TAN YEN JOE 陳衍佐

Email: yjtan@cuhk.edu.hk | *Website:* https://tanyenjoe.com/ | *Nationality:* Malaysian

RESEARCH AND ACADEMIC POSITIONS

The Chinese University of Hong Kong
Associate Professor, Department of Earth and Environmental Sciences — since 08/2025
Assistant Professor — 07/2020 – 07/2025

Lamont-Doherty Earth Observatory of Columbia University, USA — 07/2020 – 06/2025
Adjunct Associate Research Scientist

University of Tokyo, Japan — 05/2025 – 06/2025
Visiting Fellow, Earthquake Research Institute

Stanford University, USA — 07/2019 – 07/2020
Postdoctoral Scholar, Department of Geophysics

Université Savoie Mont Blanc, France — 10/2018 – 05/2019
Visiting Researcher, Institut des Sciences de la Terre

EDUCATION

Columbia University, USA — 07/2014 – 05/2019
M.A., M.Phil., Ph.D., Earth and Environmental Sciences
Thesis title: Earthquake and volcanic processes at mid-ocean ridges
Thesis advisors: Maya Tolstoy & Felix Waldhauser

Lafayette College, USA — 09/2010 – 01/2014
B.S., Geology & A.B., Anthropology and Sociology
Summa Cum Laude and *Phi Beta Kappa*

HONORS AND AWARDS

Most viewed *Geophysical Research Letters* article — 2026
University of Tokyo Earthquake Research Institute Visiting Fellowship — 2025
CUHK Faculty of Science Exemplary Teaching Award — 2024
Croucher Tak Wah Mak Innovation Award — 2022
Most downloaded paper in 2021 for Seismological Society of America journals — 2022
NSFC Excellent Young Scientists Fund 優秀青年科學基金（港澳） — 2021
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
Los Alamos National Lab Applied Machine Learning Research Fellowship — 2018
Columbia University Dean's Fellowship — 2014
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

(equal contribution, #graduate student, ^postdoc, $other advisee, corresponding author*)

Representative Publications:

- ^Zhu, J., **Tan, Y.J.***, #Zhong, Y., Tolstoy, M., Waldhauser, F., and Wilcock, W.S.D. (2026), Migrating tremors indicate the activation of distributed melt bodies days before the 2015 Axial Seamount eruption, ***Geology***, *54*(6), 567–571.

- #Song, Z., Bell, A.F., LaFemina, P.C., Butcher, S., Ruiz, M., Hernández, S., Gregg, P.M., and **Tan, Y.J.*** (2026), Long-period microseismicity reveals cryptic earthquake-triggered fluid activity can facilitate caldera eruptions, ***Nature Communications***, *17*, 2040.

- #Wang, P., **Tan, Y.J.***, Bohnenstiehl, D.R., Wilcock, W.S.D., Tolstoy, M., Walhauser, F., Zhan, Y., and Li, W. (2025), Source mechanism of impulsive seafloor events that track submarine lava flows, ***Science Advances***, *11*, eadk3942.

- #Zhong, Y. and **Tan, Y.J.*** (2024), Deep-learning-based phase picking for volcano-tectonic and long-period earthquakes, ***Geophysical Research Letters***, *51*(12), e2024GL108438.

- ^Liu, M., **Tan, Y.J.***, Lei, X., Li, H., Zhang, Y., and Wang, W. (2024), Intersection between tectonic faults and magmatic systems promotes swarms with large magnitude earthquakes around the Tengchong Volcanic Field, southeastern Tibetan Plateau, ***Geology***, *52*(4), 302–307.

- ^Zhang, Z.*, ^Liu, M., **Tan, Y.J.***, Walter, F., He, S., Chmiel, M., and Su, J. (2024), Landslide hazard cascades can trigger earthquakes, ***Nature Communications***, *15*, 2878.

- **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.

- **Tan, Y.J.*** and Marsan, D. (2020), Connecting a broad spectrum of transient slip on the San Andreas fault, ***Science Advances***, *6*, eabb2489.

- 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.

- **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.

Other Publications:

- ^Liu, M., #Liu, H., and **Tan, Y.J.*** (2027), Interaction between seismic and aseismic slips along the Mendocino oceanic transform fault offshore northern California, *Earth and Planetary Science Letters*, 697, 120421.

- #Liu, H., ^Liu, M.*, and **Tan, Y.J.*** (2026), Large earthquakes along the Mendocino oceanic transform fault hardly have any foreshocks, *Geophysical Research Letters*, *53*(9), e2026GL121743.

- Xu, G., **Tan, Y.J.**, and Chadwick, W.W. (2025), Temporal variation of crustal permeability in relation to the volcano deformation cycle at Axial Seamount, northeast Pacific, *Journal of Geophysical Research: Solid Earth*, 130, e2024JB030112.

- ^Liu, M. and **Tan, Y.J.*** (2025), Evaluating the performance of machine-learning-based phase pickers when applied to ocean bottom seismic data: Blanco oceanic transform fault as a case study, *Geophysical Journal International*, 242(3), ggaf256.

- #Song, Z. and **Tan, Y.J.*** (2025), Characteristics of deep long-period earthquakes at Alaska Volcanoes from 2005 to 2017, *Journal of Geophysical Research: Solid Earth*, 130, e2024JB030444.

- #Ho, C.Y., ^Zhang, Z.*, and **Tan, Y.J.*** (2025), Analysing dynamics of the 2000 Yigong landslide in the Tibetan plateau using seismic observations, *Landslides*, 22, 2701-2713.

- ^Liu, M., **Tan, Y.J.***, Guo, H., Li, H., Lu, R., and Jiang, J. (2025), Fluids and fault structures underlying the complex foreshock sequence of the 2021 Mw 6.1 Yangbi earthquake, *Earth and Planetary Science Letters,* 651, 119173.

- ^Adimah, N.I., **Tan, Y.J.***, and Russell, J.B. (2024), Seismic velocity structure of the Blanco oceanic transform fault zone, *Geophysical Journal International*, 239(2), 1287-1312.

- Wang, K., Waldhauser, F., Tolstoy, M., Schaff, D., Sawi, T., Wilcock, W.S.D., and **Tan, Y.J.** (2024), Volcanic precursor revealed by machine learning offers new eruption forecasting capability, *Geophysical Research Letters,* 51(19), e2024GL108631.

- #Barkat, A., **Tan, Y.J.**, and Madson, A. (2024), Deciphering the interplay between reservoir loading and dynamic stresses at the Pertusillo Reservoir, *Seismological Research Letters,* 96(1): 461–472.

- Wang, K., Waldhauser, F., Schaff, D., Tolstoy, M., Wilcock, W.S.D., and **Tan, Y.J.** (2024), Real-time detection of volcanic unrest and eruption at Axial Seamount using machine learning, *Seismological Research Letters, 95*(5), 2651-2662.

- $Lee, M.K., **Tan, Y.J.***, Russell, J.B., Tolstoy, M., and Waldhauser, F. (2024), Relative seismic velocity variations at Axial Seamount observed with ambient seismic noise capture transition point in volcanic inflation, *Geophysical Research Letters, 51*(10), e2024GL108883.

- #Barkat, A., **Tan, Y.J.***, Xu, G., Waldhauser, F., Tolstoy, M., and Wilcock, W.S.D. (2024), Permeability and seismicity rate changes at an inflating submarine volcano caused by dynamic stresses, *Earth and Planetary Science Letters*, *632*, 118625.

  ^Zhang, Z., **Tan, Y.J.***, Walter, F., He, S., Chmiel, M., and Su, J. (2024), Seismic monitoring and geomorphic impacts of the catastrophic 2018 Baige landslide hazard cascades in the Tibetan plateau, *Journal of Geophysical Research: Earth Surface*, *129*, e2023JF007363.

- $Cheng, Z., **Tan, Y.J.**, Zhang, F., Zhou, P., Lin, J., Tian, J., Zhang, X., and Zha, C. (2023), An efficient transfer-learning-based OBS seismic phase picker (OBSPD) trained on Cascadia Subduction Zone earthquake dataset, *Seismological Research Letters*, *95*(2A): 834-837.

- #Song, Z., **Tan, Y.J.***, and Roman, D.C. (2023), Deep long-period earthquakes at Akutan Volcano from 2005-2017 better track magma influxes than volcano-tectonic earthquakes, *Geophysical Research Letters, 50*, e2022GL101987.

- Chiaraluce, L., Michele, M., Waldhauser, F., **Tan, Y.J.**, Hermann, M., et al. (2022), A comprehensive suite of earthquake catalogues for the 2016-2017 Central Italy seismic

sequence, *Scientific Data*, *9*, 710.

- ^Zhu, G.H., Yang, H., **Tan, Y.J.**, Jin, M., Yang, J., and Yang W. (2022), The cascading foreshock sequence of the Ms 6.4 Yangbi Earthquake in Yunnan, China, *Earth and Planetary Science Letters*, *591*, 117594.

- #Barkat, A., Javed, F., **Tan, Y.J.***, Ali, A., Javed, M.T., Ahmad, N., Awais, M., Shah, M.A., and Iqbal, T. (2022), 2019 Mw 5.9 Mirpur, Pakistan earthquake: Insights from integrating geodetic, seismic, and field observations, *Seismological Research Letters, 93*(4), 2015-2026.

- Zhou, P., Ellsworth, W.L., Yang, H., **Tan, Y.J.**, Beroza, G., and Chu, R. (2021), Machine learning facilitated earthquake detections near the Weiyuan shale gas reservoir, Sichuan, China, *Earth and Planetary Physics*, *5*(6), 501-519.

- 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.

- 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.

- 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.

- **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.

- 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.

- 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.

- **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.

- **Tan, Y.J.*** and Maharjan, R. (2018), What googling trends tell us about public interest in earthquakes, *Seismological Research Letters, 89*(2A), 653-657.

- Wilcock, W.S.D., Tolstoy, M., Walhauser, 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.

RESEARCH GRANTS

- Integrating seismic and multiparameter observations to constrain the mechanisms underlying slow-moving landslide's evolution (PI, National Natural Science Foundation of China/Hong Kong RGC Joint Research Scheme, HK$1,190,000) 2027 – 2030

- Quantifying seismic velocity-strain dynamics at Axial Seamount in 4D (PI, Hong Kong Research Grants Council General Research Fund, HK$840,000) 2026 – 2029

- Probing Earthquake and Volcanic Processes on the Seafloor (PI, Croucher Tak Wah Mak Innovation Award, HK$5,000,000) 2022 – 2027

- Tracking Deep Long-Period Volcanic Earthquakes (PI, Hong Kong Research Grants Council General Research Fund, HK$783,000) 2023 – 2026

- Oceanic Transform Fault Behavior and Properties (PI, NSFC Excellent Young Scientists Fund 優秀青年科學基金, RMB$2,000,000) 2022 – 2024

- Earthquakes and Slow Slips on the Blanco Oceanic Transform Fault (PI, Hong Kong Research Grants Council Early Career Scheme Grant, HK$721,000) 2022 – 2025

- Collaborative Research: Caldera Dynamics and Eruption Cycles at Axial Seamount (Co-I, NSF Division of Ocean Sciences, US$476,453) 2020 – 2025

INVITED TALKS

American Geophysical Union Fall Meeting (2)	12/2026
Passive Imaging and Monitoring in Wave Physics (Asia Pacific) Summer School	07/2026
Yunnan University	12/2025
Nanjing University	11/2025
University of Science and Technology of China	11/2025
The 10th Guangdong-Hong Kong-Macau Seminar on Earthquake Science	11/2025
Peking University	10/2025
Institute of Geology and Geophysics, Chinese Academy of Sciences	10/2025
China University of Geosciences (Beijing)	10/2025
Institute of Geophysics, China Earthquake Administration	10/2025
Earthquake Research Institute, The University of Tokyo	05/2025
The University of Hong Kong	08/2024
The Fourth International Ocean Science and Technology Summer School	07/2024
Institute for Disaster Management and Reconstruction, Sichuan University	03/2024
Institute of Mountain Hazards and Environment, Chinese Academy of Sciences	03/2024
Institute of Mountain Hazards and Environment, Chinese Academy of Sciences	10/2022
University of Washington School of Oceanography	02/2022
The Australian National University Research School of Earth Sciences	10/2021
Institute of Geology and Geophysics, Chinese Academy of Sciences	09/2021
University of Cambridge	10/2020
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
Cooperative Institute for Dynamic Earth Research (CIDER) Pre-AGU Workshop	12/2017

STUDENTS/POSTDOCS SUPERVISED

Students

- Hui LIU, Ph.D., 2021-present
- Yiyuan ZHONG, Ph.D., 2022-present
- Peifeng WANG, Ph.D., 2022-present
- Yuxin QIN, Ph.D., 2024-present
- Tianxiao YU, Ph.D., 2025-present
- Yazhuo WANG, Ph.D., 2026-present
- Mahdi Farmahini FARAHANI, Ph.D., 2026-present

Postdocs

- Juan ZHU, 2024-present
- Mohammadhosein MOHAMMADNIA, 2026-present

Research Assistant Professors

- Zhen ZHANG, 2025-present

Alumni

- Zilin SONG, Ph.D., 2020-2025; now postdoc at Heriot-Watt University
- Joanne HO Chung Yang, M.Phil., 2022-2025
- Min LIU, postdoc 2023-2024; now associate professor at CUGB
- Nicholas Irabor ADIMAH, postdoc 2022-2024
- Zhen ZHANG, postdoc 2022-24; postdoc at Swiss Federal Research Institute WSL 2024-25
- Adnan BARKAT, Ph.D. 2020-2024; now postdoc at Dalhousie University
- Gaohua ZHU, postdoc jointly advised with Prof. YANG Hongfeng, 2020-2021
- Zhangbao CHENG, visiting MPhil from South China Sea Institute of Oceanology, 2021
- Zinan LYU, visiting undergraduate from Sun Yat-Sen University, 2021

TEACHING EXPERIENCE

The Chinese University of Hong Kong

• Fundamental Geoscience Fieldwork (Taiwan)	2023 – present
• Seismic Data Processing	2023 – present
• Oceanography	2022 – present
• Volcanoes	2021 – present
• Hydrogeology	2020 – present
• Morningside College GEMC1001 (guest lecture about earthquakes)	2022 – 2023
• Introduction to Computational Earth System Science	2022
• Statistical Methods and Data Analysis for Earth and Atmospheric Sciences	2021

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

FIELD EXPERIENCE

Axial Seamount 2022
- 6-day RV *Marcus G. Langseth* cruise deploying 5 broadband and 10 short-period ocean bottom seismometers and a hydrophone mooring

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

UNIVERSITY, COLLEGE, AND DEPARTMENT SERVICES

Department

- Elected member, Executive Committee 2026 – present
- Member, Graduate Committee 2026 – present
- Member, M.Sc. Programme Committee 2025 – present
- Member, Undergraduate Curriculum Committee 2020 – present
- Co-Chair, Student Affairs Committee 2025 – 2026
- Member, Assessment Panel 2025 – 2026
- Member, Undergraduate Admissions Committee 2021 – 2026
- Member, Academic Resources Committee 2023 – 2026
- Thesis Internal Examiner, 6 Ph.D. and 4 M.Phil. students supervised by other professors

Faculty

- Member, Student Exchange Programme Committee 2024 – present
- Assistant Professor Representative, Board of the Faculty of Science 2023 – 2025
- Representative, OAFA International Outreach Weekend at Jakarta, Indonesia 12/2023

- Member, Student Disciplinary Committee 2020 – 2026
- Member, Task Force on International Undergraduate Recruitment 2020 – 2026

College

- Admission Interview Panelist, Morningside College 2023 – present
- Strategic Planning Retreat Research Talk Speaker, Morningside College 01/2023
- Mentor for first year students, Morningside College 2021 – present
- Member, General Education Committee, Morningside College 2021 – present
- Guest Lecturer, GEMC1001 Current Dilemmas and Their Histories 2020 – 2023

University

- Mentor, University General Education Mentor-Assisted Study Scheme 2024
- Mentor, Future 17: Sustainable Development Goals Challenge Programme 2022
- Host, CUHK Host Family Programme 2021 – 2023

PROFESSIONAL SERVICES

Associate Production Editor and Management Committee Member for *Seismica* 2024 – present

Handling Editor for *Seismica* 2022 – 2024

Early Career Representative, *IAVCEI Committee on Submarine Volcanism* 2022 – 2023

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*, *Geomatics Natural Hazards and Risk*, *Geophysical Journal International*, *Geophysical Research Letters*, *Geoscience Frontiers*, *Journal of Geophysical Research: Solid Earth*, *Journal of Volcanology and Geothermal Research*, *Proceedings of the National Academy of Sciences*, *Pure and Applied Geophysics*, *Science Advances*, *Scientific Reports*, *Seismological Research Letters*, *Seismica*, *Terra Nova*, *Waves in Random and Complex Media*, US National Science Foundation.

EGU General Assembly Outstanding Student Presentation judge 2023 – present

AGU Fall Meeting Outstanding Student Presentation Award judge 2019 – present

Session convener and chair for international meetings

- IAVCEI Commission on Submarine Volcanism Early Career Researcher Symposium 2023
- IAVCEI Commission on Submarine Volcanism Early Career Researcher Symposium 2022
- AGU Fall Meeting: V020 Submarine Volcanism 2021
- AGU Fall Meeting: S42B Seismological contributions – Earthquakes I 2017

OUTREACH ACTIVITIES

- GradMAP Philippines Advisory Board member 2022 – present
- GradMAP Philippines STEM mentor 2020 – 2022
- The Geological Society of Hong Kong Geohazards Public Lecture Series 28/8/2025
- 19th Lau Oi Wah Memorial Science Lecture 25/04/2025
- Interview with *Ming Pao* about landslide-dammed lake triggered earthquakes 11/04/2024
- Volcanoes and Climate Dynamics short course for general public 15-19/01/2024
- Interview with *South China Morning Post* on recent earthquake near Hong Kong 04/07/2023

- CUHK Earth Month public seminar on Turkey-Syria earthquake 17/03/2023
- Interview with *Radio Television Hong Kong* on Turkey-Syria earthquake 10/02/2023
- Interview with *Hong Kong Economic Journal* about submarine volcanism 26/01/2022
- EDB Scientific Training and Mentoring for STEM Talents internship mentor 2021

OTHERS

Language: English (fluent), Mandarin (fluent), Cantonese (working proficiency), Malay (limited working proficiency)