Curriculum Vitae

Osamu SANDANBATA (Name in passport: Osamu SANDAMBATA)

Assistant Professor

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Research Interest

- Dynamics of volcanic calderas interacting intra-caldera fault systems and a magma reservoir
- Numerical modeling and analysis of tsunami and seismic waves
- Mechanical modeling of volcanic phenomena

Positions

2023.05 – Present	Assistant Professor, Earthquake Research Institute, The University of Tokyo
2023.04 – 2023.04	Postdoctoral Researcher, Earthquake Research Institute, The University of Tokyo
2020.04 – 2023.03	Research Fellow of Japan Society for the Promotion of Science (PD), Earthquake and Tsunami Research Division, National Research Institute for Earth Science and Disaster Resilience
2017.04 – 2020.03	Research Fellow of Japan Society for the Promotion of Science (DC1)

Education

2017.04 – 2020.03	Ph.D., Earthquake Research Institute, Department of Earth and Planetary Science, The University of Tokyo
2015.04 – 2017.03	M.S., Earthquake Research Institute, Department of Earth and Planetary Science, The University of Tokyo
2011.04 – 2015.03	B.S., Department of Earth and Planetary Science, The University of Tokyo

Visits

2023.12	Visiting Researcher at Seismological Laboratory, California Institute of Technology
2022.04 – 2022.07	Visiting Scholar at Geophysics Department, Stanford University
2019.07 – 2019.09	Visiting Researcher at Seismological Laboratory, California Institute of Technology

Publications

Submitted paper (not peer-reviewed)

1. Takemura, S., Kubota, T., & **Sandanbata O.**, Successive tsunamigenic events near the Sofu Seamount inferred from high-frequency teleseismic P and regional T waves (under revision). Preprint: https://doi.org/10.22541/essoar.172107980.08343842/v1
2. **Sandanbata, O.** & Saito, T., Segmented trapdoor fault in Kita-Ioto Caldera, Japan: Insights from millimeter tsunami waves captured by an array network of ocean bottom pressure gauges (under review). Preprint: https://doi.org/10.22541/essoar.172072454.49207214/v1

Published Articles

1. **Sandanbata, O.**, Satake, K., Takemura, S., Watada, S., Maeda, T., & Kubota, T. (2024). Enigmatic tsunami waves amplified by repetitive source events near Sofugan volcano, Japan. Geophysical Research Letters, 51, e2023GL106949. https://doi.org/10.1029/2023GL106949
2. **Sandanbata, O.**, & Saito, T. (2024). Quantifying magma overpressure beneath a submarine caldera: A mechanical modeling approach to tsunamigenic trapdoor faulting near Kita-Ioto Island, Japan. *Journal of Geophysical Research: Solid Earth*, 129, e2023JB027917. https://doi.org/10.1029/2023JB027917
3. **Sandanbata, O.**, Watada, S., Satake, K., Kanamori, H., & Rivera, L. (2023). Two volcanic tsunami events caused by trapdoor faulting at a submerged caldera near Curtis and Cheeseman Islands in the Kermadec Arc. *Geophysical Research Letters*, 50, e2022GL101086. https://doi.org/10.1029/2022GL101086
4. **Sandanbata, O.**, Watada, S., Satake, K., Kanamori, H., Rivera, L., & Zhan, Z. (2022). Sub-decadal volcanic tsunamis due to submarine trapdoor faulting at Sumisu caldera in the Izu–Bonin Arc. *Journal of Geophysical Research: Solid Earth*, 127, e2022JB024213. https://doi.org/10.1029/2022JB024213
5. Kubo, H., Kubota, T., Suzuki, W., Aoi, S., **Sandanbata, O.**, Chikasada, N., & Ueda, H. (2022). Ocean-wave phenomenon around Japan due to the 2022 Tonga eruption observed by the wide and dense ocean-bottom pressure gauge networks. *Earth Planets Space* **74**, 104. https://doi.org/10.1186/s40623-022-01663-w
6. Kubota, T., Saito, T., Chikasada, N. Y., & **Sandanbata, O.** (2021). Meteotsunami observed by the deep-ocean seafloor pressure gauge network off northeastern Japan, *Geophysical Research Letters*, 48(21) e2021GL094255. https://doi.org/10.1029/2021GL094255

7. Lai, V. H., Zhan, Z., Brissaud, Q., **Sandanbata, O.,** & Miller, M. S. (2021). Inflation and Asymmetric Collapse at Kilauea Summit during the 2018 Eruption from Seismic and Infrasound Analyses, *Journal of Geophysical Research: Solid Earth*, 126(10), e2021JB022139. https://doi.org/10.1029/2021JB022139
8. **Sandanbata, O.**, Kanamori, H., Rivera, L., Zhan, Z., Watada, S., & Satake, K. (2021). Moment tensors of ring-faulting at active volcanoes: Insights into vertical-CLVD earthquakes at the Sierra Negra caldera, Galápagos Islands, *Journal of Geophysical Research: Solid Earth*, 126(6), e2021JB021693. https://doi.org/10.1029/2021JB021693
9. **Sandanbata, O.**, Watada, S., Ho, T-C., & Satake, K. (2021). Phase delay of short-period tsunamis in the density-stratified compressible ocean over the elastic Earth, *Geophysical Journal International*, 226(3), 1975–1985. https://doi.org/10.1093/gji/ggab192
10. Saito, T., Kubota, T., Chikasada, N. Y., Tanaka, Y., & **Sandanbata, O.** (2021). Meteorological tsunami generation due to sea-surface pressure change: Three-dimensional theory and synthetics of ocean-bottom pressure change, *Journal of Geophysical Research: Oceans*, 126(5), e2020JC017011. https://doi.org/10.1029/2020JC017011
11. Heidarzadeh, M., Ishibe, T., **Sandanbata O.**, Muhari, A., & Wijanarto, A. B. (2020). Numerical modeling of the subaerial landslide source of the 22 December 2018 Anak Krakatoa volcanic tsunami, Indonesia, *Ocean Engineering*, 195, 106733. https://doi.org/10.1016/j.oceaneng.2019.106733
12. Wang, Y., Satake, K., **Sandanbata, O.**, Maeda, T., & Su, H. (2019). Tsunami data assimilation of cabled ocean bottom pressure records for the 2015 torishima volcanic tsunami earthquake, *Journal of Geophysical Research: Solid Earth*, 124(10), 10413-10422. https://doi.org/10.1029/2019JB018056
13. **Sandanbata, O.**, Shiobara, H., Kusumoto, S., Kim, H. J., Oba, A., Liu, Q., Ueda, T., Ogawa, M., Takano, K., Kotobuki, I., & Wang, Y. (2018). Equipment of Miniature Instruments to Measure Tsunami Waves in an Experimental Tank (in Japanese), *Technical Research Report, Earthquake Research Institute, the University of Tokyo*, 24, 29-34. http://www.eri.u-tokyo.ac.jp/GIHOU/archive/24_029-034.pdf
14. **Sandanbata, O.**, Watada, S., Satake, K., Fukao, Y., Sugioka, H., Ito, A., & Shiobara, H. (2018). Ray Tracing for Dispersive Tsunamis and Source Amplitude Estimation Based on Green's Law: Application to the 2015 Volcanic Tsunami Earthquake Near Torishima, South of Japan, *Pure and Applied Geophysics*, 175, 1371–1385. https://doi.org/10.1007/s00024-017-1746-0
15. Fukao, Y., **Sandanbata, O.**, Sugioka, H., Ito, A., Shiobara, H., Watada, S., & Satake, K. (2018). "Mechanism of the 2015 volcanic tsunami earthquake near Torishima, Japan." Science advances 4, no. 4, eaao0219. https://doi.org/10.1126/sciadv.aao0219
16. **Sandanbata, O.**, Obara, K., Maeda, T., Takagi, R., & Satake, K. (2015). Sudden changes in the amplitude-frequency distribution of long-period tremors at Aso volcano, southwest Japan, *Geophysical Research Letters*, 42, 10,256–10,262. https://doi.org/10.1002/2015GL066443

Honors and Awards

1. The University of Tokyo Excellent Young Researcher, The University of Tokyo, 2023.

2. Early-Career Researcher Plenary Speaker, IAVCEI 2023 Scientific Assembly, 2023.
3. Student Presentation Award, Seismological Society of Japan Fall Meeting 2018, 2018.
4. Outstanding Student Presentation Award, JpGU Annual Meeting 2018, 2018.
5. Outstanding Student Presentation Award, JpGU-AGU Joint Meeting 2017, 2017.
6. Best Student Poster Award, Asia Oceania Geoscience Society 13th Annual Meeting, 2016.
7. Outstanding Student Presentation Award, JpGU Annual Meeting 2016, 2016.

International Conferences

1. **Sandanbata, O.**, & Saito, T. (2023). Detecting Small Volcanic Tsunami Signals from Kita-Ioto Caldera Using Dense DONET Ocean-Bottom Pressure Records, *AGU 2022 Fall Meeting*, V11E-09, San Francisco/Online, US, December 2023.
2. **Sandanbata, O.** (2023). Trapdoor faulting at submarine calderas in Japan and New Zealand: Its potential for volcanic tsunami generation (accepted), *IAVCEI 2023 Scientific Assembly*, Early-Career Researcher Plenary Session (selected), Rotorua, New Zealand, January–February 2023.
3. **Sandanbata, O.**, Watada, S., Satake, K., Kanamori, H., Rivera, L., & Zhan, Z. (2023). Sub-decadal volcanic tsunamis due to submarine trapdoor faulting at Sumisu caldera in the Izu-Bonin arc (accepted), *IAVCEI 2023 Scientific Assembly*, 401, Rotorua, New Zealand, January–February 2023.
4. **Sandanbata, O.**, & Saito, T. (2022) Trapdoor faulting at Kita-Ioto Caldera, Japan: Quantification of magma overpressure beneath a submarine caldera, AGU 2022 Fall Meeting, V11B-01, Chicago/Online, US, December 2022.
5. **Sandanbata, O.**, Kanamori, H., Rivera, L., Zhan, Z., Watada, S., Satake, K., & Lai, V. H. (2021). Teleseismic moment tensor inversion for ring-faulting at active calderas: Case studies at Sierra Negra in the Galápagos Islands and Kilauea in Hawaii, *AGU 2021 Fall Meeting*, V25D-0155, Online, December 2021.
6. **Sandanbata, O.**, Watada, S., Satake, K., Kanamori, H., Rivera, L., & Zhan, Z. (2020). Unexpectedly large tsunamis generated by submarine volcanic earthquakes: Evidence of trapdoor faulting at a submarine caldera, *AGU 2020 Fall Meeting*, V043-04, Online, December 2020.
7. Lai, V. H., **Sandanbata, O.**, Zhan, Z., & Miller, M. S. (2020). Seismic characterization of explosive and collapse events at the Kilauea summit during the 2018 eruption, *AGU 2020 Fall Meeting*, V002-0012, Online, December 2020.
8. **Sandanbata, O.**, Watada, S., Satake, K., Kanamori, H., Rivera, L., & Zhan, Z. (2020). Volcanic tsunami earthquakes repeating at submarine calderas (1): Physical mechanism, *JpGU-AGU Joint Meeting 2020*, SVC45-36, Online, July 2020.
9. **Sandanbata, O.**, Watada, S., Satake, K., Kanamori, H., Rivera, L., & Zhan, Z. (2020). Volcanic tsunami earthquakes repeating at submarine calderas (2): Kinematic source modeling of the 2015 Torishima earthquake, *JpGU-AGU Joint Meeting 2020*, HDS08-P07, Online, July 2020.
10. Wang, Y., **Sandanbata, O.**, Satake, K., Maeda, T., & Su, H. (2019). Tsunami Data Assimilation of the

2015 Torishima Earthquake, *AGU 2019 Fall Meeting*, NH43F-0995, San Francisco, U.S., December 2019.

11. **Sandanbata, O.**, Watada, S., & Satake, K. (2018). Abrupt large uplift caused by volcanic tsunami earthquakes near the Kermadec Islands, *AGU 2018 Fall Meeting*, NH33A-06, Washington, D.C, U.S., December 2018.
12. **Sandanbata, O.**, Watada, S., Satake, K., Fukao, Y., Sugioka, H., Ito, A., & Shiobara, H. (2018). Tsunami Source Modeling for the 2015 Volcanic Tsunami Earthquake Near Torishima, South of Japan, *AOGS 2018 Annual Meeting*, IG03-D3-PM1-323A-015, Honolulu, U.S., June 2018.
13. **Sandanbata, O.**, Watada, S., Satake, K., Fukao, Y., Sugioka, H., Ito, A., & Shiobara, H. (2017). Tsunami Source Modeling of the 2015 Volcanic Tsunami Earthquake near Torishima, South of Japan, *AGU 2017 Fall Meeting*, NH23A-0231, New Orleans, U.S., December 2017.
14. **Sandanbata, O.**, Watada, S., Satake, K., Fukao, Y., Sugioka, H., Ito, A., & Shiobara, H. (2017). Ray tracing for dispersive tsunamis and estimation of initial sea-surface displacement: Application to the 2015 Smith Caldera earthquake, *JpGU-AGU Joint Meeting 2017*, HDS16-12, Chiba, Japan, May 2017.
15. **Sandanbata, O.**, Watada, S., Satake, K., Fukao, Y., Sugioka, H., Ito, A., & Shiobara, H. (2016). 2015 volcanic tsunami earthquake near Torishima Island: Ray tracing analysis of dispersive tsunami wave, *AGU 2016 Fall Meeting*, NH43B-1838, San Francisco, U.S., December 2016.
16. **Sandanbata, O.**, Watada, S., Satake, K., Fukao, Y., Sugioka, H., Ito, A., & Shiobara, H. (2016). 2015 Torishima Tsunami Earthquake: Ray Tracing Analysis Of Dispersive Tsunami Wave, *AOGS 2016 Annual Meeting*, OS22-SE37-D4-PM2-P-008, Beijing, China, August 2016.
17. **Sandanbata, O.**, Obara, K., Maeda, T., Takagi, R., & Satake, K. (2015). Step-wise temporal change in the frequency-amplitude distribution of volcanic long period tremors at Aso volcano, *Workshop ERI-IPGP*, Paris, France, September 2015.

Invited Talk

1. **Sandanbata, O.**, Unveiling hidden volcanic activity of submarine calderas based on tsunami and seismic records, Seminar of Center for Deep-Surface Coupling of Earth*, Seoul National University*, South Korea. September 2024.
2. **Sandanbata, O.**, Exploring unknown submarine volcanic activity using tsunami and seismic wave records (in Japanese), Seismology Special Seminar, *Hirosaki University*, Japan. November 2023.
3. **Sandanbata, O.**, Unusual volcanic tsunamis caused by trapdoor faulting at submarine calderas, Brown Bag Seminar of Seismological Laboratory, *California Institute of Technology*, US. April 2022.
4. **Sandanbata, O.**, Unusual volcanic tsunamis caused by trapdoor faulting at submarine calderas, Bullard Laboratories Seminar, *the University of Cambridge*, UK. March 2022.
5. **Sandanbata, O.**, Investigations of ring-faulting at active calderas: Case studies at Sierra Negra caldera in Galápagos, and Smith caldera in Japan, Volcano Group Meeting, *University of Leeds,* UK. April 2021.

6. **Sandanbata, O.**, Abnormal tsunamis caused by trapdoor faulting repeating at submarine volcanic calderas, Geophysics Seminar, *Stanford University*, US. April 2021.

Fellowships and Grants

Fellowship

1. Japan Society for the Promotion of Science (JSPS) Research fellow (PD), 2020.04 – Present.
2. Japan Society for the Promotion of Science (JSPS) Research fellow (DC1), 2017.04 – 2020.03.

Grants

1. Grant-in-Aid for Early-Career Scientists, #24K17141 (2024.04.01–2028.03.31: JPY4,810,000)
2. The Sasakawa Scientific Research Grant, The Japan Science Society, #2023–2031 (2023.04.01–2024.02.10: JPY1,500,000)
3. Grant-in-Aid for JSPS Fellows, #20J01689 (2020.04.01–2023.03.31: JPY4,810,000)
4. Grant-in-Aid for JSPS Fellows, #17J02919 (2017.04.01–2020.03.31: JPY4,160,000)

Thesis Titles

Ph.D.	Physical mechanism of volcanic tsunami earthquakes repeating at submarine volcanoes. (Supervisor: Prof. Kenji Satake)
M.S.	Ray Tracing for Dispersive Tsunamis and Estimation of Initial Sea-surface Deformation from Array Data: Application to the 2015 Volcanic Tsunami Earthquake near Smith Caldera, South of Japan. (Supervisor: Prof. Kenji Satake)
B.S.	Step-wise changes in the amplitude-frequency distribution of long-period tremors at Aso volcano (in Japanese). (Supervisor: Prof. Kazushige Obara)

Teaching Experiences

2023.09	Summer School of Earthquake Research Institute, The University of Tokyo.
2023.04 – 2023.06	Senior Research Project in Earth and Planetary Physics, The University of Tokyo.
2017.06 – 2017.07	Tutor for two international internship students of *University of Tokyo Research Internship Program*, The University of Tokyo.
2017.04 – 2017.09	Teaching Assistant, *Seismic Wave Theory*, The University of Tokyo.
2016.09 – 2017.03	Mentor for an international student in master program, The University of Tokyo.
2016.06 – 2016.07	Tutor for two international internship students of *University of Tokyo Research Internship Program*, The University of Tokyo.
2015.06 – 2015.07	Tutor for two international internship students of *Sakura Science Plan*, Earthquake Research Institute, The University of Tokyo.

2014.11 Tutor for three international internship students of *Sakura Science Plan*, Earthquake Research Institute, The University of Tokyo.

Outreach Experiences

2015.08, 2016.08, and 2018.08

Open-laboratory experiment of tsunami generation/propagations in a miniature tank, Earthquake Research Institute, The University of Tokyo.