

Marine Lasbleis, Ph.D.

ELSI Research Scientist

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Nationality: French.

Research and teaching positions

- 2018 **Invited Professor**, Université de Nantes, Laboratoire de Planétologie et Géodynamique (April-June 2018)
- 2017 - now **ELSI (Earth Life Science Institute) Research scientist**. ELSI, Tokyo Institute of Technology. Tokyo, Japan. Research topics: chemical and thermal evolution of the early cores of planets, solid core dynamics.
Febr. - March 2018: invited researcher at Australian National University, Australia.
April 2018: visit to Freie Universität (Berlin, Germany), in Pr. Noack group.
- 2015 - 2017 **JSPS Post-doctoral Fellow FY2015 – Melting and freezing in the deep Earth**.
Host researcher: Pr. Kei Hirose. 2 years, including a research grant (~17k EUR).
ELSI, Tokyo Institute of Technology, Tokyo, Japan.
- 2011 - 2014 **Teaching assistant** at Département des Sciences de la Terre, Ecole Normale Supérieure de Lyon

Education

- 2014 **Ph.D.: Dynamics and evolution of the Earth's inner core** at Laboratoire de Géologie de Lyon, France. *Ph.D. Defense: 4th december 2014.* (First class honors)
- 2012 **Summer School** at the Cooperative Institute for Dynamic Earth Research (CIDER) **"Deep Time: How did early Earth become our modern world?"** 4 weeks, UC Santa Barbara.
- 2010 **M.S. in Physics** (Magna Cum Laude) ENS de Lyon, France.
- 2008 **B.S. in Earth Science** (Magna Cum Laude) ENS de Lyon, France.
- 2007 Competitive entrance at ENS de Lyon, France (ranking: 16, about 900 candidates).

Publications

- M. Lasbleis**, L. Waszek, E. Day. *GrowYourIC: a step towards a coherent model of seismic structure*, *Geochemistry, Geophysics, Geosystems*, 2017, 18 (11), 4016-4026.
- E. Tasker, J. Tan, K. Heng, S. Kane, D. Spiegel, R. Brassler, A. Casey, S. Desch, C. Dorn, J. Hernlund, C. Houser, M. Laneuville, **M. Lasbleis**, A.-S. Libert, L. Noack, C. Unterborn & J. Wicks. *The language of exoplanet ranking metrics needs to change*. *Nature Astronomy*, 2017, 1 (2), 0042.
- M. Lasbleis**, R. Deguen, S. Labrosse, P. Cardin. *Earth's inner core dynamics induced by the Lorentz force*. *Geophysical Journal International*, 2015, 202 (1), 548-563.
- M. Lasbleis**, R. Deguen. *Building a regim diagram for the Earth's inner core*. *Physics of the Earth and Planetary Interiors*, 2015, 247, 80-93.
- Z. M. Geballe, **M. Lasbleis**, V. F. Cormier and E. A. Day. *Sharp hemisphere boundaries in a translating inner core*, *Geophysical Research Letter*, 2013, 40, 1719-1723
- J. Noir, M. A. Calkins, **M. Lasbleis** and J. M. Aurnou. *Experimental study of librationaly driven zonal flows in a straight cylinder*, *Physics of the Earth and Planetary Interiors*, 2010, 182, 98-106.

Work in progress

M. Lasbleis, J. Hernlund, S. Labrosse. *Snow in the Earth's core*, in prep.

M. Lasbleis, Q. Forquenot, R. Deguen. *Inner core topography with stochastic approach*, in prep.

Conferences and workshops – Talks ★ and invited talks ☆.

Upcoming conferences and invitations

- ★ Invited research talk: SEDI (Study of the Earth Deep Interior) meeting, July 2018 (Edmonton, Canada)

Past conferences and workshops

- ★ **M. Lasbleis**, R. Deguen, Q. Forquenot, *Topography at the inner core boundary*, PICO Presentation EGU (European Geophysical Union) meeting (Vienna, Austria), April 2018.
- ★ **M. Lasbleis**, R. Deguen, Q. Forquenot, *Topography at the inner core boundary*, AGU Fall Meeting (New Orleans, USA), December 2017.
- E. Day, **M. Lasbleis**, L. Waszek, *GrowYourIC: an open access Python code to facilitate comparison between kinematic models of inner core evolution and seismic observations*, AGU Fall Meeting (New Orleans, USA), December 2017.
- **M. Lasbleis**, L. Waszek, E. Day, *A first step to compare geodynamical models and seismic observations of the inner core*, IAG-IASPEI meeting (Kobe, Japan), August 2017.
- Q. Forquenot, **M. Lasbleis**, *Inner core topography*, Crust to Core Workshop (Ikoinoie, Japan), July 2017.
- **M. Lasbleis**, R. Brasser, *Can we estimate an upper bound for the magnetic field of rocky planets?* ACCRETE Meeting (Nice, France), May 2017
- ★ **M. Lasbleis**, *Inner core dynamics: combining seismic studies and geodynamical models*, Gordon Research Conference on the Earth Interior (South Hadley, MA, USA), May 2017.
- **M. Lasbleis**, R. Brasser, *Can we estimate an upper bound for the magnetic field of rocky planets?* Astrobiology Science Conference (Mesa, AZ, USA), April 2017.
- **M. Lasbleis**, L. Waszek, E. Day, *A first step to compare geodynamical models and seismic observations of the inner core*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA), December 2016.
- ★ **M. Lasbleis**, *Deep Earth from a laptop*, European Research Day (Tokyo, Japan), November 2016.
- **M. Lasbleis**, J. Hernlund, S. Labrosse, *Solid iron snow in the F-layer*, SEDI (Study of the Earth Deep Interior) meeting, July 2016.
- M. Laneuville, **M. Lasbleis**, G. Helffrich, *Evolution of an Initially Stratified Liquid Core on Mars and Dynamo activity*, SEDI (Study of the Earth Deep Interior) meeting, July 2016.
- ★ **M. Lasbleis**, J. Hernlund, S. Labrosse, *Snow in the Earth's core*, Goldschmidt Conference (Yokohama, Japan), June 2016.
- ★ **M. Lasbleis**, J. Hernlund, S. Labrosse, *Snow Model for the F-Layer*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA), December 2015.
- L. Waszek, **M. Lasbleis**, E. Day, D. Al-Attar, Z.M. Geballe *Super-rotation, Translation and Growth of the Inner Core: A Step Towards a Coherent Model of Seismic Structures*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA), December 2015.
- ★ **M. Lasbleis**, *Freezing and melting at the inner core boundary*, Workshop on the Earth's mantle and core (Matsuyama, Japan) November 2015.
- **M. Lasbleis**, S. Labrosse, R. Deguen, *Building a regime diagram for the Earth's inner core*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA), December 2014.
- **M. Lasbleis**, R. Deguen, S. Labrosse, P. Cardin, *Dynamics induced by the Lorentz force in the growing inner core*, SEDI (Study of the Earth Deep Interior) Meeting (Kamakura, Japan) August 2014.
- ★ **M. Lasbleis**, R. Deguen, S. Labrosse, P. Cardin, *Dynamics induced by the Lorentz force in the growing inner core*, Workshop on transport properties in the Earth's core (Kawaguchiko, Japan), November 2013.

Conferences and workshops – Talks ★ and invited talks ☆.

- ★ **M. Lasbleis**, R. Deguen, S. Labrosse, P. Cardin, *Dynamics induced by the Lorentz force in the growing inner core* Inner core anisotropy workshop (Grenoble, France), November 2013.
- **M. Lasbleis**, R. Deguen, S. Labrosse, P. Cardin, C. Juan, *Dynamics induced by the Lorentz force in the growing inner core*, Gordon Research Conference and Gordon Research Seminar on the Earth Interior (South Hadley, MA, USA) June 2013.
- **M. Lasbleis**, S. Labrosse, J. Hernlund, *Growth of the inner core by snowfall*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA) December 2012.
- E. Day, V. Cormier, Z. Geballe, **M. Lasbleis**, M. Youssof, H. Yue, *Investigating the translation of Earth's inner core*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA) December 2012.
- **M. Lasbleis**, B. Journaux, C. Perge, A. Marguerite, H. Dore, B. Bourget, *A planet in your garage : Simple and memorable experiments to explain complex fluid dynamic phenomenons to non-scientist* – Education session, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA) December 2012.
- **M. Lasbleis**, S. Labrosse, J. Hernlund, *Can the F-layer be explained by a slurry layer?*, SEDI (Study of the Earth Deep Interior) Meeting (Leeds, UK) July 2012.
- ★ **M. Lasbleis**, S. Labrosse, J. Hernlund, *Feedbacks Between Inner Core Freezing, Melting, and Evolution of the F-Layer*, AGU (American Geophysical Union) Fall Meeting (San Francisco, CA, USA), December 2011.

Invited seminars:

- Research School of Earth Sciences, Australian National University (February 2018)
- Laboratoire de Planétologie de Nantes, France (March 2015, May 2016).
- Institut des Sciences de la Terre, Grenoble, France (March 2015, April 2016).
- Institut de Recherches en Astrophysique et Planétologie, Toulouse, France (April 2016).

Fundings/scholarships/awards

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| 2018 | Marie Skłodowska-Curie actions (MSCA) Individual Fellowship (185k EUR for 2 years, starting 2018) |
| 2018 | Grant-in-Aid for Scientific Research (Kakenhi – young researcher) ~ 17k EUR for 2 years (PI) |
| 2017 | Earth-Life Science Institute Incentive Award. |
| 2016 | Earth-Life Science Institute Director's fund ~ 7k EUR.(PI) |
| 2015 | Grant-in-Aid for Scientific Research (Kakenhi – JSPS postdoctoral fellow). ~ 17k EUR for 2 years. (Fiscal years 2015 and 2016) |
| 2015 | Earth-Life Science Institute Director's fund ~ 6k EUR. (PI) |
| 2015 | Japan Society for the Promotion of Science Post Doctoral Fellowship (2 years). ~ 70kEUR |
| 2012 | CIDER funding for research group. 5k EUR. (co-I) |
| 2011 | École Normale Supérieure de Lyon grant for student research groups. 4.5k EUR. (PI) |
| 2007 | Scholarship: full study and living allowance grant for graduate studies at École Normale Supérieure de Lyon: ~ 60k EUR. |

Mentoring activities

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| 2017 | Mathilde Kervazo , graduate (Master 1) student internship (3 months) at ELSI: Inner core dynamics with CIG-ASPECT. |
| 2017 | Quiterie Forquenot , graduate (Master 2) student internship (5 months) at ELSI: Inner core topography. Research presented at the Crust-to-core workshop (July 30-Aug. 1, Ikoinoie, Japan) |
| 2016 | Maude Geissmann , graduate (Master 1) student internship, at ELSI, co-advised with John Hernlund. Research presented at the SEDI meeting 2016. |
| 2013 | Christie Juan , undergrad (Licence 3) student internship. |

Teaching experience and teaching administration

2018 **Co-organization of the 2018 ELSI/EON Winter School for graduate and post doctoral students (34 students, from 4 different continents)** , with responsibilities for the curriculum and technical organisation of the lectures: initiation to UNIX and Python, planetary atmospheres, exoplanets, mantle convection. I personally taught the lecture on initiation to UNIX and Python.

2015 **Highschool class** Chiba, Japan . 3 hours on Introduction to the Earth's core.

2011 - 2014 **Teaching assistant** at the Department of Earth Science, École Normale Supérieure (ENS) de Lyon, France. Total: 190 hours over 3 years. In bold are the lectures I was responsible for in term of curriculum and organisation.

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| B.S. 2nd y. | Introduction to geophysics | Spring 2012 | 20hours (tutorials) |
| B.S. 3rd y. | Computer Science for geosciences | Fall 2012, 2013 | 2x20h (lectures+tut.) |
| | Mathematics | Fall 2011, 2012, 2013 | 3x20h (lectures+tut.) |
| | Thermodynamics of natural systems | Fall 2011, 2012, 2013 | 3x14h (tutorials) |
| | Geophysics (elasticity and magnetism) | Spring 2012, 2013 | 2x25h (tutorials) |
| | Mentoring | Fall 2012, 2013 | 2x20h |
| M.S. 1st y. | Geophysics (heat budget of planets) | Fall 2012, 2013 | 2x6h (tutorials) |

Community service

- 2018 Co-organizer of the Earth Life Science Winter School, at ELSI, Jan-Feb 2018.
- 2017 - Community ambassador for EarthArXiv (an open source community governed preprint system for the Earth sciences)
- 2017 Organizer of the Power Hour during Gordon Research Conference Interior of the Earth (South Hadley, MA, USA)
- 2016 - 2017 Member of the Scientific Organizing Committee for the 5th ELSI International Symposium (11-13 January 2017)
- 2016 - 2017 Organizer of the Young Researchers' Day during the 5th ELSI Symposium (10 January 2017. ~ 60 grad students and post docs).
- 2016 Convener of the session *The Earth's core: constraints on the Earth's metallic heart from multi-disciplinary approaches*, at AGU Fall Meeting 2016.
- 2014 - 2017 Outstanding student paper award judge, AGU fall meeting.
- 2012 - 2014 Grad student representative at the Laboratoire de Géologie de Lyon board of directors.
- 2011 Organization of the graduate student Day 2011: short scientific conferences held by the grad students, Laboratoire de Géologie de Lyon. Budget: 2.5k euros.

Peer-review for journals: Icarus, Progress in Earth and Planetary Science
Academic membership: American Geophysical Union (2011 – today)

Scientific Outreach

- 2017 Talk at Nerd Nite Tokyo, October 20.
- 2017 Talk at the ELSIOrigins1, September 2017. Public outreach event at ELSI.
- 2016 Talk on "Research and life in Japan", at the Orientation for JSPS Post Doctoral Fellows.
- 2016 Organisation of the "Earth-Life Science Institute Youchien", classes held at the institute. Lecture on "fluid dynamics for deep Earth".
- 2016 ELSI's Ask me Anything: open discussion with the public at the Tokyo Tech Institute of Technology.
- 2012 - 2014 Participation to the annual science fair *Fête de la Science* (4 days, responsible for the organisation and presentation of an activity for the 4 days), ENS de Lyon.
- 2011 - 2013 Creation and management of a student group: First approach of planetary fluid dynamics ENS de Lyon. . Budget: 4.5k euros for two years.