Yo Fukushima

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EDUCATION

2005	PhD Degree (Volcanology), Université Blaise Pascal, France. Subject: Mechanisms of magma transfer at Piton de la Fournaise volcano from 3D modelling of deformation fields - The 1998–2000 eruptions.
2000	Master of Science (Geophysics), Tohoku University, Sendai, Japan. Subject: Laboratory study on scattering characteristics of shear waves in rock samples.
1998	Bachelor of Science (Geophysics), Tohoku University, Sendai, Japan.

JOB HISTORY

Sep 2016–present	Associate Professor at International Research Institute of Disaster Science, Tohoku University.
Feb 2013–Aug 2016	Leading university research administrator at URA center, Office of Research Promotion, Tohoku University.
Apr 2006–Jan 2013	Assistant professor at Research Center for Earthquake Prediction, Disaster Prevention Research Institute, Kyoto University.
Nov 2008–Oct 2010	Visiting scholar at Department of Geophysics, Stanford University.
Jan 2006–Mar 2006	Postdoctoral researcher of Centre National d'Etudes Spatiales (France) at Laboratoire Magmas et Volcans, Clermont-Ferrand, France. Modelling of crustal deformation data at Piton de la Fournaise volcano.
Nov 2000–Aug 2002	Seismic, hydroacoustic and infrasound associate analyst at CTBTO at Vienna, Austria. Mainly involved in locating events (natural earthquakes, mining blasts, etc.) around the world, by picking phases and computing arriving directions of the phases.
Mar 2000–Aug 2000	Trainee for a seismic, hydroacoustic and infrasound analyst at the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) at Vienna, Austria.
Feb 1999–Mar 1999	Temporary researcher of Geological Survey of Japan. Performing laboratory experiments in the framework of my master's thesis on seismic wave scattering.

EXPERTISE and MAIN RESEARCH THEMES

- Expertise: Crustal Deformation (Geodesy, Seismology, Volcanology)
- InSAR (Synthetic Aperture Radar Interferometry): Detection of crustal deformation on targets including coseismic deformation, small deformation around active faults, volcanoes, landslides
- Modeling of crustal deformation: Analytical and numerical computation of crustal deformation, inverse problems, data analysis
- Disaster risk reduction through intervention and education

AWARDS

2004 Prominent student presentation award, Geodetic Society of Japan

2011 Research award, Volcanological Society of Japan

PUBLICATION

Yoshida, K., R. Takagi, Y. Fukushima, R. Ando, Y. Ohta, and Y. Hiramatsu (2024), Role of a hidden fault in the early process of the 2024 Mw7.5 Noto Peninsula earthquake, *Geophys. Res. Lett.* 51, e2024GL110993. https://doi.org/10.1029/2024GL110993.

Raimbault, B., R. Jolivet, E. Calais, S. Symithe, Y. Fukushima, and P. Dubernet (2023), Rupture geometry and slip distribution of the Mw 7.2 Nippes earthquake, Haiti, from space geodetic data, *Geochemistry, Geophysics, Geosystems* 24, e2022GC010752. https://doi.org/10.1029/2022GC010752.

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Hirano, K., Y. Fukushima, H. Maruya, M. Kido, and M. Sugiura (2023), The anticipated Nankai Trough earthquake and tsunami in Japan: Determinant factors of residents pre-event evacuation intentions, *J. Disaster Research* 18(3), 233-245.

Nakano, T., S. Fujiwara, A. Miyajima, and Y. Fukushima (2023), Evaluation of earthquake-induced deformation of reclaimed land using synthetic aperture radar interferometry, Structure from Motion and Multi-view Stereo technology, *J. Japan. Geotech. Soc.* 71, 30-34, in Japanese.

Sailellah, S. N., and Y. Fukushima (2023), Comparison of tropospheric delay correction methods for InSAR analysis using a mesoscale meteorological model: a case study from Japan, *Earth Planets Space* 75, 115, https://doi.org/10.1186/s40623-023-01773-z.

Fukushima, Y., T. Nishikawa, and Y. Kano (2023), High probability of successive occurrence of Nankai megathrust earthquakes, *Scientific Reports*, 13, 63, https://doi.org/10.1038/s41598-022-26455-w.

Miyajima, A., Y. Fukushima, T. Nakano, and S. Fujiwara (2022), Deformation of reclaimed valleys in Sendai during the 2011 off the Pacific Coast of Tohoku Earthquake detected by InSAR and its background factors, *J. Japan Soc. Natural Disaster Sci.*, 41 Special Issue, 19-35, in Japanese with English abstract.

Calais, E., S. Symithe, T. Monfret, B. Delouis, A. Lomax, F. Courboulex, J. P. Ampuero, P. E. Lara, Q. Bletery, J. Chèze, F. Peix, A. Deschamps, B. de Lépinay, B. Raimbault, R. Jolivet, S. Paul, S. St Fleur, D. Boisson, Y. Fukushima, Z. Duputel, L. Xu, and L. Meng (2022), Citizen Seismology Helps Decipher the 2021 Haiti Earthquake, *Science*, 376 (6590), 283-287.

Ghayournajarkar, N., and Y. Fukushima (2022), Using InSAR for evaluating the accuracy of locations and focal mechanism solutions of local earthquake catalogues, *Geophys. J. Int.*, 230, 607-622.

Ohtani, R., M. Hyodo, Y. Hayashi, M. Hashimoto, T. Hori, N. Kawabata, K. Kumamoto, T. Iwata, T. Yokota, K. Tanihara, S. Irie, and Y. Fukushima (2021), Development of a scenario method to identify potential problems associated with the issuance of the Nankai Trough Earthquake Information, *J. Japan Assoc. Earthq. Eng.*, 21(2), 34-56, in Japanese with English abstract.

Ishimura, D., H. Tsutsumi, S. Toda, Y. Fukushima, Y. Kumahara, N, Takahashi, T. Ichihara, and K. Takada (2021), Repeated triggered ruptures on a distributed secondary fault system: an example from the 2016 Kumamoto earthquake, southwest Japan, *Earth Planets Space, 73*, 39, https://doi.org/10.1186/s40623-021-01371-x.

Fukushima, Y., and D. Ishimura (2020), Characteristics of secondary-ruptured faults in the Aso Caldera triggered by the 2016 Mw 7.0 Kumamoto earthquake, *Earth Planets and Space, 72*, 175, https://doi.org/10.1186/s40623-020-01306-y.

Dianala, J. D. B., R. Jolivet, M. Y. Thomas, Y. Fukushima, B. Parsons, and R. Walker (2020), The relationship between seismic and aseismic slip on the Philippine Fault on Leyte Island: Bayesian modeling of fault slip and geothermal subsidence, *j. Geophys. Res.: Solid Earth, 125*, e2020JB020052, https://doi.org/10.1029/2020JB020052.

Ghayournajarkar, N., and Y. Fukushima (2020), Determination of the dipping direction of a blind reverse fault from InSAR: case study on the 2017 Sefid Sang earthquake, northeastern Iran, *Earth Planets and Space, 72*, 64, doi:10.1186/s40623-020-01190-6.

Fukushima, Y., M. Hashimoto, M. Miyazawa, N. Uchida, and T. Taira (2019), Surface creep rate distribution along the Philippine fault, Leyte Island, and possible repeating of Mw∼6.5 earthquakes on an isolated locked patch, *Earth Planets and Space, 71*, 118, doi:10.1186/s40623-019-1096-5.

Fukushima, Y., S. Toda, S. Miura, D. Ishimura, J. Fukuda, T. Demachi, and K. Tachibana (2018), Extremely early recurrence of intraplate fault rupture following the Tohoku-Oki earthquake, *Nature Geoscience, 11*, 777–781, doi:10.1038/s41561-018-0201-x.

Conway, S., C. Wauthier, Y. Fukushima, and M. Poland (2018), A retrospective look at the February 1993 east rift zone intrusion at Kilauea volcano, Hawaii, *J. Volcanol. Geotherm. Res.*, doi:10.1016/j.jvolgeores.2018.05.017.

Feng, W., Z. Li, J. R. Elliott, Y. Fukushima, T. Hoey, A. Singleton, R. Cook, and Z. Xu (2014), The 2011 Mw 6.8 Burma earthquake: Fault constraints provided by multiple SAR techniques, *Geophys. J. Int., 195*, 650–660, doi:10.1093/gji/ggt254.

Ishitsuka, K., Y. Fukushima, T. Tsuji, Y. Yamada, T. Matsuoka, and P.H. Giao (2014), Natural surface rebound of the Bangkok plain and aquifer characterization by persistent scatterer interferometry, *Geochemistry, Geophysics, Geosystems, 15*, 965–974, doi:10.1002/2013GC005154.

Takada, Y., and Y. Fukushima (2014), Volcanic subsidence triggered by megathrust earthquakes, *Journal of Disaster Research, 9*, 373–380.

Hashimoto, M., M. Furuya, T. Ozawa, and Y. Fukushima (2013), Perspectives of crustal deformation research in Japan with synthetic aperture radar, *J. Geod. Soc. Japan, 59*, 119–132.

Takada, Y.*, and Y. Fukushima* (2013), Volcanic subsidence triggered by the 2011 Tohoku earthquake in Japan, *Nature Geoscience, 6*, 637-641, doi: 10.1038/NGEO1857. (* These authors contributed equally to this work.)

Luo, X.-W., Sun, J.-B., Shen, Z.-K., Fukushima, Y. (2013), Co-seismic slip distribution of 2010 Darfield, New Zealand Mw7.1 earthquake inverted using InSAR measurements, *Chinese Journal of Geophysics (Acta Geophysica Sinica), 56*, 2613-2624, doi: 10.6038/cjg20130811 (in Chinese with English abstract).

Fukushima, Y., Y. Takada, and M. Hashimoto (2013), Complex ruptures of the 11 April 2011 Iwaki earthquake (Mw 6.6) triggered by the 11 March 2011 Tohoku earthquake (Mw 9.0), Japan, *Bull. Seismol. Soc. Am., 103*, 1572–1583, doi:10.1785/0120120140.

Rudolph, M. L., M. Shirzaei, M. Manga, and Y. Fukushima (2013), Evolution and future of the Lusi mud eruption inferred from ground deformation, *Geophys. Res. Lett., 40*, doi:10.1002/grl.50189.

Arimoto, M., Y. Fukushima, M. Hashimoto, and Y. Takada (2013), Land subsidence in Semarang, Indonesia, observed by InSAR time-series analysis using ALOS/PALSAR data, *J., Geod. Soc. Japan, 59*, 45–56 (in Japanese with English abstract).

Fukushima, Y. (2012), Future of earthquake forecasting studies, *Monograph of the Seismol. Soc. Japan I*, 110–112. (http://zisin.jah.jp/pdf/SSJ_final_report.pdf; in Japanese)

Fukushima, Y., and A. Hooper (2011), Crustal deformation after 2004 Niigataken-Chuetsu earthquake, central Japan, investigated by persistent scatterer interferometry, *J. Geod. Soc. Japan, 57*, 195–214 (in Japanese with English abstract).

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Hashimoto, M., Y. Fukushima, and Y. Fukahata (2011), Fan-delta uplift and mountain subsidence during the Haiti 2010 earthquake, *Nature Geoscience, 4*, 255–259, doi:10.1038/NGEO1115.

Enomoto, M., M. Hashimoto, Y. Fukushima, and Y. Fukahata (2010), Analysis of crustal deformation associated with the 2008 Wenchuan, China, earthquake using ALOS/PALSAR data, *J. Geod. Soc. Japan, 56*, 155–167.

Fukushima, Y., V. Cayol, P. Durand, and D. Massonnet (2010), Evolution of magma conduits during the 1998–2000 eruptions of Piton de la Fournaise volcano, Réunion Island, *J. Geophys. Res., 115*, B10204, doi:10.1029/2009JB007023.

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Fukushima, Y., O. Nishizawa, and H. Sato (2009), A performance study of a laser Doppler vibrometer for measuring waveforms from piezoelectric transducers, *IEEE Trans. Ultrasonics and Frequency Control, 56*, 1442–1450.

Fukushima, Y., J. Mori, M. Hashimoto, and Y. Kano (2009), Subsidence associated with the LUSI mud eruption, East Java, investigated by SAR interferometry, *Marine and Petroleum Geology, 29*, 1740–1750, doi:10.1016/j.marpetgeo.2009.02.001.

Nishizawa, O., and Y. Fukushima (2008), Laboratory experiments of seismic wave propagation in random heterogeneous media, in *Advances in Geophysics, 50*, edited by R. Domowska, H. Sato, and M. Fehler, pp. 219–245, Elsevier, doi:10.1016/S0065-2687(08)00008-3.

Peltier, A., V. Famin, P. Bachèlery, V. Cayol, Y. Fukushima, and T. Staudacher (2008), Cyclic magma storages and transfers at Piton de La Fournaise volcano (La Réunion hotspot) inferred from deformation and geochemical data, *Earth Planet. Sci. Lett., 270*, 180–188.

Fukushima, Y., T. Ozawa, and M. Hashimoto (2008), Fault model of the 2007 Noto Hanto earthquake estimated from PALSAR radar interferometry and GPS data, *Earth Planets and Space, 60*, 99–104.

Fukushima, Y. (2006), Complex and realistic modeling of InSAR data, *J. Geod. Soc. Japan, 52*, 213–224.

Fukushima, Y., V. Cayol, and P. Durand (2005), Finding realistic dike models from InSAR data: The February 2000 eruption at Piton de la Fournaise,¡br¿ *J. Geophys. Res., 110*, B03206, doi:10.1029/2004JB003268.

Froger, J.-L., Y. Fukushima, P. Briole, T. Staudacher, T. Souriot, and N. Villeneuve (2004), The deformation field of the August 2003 eruption at Piton de la Fournaise, Reunion Island, mapped by ASAR interferometry, *Geophys. Res. Lett., 31*, L14601, doi:10.1029/2004GL020479.

Fukushima, Y., O. Nishizawa, H. Sato, and M. Ohtake (2003), Laboratory study on scattering characteristics in rock samples, *Bull. Seismol. Soc. Am., 93*, 253–263.

Spetzler, J., C. Sivaji, O. Nishizawa, and Y. Fukushima (2002), A test of ray theory and scattering theory based on a laboratory experiment using ultrasonic waves and numerical simulation by finite-difference method. *Geophys. J. Int., 148*, 165–178.

Sivaji, C., O. Nishizawa, G. Kitagawa, and Y. Fukushima (2002), A physical-model study of the statistics of seismic waveform fluctuations in random heterogeneous media, *Geophys. J. Int., 148*, 575–595.

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SOLICITED CONFERENCE PRESENTATION

Fukushima, Y. (2022), Slow Earthquakes: Where physics, geology, and disaster sciences meet, *Japanese-American-German Frontiers of Science Symposium, Irvine, U.S.A.*

Fukushima, Y., Y. Takada, T. Ozawa, and M. Hashimoto (2011), ALOS/PALSAR observations associated with the 2011 Mw 9.0 Tohoku, Japan, earthquake, *2011 AGU fall meeting, San Francisco, U.S.A.*

Fukushima, Y., V. Cayol, P. Durand, and D. Massonnet (2006), Complex dike emplacements at Piton de la Fournaise revealed by InSAR and their implications on the magma transfer mechanism, *2006 Western Pacific Geophysics Meeting, Beijing, China.*