

# J r mie Vasseur · Ph.D.

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Born February 5, 1987 · French citizenship

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## Education

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### Ludwig-Maximilians-Universit t

Ph.D. (Dr. rer. nat.), Volcanology; *Summa Cum Laude* (with highest honour)

Thesis topic *The life and death of heterogeneity in magmas: Implications for failure forecasting*

Supervisors Prof Donald B. Dingwell & Prof Yan Lavall e [U. of Liverpool, U.K.]

**Munich, Germany**

06/2011–09/2015

### Institut de Physique du Globe de Paris

M.Sc., Geology & Natural Hazards

Thesis topic *Seismological aspects of Bouillante’s geothermal field, Guadeloupe, French West Indies*

Supervisor Dr Philippe Jousset [French Geological Survey; now at GFZ Potsdam, Germany]

**Paris, France**

09/2008–09/2010

### Universit  Denis Diderot

B.Sc., Geosciences

**Paris, France**

09/2005–06/2008

## Experience

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### Ludwig-Maximilians-Universit t

Postdoctoral researcher in Experimental & Physical Volcanology

Grant European Research Council Advanced Grant EAVESDROP (No. 834225)

**Munich, Germany**

09/2019–ongoing

### Ludwig-Maximilians-Universit t

Postdoctoral researcher in Experimental & Physical Volcanology

Responsibility Cameca SX 100 Electron Probe Micro-Analyser coordinator

**Munich, Germany**

10/2015–08/2019

## Teaching

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**Lecturer** *Data Processing in Earth Science* (3rd year B.Sc. course)

2017–ongoing

**Assistant lecturer** *Mineralogy* (2nd year B.Sc. course)

2015–2016

**Teaching assistant** *Petrophysics* (1st year M.Sc. course)

2012–2015

**Teaching assistant** *Melts, Glasses, Magmas* (post-graduate course)

2012–ongoing

## Supervising

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**Caron Vossen** M.Sc. candidate [co-supervised]

Thesis topic *Failure forecasting in silicate liquids*

**LMU Munich**

06–12/2017

**Madeleine Barrow** DAAD RISE intern (B.Sc.)

Thesis topic *The microseismic signature of magma failure*

**LMU Munich**

Summer 2013

## Grants awarded

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**AGU Fall Meeting (2015)** LMUexcellent travel grant

1,880 EUR

**DAAD RISE (2013)** Summer internship host

5,200 EUR

**IAVCEI Assembly (2013)** Student travel grant, support A

25,000 JPY

**7th Cities on Volcanoes (2012)** Student travel grant

1,200 USD

## Memberships

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**Editorial Board Member** *Volcanica*

2017–ongoing

**Editorial Board Member** *Scientific Reports* (Nature Publishing Group)

2017–ongoing

**Member** Int. Association of Volcanology and Chemistry of the Earth’s Interior

since 2013

**Member** European Geosciences Union & American Geophysical Union

since 2011

## Invited presentations

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<b>EGU General Assembly</b>	<i>Can we forecast the failure of magma and how does this help us forecast eruptions?</i>	2018
<b>AGU Fall Meeting</b>	<i>Forecasting the failure of heterogeneous magmas</i>	2015
<b>10th Euroconference on Rock Physics</b>	<i>Predicting the failure of two phase viscoelastic suspensions</i>	2014
<b>Institut de Physique du Globe de Strasbourg</b>	<i>Cracking magmas: From the field to the lab</i>	2013

## Media coverage

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<b>PBS Newshour</b>	<i>Glass spheres forged by volcanic lightning offer clues about eruptions</i>	2017
<b>AGU Geospace</b>	<i>Glass formed by volcanic lightning could be used to understand eruptions</i>	2017

## Citation metrics (as of August 2020)

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**GoogleScholar** h-index 16, i10-index 19, citations 663.

**ResearchGate** score 28.34, reads 9268.

## Skills

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**Languages** French (native), English (fluent), German (good).

**Programming** Python (fluent), Cython (fluent), Matlab (advanced), C/C++ (good).

**Laboratory** Acoustic testing, rheology, chemical analysis, pycnometry, particle characterization.

**Numerics** Inversion, finite differences, Monte Carlo method, image analysis.

## Others

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**Interests** Historical reading, cooking, photography, computer.

**Sports** Alpine skiing (3rd star), judo (1st dan), jiu-jitsu, hiking, biking.

## Publications

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- Dobson, K.J., Allabar, A., Bretagne, E., Coumans, J., Cassidy, M., Cimarelli, C., Coats, R., Connolley, T., Courtois, L., Dingwell, D.B., Di Genova, D., Fernando, B., Fife, J.L., Fyfe, F., Gehne, S., Jones, T., Kendrick, J.E., Kinvig, H., Kolzenburg, S., Lavallée, Y., Liu, E., Llewellyn, E.W., Madden-Nadeau, A., Madi, K., Marone, F., Morgan, C., Oppenheimer, J., Ploszajski, A., Reid, G., Schaurroth, J., Schlepuetz, C.M., Sellick, C., **Vasseur, J.**, von Aulock, F.W., Wadsworth, F.B., Wiesmaier, S., & Wanelik, K. Quantifying microstructural evolution in moving magma. In press. *Frontiers in Earth Science*.
- 35** Wadsworth, F.B., Llewellyn, E.W., **Vasseur, J.**, Gardner, J.E., & Tuffen, H. Explosive-effusive volcanic eruption transitions caused by sintering. In press. *Science Advances*.
- 34** Heap, M.J., Kushnir, A.R.L., **Vasseur, J.**, Wadsworth, F.B., Harlé, P., Baud, P., Kennedy, B.M., Troll, V.R., & Deegan, F.M. The thermal properties of porous andesite. *Journal of Volcanology and Geothermal Research*, 398, 106901.
- 33** **Vasseur, J.**, Wadsworth, F.B., & Dingwell, D.B. (2020). Permeability of polydisperse magma foam. *Geology*, 48(6), 536–540.
- 32** Colombier, M., Wadsworth, F.B., Scheu, B., **Vasseur, J.**, Dobson, K.J., Cáceres, F., Allabar, A., Marone, F., Schlepuetz, C.M., & Dingwell, D.B. (2020). In situ observation of the percolation threshold in multiphase magma analogues. *Bulletin of Volcanology*, 82, 32.
- 31** **Vasseur, J.**, & Wadsworth, F.B. (2019). The permeability of columnar jointed lava. *Journal of Geophysical Research*, 124(11), 11305–11315.
- 30** Wadsworth, F.B., **Vasseur, J.**, Schaurroth, J., Llewellyn, E.W., Dobson, K.J., Havard, T., Scheu, B., von Aulock, F.W., Gardner, J.E., Dingwell, D.B., Hess, K.-U., Colombier, M., Marone, F., Tuffen, H., & Heap, M.J. (2019). A general model for welding of ash particles in volcanic systems validated using in situ X-ray tomography. *Earth and Planetary Science Letters*, 525, 115726.
- 29** Casas, A.S., Wadsworth, F.B., Ayris, P.M., Delmelle, P., **Vasseur, J.**, Cimarelli, C., & Dingwell, D.B. (2019). SO<sub>2</sub> scrubbing during permeable flow through rhyolitic volcanic domes. *Geochemica Cosmochemica Acta*, 257, 150–162.
- 28** Wadsworth, F.B., Unwin, H.E., **Vasseur, J.**, Kennedy, B.M., Holzmueller, J., Scheu, B., Witcher, T., Adolf, J., Cáceres, F., Casas, A.S., Cigala, V., Clement, A.M., Colombier, M., Cronin, S., Cronin, M., Dingwell, D.B., Guimarães, L.F., Hoeltgen, L., Kueppers, U., Kunzmann, T., Seropian, G., Stern, S., Teissier, A., Vossen, C.E.J., & Weichselgartner, N. (2018). *Trashcano*: Developing a quantitative teaching tool to understand ballistics accelerated by explosive volcanic explosions. *Volcanica*, 1(2), 107–126.

- 27 **Vasseur, J.**, Wadsworth, F.B., & Dingwell, D.B. (2018). Forecasting multiphase magma failure at the laboratory scale using acoustic emission data. *Frontiers in Earth Science*, 6, 132.
- 26 Colombier, M., Scheu, B., Wadsworth, F.B., Cronin, S., **Vasseur, J.**, Dobson, K.J., Hess, K.-U., Tost, M., Yilmaz, T.I., Cimarelli, C., Brenna, M., Ruthensteiner, B., & Dingwell, D.B. (2018). Vesiculation and quenching during Surtseyan eruptions at Hunga Tonga-Hunga Ha'apai volcano, Tonga. *Journal of Geophysical Research*, 123(5), 3762–3779.
- 25 Wadsworth, F.B., Witcher, T., **Vasseur, J.**, Dingwell, D.B., & Scheu, B. (2018). "When does magma break?" In: *Advances in Volcanology: Volcanic Unrest* (book chapter). Eds. Gottsmann, J., Neuberg, J., & Scheu, B. Springer, Berlin, Heidelberg.
- 24 **Vasseur, J.**, & Wadsworth, F.B. (2017). Sphere models for pore geometry and fluid permeability in heterogeneous magmas. *Bulletin of Volcanology*, 79, 77.
- 23 Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Dobson, K.J., Colombier, M., von Aulock, F.W., Fife, J.L., Wiesmaier, S., Hess, K.-U., Scheu, B., Lavallée, Y., & Dingwell, D.B. (2017). Topological inversions in coalescing granular media control fluid-flow regimes. *Physical Review E*, 96(3), 033113.
- 22 **Vasseur, J.**, Wadsworth, F.B., Heap, M.J., Main, I.G., Lavallée, Y., & Dingwell, D.B. (2017). Does an inter-flaw length control the accuracy of rupture forecasting in geological materials? *Earth and Planetary Science Letters*, 475, 181–189.
- 21 Di Genova, D., **Vasseur, J.**, Hess, K.-U., Neuville, D.R., & Dingwell, D.B. (2017). Effect of oxygen fugacity on the glass transition, viscosity and structure of silica- and iron-rich magmatic melts. *Journal of Non-Crystalline Solids*, 470, 78–85.
- 20 Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Genareau, K., Cimarelli, C., & Dingwell, D.B. (2017). Size limits for rounding of volcanic ash particles heated by lightning. *Journal of Geophysical Research*, 122(3), 1977–1989.
- 19 Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., & Dingwell, D.B. (2017). Sintering of polydisperse viscous droplets. *Physical Review E*, 95(3), 033114.
- 18 Heap, M.J., Violay, M., Wadsworth, F.B., & **Vasseur, J.** (2017). From rock to magma and back again: The evolution of temperature and deformation mechanism in conduit margin zones. *Earth and Planetary Science Letters*, 463, 92–100.
- 17 Wadsworth, F.B., Heap, M.J., Damby, D.E., Hess, K.-U., Najorka, J., **Vasseur, J.**, Fahrner, D., & Dingwell, D.B. (2017). Local geology controlled the feasibility of vitrifying Iron Age buildings. *Scientific Reports*, 7, 40028.
- 16 Wadsworth, F.B., **Vasseur, J.**, & Damby, D.E. (2016). Evolution of vocabulary in the poetry of Sylvia Plath. *Digital Scholarship in the Humanities*, 32(3), 660–671.
- 15 Kendrick, J.E., Lavallée, Y., Varley, N., Wadsworth, F.B., Lamb, O.D., & **Vasseur, J.** (2016). Blowing off steam: Tuffsite formation as a regulator for lava dome eruptions. *Frontiers in Earth Science*, 4, 41.
- 14 Wadsworth, F.B., **Vasseur, J.**, Llewellyn, E.W., Schauthroth, J., Dobson, K.J., Scheu, B., & Dingwell, D.B. (2016). Sintering of viscous droplets under surface tension. *Proceedings of the Royal Society A*, 472, 2188.
- 13 Schauthroth, J., Wadsworth, F.B., Kennedy, B.M., von Aulock, F.W., Lavallée, Y., Damby, D.E., **Vasseur, J.**, Scheu, B., & Dingwell, D.B. (2016). Conduit margin heating and deformation during the AD 1886 basaltic Plinian eruption at Tarawera volcano, New Zealand. *Bulletin of Volcanology*, 78, 12.
- 12 Wadsworth, F.B., **Vasseur, J.**, Scheu, B., Kendrick, J.E., Lavallée, Y., & Dingwell, D.B. (2016). Universal scaling of fluid permeability during volcanic welding and sediment diagenesis. *Geology*, 44(3), 219–222.
- 11 **Vasseur, J.**, Wadsworth, F.B., Lavallée, Y., & Dingwell, D.B. (2016). Dynamic elastic moduli during isotropic densification of initially granular media. *Geophysical Journal International*, 204(3), 1721–1728.
- 10 Kennedy, B.M., Wadsworth, F.B., **Vasseur, J.**, Schipper, C.I., Jellinek, A.M., von Aulock, F.W., Hess, K.-U., Russell, J.K., Lavallée, Y., Nichols, A.R.L., & Dingwell, D.B. (2016). Surface tension driven processes densify and retain permeability in magma and lava. *Earth and Planetary Science Letters*, 433, 116–124.
- 9 Ayris, P.M., Cimarelli, C., Delmelle, P., Wadsworth, F.B., **Vasseur, J.**, Suzuki, Y.J., & Dingwell, D.B. (2015). A novel apparatus for the simulation of eruptive gas-rock interactions. *Bulletin of Volcanology*, 77, 104.
- 8 **Vasseur, J.**, Wadsworth, F.B., Lavallée, Y., Bell, A.F., Main, I.G., & Dingwell, D.B. (2015). Heterogeneity: The key to failure forecasting. *Scientific Reports*, 5, 13259.
- 7 Wadsworth, F.B., Damby, D.E., Hearne, R.L., Le Blond, J.S., **Vasseur, J.**, Najorka, J., Hess, K.-U., & Dingwell, D.B. (2015). The feasibility of vitrifying a sandstone enclosure in the British Iron Age. *Journal of Archaeological Science: Reports*, 4, 605–612.
- 6 Ashwell, P.A., Kendrick, J.E., Lavallée, Y., Kennedy, B.M., Hess, K.-U., von Aulock, F.W., Wadsworth, F.B., **Vasseur, J.**, & Dingwell, D.B. (2015). Permeability of compacting porous lavas. *Journal of Geophysical Research*, 120(3), 1605–1622.

- 5 Lavallée, Y., Wadsworth, F.B., **Vasseur, J.**, Russell, J.K., Andrews, G.D.M., Hess, K.-U., von Aulock, F.W., Kendrick, J.E., Tuffen, H., Biggin, A.J., & Dingwell, D.B. (2015). Eruption and emplacement timescales of ignimbrite super-eruptions from thermokinetics of glass shards. *Frontiers in Earth Science*, 3, 2.
- 4 Wadsworth, F.B., **Vasseur, J.**, von Aulock, F.W., Hess, K.-U., Scheu, B., Lavallée, Y., & Dingwell, D.B. (2014). Nonisothermal viscous sintering of volcanic ash. *Journal of Geophysical Research*, 119(12), 8792–8804.
- 3 **Vasseur, J.**, Wadsworth, F.B., Lavallée, Y., Hess, K.-U., & Dingwell D.B. (2013). Volcanic sintering: Timescales of viscous densification and strength recovery. *Geophysical Research Letters*, 40(21), 5658–5664.
- 2 Kremers, S., Wassermann, J., Meier, K., Pelties, C., van Driel, M., **Vasseur, J.**, & Hort, M. (2013). Inverting the source mechanism of Strombolian explosions at Mt. Yasur, Vanuatu, using a multi-parameter dataset. *Journal of Volcanology and Geothermal Research*, 262, 104–122.
- 1 Lavallée, Y., Mitchell, T.M., Heap, M.J., **Vasseur, J.**, Hess, K.-U., Hirose, T., & Dingwell, D.B. (2012). Experimental generation of volcanic pseudotachylytes: Constraining rheology. *Journal of Structural Geology*, 38, 222–233.