

# Ingo Leonardo Stotz Canales

**Birth date:** February 11, 1986 – **Nationality:** German, Chilean –  
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## Research Areas of Interests

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| * Geodynamics<br>* Numerical Modelling<br>* Mantle convection (Fluid dynamic models) | * Tectonics (Crustal models)<br>* Data Assimilation<br>* Geology |
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## Employment and Education

2024 – now	<b>Postdoctoral Associate at Ludwig-Maximilians-Universität München, Deutschland</b> DeepDyn: DFG Priority Programm 2404
2020 – 2023	<b>Wissenschaftlicher Mitarbeiter, Ludwig-Maximilians-Universität München, Deutschland</b> DFG <i>Eigene Stelle</i> (STO 1271/2-1): Bewertung des Beitrags von Plattengrenzen und Mantelkonvektionskräfte in der späten känozoischen Nordamerikanischen Plattenbewegungsgeschichte mit gekoppelte globale Modellen der Mantel- und Lithosphärenodynamik.
2019	<b>Post Doc, University of Copenhagen, Denmark</b>
2018	<b>Teaching assistant at the University of Copenhagen, Denmark</b>
2013 – 2017	<b>PhD, University of Copenhagen, Denmark</b> Thesis: Coupled Global Models of Mantle and Lithosphere Dynamics: Identifying the Forces Governing Pacific Plate Motions since the mid-Miocene. Supervisor: Giampiero Iaffaldano Research association with the Australian National University to collaboration with D. Rhodri Davies.
2010 – 2012	<b>MSc Geophysics, University of Concepción, Chile</b> Thesis: South American plate motion, asthenospheric flow and its implications for Andean orogeny since the late Cretaceous. Supervisor: Andres Tassara
2005 – 2009	<b>BSc Geophysics, University of Concepción, Chile</b>

## Awards

2020 – 2023	<b>DFG <i>Eigene Stelle</i> (STO 1271/2-1)</b>
2013 – 2017	<b>CONICYT Becas-Chile Scholarship</b>
2011 – 2012	<b>Scholarship given by Technische Universität München (TUM)</b>
2005 – 2012	<b>University of Concepción Sport Scholarship</b> Only 1 scholarship for Athletics is given each year University wide.

## Reviewing Activities

2019 – now	Scientific reviewer for journals: e.g., Geology, EPSL, AGU-Solid Earth and Nature Geoscience.
2021	External Reviewer, National Science Foundation (NSF).

## Organisation of Scientific Meetings

2020 – now	Session organiser at the yearly EGU meeting in Vienna (Virtual and in-Person).
2024	Session organiser 84. Jahrestagung der Deutschen Geophysikalischen Gesellschaft.
2020	Session organiser 80. Jahrestagung der Deutschen Geophysikalischen Gesellschaft.

## Invited Talks

2025	DeepDyn Schwerpunkt Program, Online titled: <i>Reconstructing Earth's Deep Dynamics Through Geologic Time</i>
2024	LMU Muenchen, Germany titled: <i>Tracking mantle flow through geophysical and geological observations</i>
2023	Universidad de Chile, Chile. titled: <i>Exploring the deep mantle through surface observations</i>
2023	Friedrich Schiller University Jena, Germany. titled: <i>Plume driven plate tectonics: observations and theory</i>
2022	SCRIPPS University of California San Diego, USA. titled: <i>Theoretical estimates of upper mantle flow and their link to horizontal and vertical plate motions</i>
2018	Ecole Normale Supérieure, Paris, France. titled: <i>Coupled Global models of mantle and lithosphere dynamics: Identifying the forces governing Pacific plate motions since the mid-Miocene</i>
2018	GFZ Helmholtz Centre Potsdam, Germnay. titled: <i>Coupled Mantle and lithosphere dynamic models: the role of convection on recent Pacific plate motions</i>

## Supervision of Students

2021 – now	Co-Supervision of one PhD students in Denmark (Valentina Espinoza)
2020 – now	Supervision of four PhD students (Hamish Brown, Berta Vilacis and Nicolas J. Hayek)
2021 – 2022	Supervision Two master students: Zhirui Wang and Josef Niedermaier, both enrolled now as PhD students.
2019 – 2020	Supervision One master student: Valentina Espinoza, now a PhD student in Copenhagen.

## Teaching Activities

2023 – now	Teaching course "Modern Interpretation of Plate Tectonics", Ludwig-Maximilians-Universität München, Deutschland.
2015 – 2018	Teaching assistant in the course "Introduction to Solid Earth Geophysics", University of Copenhagen, Denmark.
2014	Teaching assistant in the course "EARTH: The chemistry and physics of our Planet", Australian National University, Australia.
2013	Teaching assistant in the course "Physics of the Earth", Australian National University, Australia.
2011	Teaching assistant in the course "Geophysics of the Solid Earth", University of Concepción, Department of Geophysics.
2009	Teaching assistant in the course "Physics", University of Concepción, Chile.

## List of accepted Publications

- 2025 | **Ingo L. Stotz.** Predictions of asthenosphere flow from Couette/Poiseuille models compared to seismic anisotropy and mantle circulation models. *The Royal Society: Proceedings A*. doi: 10.1098/rspa.2025.0085.
- 2025 | J. N. Hayek and **Ingo L. Stotz** and H.-P. Bunge and S. Carena. First-order global stress patterns inferred from upper mantle flow models *The Royal Society: Proceedings A*. doi: 10.1098/rspa.2024.0969.
- 2025 | Yi-Wei Chen, Jonny Wu, Hans-Peter Bunge, **Ingo L. Stotz**, Gabriel Robl and Bernhard S. A. Schuberth. Tomopac2: an unfolded-slab plate reconstruction validated via mantle circulation models in a closed-loop experiment. *The Royal Society: Proceedings A*. doi: 10.1098/rspa.2024.0726.
- 2025 | **Ingo L. Stotz** and Berta Vilacís and Jorge N. Hayek and Hans-Peter Bunge. Continental rift driven by asthenosphere flow and lithosphere weakening by flood basalts: South America and Africa cenozoic rifting, *Mineral*. doi: 10.3390/min15060644.
- 2024 | Vilacís, Berta and Brown, Hamish and Bunge, Hans-Peter and Carena, Sara and Hayek, J. Nicolás and **Stotz**, **Ingo L.** and Wang, Z. Ray and Friedrich, Anke M. Dynamic topography and the planform of mantle convection since the Jurassic inferred from global continental hiatus maps, 480(2302), *The Royal Society: Proceedings A*, doi: 10.1098/rspa.2024.0311.
- 2024 | **Stotz**, **Ingo L.** and Carena, Sara and Vilacís, Berta and Hayek, Jorge N. and Bunge, Hans-Peter. Kerguelen Plume Drives the Eocene Directional Change in Australian Plate Motion, *Lithosphere*, doi:10.2113/2024/lithosphere2023289.
- 2023 | Wang Z. R., **I. L. Stotz**, H.-P. Bunge, B. Vilacís, J. N. Hayek, S. Ghelichkhan, S. Lebedev. Cenozoic upper mantle flow history of the Atlantic realm based on Couette/Poiseuille models: towards Paleo-Mantle-Flowgraphy. *PEPI*. <https://doi.org/10.1016/j.pepi.2023.107045>.
- 2023 | **Stotz I. L.**, B. Vilacís, J. N. Hayek, S. Carena and H.-P. Bunge. Plume driven plate motion changes: New insights from the South Atlantic realm. *Journal of South American Earth Sciences*, <https://doi.org/10.1016/j.jsames.2023.104257>.
- 2022 | **Stotz I. L.**, B. Vilacís, J. N. Hayek, H.-P. Bunge, A. M. Friedrich. Yellowstone Plume Drives Neogene North American Plate Motion Change. *Geophysical Research Letters*, <https://doi.org/10.1029/2021GL095079>.
- 2022 | Paolo A. Sossi, **I. L. Stotz**, Seth A. Jacobson, Alessandro Morbidelli, Hugh St.C. O'Neill (2022) Stochastic accretion of the Earth. *Nature Astronomy*, <https://doi.org/10.1038/s41550-022-01702-2>.
- 2021 | Vilacís B., J. N. Hayek, **I. L. Stotz**, H.-P. Bunge , A. M. Friedrich, Sara Carena and Stuart Clark. Evidence for active upper mantle flow in the Atlantic and Indo-Australian realms since the Upper Jurassic from hiatus maps and spreading rate changes. *The Royal Society: Proceedings A*. <https://doi.org/10.1098/rspa.2021.0764>.
- 2020 | **Stotz I. L.**, A. Tassara, G. Iaffaldano. Pressure-driven Poiseuille flow inherited from Mesozoic mantle circulation led to the Eocene separation of Australia and Antarctica. *Journal of Geophysical Research: Solid Earth*, <https://doi.org/10.1029/2020JB019945>.
- 2018 | **Stotz I. L.**, G. Iaffaldano, D. R. Davies. Pressure Driven Poiseuille Flow: A Major Component of the Torque-Balance Governing Pacific Plate Motion. *Geophysical Research Letters*, 45, 117–125 doi:10.1002/2017GL075697.
- 2017 | **Stotz I. L.**, G. Iaffaldano, D. R. Davies. Late–Miocene Pacific plate kinematic change explained with coupled global models of mantle and lithosphere dynamics. *Geophysical Research Letters*, 44, 7177–7186, doi:10.1002/2017GL073920.
- 2014 | Colli L., **I. L. Stotz**, H.-P. Bunge, M. Smethurst, S. Clark, G. Iaffaldano, A. Tassara, F. Guillocheau, and M. C. Bianchi. Rapid South Atlantic spreading changes and coeval vertical motion in surrounding continents: Evidence for temporal changes of pressure-driven upper mantle flow. *Tectonics*, 32, doi:10.1002/2014TC003612.

## List of Publications under review (2 accepted, 3 under review)

- 2025 Hamish Brown, Berta Vilacís, **Ingo L. Stotz** and Hans-Peter Bunge. Synthetic Geological Hiatus Maps as a Tool for Assessing Reconstructions of Past Dynamic Topography. *accepted in The Royal Society: Proceedings A.*
- 2025 R. Freissler, B. S. A. Schuberth, **Ingo L. Stotz** and C. Zaroli. Integrating tomographic resolution and uncertainty information into geodynamic mantle flow reconstructions. *accepted in The Royal Society: Proceedings A.*
- 2026 Valentina Espinoza, Juan Martin de Blas, **Ingo L. Stotz**, Andrés Tassara Oddo, Giampiero Iaffaldano Unraveling Plate Motion Drivers: Geodynamical framework and statistical appraisal for the case of the Neogene Nazca-South America Convergence *under review in Tectonics*.
- 2026 Hamish Brown, Gabriel Robl, **Ingo L. Stotz**, Berta Vilacís, Yi-Wei Chen, Mark J. Hoggard, Bernhard S.A. Schuberth, Hans-Peter Bunge, Jens Oeser. Constraining mantle viscosity using dynamic topography, the geoid, and seismic heterogeneity from high-resolution mantle circulation. *under revision in Geophysical Journal International*.
- 2026 J. N. Hayek, **I. L. Stotz**, B. Kahle, B. Vilacis, H.-P. Bunge Global paleostress predictions from upper mantle flow models and links to Cretaceous-Cenozoic paleostress shifts in Europe through variable plume flux *under review in The Royal Society: Proceedings A.*