

## Thibaut BARREYRE

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### RESEARCH INTERESTS

Marine geology and geophysics and fluid dynamics.  
Hydrothermalism, Deep-sea Instrumentation and Exploration.  
Signal Analysis, Statistic, Stochastic and Spectral Methods.

### EDUCATION

- 2010-2013 **Ph.D. in Marine Geophysics** (advisor : Javier Escartín)  
*Institut de Physique du Globe de Paris (IPGP), Paris, France*
- 2009-2010 **M.S., Geophysics** obtained with high honors (*summa cum laude*).  
*Institut de Physique du Globe de Paris (IPGP) –  
Ecole Normale Supérieure (ENS), Paris, France*
- 2007-2008 **B.S., Physics** obtained with honors, 2008.  
*Ecole Normale Supérieure (ENS), Paris, France*

### RESEARCH EXPERIENCE

- 01/14 – Now **Postdoctoral Scholar** at the Woods Hole Oceanographic Institution (WHOI),  
Woods Hole, MA., USA.  
Dir. : Robert Reves-Sohn, Adam Soule and Dan Fornari.
- 9/10 – 10/13 **PhD program** at the Institut de Physique du Globe (Géosciences Marines, IPGP),  
Paris, France.  
Supervised by Javier Escartín.  
*Dynamics and heat fluxes of hydrothermal fields.*  
**Fluid dynamics experiments** at the FAST, Orsay, France.  
Supervised by Anne Davaille and Eric Mittelstaedt.  
*Analogical modeling of a hydrothermal crack.*
- 2/10 – 6/10 **Internship** at the Institut de Physique du Globe (Géosciences Marines, IPGP),  
Paris, France.  
Supervised by Javier Escartín.  
*Hydrothermal activity at slow-spreading ridges: Spatial structure and temporal  
variability at the Lucky Strike field (MAR).*
- 2/09 - 8/09 **Internship** at the Woods Hole Oceanographic Institution (WHOI),  
Woods Hole, MA., USA.  
Supervised by Robert Reves-Sohn and Samuel Adam Soule.  
*Explosive volcanism in the deep ocean: investigating the dispersal of volcanoclastic  
material through laboratory measurements and numerical models.*
- 6/08 - 7/08 **Internship** at the Laboratoire d'Océanographie et du Climat :  
Expérimentation et Approches Numériques (LOCEAN), Paris, France.  
Supervised by Christine Provost and Alice Renault  
*Study of the Antarctic Circumpolar Current (ACC) in the Drake Passage.*
- 6/07 - 7/07 **Internship** at the Laboratoire d'Etude du Rayonnement et de la Matière en Astrophysique  
(LERMA) at the Observatoire de Paris, CNRS, Paris, France.  
Supervised by Eric Defer and Catherine Prigent.  
*Analysis of earth satellite observations and development of processing tools.*

## **FIELD EXPERIENCE AND RESEARCH CRUISE**

- 07/14 “AT26-17”, Instruments deployment and recovery for short-term observations at the ASHES site, on R/V *Atlantis – Alvin*, 11 Jul - 8 Aug 2014, Astoria.
- 01/14 “64PE382”, Instrument recovery for long-term observations at the Rainbow site, on R/V *Pelagia*, 04 Jan - 22 Jan 2014, Ponta Delgada.
- 08/13 “MoMARSAT13”, Instrument recovery and deployment for long-term observations at the Lucky Strike MoMAR site, on R/V *Atalante, Victor*, 21 Aug - 15 Sep 2013, Horta.
- 07/12 “MoMARSAT12”, Instrument recovery and deployment for long-term observations at the Lucky Strike MoMAR site, on R/V *Atalante, Victor*, 12 Jul - 31 Jul 2012, Ponta Delgada.
- 07/11 “MoMARSAT11”, Instrument recovery and deployment for long-term observations at the Lucky Strike MoMAR site, on R/V *PourQuoi Pas?*, *Victor*, 28 Jun - 21 Jul 2011, Horta.
- 10/10 “MoMARSAT10”, Instrument recovery and deployment for long-term observations at the Lucky Strike MoMAR site, on R/V *PourQuoi Pas?*, *Victor*, 1 Oct - 16 Oct 2010, Horta.
- 9/09 “Bathyluck’09”, Instrument recovery and deployment for long-term observations at the Lucky Strike MoMAR site, on R/V *PourQuoi Pas?*, *Nautile & Victor*, 31 Aug - 29 Sep 2009, Horta.
- 9/07 – 5/10 Various field courses including cartography, tectonics and petrology in the French and Italian Alps (ENS), active tectonics in Greece (IPGP) and geodynamics in Barbados (WHOI).

## **ARTICLES**

- Barreyre, T., J. Escartín, R. Sohn, and M. Cannat, Permeability of the Lucky Strike deep-sea hydrothermal system: constraints from the poroelastic response to ocean tidal loading, *Earth and Planetary Science Letters*, 408, 146-154, 2014.
- Barreyre, T., J. Escartín, R. Sohn, M. Cannat, V. Ballu and W. Crawford, Temporal variability and tidal modulation of hydrothermal exit-fluid temperatures at the Lucky Strike deep-sea vent field, Mid-Atlantic Ridge, *Journal of Geophysical Research*, 119, doi: 10.1002/2013JB010478, 2014.
- Barreyre, T., J. Escartín, R. Garcia, M. Cannat, E. Mittelstaedt and R. Prados  
Structure, temporal evolution, and heat flux estimates from the Lucky Strike deep-sea hydrothermal field derived from seafloor image mosaics, *G-cubed* 13, 4Q04007, doi:10.1029/2011GC003990, 2012.
- Mittelstaedt, E., J. Escartín, N. Gracias, J.-A. Olive, T. Barreyre, A. Davaille, M. Cannat, and R. Garcia  
Quantifying diffuse and discrete venting at the Tour Eiffel vent site, Lucky Strike hydrothermal field, *G-cubed* 13, doi:10.1029/2011GC003991, 2012.
- Barreyre, T., S. Adam Soule, Robert A Reves-Sohn  
Dispersal of volcanoclastic material by buoyant water plumes in deep-ocean explosive basaltic eruptions, *JVGR* 205, doi:10.1016/j.jvolgeoes.2011.05.006, 2011.

## **ABSTRACTS, COMMUNICATIONS**

2014

- Barreyre, T., R. Sohn, J. Escartín and M. Cannat, Dynamics and poroelastic behavior of the Lucky Strike hydrothermal field (Mid-Atlantic Ridge, 37deg17’N), *Invited Talk*, Columbia University – Lamont Doherty Earth Observatory, New York, NY, April 2014.

- Barreyre, T., J. Escartín, A. Davaille, M. Cannat, E. Mittelstaedt, R. Sohn, and R. Garcia, Dynamics and Heat fluxes of the Lucky Strike hydrothermal field (Mid-Atlantic Ridge, 37deg17'N), *Invited Talk*, University of Idaho, Moscow, ID, March 2014.
- 2012 Barreyre, T., J. Escartín, R. Sohn, M. Cannat and V. Ballu, Temperature variation records at diffuse and focused outflow in Lucky Strike hydrothermal field : toward a characterization of the outflow dynamic, *Talk*, AGU, San Francisco, CA, December 2012.
- Barreyre, T., J. Escartín, R. García, M. Cannat and E. Mittelstaedt, Structure and temporal variation in fluid outflow at the deep-sea Lucky Strike hydrothermal field (Mid-Atlantic Ridge) from seafloor imagery, DS3F ,Sitges, Spain, March 2012.
- 2011 Barreyre, T., J. Escartín, R. García, M. Cannat, E. Mittelstaedt and R. Prados, Temporal monitoring and quantification of hydrothermal activity from photomosaics: the Lucky Strike hydrothermal field, *Invited Talk*, AGU, San Francisco, CA, December 2011.
- 2010 Barreyre, T., J. Escartín, M. Cannat, R. García, Distribution, structure and temporal variability of hydrothermal outflow at a slow-spreading hydrothermal field from seafloor image mosaics, Goldschmidt Conference, Knoxville, TN, June 2010.
- Barreyre, T., J. Escartín, M. Cannat, R. García, MoMAR'08 & Bathyluck'09 Science Party, Distribution, structure and temporal variability of hydrothermal outflow at a slow-spreading hydrothermal field from seafloor image mosaics, Geophysical Research Abstracts, Vol. 12, EGU2010-A-8487, Vienna, May 2010.
- Escartín, J., R. García, R. Prados, R. Campos, T. Barreyre & Bathyluck'09 Science Party, Image seafloor mosaics: Acquisition, processing, and role on deep-sea observatory planning and implementation, Geophysical Research Abstracts, Vol. 12, EGU2010-A-10544, Vienna, May 2010.
- 2009 Barreyre, T., S. Adam Soule, Robert A Reves-Sohn  
Dispersal of volcanoclastic material by buoyant water plumes in deep-ocean explosive basaltic eruptions, AGU Fall Meet. Suppl., Abstract V51D-1743, San Francisco, CA, 2009.

### **HONORS AND AWARDS**

- 2014 – 2016    WHOI postdoctoral scholarship (18 months).  
2010 – 2013    Ministry of Research and Higher Education Fellowship (3 years).

### **TEACHING EXPERIENCE**

- 2010 – 2013    **Teaching Assistant**  
Applied Mathematics (Algebra and Analysis) and Matlab for bachelor's degree classes.  
*University Paris Diderot (Paris VII) and Institut de Physique du Globe de Paris (IPGP)*

### **LANGUAGES**

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|---------|-----------------|
| French  | Native language |
| English | Fluent          |
| Spanish | Average level   |

### **COMPUTING & SKILLS**

Familiar with MAC.OS, Microsoft and Linux operating systems  
Programming and software: Matlab, Fortran 90, Shell, Illustrator, Photoshop ...  
Instrumentation: Maintenance and management of IPGP temperature sensor facility  
Laboratory: analogical modeling in fluid dynamics

### **INTERESTS**

Travelling, Surfing, Diving, Climbing, Hiking and Theater.