Kurama Okubo

National Research Institute for Earth Science and Disaster Resilience (NIED), Tsukuba, Japan
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EDUCATION

2018/11	**Ph. D.***	Earth Sciences, Environments and Planets **Institut de Physique du Globe de Paris, France**
2015/03	**M. E.**	Civil and Earth Resources Engineering **Kyoto University, Japan**
2014/06	**M. S.**	Earth Sciences, Environments and Planets **Institut de Physique du Globe de Paris, France**
2013/03	**B. E.**	Global Engineering **Kyoto University, Japan**

*Advisors: Prof. Harsha S. Bhat & Prof. Yann Klinger
Co-Advisor: Prof. Esteban Rougier

RESEARCH EXPERIENCE

2020.10 - present	Postdoctoral Researcher at **NIED, Japan**
2019.01 - 2020.09	Post-Doctoral Fellow at **EPS, Harvard University**
2016.05 - 2018.12	Working at **Laboratoire de Géologie, Ecole Normale Supérieure**
2017.10 - 2017.12	Research internship at **Los Alamos National Laboratory**
2016.11 - 2016.12	Research internship at **Los Alamos National Laboratory**

GRANTS

2021.04 - 2024.03	**JSPS KAKENHI Grant-in-Aid for Early-Career Scientists ($23,000)** Localized amplification of ground motion and displacement due to co-seismic off-fault damage
2015.10 - 2018.09	**Ph.D. Funding** Contrats doctoraux Université Sorbonne Paris Cité 2015 Volant International

AWARDS

[1] 2020: Prix de Géophysique, Le Comité National Français de Géodésie et Géophysique (CNFGG)
[2] 2018: EGU Outstanding Student Poster and PICO (OSPP) Awards

REFEREED PUBLICATIONS & PAPERS IN REVIEW

[1] Okubo, K., Delbridge, B. G. & Denolle, M. A. Monitoring Velocity Change Over 20 Years at Parkfield, *J. Geophys. Res.* doi: 10.1029/2023jb028084 (2024).

[2] Takemura, S., Hamada, Y., Okuda, H., Okada, Y., Okubo, K., Akuhara, T., Noda, A. & Tonegawa, T. A review of shallow slow earthquakes along the Nankai Trough, *Earth, Planets and Space.* doi: 10.1186/s40623-023-01920-6 (2023).

[3] Yang, X., Bryan, J., Okubo, K., Jiang, C., Clements, T. & Denolle, M. A. Optimal stacking of noise cross-correlation functions, *Geophys. J. Int.* doi: 10.1093/gji/ggac410 (2022).

[4] Jara, J., Bruhat, L., Thomas, M. Y., Antoine, S. L., Okubo, K., Rougier, E., Rosakis, A. J., Sammis, C. G., Klinger, Y., Jolivet, R. & Bhat, H. S. Signature of transition to supershear rupture speed in the coseismic off-fault damage zone, eng. *Proc Math Phys Eng Sci.* doi: 10.1098/rspa.2021.0364 (2021).

[5] Jones, J. P., Okubo, K., Clements, T. & Denolle, M. A. SeisIO: A Fast, Efficient Geophysical Data Architecture for the Julia Language, *Seismol. Res. Lett.* doi: 10.1785/0220190295 (2020).

[6] Knight, E. E., Rougier, E., Lei, Z., Euser, B., Chau, V., Boyce, S. H., Gao, K., Okubo, K. & Froment, M. HOSS: an implementation of the combined finite-discrete element method, *Computational Particle Mechanics.* doi: 10.1007/s40571-020-00349-y (2020).

[7] Okubo, K., Bhat, H. S., Rougier, E., Marty, S., Schubnel, A., Lei, Z., Knight, E. E. & Klinger, Y. Dynamics, Radiation, and Overall Energy Budget of Earthquake Rupture With Coseismic Off-Fault Damage, *J. Geophys. Res.* doi: 10.1029/2019jb017304 (2019).

[8] Okubo, K. Dynamic earthquake ruptures on multiscale fault and fracture networks, PhD thesis (Institut de Physique du Globe de Paris, 2018).

[9] Klinger, Y., Okubo, K., Vallage, A., Champenois, J., Delorme, A., Rougier, E., Lei, Z., Knight, E. E., Munjiza, A., Satriano, C., *et al.* Earthquake damage patterns resolve complex rupture processes, *Geophys. Res. Lett.* doi: 10.1029/2018gl078842 (2018).

PRESENTATIONS

▸ Oral presentations

[1] Okubo, K., Yamashita, F. & Fukuyama, E. Non-self-similar scaling of laboratory earthquakes and their source mechanisms: recent progress with M-7 events, **Slow-to-Fast Earthquake Workshop in Chile** (Santiago, Chile., 2025).

[2] Okubo, K., Yamashita, F. & Fukuyama, E. Non-self-similarity of Laboratory Microearthquakes Generated by Controlled Gouge Patch **(invited)**, **AGU Fall Meeting** (Washington, D.C., USA, 2024).

[3] Okubo, K., Villafuerte, C., Rougier, E. & Bhat, H. S. Near-field strong pulse caused by the coseismic off-fault damage on the 2016 Kumamoto earthquake, **EARTHQUAKES 4th edition: Cargèse international workshop on earthquakes** (Cargèse, France, 2024).

[4] Okubo, K., Yamashita, F. & Fukuyama, E. Dynamic rupture modeling of non-self-similar seismic events generated by a controlled gouge patch, **International Joint Workshop on Slow-to-Fast Earthquakes** (Beppu, Oita, Japan, 2024).

[5] Okubo, K., Yamashita, F. & Fukuyama, E. Constraining Source Parameters of Seismic Events Generated by Circular Gouge Patches on 4-meter-long Laboratory Fault, **SSA Annual Meeting** (Anchorage, Alaska, USA, 2024).

[6] Okubo, K., Yamashita, F. & Fukuyama, E. Validation of Fiber Bragg Grating sensors for strain measurement on giant biaxial rock friction experiments, **JpGU Meeting** (Makuhari Messe, Chiba, Japan, 2024).

[7] Okubo, K., Yamashita, F. & Fukuyama, E. Foreshocks Generated by Simulated Gouge Patches on 4-meter-long Laboratory Fault, **AGU Fall Meeting** (San Francisco, CA, USA, 2023).

[8] Okubo, K., Carlos, V., Esteban, R. & Bhat, H. S. Dynamic earthquake ruptures and its radiations with off-fault fracture network in various spatial resolutions, **JpGU Meeting** (Makuhari Messe, Chiba, Japan, 2023).

[9] Okubo, K., Yamashita, F. & Fukuyama, E. Estimate the source properties of foreshocks that occurred during stick-slip experiments using the 4-meter-long biaxial rock friction apparatus **(invited)**, **AGU Fall Meeting** (Chicago, IL, 2022).

[10] Okubo, K., Yamashita, F. & Fukuyama, E. Estimation of source properties with foreshocks on a 4-meter-long laboratory fault using synthetic Green's function **(invited)**, **JpGU Meeting** (Makuhari Messe, Chiba, Japan, 2022).

[11] Okubo, K., Delbridge, B. G. & Denolle, M. A. Two decades continuous monitoring of seismic velocity change at Parkfield to identify its origins, **Joint Scientific Assembly IAGA-IASPEI 2021** (S4 CoSOI Seismic scattering, absorption, ambient noise, and monitoring Earth's structure, 2021).

[12] Okubo, K., Delbridge, B. G. & Denolle, M. A. Continuous monitoring of seismic velocity change at Parkfield towards identifying the strain accumulation, **JpGU Meeting** (2021).

[13] Okubo, K., Bhat, H. S., Rougier, E. & Denolle, M. A. Coseismic off-fault damage, its implications on the rupture dynamics, and building seismic observables, **Numerical Modeling of Earthquake Motions: Waves and Ruptures (NMEM)** (Smolenlce Castle, Slovakia, 2019).

[14] Okubo, K., Bhat, H. S. & Rougier, E. Dynamic earthquake ruptures with coseismic off-fault damage on finite faults and fault kinks, **EGU General Assembly Conference** (Vienna, Austria, 2019).

[15] Okubo, K., Bhat, H. S., Rougier, E., Lei, Z., Earl, K. E. & Klinger, Y. Dynamic fracture network around faults: implications for earthquake ruptures, ground motion and energy budget, **AGU Fall Meeting** (New Orleans, USA, 2017).

[16] Okubo, K., Bhat, H. S., Klinger, Y. & Rougier, E. Modeling dynamic earthquake rupture with coseismic off-fault damage, **IAG-IASPEI Symposia** (Kobe, Japan, 2017).

[17] Okubo, K., Bhat, H. S., Klinger, Y. & Rougier, E. Earthquake rupture modelling on complex fault systems and complex media, **6th International Conference on Coupled THMC Processes in Geosystems** (Paris, France, 2017).

[18] Okubo, K., Bhat, H. S., Klinger, Y. & Rougier, E. Modelling earthquake ruptures with dynamic off-fault damage, **EGU General Assembly Conference** (Vienna, Austria, 2017).

► Seminars

[1] Okubo, K., Yamashita, F. & Fukuyama, E. Non-self-similar scaling of laboratory earthquakes and their source mechanics, **ERC TECTONIC-FEAR Seminars on Earthquake Physics** (Online, 2025).

[2] Okubo, K., Yamashita, F. & Fukuyama, E. Dynamics of non-self-similar earthquakes identified by a controlled fault asperity, **Kyoto University** (Japan, 2024).

[3] Okubo, K., Yamashita, F. & Fukuyama, E. Dynamics of non-self-similar earthquakes identified by a controlled fault asperity, **ENS Paris** (France, 2024).

[4] Okubo, K., Yamashita, F. & Fukuyama, E. Dynamics of non-self-similar earthquakes identified by a controlled fault asperity, **Ecole des Mines de Nancy** (France, 2024).

[5] Okubo, K., Yamashita, F. & Fukuyama, E. Dynamics of non-self-similar earthquakes identified by a controlled fault asperity, **JAMSTEC** (Yokohama, Japan, 2024).

[6] Okubo, K., Delbridge, B. G. & Denolle, M. A. Monitoring seismic velocity changes in 18 years at Parkfield using ambient seismic noise, **The Deformation and Tectonics Talk (DeTect) Series, IPGP** (Online, 2021).

[7] Okubo, K. Dynamic rupture modeling and ambient seismic noise monitoring towards resolving earthquake source mechanisms, **GSPD seminar , Harvard University** (MA, USA, 2020).

[8] Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Modeling dynamic earthquake ruptures on multiscale fault and fracture networks, **Harvard University** (MA, USA, 2019).

[9] Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Dynamic earthquake rupture modelling with coseismic off-fault damage : from theory to application to the 2016 Mw 7.8 Kaikōura earthquake, **BRGM** (Orléans, France, 2018).

[10] Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Off-fault damage induced by dynamic earthquake rupture: Implications for rupture process, radiation and energy budget, **Los Alamos National Laboratory** (NM, USA, 2017).

[11] Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Evolution of secondary crack network around faults induced by dynamic earthquake rupture, **National Research Institute for Earth Science and Disaster Resilience** (Tsukuba, Japan, 2017).

[12] Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Off-fault fracture network induced by dynamic earthquake ruptures, **UMR Géoazur** (Nice, France, 2017).

[13] Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Earthquake rupture modeling on complex fault systems and complex media, **Los Alamos National Laboratory** (NM, USA, 2016).

Mentoring / Students

Undergraduate Students : 2.0-month-long research internship

▶ **Jared Bryan (2019)**, currently a PhD student at MIT
Monitoring of co-seismic damage in the 2004 Parkfield earthquake using the ambient seismic field (co-advised with Prof. M. A. Denolle)

REVIEWING ACTIVITIES

Journal of Geophysical Research: Solid Earth
Tectonics
Geophysical research letters
Geophysical Journal International
Computational Particle Mechanics
Earth, planets and space
Nature communications
Scientific Reports

COMPUTER SKILLS

Languages & Software: C/C++, Fortran90/95, Julia, Python, Matlab, Cubit (Trelis).

LANGUAGES

English (Fluently), French (Basic), Japanese (Native).

Last Modified Thursday 17th April, 2025