017	„Methods and Applications of the Finite-Element Software ASPECT in Geodynamics” in the Computer Science Colloquium at UC Boulder, Colorado (USA)

- 4/2017 **„Compressible Magma/Mantle Dynamics: 3d, Adaptive Simulations in ASPECT“** at the UC Davis Earth and Planetary Sciences Department Seminar Series in Davis, California, USA
- 5/2017 **„Geodynamic modeling with ASPECT: Applications for magma/mantle dynamics, grain size evolution and chemical zonation in mantle plumes“** and **ASPECT Hands-on Tutorial** at UT Austin, Texas, USA
- 9/2017 **“Geodynamic models of coupled magma/mantle dynamics: Towards integrating thermodynamic data”** in the Department of Geoscience Seminar at Aarhus University, Denmark
- 9/2017 **“Compressible magma/mantle dynamics: 3D adaptive simulations”** at the SIAM Conference on Mathematical and Computational Issues in the Geosciences in Erlangen, Germany
- 9/2017 **“Coupling mantle convection and melt migration: 3-D, adaptive simulations”** in the MathLab Seminar at SISSA (Scuola Internazionale Superiore di Studi Avanzati), Trieste, Italy
- 10/2017 **“Forward and inverse problems in geodynamic modelling: Part II -- Thermochemical Convection”** in the Inverse Problems seminar at Colorado State University, Fort Collins, USA
- 1/2018 **“Geodynamic modelling with ASPECT: Applications for magma/mantle dynamics, grain size evolution and chemical zonation in mantle plumes”** in the Global Geophysics seminar, University College London, UK
- 5/2018 CIG Webinar about **“ASPECT 2.0: Improved architecture, new features”** (with the ASPECT team)
- 7/2018 **“Chemical trends in ocean islands explained by plume–slab interaction”**, research talk at the 16th Symposium of SEDI, Study of the Earth's Deep Interior, Edmonton, Canada
- 8/2018 **“Advances in the geodynamic modelling code ASPECT”**, keynote talk at the German-Swiss Geodynamics Workshop 2018 in Noer, Germany
- 11/2018 Guest lecture on **“The importance of subduction history and mineral grain size evolution to mantle dynamics”** at CEED – University of Oslo, Norway
- 12/2018 **“Convection Simulations Explain the Compositional Heterogeneity of Oceanic Island Chains”** and **“Modeling Melt Generation and Transport by Integrating Thermodynamic Models in Geodynamic Simulations Using the Community Code ASPECT”** at the AGU Fall Meeting, Washington D.C., USA
- 1/2019 **“Mantle plumes and their interaction with tectonic plates: Insights from geodynamic modeling”** at University of Florida, Gainesville, Florida, USA

3/2019	"Mantle plumes and their interaction with tectonic plates: Insights from geodynamic modeling" at University of Delaware, Newark, Delaware, USA
4/2019	"Linking chemical trends in ocean islands to the complex interaction between starting plumes and the core-mantle boundary" at the EGU General Assembly, Vienna, Austria
5/2019	"Mantle plumes and their interaction with tectonic plates: Insights from geodynamic modeling" at Goethe University Frankfurt, Germany
8/2019	"Modelling mantle convection with chemical and rheological heterogeneities" , keynote talk at the Ada Lovelace Workshop on Modeling of Mantle and Lithosphere Dynamics, Siena, Italy
11/2019	"Numerical Modeling of Coupled Magma/Mantle Dynamics Using the Community Code ASPECT" in the Applied and Numerical Analysis seminar at University of Florida, Gainesville, USA
12/2019	"Plume formation across scales: The influence of subducted slabs, chemical heterogeneities and a partially molten boundary layer" at the AGU Fall Meeting, San Francisco, USA
12/2019	"Mantle plumes and their interaction with tectonic plates: Insights from geodynamic modeling" in the weekly seminar of the Institute of Geosciences, Friedrich-Schiller-University Jena, Germany
3/2020	"Plumes and their interaction with a heterogeneous mantle: Insights from geodynamic modeling" in the Tectonics and Seismology Seminar at UCLA, Los Angeles, USA

⌘ Teaching

3/2013, 2014, 2015	Instructor for the course <i>"Computational Geodynamics"</i> , University of Potsdam, Germany
9/2014	Organizer and Instructor for the hands-on tutorial on <i>"ASPECT: a next-generation geodynamic modelling software"</i> at the Geomod conference in Potsdam, Germany
1/2016 – 5/2016	Co-Instructor (with W. Bangerth) for the class <i>Mathematical Modeling (MATH 442)</i> at Texas A&M University, USA
6/2016	Instructor for the <i>ASPECT tutorial</i> at the CIG All Hands Meeting, Davis, USA
10/2017	Instructor for the Deep Earth Systems PhD Course <i>"Forging links between petrology and geophysics"</i> , October 2-13, 2017 Aarhus University, Aarhus, Denmark
1/2018	Guest Lecture on <i>"Applications of the geodynamics code ASPECT"</i> in the Geophysics Seminar of the University of Kiel, Germany
1/2018	Instructor for the 2018 EON-ELSI Winter School in Earth-Life Sciences, January 22 - February 2, 2018, Earth-Life Science Institute, Tokyo Institute of Technology Tokyo, Japan

5/2018	Instructor for the <i>ASPECT tutorial</i> at UC Davis, USA
6/2018	Instructor for the <i>ASPECT tutorial</i> at the CIG/CGU Meeting, Niagara Falls, Canada
11/2018	Instructor for the <i>ASPECT tutorial</i> at CEED – University of Oslo, Norway
8/2019	Co-Organizer of the <i>Computational Methods for PDEs Summer School</i> at Colorado State University, Fort Collins, CO, USA
1/2020 – 5/2020	Instructor for the class <i>Introduction to Geophysics</i> (GLY 4450/GLY 5255) at University of Florida, USA
<hr/> ⌘ Outreach <hr/>	
2017	Dannberg, J. (2017). “Auf und Ab im Erdmantel” (Up and Down in the Earth's Mantle), <i>special supplement to the weekly journal “Die Zeit”</i> . (https://www.klartext-preis.de/meldungen/auf-und-ab-im-erdmantel/)
6/2018	Invited talk “Ein Blick ins Innere der Erde – Wie Gesteinsbewegungen unseren Planeten formen” (Looking into the Earth's Interior – How Moving Rocks Shape Our Planet) at Schule mit Wissenschaft Thüringen (School MIT Science), a workshop for high-school teachers organized by the MIT Club of Germany, Erfurt, Germany (https://youtu.be/Rh2yn5sxMeM)
12/2018	“Why Are the Pieces of Land in the Wide Water that Breathe out Fire and Smoke Made of Different Types of Rocks?”, talk in the Education session “The Up-Goer Five Challenge” at the AGU Fall Meeting (https://youtu.be/SAXO2nzhvZ0)
<hr/> ⌘ Professional Service <hr/>	
2013-2014	Elected Student Representative of the graduate school GeoSim involving communicating the student's interests to the executive board
since 2014	Reviewer for SIAM Journal of Scientific Computing; Geochemistry, Geophysics, Geosystems; Gondwana Research; Geophysical Journal International; Physics of the Earth and Planetary Interiors; Journal of Geophysical Research: Solid Earth; Tectonophysics; Frontiers in Earth Science; NSF Geophysics Proposals; and NASA's Solar System Workings Program Proposals
since 2014	Committee Member of the Mantle Convection working group of the Computational Infrastructure for Geodynamics (CIG)
2016	Session Convener at EGU General Assembly & AGU Fall Meeting
4/2016	Judge for the Outstanding Student Poster and PICO Award at the EGU General Assembly
since 2016	Principal Developer and Official Maintainer of the Open Source mantle convection code ASPECT
2017 – 2019	Session Convener and OSPA Liaison at the AGU Fall Meeting

2018, 2019	Member of the Expert Panel for the KlarText – Prize for Science Communication awarded by the German foundation Klaus Tschira Stiftung
since 2019	Elected member of the Science Steering Committee of the Computational Infrastructure for Geodynamics (CIG)

⌘ Organization of Workshops and Seminars

8/2011	Management team of the <i>12th International Workshop on Modeling of Mantle Convection and Lithospheric Dynamics</i> , Potsdam, Germany
11/2012	Organization committee member of the <i>Annual workshop of the graduate school GeoSim</i>
2013	Organization committee member of the <i>GeoSim seminar series</i> , Potsdam, Germany
10/2014	Organizer of the <i>GeoSim Fall school “Software development”</i>
2016	Co-Organizer of the third <i>ASPECT Hackathon</i> , Lake Tahoe, USA
2017	Co-Organizer of the fourth <i>ASPECT Hackathon</i> , Blue Ridge, USA
2018	Co-Organizer of the fifth <i>ASPECT Hackathon</i> near Petaluma, USA
2019	Co-Organizer of the sixth <i>ASPECT Hackathon</i> near Heber City, USA