

Ryo Okuwaki

Institute of Life and Environmental Sciences,
University of Tsukuba

Contact

1-1-1 Ten'nodai, Tsukuba, Ibaraki 305-8572 Japan
<https://www.geol.tsukuba.ac.jp/~rokuwaki/>
<https://trios.tsukuba.ac.jp/en/researcher/0000004310>
 rokuwaki@geol.tsukuba.ac.jp

Positions

Assistant professor University of Tsukuba	04/2023–
International Tenure Track assistant professor University of Tsukuba	06/2019–03/2023
Research Fellow (PD) Japan Society for the Promotion of Science Geological Survey of Japan, AIST / Mentor: Takahiko Uchide	04/2019–06/2019
Research Fellow (DC1) Japan Society for the Promotion of Science University of Tsukuba / Mentor: Yuji Yagi	04/2016–03/2019
Visiting Scholar University of California, San Diego / Mentor: Wenyan Fan	11/2022–12/2022
Visiting Professor University of Leeds / Mentor: Tim Wright	03/2020–03/2022
Cooperative Research Fellow Geological Survey of Japan, AIST	09/2019–03/2020
Visiting Scholar Florida State University / Mentor: Wenyan Fan	09/2019–12/2019
Visiting Scholar University of California, Los Angeles / Mentor: Lingsen Meng	09/2016–10/2016

Grants

JSPS Grant-in-Aid for Scientific Research (B) (PI) What rocks the Earth? Unearthing non-earthquake sources from noise (24K00726) Budget amount: 12,870,000 JPY (Direct cost: 9,900,000 JPY, Indirect cost: 2,970,000 JPY)	2024-04-01 – 2028-03-31
Publicly Offered Research in JSPS Grant-in-Aid for Transformative Research Areas (A) “Science of Slow-to-Fast Earthquakes” (PI) Exploring slow-to-fast earthquake transition phenomena using a data-driven strategy (24H01020) Budget amount: 4,030,000 JPY (Direct cost: 3,100,000 JPY, Indirect cost: 930,000 JPY)	2024-04-01 – 2026-03-31
ERI Joint Research program (coordinator) Earthquake Research Institute, the University of Tokyo “Source Inversion Workshop” (2024-W-02)	2024-04-01 – 2025-03-31

ERI Joint Research program (Principal coordinator)	2023-04-01 – 2024-03-31
Earthquake Research Institute, the University of Tokyo	
“Source Inversion Workshop” (2023-W-04)	
ERI Joint Research program (Principal coordinator)	2022-04-01 – 2023-03-31
Earthquake Research Institute, the University of Tokyo	
“Source Inversion Workshop” (2022-W-03)	
JSPS Grant-in-Aid for Scientific Research(C) (Co-PI)	2021-04-01 – 2025-03-31
Development of geodetic data analysis and viscoelasticity data assimilation toward robust detection and forecast of postseismic deformation (21K03694)	
Budget amount: 4,160,000 JPY (Direct cost: 3,200,000 JPY, Indirect cost: 960,000 JPY)	
JSPS Grant-in-Aid for Early-Career Scientists (PI)	2020-04-01 – 2024-03-31
Unraveling unconventional seismic sources using dense seismic arrays (20K14570)	
Budget amount: 3,770,000 JPY (Direct cost: 2,900,000 JPY, Indirect cost: 870,000 JPY)	
Grant-in-Aid for JSPS Fellows (PI)	2019-04-01 – 2022-03-31*
Rupture evolution during the mega and large earthquakes resolved by multi-scale source analyses (19J00814)	
Budget amount: 4,420,000 JPY (Direct cost: 3,400,000 JPY, Indirect cost: 1,020,000 JPY)	
*Budgets for FY2020 and FY2021 have been declined due to resignation of JSPS fellow to accept tenure-track position at University of Tsukuba	
Grant-in-Aid for JSPS Fellows (PI)	2016-04-01 – 2019-03-31
Irregular rupture evolution during the large/great earthquakes: resolved by high-frequency radiation sources and co-seismic slip distribution (16J00298)	
Budget amount: 2,500,000 JPY (Direct cost: 2,500,000 JPY, Indirect cost: 0 JPY)	
Young Researcher Travel Support	2018
10th ACES (APEC Cooperation for Earthquake Science) International Workshop, Awaji Island Japan, ACES	
Travel Grant	2015
The 3rd international summer school on Earthquake Science, Lake-Yamanaka Japan, Earthquake Research Institute of the University of Tokyo and Southern California Earthquake Center	
Travel Grant	2014
The 2014 VISES Summer School, Oxnard CA, Southern California Earthquake Center and Earthquake Research Institute of the University of Tokyo	
Travel Grant	2014
The 2014 Annual Meeting of Seismological Society of America, Anchorage Ak, Seismological Society of Japan	

Education

Ph.D. (Science), University of Tsukuba	03/2019
M.Sc. (Science), University of Tsukuba	03/2016
B.Sc. (Science), University of Tsukuba	03/2014

Awards

2022 Young Scientist Award of the Seismological Society of Japan	2023
2022 Young Faculty Award, University of Tsukuba	2022
AGU 2021 Editors' Citation for Excellence in Refereeing - JGR-Solid Earth	2022
Excellent Reviewers for 2020, Earth, Planets and Space	2021
President Prize, University of Tsukuba	2019
Outstanding Student Presentation Award, JpGU Meeting 2018	2018
Outstanding reviewer, Earth and Planetary Science Letters	2018
Best Student Award, Doctoral Program in Earth Science Evolution, Univ. Tsukuba	2017

Outstanding Student Presentation Award, JpGU-AGU Joint Meeting 2017	2017
Best Poster Presentation Award, Tsukuba Global Science Week 2015	2015
Outstanding Student Presentation Awards, Seismol. Soc. of Japan 2014 Fall Meeting	2014
Outstanding Student Award (Provost Prize), University of Tsukuba	2014

Service

Journal editor

Seismica - Editorial Board member, Editor of <i>Fast Reports</i>	2022–
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Journal referee

Earth and Planetary Science Letters, Earth, Planets and Space, Geophysical Journal International, Geophysical Research Letters, Journal of Asian Earth Sciences, Journal of Geophysical Research - Solid Earth, Nature Geoscience, Progress in Earth and Planetary Science, Physics of the Earth and Planetary Interiors, Proceedings of the Japan Academy Series B, Pure and Applied Geophysics, Seismica, Scientific Reports, Tectonophysics

Conference convener

- JpGU, S-SS05: Fault Rheology and Earthquake Physics	2024
- JpGU, S-SS06: Fault Rheology and Earthquake Physics	2023
- AGU, S12B/S13A/S14A/S15C: Advancements in imaging earthquake source processes	2022
- JpGU, S-SS07: Fault Rheology and Earthquake Physics	2022
- JpGU, U-07: Study abroad during the COVID-19 pandemic	2022
- AGU, S036/S037/S042/S043: Modeling and imaging complex earthquake ruptures	2020
- AGU, S42B/S51E: Resolving the complexity of earthquake processes	2019
- JpGU, S-CG50: Intralab and intraplate earthquakes	2019
- AGU, S41A/S42A/S43C: Earthquake Source Physics: Unified perspectives from Kinematic Source Imaging, Physics-based Modeling, Laboratory Experiments, and Earthquake Geology	2018

Organizer

- Source Inversion Workshop Earthquake Research Institute, the University of Tokyo, Joint Research Program https://rokuwaki.github.io/SIW/	2022–2024
- SOLIST (SOLId-earth Seminar of Tsukuba) seminar series https://www.geol.tsukuba.ac.jp/~rokuwaki/solist/	2021–

Research interests

Geophysics, Seismology, Earthquake seismology, Earthquake-source kinematics and physics, Earthquake source imaging (backprojection, finite-fault modeling), Earth's subsurface phenomena, Environmental seismology, Array seismology

Invited talks

IGPP Seminar Series 2022, SIO, UCSD, San Diego CA	2022
Envisioning the Future of Geophysics: A Celebration of the Centennial of the Seismological Laboratory, Caltech, Pasadena CA	2022
American Geophysical Union Fall Meeting 2021, S44C-04, New Orleans LA (online)	2021
Imperial College London, Earth and planets seminars, London UK (online)	2021
JpGU Meeting 2018, Session: Intralab and intraplate earthquake, Chiba JP	2018
SCEC-ERI, The 3rd international summer school on Earthquake Science, Yamanashi JP	2015

Publications

41. **Okuwaki, R.**, Yagi, Y., Murakami, A., & Fukahata, Y., A Multiplex Rupture Sequence under Complex Fault Network due to Preceding Earthquake Swarms during the 2024 Mw 7.5 Noto Peninsula, Japan, Earthquake. *Geophysical Research Letters*,

51, e2024GL109224, June 2024.

doi:10.1029/2024GL109224

40. Yagi, Y., **Okuwaki, R.**, Hirano, S., Enescu, B., Chikamori, M., & Yamaguchi, R., Barrier-induced rupture front disturbances during the 2023 Morocco earthquake. *Seismological Research Letters*, , 1–8, January 2024.
doi:10.1785/0220230357
39. Ohara, K., Yagi, Y., & **Okuwaki, R.**, Complex rupture evolution of the 2007 Martinique earthquake: a non-double-couple event in the Caribbean Sea. *Geophysical Journal International*, 236, 1743–1752, March 2024.
doi:10.1093/gji/ggae024
38. Ohara, K., Yagi, Y., Yamashita, S., **Okuwaki, R.**, Hirano, S., & Fukahata, Y., Complex evolution of the 2016 Kaikoura earthquake revealed by teleseismic body waves. *Progress in Earth and Planetary Science*, 10, 1–12, July 2023.
doi:10.1186/s40645-023-00565-z
37. **Okuwaki, R.**, Yagi, Y., Taymaz, T., & Hicks, S. P., Multi-scale rupture growth with alternating directions in a complex fault network during the 2023 south-eastern Türkiye and Syria earthquake doublet. *Geophysical Research Letters*, 50, e2023GL103480, June 2023.
doi:10.1029/2023GL103480
36. Yagi, Y., **Okuwaki, R.**, Enescu, B., & Lu, J., Irregular Rupture Process of the 2022 Taitung, Taiwan, Earthquake Sequence. *Scientific Reports*, 13, 1107, January 2023.
doi:10.1038/s41598-023-27384-y
35. Fang, J., Ou, Q., Wright, T. J., **Okuwaki, R.**, Amey, R., Craig, T. J., Elliott, J. R., Hooper, A. J., Lazecky, M., & Maghsoudi, Y., Earthquake Cycle Deformation Associated with the 2021 Mw 7.4 Maduo (Eastern Tibet) Earthquake: An Intrablock Rupture Event on a Slow-Slipping Fault from Sentinel-1 InSAR and Teleseismic Data. *Journal of Geophysical Research: Solid Earth*, 127, 1–30, November 2022.
doi:10.1029/2022JB024268
34. Rowe, C. D., Agius, M., Convers, J., Funning, G., Galasso, C., Hicks, S., Huynh, T., Lange, J., Lecocq, T., Mark, H., **Okuwaki, R.**, Ragon, T., Rychert, C., Teplitzky, S., & van den Ende, M. The Launch of Seismica: a seismic shift in publishing. *Seismica* (non-peer reviewed article), 1, 1–14, November 2022.
doi:10.26443/seismica.v1i1.255
33. **Okuwaki, R.**, Chasing supershear earthquakes. *Nature Geoscience* (non-peer reviewed News & Views article), 15, 863–864, October 2022.
doi:10.1038/s41561-022-01054-6
32. Yamashita, S., Yagi, Y., **Okuwaki, R.**, Shimizu, K., Agata, R., & Fukahata, Y., Potency density tensor inversion of complex body waveforms with time-adaptive smoothing constraint. *Geophysical Journal International*, 231, 91–107, May 2022.
doi:10.1093/gji/ggac181
31. Tadapansawut, T., Yagi, Y., **Okuwaki, R.**, Yamashita, Y., & Shimizu, K., Complex rupture process on the conjugate fault system of the 2014 Mw 6.2 Thailand earthquake. *Progress in Earth and Planetary Science*, 9, 1–13, April 2022.
doi:10.1186/s40645-022-00484-5
30. Yamashita, S., Yagi, Y., & **Okuwaki, R.**, Irregular rupture propagation and geometric fault complexities during the 2010 El Mayor-Cucapah earthquake. *Scientific Reports*, 12, 4575, March 2022.
doi:10.1038/s41598-022-08671-6
29. Fan, W., Barbour, A. J., McGuire J. J., Huang, Y., Lin, G., Cochran, E. S., & **Okuwaki, R.**, Very low frequency earthquakes in between the seismogenic and tremor zones in Cascadia? *AGU Advances*, 3, e2021AV000607, March 2022.
doi:10.1029/2021AV000607

28. Fan, W., **Okuwaki, R.**, Barbour, A. J., Huang, Y., Lin, G., & Cochran, E. S., Fast rupture of the 2009 Mw 6.9 Canal de Ballenas earthquake in the Gulf of California dynamically triggers seismicity in California. *Geophysical Journal International*, 230, 528–541, February 2022.
doi:10.1093/gji/ggac059
27. **Okuwaki, R.**, & Fan, W., Oblique convergence causes both thrust and strike-slip ruptures during the 2021 M 7.2 Haiti earthquake. *Geophysical Research Letters*, 49, e2021GL096373, January 2022.
doi:10.1029/2021GL096373
26. **Okuwaki, R.**, Hicks, S. P., Craig, T. J., Fan, W., Goes, S., Wright, T. J., & Yagi, Y., Illuminating a Contorted Slab with a Complex Intraslab Rupture Evolution during the 2021 Mw 7.3 East Cape, New Zealand Earthquake, *Geophysical Research Letters*, 48, e2021GL095117, December 2021.
doi:10.1029/2021GL095117
25. Hu, Y., Yagi, Y., **Okuwaki, R.**, & Shimizu, K., Back-propagating rupture evolution within a curved slab during the 2019 Mw 8.0 Peru intraslab earthquake, *Geophysical Journal International*, 223, 1602–1611, December 2021.
doi:10.1093/gji/ggab303
24. **Okuwaki, R.**, Fan, W., Yamada, M., Osawa, H., & Wright, T. J., Identifying landslides from continuous seismic surface waves: a case study of multiple small-scale landslides triggered by Typhoon Talas, 2011, *Geophysical Journal International*, 226, 729–741, August 2021.
doi:10.1093/gji/ggab129
23. Heidarzadeh, M., Pranantyo, I. R., **Okuwaki, R.**, Dogan, G. G., & Yalciner, A. C., Long tsunami oscillations following the 30 October 2020 Mw 7.0 Aegean Sea earthquake: Observations and modelling, *Pure and Applied Geophysics*, 178, 1531–1548, May 2021.
doi:10.1007/s00024-021-02761-8
22. Yamashita, S., Yagi, Y., **Okuwaki, R.**, Shimizu, K., Agata, R., & Fukahata, Y., Consecutive Ruptures on a Complex Conjugate Fault System During the 2018 Gulf of Alaska Earthquake, *Scientific Reports*, 11, 1–11, March 2021.
doi:10.1038/s41598-021-85522-w
21. Shimizu, K., Yagi, Y., **Okuwaki, R.**, & Fukahata, Y., Construction of fault geometry by finite-fault inversion of teleseismic data, *Geophysical Journal International*, 224, 1003–1014, February 2021.
doi:10.1093/gji/ggaa501
20. Tadapansawut, T., **Okuwaki, R.**, Yagi, Y., & Yamashita, S., Rupture Process of the 2020 Caribbean Earthquake along the Oriente Transform Fault, Involving Supershear Rupture and Geometric Complexity of Fault, *Geophysical Research Letters*, 48, 1–9, January 2021.
doi:10.1029/2020GL090899
19. **Okuwaki, R.**, Hirano, S., Yagi, Y., & Shimizu, K., Inchworm-like source evolution through a geometrically complex fault fueled persistent supershear rupture during the 2018 Palu Indonesia earthquake, *Earth and Planetary Science Letters*, 547, 116449 (1–8), October 2020.
doi:10.1016/j.epsl.2020.116449
18. Hicks, S., **Okuwaki, R.**, Steinberg, A., Rychert, C., Harmon, N., Abercrombie, R., Bogiatzis, P., Schlaphorst, D., Zahradník, J., Kendall, J.-M., Yagi, Y., Shimizu, K., & Sudhaus, H., Back-propagating supershear rupture in the 2016 Mw 7.1 Romanche transform fault earthquake, *Nature Geoscience*, 13, 647–653, September 2020.
doi:10.1038/s41561-020-0619-9

17. Takemura, S., **Okuwaki, R.**, Kubota, T., Shiomi, K., Kimura, T., & Noda, A., Centroid moment tensor inversions of offshore earthquakes using a three-dimensional velocity structure model: Slip distributions on the plate boundary along the Nankai Trough, *Geophysical Journal International*, 220, 1109–1125, August 2020.
doi:10.1093/gji/ggaa238
16. Aránguiz, R., Esteban, M., Takagi, H., Mikami, T., Takabatake, T., Gomez, M., Gonzalez, J., Shibayama, T., **Okuwaki, R.**, Yagi, Y., Shimizu, K., Achiari, H., Stolle, J., Robertson, I., Ohira, K., Nakamura, R., Nishida, Y., Krautwald, C., Goseberg, N., & Nistor, I., The 2018 Sulawesi tsunami in Palu city as a result of several landslides and coseismic tsunamis, *Coastal Engineering Journal*, 0, 1–15, June 2020.
doi:10.1080/21664250.2020.1780719
15. Shimizu, K., Yagi, Y., **Okuwaki, R.**, & Fukahata, Y., Development of an inversion method to extract information on fault geometry from teleseismic data, *Geophysical Journal International*, 220, 1055–1065, February 2020.
doi:10.1093/gji/ggz496
14. Hirano, S., & **Okuwaki, R.**, Note on “Backprojection to image slip”, *OSF preprint* (non-peer reviewed article), September 2020.
doi:10.17605/osf.io/pb7hk
13. **Okuwaki, R.**, Kasahara, A., Yagi, Y., Hirano, S., & Fukahata, Y., Backprojection to image slip, *Geophysical Journal International*, 216, 1529–1537, March 2019.
doi:10.1093/gji/ggy505
12. Aránguiz, R., Urrea, L., **Okuwaki, R.**, & Yagi, Y., Development and application of a tsunami fragility curve of the 2015 tsunami in Coquimbo, Chile, *Natural Hazards and Earth System Sciences*, 18, 2143–2160, August 2018.
doi:10.5194/nhess-18-2143-2018
11. **Okuwaki, R.**, & Yagi, Y., Role of geometric barriers in irregular-rupture evolution during the 2008 Wenchuan earthquake, *Geophysical Journal International*, 212, 1657–1664, March 2018.
doi:10.1093/gji/ggx502
10. **Okuwaki, R.**, & Yagi, Y., Rupture Process During the Mw 8.1 2017 Chiapas Mexico Earthquake: Shallow Intraplate Normal Faulting by Slab Bending, *Geophysical Research Letters*, 44, 11816–11823, December 2017.
doi:10.1002/2017GL075956
9. Miyakawa, A., Sumita, T., Okubo, Y., **Okuwaki, R.**, Otsubo, M., Uesawa, S., & Yagi, Y., Volcanic magma reservoir imaged as a low-density body beneath Aso volcano that terminated the 2016 Kumamoto earthquake rupture, *Earth, Planets and Space*, 68, 9 pages, December 2016.
doi:10.1186/s40623-016-0582-2
8. Yagi, Y., **Okuwaki, R.**, Enescu, B., Kasahara, A., Miyakawa, A., & Otsubo, M., Rupture process of the 2016 Kumamoto earthquake in relation to the thermal structure around Aso volcano, *Earth, Planets and Space*, 68, 6 pages, July 2016.
doi:10.1186/s40623-016-0492-3
7. **Okuwaki, R.**, Yagi, Y., Aránguiz, R., González, J., & González, G., Rupture Process During the 2015 Illapel, Chile Earthquake: Zigzag-Along-Dip Rupture Episodes, *Pure and Applied Geophysics*, 173, 1011–1020, April 2016.
doi:10.1007/s00024-016-1271-6
6. Mai, P. M., Schorlemmer, D., Page, M., Ampuero, J., Asano, K., Causse, M., Custodio, S., Fan, W., Festa, G., Galis, M., Galovic, F., Imperatori, W., Käser, M., Malytskyy, D., **Okuwaki, R.**, Pollitz, F., Passone, L., Razafindrakoto, H. N. T., Sekiguchi, H., Song, S. G., Somala, S. N., Thingbaijam, K. K. S., Twardzik, C., van Driel, M., Vyas, J. C., Wang, R., Yagi, Y., & Zielke, O., The Earthquake-Source Inversion Validation

(SIV) Project, *Seismological Research Letters*, 87, 690–708, April 2016.
doi:10.1785/0220150231

5. Aránguiz, R., González, G., González, J., Catalán, P. A., Cienfuegos, R., Yagi, Y., **Okuwaki, R.**, Urrea, L., Contreras, K., Del Rio, I., & Rojas, C., The 16 September 2015 Chile Tsunami from the Post-Tsunami Survey and Numerical Modeling Perspectives, *Pure and Applied Geophysics*, 173, 333–348, February 2016.
doi:10.1007/s00024-015-1225-4
4. Yagi, Y., & **Okuwaki, R.**, Integrated seismic source model of the 2015 Gorkha, Nepal, earthquake, *Geophysical Research Letters*, 42, 6229–6235, August 2015.
doi:10.1002/2015GL064995
3. Yagi, Y., **Okuwaki, R.**, Enescu, B., & Fukahata, Y., Unusual low-angle normal fault earthquakes after the 2011 Tohoku-oki megathrust earthquake, *Earth, Planets and Space*, 67, 7 pages, June 2015.
doi:10.1186/s40623-015-0271-6
2. **Okuwaki, R.**, Yagi, Y., & Hirano, S., Relationship between High-frequency Radiation and Asperity Ruptures, Revealed by Hybrid Back-projection with a Non-planar Fault Model, *Scientific Reports*, 4, 6 pages, November 2014.
doi:10.1038/srep07120
1. Yagi, Y., **Okuwaki, R.**, Enescu, B., Hirano, S., Yamagami, Y., Endo, S., & Komoro, T., Rupture process of the 2014 Iquique Chile earthquake in relation with the foreshock activity, *Geophysical Research Letters*, 41, 4201–4206, June 2014.
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