

TAN Yen Joe

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RESEARCH AND ACADEMIC POSITIONS

The Chinese University of Hong Kong , Hong Kong Assistant Professor, Earth System Science Programme, Faculty of Science	08/2020 - present
Lamont-Doherty Earth Observatory of Columbia University , USA Adjunct Associate Research Scientist	08/2020 – present
Stanford University , USA Postdoctoral Scholar, Department of Geophysics	07/2019 – 07/2020
Université Savoie Mont Blanc , France Visiting Researcher, Institut des Sciences de la Terre	10/2018 – 05/2019

EDUCATION

Columbia University , USA M.A., M.Phil., Ph.D., Geophysics <i>Thesis title:</i> Earthquake and volcanic processes at mid-ocean ridges <i>Thesis advisors:</i> Maya Tolstoy & Felix Waldhauser	07/2014 – 05/2019
Lafayette College , USA B.S., Geology & A.B., Anthropology and Sociology <i>Summa Cum Laude</i>	09/2010 – 01/2014

HONORS AND AWARDS

AGU Outstanding Student Presentation Award (oral)	2018
New York Community Trust Edward Prince Goldman Scholarship in Science	2018
President Macron's "Make Our Planet Great Again" Fellowship	2018
Chateaubriand Fellowship	2018
Science-Corps Teaching Fellowship (declined)	2018
Los Alamos National Lab Applied Machine Learning Research Fellowship	2018
Columbia University Dean's Fellowship	2014
Phi Beta Kappa (Academic Honor Society)	2013
AGU Outstanding Student Presentation Award (poster)	2013
Lafayette College James L. Dyson Geology Award	2013
Woods Hole Oceanographic Institution Summer Student Fellowship	2013
Geological Society of America / ExxonMobil Field Camp Scholar Award	2012

PUBLICATIONS

(Annotations: equal contributions, *student/postdoc)

14. Zhou, P.*, Ellsworth, W.L., Yang, H., **Tan, Y.J.**, Beroza, G., and Chu, R., Machine learning facilitated earthquake detections near the Weiyuan shale gas reservoir, Sichuan, China, *submitted to Earth and Planetary Physics*.
13. **Tan, Y.J.**, Waldhauser, F., Ellsworth, W.L., Zhang, M., Zhu, M., Michele, M., Chiaraluce, L., Beroza, G., and Segou, M. (2021), Machine-learning-based high-resolution earthquake catalog

reveals how complex fault structures were activated during the 2016-2017 central Italy sequence, *The Seismic Record*, 1(1), 11-19.

12. **Tan, Y.J.** and Marsan, D. (2020), Connecting a broad spectrum of transient slip on the San Andreas fault, *Science Advances*, 6, eabb2489.
11. Waldhauser, F., Wilcock, W.S.D., Tolstoy, M., Baillard, C., **Tan, Y.J.**, and Schaff, D.P. (2020), Precision seismic monitoring and analysis at Axial Seamount using a real-time double-difference system, *Journal of Geophysical Research: Solid Earth*, 125, e2019JB018796.
10. Marsan, D. and **Tan, Y.J.** (2020), Maximum earthquake size and seismicity rate from an ETAS model with slip budget, *Bulletin of the Seismological Society of America*, 110(2), 874-885.
9. Scholz, C.H., **Tan, Y.J.**, and Albino, F. (2019), The mechanism of tidal triggering of earthquakes at mid-ocean ridges, *Nature Communications*, 10(1), 2526.
8. Yuan, B., **Tan, Y.J.**, Mudunuru, M.K., Marcillo, O.E., Delorey, A.A., Roberts, P.M., Webster, J.D., Gammans, C.N.L., Karra, S., Guthrie, G.D., and Johnson, P.A. (2019), Using machine learning to discern eruption in noisy environments: A case study using CO₂-driven cold-water geyser in Chimayó, New Mexico, *Seismological Research Letters*, 90(2A), 591-603.
7. **Tan, Y.J.**, Waldhauser, F., Tolstoy, M., and Wilcock, W.S.D. (2019), Axial Seamount: Periodic tidal loading reveals stress dependence of the earthquake size distribution (b value), *Earth and Planetary Science Letters*, 512, 39-45.
6. Tolstoy, M., Wilcock, W.S.D., **Tan, Y.J.**, and Waldhauser, F. (2018), A tale of two eruptions: How data from Axial Seamount led to a discovery on the East Pacific Rise, *Oceanography*, 31(1), 124-126.
5. Wilcock, W.S.D., Dziak, R.P., Tolstoy, M., Chadwick, W.W., Nooner, S.L., Bohnenstiehl, D.R., Caplan-Auerbach, J., Waldhauser, F., Arnulf, A., Baillard, C., Lau, K., Haxel, J.H., **Tan, Y.J.**, Garcia, C., Levy, S., Mann, M.E. (2018), The recent volcanic history of Axial Seamount: Geophysical insights into past eruption dynamics with an eye toward enhanced observations of future eruptions, *Oceanography*, 31(1), 114-123.
4. **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Bohnenstiehl, D.R. (2018), Tidal triggering of microearthquakes over an eruption cycle at 9°50'N East Pacific Rise, *Geophysical Research Letters*, 45, 1825-1831.
3. **Tan, Y.J.** and Maharjan, R. (2018), What googling trends tell us about public interest in earthquakes, *Seismological Research Letters*, 89(2A), 653-657.
2. Wilcock, W.S.D., Tolstoy, M., Waldhauser, F., Garcia, C., **Tan, Y.J.**, Bohnenstiehl, D.R., Caplan-Auerbach, J., Dziak, R.P., Arnulf, A.F., and Mann, M.E. (2016), Seismic constraints on caldera dynamics from the 2015 Axial Seamount eruption, *Science*, 354(6318), 1395-1399.
1. **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2016), Dynamics of a seafloor spreading episode at the East Pacific Rise, *Nature*, 540, 261-265.

INVITED TALKS

Zhejiang University	07/2020
UC Berkeley Seismological Laboratory	04/2020
Stanford University	01/2020
Lamont-Doherty Earth Observatory of Columbia University	05/2019
EGU General Assembly	04/2019
Géoazur Laboratory	04/2019
Massachusetts Institute of Technology	03/2019
Institut de Physique du Globe de Paris	02/2019
Université Savoie Mont Blanc	11/2018
Université Grenoble Alpes/Institut des Sciences de la Terre	11/2018
Caltech Seismological Laboratory	10/2018
The Chinese University of Hong Kong	09/2018
South China Sea Institute of Oceanology	09/2018
Southern University of Science and Technology	09/2018
Lamont-Doherty Earth Observatory of Columbia University	01/2018
Cooperative Institute for Dynamic Earth Research (CIDER) Pre-AGU Workshop	12/2017
Lamont-Doherty Earth Observatory of Columbia University	02/2017

CONFERENCE ABSTRACTS

- **Tan, Y.J.**, Waldhauser, F., Ellsworth, W.L., Zhang, M., Zhu, M., Michele, M., Chiaraluce, L., Beroza, G., and Segou, M. (2021), The 2016-2017 central Italy sequence: A machine-learning-based high-resolution catalog of 900,000 earthquakes, European Seismological Commission General Assembly.
- **Tan, Y.J.**, Ellsworth, W.L., and Waldhauser, F. (2020), The 2016-2017 central Italy earthquake sequence: How the largest events initiated, AGU Fall Meeting.
- Ellsworth, W.L., Barbour, A.J., Shelly, D.R., **Tan, Y.J.**, and Waldhauser, F. (2020), Foreshocks cascades to failure, AGU Fall Meeting.
- Janizewski, H.A., Russell, J.B., Hawley, W.B., **Tan, Y.J.**, Lynner, C., Gaherty, J.B., Eilon, Z., and Mosher, G. (2020), 10+ years of ocean bottom seismometer noise: Fresh insights and persistent questions, AGU Fall Meeting.
- Waldhauser, F., Michele, M., Chiaraluce, L., Di Stefano, R., Ellsworth, W.L., **Tan, Y.J.**, Beroza, G., De Gori, P., and Meier, M.A. (2020), Illuminating the complex fault zone structure of the 2016-2017 Amatrice, Central Italy, earthquake sequence with a high-resolution, high-density earthquake catalog, AGU Fall Meeting.
- **Tan, Y.J.**, Scholz, C.H., and Albino, F. (2019), Axial Volcano: How earthquakes respond to periodic tidal stress changes, AGU Fall Meeting (oral).
- Muller, J.K., Kemmerlin, M.S., Santana, J.M.G., Shamloo, H.I., **Tan, Y.J.**, Zhan, Y., Smith, C.M., Myers, M., Gregg, P.M., Abers, G.A., Plank, T.A., Wallace, P.J., Andrews, B.J., Roman, D.C., Bergantz, G., and Cooper, K.M. (2019), Tectonic and compositional controls on magma storage depths globally: Results from CIDER 2019, AGU Fall Meeting.
- Tolstoy, M. and **Tan, Y.J.** (2019), Mid-ocean ridge eruption rates, long-term climate change, and the importance of marine seismoacoustics, ASA Meeting (oral).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2019), Characterizing submarine eruption dynamics and magmatic processes, CIDER Workshop (poster).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2019), Geophysical observations preceding the 2015 Axial Seamount eruption, EGU General Assembly (invited).
- **Tan, Y.J.**, Waldhauser, F., Tolstoy, M., and Wilcock, W.S.D. (2018), Tides reveal stress dependence of the earthquake *b*-value, AGU Fall Meeting (oral).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., Wilcock, W.S.D., and Bohnenstiehl, D.R. (2017), Spatiotemporal behavior of microearthquakes over an eruption cycle at 9°50'N East Pacific Rise and Axial Seamount, AGU Fall Meeting (oral).

- **Tan, Y.J.** and Maharjan, R. (2017), What googling trends tell us about public interest in earthquakes, AGU Fall Meeting (poster).
- Waldhauser, F., Wilcock, W.S.D., Tolstoy, M., Baillard, C., **Tan, Y.J.**, and Schaff, D.P. (2017), Precision seismic monitoring of volcanic eruptions at Axial Seamount, AGU Fall Meeting.
- **Tan, Y.J.**, Bletery, Q., Fan, W.Y., Janiszewski, H.A., Lynch, E., McCormack, K.A., Phillips, N.J., Rousset, B., Seyler, C., French, M.E., Gaherty, J.B. and Regalla, C. (2017), Hunting for shallow slow-slip events at Cascadia, AGU Fall Meeting (poster).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Bohnenstiehl, D.R. (2017), Tidal triggering of microearthquakes over an eruption cycle at the East Pacific Rise, Cargèse Summer School (poster).
- **Tan, Y. J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2017), Seismic signals associated with the 2015 eruption at Axial Seamount, OBSIP OBS Symposium (poster).
- **Tan, Y.J.** and Tolstoy, M. (2017), Tidal triggering of earthquakes in the Alaska-Aleutian subduction zone, CIDER Workshop (poster).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2017), Dynamics of a seafloor spreading episode at the East Pacific Rise, AGU Chapman Conference (oral).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2016), Cross-correlation-based earthquake relocation and ambient noise imaging at Axial Seamount, AGU Fall Meeting (oral).
- Wilcock, W.S.D., Tolstoy, M., Waldhauser, F., **Tan, Y.J.**, Garcia, C., Arnulf, A.F., Crone, T.J. (2016), Earthquake tidal triggering associated with the 2015 eruption of Axial Seamount, AGU Fall Meeting.
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2016), Dynamics of a seafloor spreading episode at the East Pacific Rise, IRIS Workshop (poster).
- Garcia, C., Wilcock, W.S.D., **Tan, Y.J.**, and Tolstoy, M. (2015), Impulsive seafloor signals from the 2015 eruption of Axial Seamount, AGU Fall Meeting.
- Wilcock, W.S.D., Tolstoy, M., Garcia, C., **Tan, Y.J.**, and Waldhauser, F. (2015), Live from the seafloor: Seismic signals associated with the 2015 eruption of Axial Seamount, AGU Fall Meeting.
- Tolstoy, M., Wilcock, W.S.D., **Tan, Y.J.**, and Waldhauser, F. (2015), A tale of two seafloor eruptions: Comparing seismic data from the 2006 East Pacific Rise and 2015 Axial Seamount eruptions, AGU Fall Meeting.
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2015), A new perspective on the 9°50'N East Pacific Rise 2006 eruption, AGU Fall Meeting (oral).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2015), A new perspective on the 9°50'N East Pacific Rise 2006 eruption, OBSIP OBS Symposium (poster).
- **Tan, Y.J.**, Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2014), A new perspective on the 9°50'N East Pacific Rise 2006 eruption, 3rd International Summer School on Earthquake Science (poster).
- **Tan, Y.J.** and Tolstoy, M. (2014), Tidal triggering of earthquakes in the Alaska-Aleutian subduction zone, AGU Fall Meeting (poster).
- **Tan, Y.J.** and Lin, J. (2013), Simulations of tsunami triggered by the 1883 Krakatau volcanic eruption: Implications for tsunami hazards in the South China Sea, AGU Fall Meeting (poster).

RESEARCH PROJECTS

2. Earthquakes, Foreshocks, and Slow Slips (PI, CUHK Direct Grant for Research) 2020-present
1. Collaborative Research: Caldera Dynamics and Eruption Cycles at Axial Seamount (Co-I, NSF Division of Ocean Sciences) 2020-present

TEACHING EXPERIENCE

The Chinese University of Hong Kong

- Volcanoes: Formation, Unrest, and Eruption 2021
- Statistical Methods and Data Analysis for Earth and Atmospheric Sciences 2021
- Hydrogeology 2020

Columbia University

Teaching Assistant (delivered guest lecture, led discussion sections, held office hours, and graded problem sets, papers, and exams)

- Solid Earth Dynamics 2018
- Earth Resources and Sustainable Development 2015, 2017
- Introduction to Seismology 2016

Lafayette College

Lab Teaching Assistant (set up and assisted students in hands-on lab exercises)

- Earth and Planetary Materials (Mineralogy) 2013

Peer Tutor (provided individual tutoring)

- Earth Surface Processes (Geomorphology) 2013
- Advanced Chinese 2013

FIELD EXPERIENCE

East Pacific Rise 2016

- 31-day OASIS experiment RV *Atlantis* cruise involving multibeam mapping, dredging, Sentry AUV operation, and rock sampling using HOV Alvin at the Siqueiros seamounts

Okavango Delta, Botswana 2014

- 18-day PRIDE SeisORZ active-source seismic experiment to understand the initiation and evolution of the East African continental rift system

Offshore Oregon, USA 2014

- 14-day Cascadia Initiative RV *Thompson* cruise recovering ocean bottom seismometers

Wyoming, USA 2013

- 5-day field mapping at the Bighorn Basin for a Structural Geology class

Alaska, USA 2012

- 14-day International Volcanology Field School at the Katmai National Park

Langkawi, Malaysia 2011

- 10-day field survey as part of a marine mammals conservation effort

PROFESSIONAL SERVICES

Reviewer for *Acta Oceanologica Sinica*, *Bulletin of the Seismological Society of America*, *Earth and Planetary Science Letters*, *Earth, Planets and Space*, *Earthquake Science*, *G-Cubed*, *Geophysical Research Letters*, *Journal of Geophysical Research: Solid Earth*, *Journal of Volcanology and Geothermal Research*, *Pure and Applied Geophysics*, *Scientific Reports*, *Seismological Research Letters*, *Terra Nova*, *Waves in Random and Complex Media*, US National Science Foundation.

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| AGU Fall Meeting Outstanding Student Presentation Award judge | 2019 – present |
| Session convener and co-chair for international meetings | |
| • AGU Fall Meeting: S42B Seismological contributions – Earthquakes I | 2017 |

OUTREACH ACTIVITIES

Science exhibitions

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| • Columbia University Girls Science Day (wave propagation) | 2015, 2017 |
| • Lamont-Doherty Earth Observatory Open House (seafloor mapping) | 2016 |

Mentoring

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| • Stanford Science Penpals for 6 – 12 th graders | 2019 – 2020 |
| • Columbia University Summer Internship for high-school students | 2015, 2016 |
| • Resident advisor (McKeen Hall, Lafayette College) | 2013 |