Tomoya Takano

Chief Researcher
National Research Institute for
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Personal Data

Place of Birth:	Tanashi, Tokyo, Japan
Current city:	Tsukuba, Ibaraki, Japan
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Educational Background

4/2016 – 3/2019	Ph.D. Geophysics, Tohoku University
4/2012 – 3/2014	M.S. Geophysics, Tohoku University
4/2008 – 3/2012	B.S. Geophysics, Tohoku University

Thesis Titles

Ph.D.	Temporal changes in seismic velocity of shallow structures at active volcanoes as inferred from analyses of ambient noise correlations
M.S.	Detection of seismic velocity changes caused by the Earth tides with a seismic interferometry method
B.S.	Estimation of seismic velocity changes by using auto correlation functions of ambient noise recorded at Hi-net stations

Awards

- JSPS Postdoctoral Fellowship (Japan Society for the Promotion of Science), 2019-2021
- Tohoku University Presidential Award, Tohoku University, Japan, 2019
- JSPS Doctoral Course Fellowship (Japan Society for the Promotion of Science), 2017-2019
- Outstanding student paper award, 2018, by Japan Volcanological Society, about the paper, Takano *et al.*, 2017 and Takano *et al.*, 2014
- Outstanding presentation award, 2017, Japan Seismological Society
- Journal Highlights by *J. Geophys. Res.*, about the papar, Takano *et al.*, 2017, *J. Geophys. Res.*,

Grants

4/2022 – 3/2025	**Tomoya Takano (PI)**, High temporal resolution monitoring of pore fluid pressure in the crust, *JSPS KAKENHI*, Grant-in-Aid for Early-Career Scientists, #22K14110
4/2019 – 3/2022	**Tomoya Takano (PI)**, Development of different size of array: Toward estimating stress sensitivity in deeper region, *Japan Society for the Promotion of Science* (*JSPS*), Postdoctoral Fellow
4/2017 – 3/2019	**Tomoya Takano (PI)**, Characteristics of stress sensitivity of seismic velocity changes by using seismic interferometry, *Japan Society for the Promotion of Science* (*JSPS*), Doctoral Course Students, #17J02025

Research Experience

Postdoctoral Research

Earthquake Research Institute, the University of Tokyo and ISTerre, Université Grenoble Alpes (research advisor: Dr. Kiwamu Nishida and Dr. Florent Brenguier)

- Cross-correlations of ambient noise and earthquake waveforms from a dense network of permanent ocean bottom seismometers offshore Honshu, Japan
- Extracting tidal response of seismic velocity changes using a state-space model throughout Japan

Doctoral Research

Department of Geophysics, Graduate School of Science, Tohoku University, 4/2016 – 3/2019 (research advisor: Dr. Takeshi Nishimura)

- Depth dependence of stress sensitivity of seismic velocity changes
- Sensitivity of seismic velocity changes to tidal deformation at different lapse-times
- Noise-based passive ballistic wave seismic monitoring on an active volcano
- Seismic velocity changes in response to different directions of tidal deformation

Master Course's Research

Department of Geophysics, Graduate School of Science, Tohoku University, 4/2012 – 3/2014 (research advisor: Dr. Takeshi Nishimura)

- Seismic velocity changes caused by the Earth tide: Ambient noise correlation analyses of small-array data

Research Interests

My research focuses on understanding the spatiotemporal changes of the Earth's structure using seismic waves. I'm particularly interested in a complex response of geomaterials to hydrological changes, volcanic activities, earthquake shaking, and static stress or strain variations. I have been involved in extracting the crustal response to applied static strain using ambient seismic noise and earth tides.

Prior Employment

4/2014 – 9/2015	Japan Radio Co., Ltd. (as a marine electronics engineer)
10/2015 – 3/2016	Technical Staff at Tohoku University

Positions Held

4/2024 –	Chief Researcher, National Research Institute for Earth Science and Disaster Resilience (NIED)
3/2021 – 3/2024	Assistant Professor at Hirosaki University
5/2019 – 3/2020	Visiting Researcher at ISTerre, Université Grenoble Alpes
4/2019 – 3/2022	Postdoctoral Fellowship of Japan Society for the Promotion of Science, Earthquake Research Institute, the University of Tokyo
4/2018 – 10/2018	Visiting student at ISTerre, Université Grenoble Alpes (Supervisor: Dr. Florent Brenguier and Dr. Michel Campillo)
3/2017 – 3/2017	Internship at Meteorological Research Institute
4/2017 – 3/2019	Research Fellow of the Japan Society for the Promotion of Science (DC2)
10/2015 – 3/2016	Technical Staff at Department of Geophysics, Tohoku University
4/2014 – 9/2015	Marine electronics engineer at Japan Radio Co., Ltd.

Publications

Journal Articles

1. **Takano, T.** and Poli, P. (2025), Coherence-based characterization of a long-period monochromatic seismic signal, Geophysical Research Letters, 52, e2024GL113290
2. **Takano, T.** and Nishida, K. (2024), Estimation of seismometer clock time offsets using Kalman Filter toward accurate seismic velocity change, Geophysical Journal International, ggae322, https://doi.org/10.1093/gji/gg
3. **Takano, T.**, Nishimura, T., and Nakahara, H. (2023), Anisotropic seismic velocity variations in response to different orientations of tidal deformations. Geophysical Journal International, 235(3), 2716-2726, https://doi.org/10.1093/gji/ggad386
4. **Takano, T.** and Nishida, K. (2023), Tidal response of seismic wave velocity at shallow crust in Japan, Geophysical Research Letters, 50(9), e2023GL103011
5. Hogawa, R., Maeda, T., **Takano, T.**, and Noguchi, S. (2023), Estimation of site amplification factors among seismic networks around Aomori prefecture by means of coda-wave amplitude, Zisin 2, 76, 77-92, https://doi.org/10.4294/zisin.2022-18. (in Japanese)
6. Tensaka, T., Maeda, T., and **Takano, T.** (2023), Intrinsic Attenuation Structure of the Mantle Wedge beneath Hokkaido, Japan, Inferred from Seismic Wave Propagation Simulations of Deep-focus Earthquake, Zisin 2, 76, 93-107, https://doi.org/10.4294/zisin.2022-19.(in Japanese)

7. **T. Takano**, F. Brenguier, M. Campillo, A. Peltier, T. Nishimura, 2019, Noise-based passive ballistic wave seismic monitoring on an active volcano, *Geophysical Journal International*, Volume 220, Issue 1, January 2020, Pages 501–507, https://doi.org/10.1093/gji/ggz466

8. Brenguier, F., R. Courbis, A. Mordret, X. Campman, B. Boué, M. Chmiel, **T. Takano**, T. Lecocq, W. Van der Veen, S. Postif, and D. Hollis, 2019, Noise-based Ballistic Body-wave Passive Seismic Monitoring, *Geophysical Journal International*, Volume 221, Issue 1, April 2020, Pages 683–691, https://doi.org/10.1093/gji/ggz440

9. **Takano, T.**, T. Nishimura, H. Nakahra, H. Ueda, E. Fujita, 2019, Sensitivity of seismic velocity changes to the tidal strain at different lapse-times: Data analyses of a small seismic array at Izu-Oshima volcano, *Journal of Geophysical Research: Solid Earth*, *124* (3), 3011-3023, https://doi.org/10.1029/2018JB016235

10. **Takano, T.**, T. Nishimura, H. Nakahara, 2017, Seismic velocity changes concentrated at the shallow structure as inferred from correlation analyses of ambient noise during volcano deformation at izu-oshima, japan, *Journal of Geophysical Research: Solid Earth*, *122* (8), 6721-6736, doi:10.1002/2017JB014340

11. **Takano, T.**, T. Nishimura, H. Nakahara, Y. Ohta, and S. Tanaka, 2014, Seismic velocity changes caused by the earth tide: Ambient noise correlation analyses of small-array data, *Geophysical Research Letters*, *41* (17), 6131-6136, doi:10.1002/2014GL060690

Proceedings

1. **Takano, T.**, F. Brenguier, M. Camillo, T. Nishimura, 2019, Temporal changes of ballistic wave velocity on Piton de la Fournaise volcano, *IUGG General Assembly*, Montreal, Canada, July 2019.

2. **Takano, T.**, T. Nishimura, H. Nakahara, 2018, Seismic velocity changes in response to different direction of tidal strain, *EGU General Assembly*, Vienna, Austria, April 2018.

3. **Takano, T.**, T. Nishimura, H. Nakahara, 2017, Estimation of strain sensitivity of seismic velocity changes using the Earth tide: Analyses of seismic small array data at Izu-Oshima volcano, Japan, *AGU Fall meeting*, New Orleans, Louisiana, USA, December 2017.

4. **Takano, T.**, T. Nishimura, H. Nakahara, H. Ueda, E. Fujita, 2017, Estimation of strain sensitivity of seismic velocity changes using the Earth tide: Noise correlation analyses of small seismic array data at Izu-Oshima volcano, *Seismological Society of Japan Fall meeting*, S01-08, Kagoshima, Japan, October, 2017 (in Japanese)

5. **Takano, T.**, T. Nishimura, H. Nakahara, H. Ueda, E. Fujita, 2017, Strain sensitivity of seismic velocity changes at the shallow part of Izu-Oshima volcano: Ambient noise correlation analyses of small seismic array data, *Volcanological Society of Japan Fall Meeting*, SSS11-P12, Kumamoto, Japan, September, 2017 (in Japanese)

6. **Takano, T.**, T. Nishimura, H. Nakahara, H. Ueda, E. Fujita, 2017, Estimation of strain sensitivity of seismic velocity changes by using the tidal strain at Izu-Oshima volcano, *Scattered wave workshop*,S17-21, Tokyo, Japan, September, 2017 (in Japanese)

7. **Takano, T.**, T. Nishimura, H. Nakahara, 2017, Stress sensitivity of seismic velocity changes in depth as inferred from noise correlation analyses at Izu-Oshima volcano, Japan, *IASPEI*, Kobe, Japan, July 2017.

8. **Takano, T.**, T. Nishimura, H. Nakahara, 2017, Seismic velocity changes at the shallow structure during volcanic deformation at Izu-Oshima, Japan, *Ambient Noise Imaging and Monitoring 2017*, Cargese, France, June, 2017

9. **Takano, T.**, T. Nishimura, H. Nakahara, 2017, Seismic velocity changes localized at the shallow structure: Noise correlation analyses during volcanic deformation at Izu-Oshima, Japan, *GP-EES*, Sendai, Japan, June 2017.
10. **Takano, T.**, T. Nishimura, H. Nakahara, 2017, Estimation of seismic velocity changes in response to the earth tide: Noise correlation analysis at 13 active volcanoes in Japan, *Japan Geoscience Union Meeting*, SSS11-P12, Chiba, Japan, May, 2017 (in Japanese)
11. **Takano, T.**, T. Nishimura, H. Nakahara, Y. Ohta, and S. Tanaka, 2013, Detecting temporal changes of seismic velocity in response to tidal strain: analysis of a small array data at Iwate volcano, *AGU Fall meeting*, San Francisco, California, USA, December 2013.
12. **Takano, T.**, T. Nishimura, H. Nakahara, 2016, Estimation of stress sensitivity of seismic velocity changes at Izu-Oshima volcano: Analyses of JMA seismic data with seismic interferometry , *Scattered wave workshop*, Tokyo, Japan, September, 2016 (in Japanese)
13. **Takano, T.**, T. Nishimura, H. Nakahara, 2016, Characteristics of seismic velocity changes on volcanoes using noise correlation method: Analyses of JMA seismic data, *Japan Geoscience Union Meeting*, SVC47-23, Chiba, Japan, May, 2016 (in Japanese)
14. **Takano, T.**, T. Nishimura, H. Nakahara, Y. Ohta, S. Tanaka, 2013, Detecting temporal changes of seismic velocity in response to tidal strain : analysis of a small array data at Iwate volcano, *AGU Fall meeting*, San Francisco, California, USA, December 2013.
15. **Takano, T.**, T. Nishimura, H. Nakahara, Y. Ohta, S. Tanaka, 2013, Estimation of strain sensitivity of seismic velocity changes using the Earth tide: Noise correlation analyses of small seismic array data at Izu-Oshima volcano, *Seismological Society of Japan Fall meeting*, S01-08, Yokohama, Japan, October, 2013 (in Japanese)
16. **Takano, T.**, T. Nishimura, H. Nakahara, Y. Ohta, S. Tanaka, 2013, Detection of seismic velocity changes caused by the Earth tide with seismic interferometry: Analyses of small seismic array data at the foot of Mt. Iwate, *Scattered wave workshop*, Tokyo, Japan, September, 2013 (in Japanese)
17. **Takano, T.**, T. Nishimura, H. Nakahara, S. Tanaka, 2013, An attempt of detecting seismic velocity changes caused by the Earth tide with auto correlation functions of ambient noise, *Japan Geoscience Union Meeting*, SVC47-23, Chiba, Japan, May, 2013 (in Japanese)

Teaching

- 2023 Fall, Geology Special Experiment (co-taught 3 sessions), Hirosaki University
- 2023 Fall, Seismology I (15 sessions), Hirosaki University
- 2023 Fall, Seismology Exercise (co-taught 8 sessions), Hirosaki University
- 2023 Spring, Applied Physics Experiment (15 sessions), Hirosaki University
- 2023 Spring, Earth Environment Disaster Prevention Exercise (1 session), Hirosaki University
- 2023 Spring, Special Topics in Solid Earth Physics (15 sessions), Hirosaki University
- 2023 Spring, Special Lecture on Earth Environment Disaster Prevention (1 session), Hirosaki University
- 2022 Fall, Seismology I (15 sessions), Hirosaki University
- 2022 Fall, Seismology Exercise (co-taught 8 sessions), Hirosaki University

- 2022 Spring, Applied Physics Experiment (15 sessions), Hirosaki University
- 2022 Spring, Basic Seminar (15 sessions), Hirosaki University
- 2022 Spring, Earth Environment Disaster Prevention Exercise (1 session), Hirosaki University
- 2022 Spring, Special Topics in Solid Earth Physics (15 sessions), Hirosaki University
- 2022 Spring, Special Lecture on Earth Environment Disaster Prevention (1 session), Hirosaki University
- 2021 Fall, Geology Special Experiment (co-taught 3 sessions), Hirosaki University
- 2021 Fall, Seismology Exercise (co-taught 8 sessions), Hirosaki University
- 2021 Fall, Seismology I (co-taught 7 sessions), Hirosaki University
- 2021 Spring, Applied Physics Experiment (15 sessions), Hirosaki University
- 2021 Spring, Science and Technology English (co-taught 3 sessions), Hirosaki University
- 2021 Spring, Earth Disaster Prevention Exercise (co-taught 1 session), Hirosaki University
- 2021 Spring, Special Lecture on Earth Environment Disaster Prevention (co-taught 1 session), Hirosaki University
- 2016 Fall, Teaching assistant, Exercises in Mechanics, Tohoku University
- 2012 Spring, Teaching assistant, Experiments in Geophysics, Tohoku University

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