Marine Lasbleis, Ph.D.
ELSI Research Scientist

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Nationality: French.

Research interests

Dynamics of planetary interiors, early Earth dynamics, inner core dynamics, magnetic field.

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.
	Research internship (4 months): Particles displacement with internal waves, P. Odier and T. Dauxois, Lyon.
	Research internship (3 months): Spin-up as a proxy for viscous coupling in librating systems, J. Aurnou and J. Noir, UCLA.
2008	**B.S. in Earth Science** (Magna Cum Laude) ENS de Lyon, France.
	Research internship (2 months): Detection of magnetic plumes, S. Labrosse, Lyon.
2007	Competitive entrance at ENS de Lyon, France (ranking: 16, about 900 candidates).
2005 - 2007	Intensive 2-year University program in Biology, Geology, Chemistry, Physics and Mathematics (Classe préparatoire BCPST)

Research positions

2017 - now	**ELSI (Earth Life Science Institute) Research scientist – 3 years** . ELSI, Tokyo Institute of Technology. Tokyo, Japan.
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.
2010 - 2014	**Grad student: Dynamics and evolution of the Earth's inner core,** under the supervision of Pr. Stéphane Labrosse, Laboratoire de Géologie de Lyon, France.

Publications

E. Tasker, J. Tan, K. Heng, S. Kane, D. Spiegel, R. Brasser, 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 (comment article), 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 librationally driven zonal flows in a straight cylinder* , Physics of the Earth and Planetary Interiors, 2010, 182, 98-106.

Work in progress

M. Lasbleis, L. Waszek, E. Day. *GrowYourIC: a step towards a coherent model of seismic structure*, submitted.

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.

M. Laneuville, **M. Lasbleis**. *Evolution of an Initially Stratified Liquid Core on Mars and Dynamo activity*, in prep

Conferences and workshops – Talks ★ and invited talks ☆.

- **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.
- **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.

☆ **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

- Laboratoire de Planétologie de Nantes, France (2015, 2016).
- Institut des Sciences de la Terre, Grenoble, France (2015, 2016).
- Institut de Recherches en Astrophysique et Planétologie, Toulouse, France (2016).

Fundings/scholarships/awards

Submitted/in preparation:

2017 Start-up grant Kakenhi (submitted)
2017 NSF Grant (PI: L. Waszek, in prep)

Received:

2016 Earth-Life Science Institute Director's fund: $\sim$ 7k EUR. (internal grant) Topic: *Estimating the magnetic field of rocky exo-planets.*
2015 Grant-in-Aid for Scientific Research (Tokubetsu Kenkyuin Syoure-hi). $\sim$ 17k EUR for 2 years. (Fiscal years 2015 and 2016)
2015 Earth-Life Science Institute Director's fund: $\sim$ 6k EUR. (internal grant) Topic: *thermal evolution of an initially stratified core.*
2012 CIDER funding for research group *Sharp hemisphere boundaries in a translating inner core.* 5k EUR.
2011 Ecole Normale Supérieure de Lyon grant for student research groups. 4.5k EUR for 2 years.
2007 Scholarship: full study and living allowance grant for graduate studies at École Normale Supérieure de Lyon: $\sim$ 60k EUR.

Mentoring activities

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

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. In bold are the lectures I was responsible for in term of curriculum and organisation.

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

2017 - 2018	Part of the organization of the Earth Life Science Winter School, at ELSI, Jan-Feb 2018.
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. $\sim$ 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 - 2016	Outstanding student paper award judge, AGU fall meeting.
2012 - 2014	Grad student representative at the Laboratoire de Géologie de Lyon board of directors.
2012 - 2013	Teacher representative at the Board of Directors of the ENS de Lyon.
2012 - 2014	Grad student representative at the Laboratoire de Géologie de Lyon board of directors.
2012 - 2013	Teacher representative at the Board of Directors of the ENS de Lyon.
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.
2008 - 2011	Organization of multidisciplinary scientific conferences *(Cédric Villani, Thomas Peacock, Eric Brun, Louis Schweitzer, etc.)* Budget: 2k euros per year.
2008 - 2010	Student representative at the Board of Directors of the ENS de Lyon.

Scientific Outreach

2016	Talk on "Research and life in Japan", at the Orientation for JSPS Post Doctoral Fellows.
2016	Part of the organisation of the "Earth-Life Science Institute Youchien", classes held at the institute "to provide education across diverse fields of disciplines at ELSI from a very beginner's point of view". Class on "fluid dynamics for deep Earth".
2016	ELSI's Ask me Anything: open discussion with 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.
	Tsunami generation and propagation in a 2-meter tank, rotating fluid on a small turntable, introduction to viscosity and viscous flows with kitchen liquids, first approach to magnetic field with ferrofluids and magnets. Award for a lecture given to 5th grade students on tsunamis and risks ("Prix La Main à la pâte 2013").

Skills

Computing: Python (numpy, scipy, matplotlib, panda, *etc.*), Fortran, Matlab, LaTeX, git, *etc.*

Github account: https://github.com/MarineLasbleis

Langages: fluent in English (spoken and written English), native speaker in French, beginner in Japanese and German.