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 : Dr. Harsha S. Bhat & Dr. Yann Klinger
Co-Advisor: Dr. 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**

RESEARCH INTEREST

Continuous monitoring of ambient seismic noise; Earthquake source physics;
Modeling of fracturing problem using the combined-finite discrete element method (FDEM).

GRANTS

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 & IN PREPARATION

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

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

[3] 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.* (2019).

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

[5] Klinger, Y., Okubo, K., Vallage, A., Champenois, J., Delorme, A., Rougier, E., Lei, Z., Knight, E. E., Munjiza, A., Satriano, C., Baize, S., Langridge, R. & Bhat, H. S. Earthquake damage patterns resolve complex rupture processes, *Geophys. Res. Lett.* (2018).

PRESENTATIONS

► Oral presentations

[1] 2023. 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).

[2] 2022. 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, **AGU Fall Meeting** (Chicago, IL, 2022).

[3] 2022. Okubo, K., Yamashita, F. & Fukuyama, E. Estimation of source properties with foreshocks on a 4-meter-long laboratory fault using synthetic Green's function, **JpGU Meeting** (Makuhari Messe, Chiba, Japan, 2022).

[4] 2021. 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** (Online, 2021).

[5] 2021. Okubo, K., Delbridge, B. G. & Denolle, M. A. Continuous monitoring of seismic velocity change at Parkfield towards identifying the strain accumulation, **JpGU Meeting** (Online, 2021).

[6] 2019. 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).

[7] 2019. 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).

[8] 2017. 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).

[9] 2017. Okubo, K., Bhat, H. S., Klinger, Y. & Rougier, E. Modeling dynamic earthquake rupture with coseismic off-fault damage, **IAG-IASPEI Symposia** (Kobe, Japan, 2017).

[10] 2017. 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).

[11] 2017. Okubo, K., Bhat, H. S., Klinger, Y. & Rougier, E. Modelling earthquake ruptures with dynamic off-fault damage, **EGU General Assembly Conference** (Vienna, Austria, 2017).

► Poster presentations

[12] 2021. Okubo, K., Yamashita, F. & Fukuyama, E. Wave propagation modeling to identify source characteristics of seismic events on a 4-meter-long laboratory fault, **AGU Fall Meeting** (Online, New Orleans, 2021).

[13] 2021. Okubo, K., Fukuyama, E. & Yamashita, F. Modeling of wave propagation in 4m biaxial rock friction apparatus for Green's functions of AE events on the fault, **JpGU Meeting** (Online, 2021).

[14] 2020. Okubo, K., Delbridge, B. G. & Denolle, M. A. Tectonic origins of seismic velocity changes inferred from ambient seismic noise in 18 years at Parkfield, **AGU Fall Meeting** (Online, 2020).

[15] 2019. Okubo, K., Rougier, E., Bhat, H. S. & Denolle, M. A. Modeling dynamic earthquake ruptures with coseismic off-fault damage to build seismic observables, **AGU Fall Meeting** (San Francisco, CA, 2019).

[16] 2019. Okubo, K., Bhat, H. S., Rougier, E. & Denolle, M. A. Towards identifying its seismic observables in models of coseismic off-fault damage, **MCS Megathrust Workshop** (Eugene, OR, 2019).

[17] 2019. Bryan, J., Okubo, K., Yuan, C. & Denolle, M. A. Monitoring changes in elastic properties due to dynamic earthquake ruptures using ambient seismic noise and off-fault damage modelling, **summer school - Passive Imaging** (Cargese, France, 2019).

[18] 2019. Okubo, K., Bhat, H. S., Rougier, E. & Denolle, M. A. Towards identifying its seismic observables in models of coseismic off-fault damage, **SCEC annual meeting** (Palm Springs, CA, 2019).

[19] 2018. Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Radiation and overall energy budget of earthquake ruptures with secondary dynamic fracturing in off-fault medium, **AGU Fall Meeting** (Washington, D.C., USA, 2018).

[20] 2018. Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. The role of off-fault damage in rupture dynamics, radiation and overall energy budget, **International School of Physics, Enrico Fermi, "Mechanics of Earthquake Faulting"** (Varenna, Italy, 2018).

[21] 2018. Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Off-fault fracture network induced by dynamic earthquake rupture, **50 Years of Plate Tectonics: Then, Now, and Beyond** (Collège de France, Grand Amphithéâtre, Paris, France, 2018).

[22] 2018. Okubo, K., Bhat, H. S., Klinger, Y. & Rougier, E. Overall energy budget of earthquake rupture with dynamically generated off-fault crack network, **EGU General Assembly Conference** (Vienna, Austria, 2018).

[23] 2018. Okubo, K., Bhat, H. S., Rougier, E., Vallage, A., Champenois, J. & Klinger, Y. Distributed deformation field due to coseismic off-fault damage of Mw 7.8 Kaikoura earthquake, **EGU General Assembly Conference** (Vienna, Austria, 2018).

▶ **Seminars**

[24] 2021. Okubo, K. Monitoring seismic velocity changes in 18 years at Parkfield using ambient seismic noise, **The Deformation and Tectonics Talk (DeTect) Series, IPGP** (Online, 2021).

[25] 2020. Okubo, K. Dynamic rupture modeling and ambient seismic noise monitoring towards resolving earthquake source mechanisms, **GSPD seminar , Harvard University** (MA, USA, 2020).

[26] 2019. Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Modeling dynamic earthquake ruptures on multiscale fault and fracture networks, **BiSEPPS Seminar, Harvard University** (MA, USA, 2019).

[27] 2018. 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).

[28] 2017. 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).

[29] 2017. 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).

[30] 2017. Okubo, K., Bhat, H. S., Rougier, E. & Klinger, Y. Off-fault fracture network induced by dynamic earthquake ruptures, **UMR Géoazur** (Nice, France, 2017).

[31] 2016. 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) 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
Geophysical research letters
Geophysical Journal International
Computational Particle Mechanics
Nature communications

COMPUTER SKILLS

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

LANGUAGES

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