Fengzhou Tan

Email fengzhou.tan@gmail.com
Languages English, Chinese

Research Interests

- Earthquake seismology
- Tectonics & plate boundary processes
- Artificial intelligence & seismological methods
- Environmental seismology

Work Experience

Postdoctoral research scholar Oct 2024–Present
University of California, San Diego (UCSD)

- Awarded the NSERC postdoctoral fellowship.
- Leading research in marine geophysics using modern AI methods.
- Leading research on seismic observations of the cryosphere.

Field technician Feb 2025
University of California, San Diego

- Recovered 324 temporary seismic stations around Anza, CA, US.

Teaching assistant Sep 2018–Dec 2022
University of Victoria (UVic)

- Co-developed the undergraduate course EOS 170: Natural Hazards, including lab activities and assessments.
- Led whole-class interactive activities (∼300 students/term).
- Won President's Fellowship in Research-Enriched Teaching in 2020.

Research assistant Dec 2018–Mar 2019
Geological Survey of Canada, Natural Resources Canada

- Developed, coded, and tested an automatic earthquake detection and location workflow (S-SNAP) for induced seismicity monitoring in British Columbia.
- Contributed to operational research at Natural Resources Canada and collaborated with federal scientists on seismic analysis.

Field technician Sep 2018–Oct 2018
Geological Survey of Canada, Natural Resources Canada

- Set up 6 permanent seismic stations for the "Public Safety Geoscience Program Canadian Research Network" in northeast British Columbia.

Education

Ph. D. Major in Geophysics 05/01/2019–08/31/2024
University of Victoria, Victoria, BC, Canada

- **GPA:** 9.0/9.0

M. S. Major in Geophysics 09/01/2017–04/30/2019
University of Victoria, Victoria, BC, Canada

B. S. Major in Geophysics 09/01/2013–07/12/2017
Peking University (PKU), Beijing, China

Funding and Awards

- NSERC Postdoctoral Fellowship — 140,000 CAD Nat'l Comp., Canada, 2024-2026
- Graduate Award — 50,000 CAD UVic, 2017–2023
- Graduate Student Travel Grant — 1,200 CAD UVic, 2022, 2023
- The Charles S. Humphrey Graduate Student Award — 5,000 CAD UVic, 2020, 2023
- Albert Hung Chao Hong Scholarships — 3,189 CAD UVic, 2023
- Victoria Canada-China Friendship Association Scholarship — 726 CAD UVic, 2023
- David McGillivray Scholarship in Science — 3,731 CAD UVic, 2022
- M.A. & D.E. Breckenridge Graduate Awards — 2,000 CAD UVic, 2022
- Melva J. Hanson Graduate Scholarship — 3,200 CAD UVic, 2022
- CUPE 4163 Conference Award — 900 CAD UVic, 2018, 2022
- President's Fellowship in Research-Enriched Teaching — 5,000 CAD UVic, 2020
- A. & H. Stafford MacCarthy Muir Graduate Scholarship — 3,500 CAD UVic, 2020
- Mitacs Research Training Award — 6,000 CAD Nat'l Comp., Canada, 2020
- Graduate Entrance Award — 5,000 CAD UVic, 2019
- Diana and Martin Hocking Scholarship — 1,300 CAD UVic, 2018
- Honors Student of Peking University PKU, 2016
- China Aerospace Science and Technology Scholarship — 3,000 CNY PKU, 2016
- National Innovation Training Program — 10,000 CNY Nat'l Comp., China, 2015

Peer-Reviewed Publications

- Luo H.*, **Tan F.***, Ma Z., Chen K., Zhang J., Wang X., Xu S., Carvajal M., Xu H., Yun S. & Chen L., Rough Fracture Zone as a Gateway to the 2025 Mw 8.8 Kamchatka Earthquake. Under review at *Science*. *Co-first authors (equal contribution).

- **Tan F.**, Fan W., Shearer P. M., Behn M. D., & McGuire J. J. Variations in mechanical properties control segmentation of oceanic transform faults. Under revision at *Nature Communications*.
- **Tan F.**, Nissen E., & Kao H. Pervasive tectonic inheritance in the East Anatolian Fault Zone revealed by the 2023 Kahramanmaraş earthquake sequence. Under review at *Seismica*.
- Ulrich T., Zou X., Marchandon M., Schliwa N., **Tan F.**, Gabriel A., Fan W., Shearer P., Thant M., Tin TZH., Lindsey E. O., & Fialko Y. On predictability of slip, rupture geometry, and rupture speed of the Mw7.8 2025 Mandalay (Myanmar) Earthquake. Under revision at *Nature Communications*.
- Salomon G., Nissen E., **Tan F.**, Bergman E., Sloan A., & Pousse-Beltran L. (2025). The 2020 Mw 6.4 Koryak Highlands earthquake illustrates hidden seismic hazards in the northern Pacific Cordillera. *Geophysical Journal International*, 240(3), 2111–2124.
- **Tan F.**, Kao H., Yi K. M., Nissen E., Goerzen C., Hutchinson J., Gao D., & Farahbod A. (2024). Next generation source detection by computer vision: untangling the complexity of the 2016 Kaikōura earthquake sequence. *Journal of Geophysical Research: Solid Earth*, 129, e2024JB028735.
- **Tan F.**, Kao H., Nissen E., & Visser R. (2020). Tracking earthquake sequences in real time: application of Seismicity-Scanning based on Navigated Automatic Phase-picking (S-SNAP) to the 2019 Ridgecrest, California sequence. *Geophysical Journal International*, 223(3), 1511–1524.
- Pousse-Beltran L., Nissen E., Bergman E. A., Cambaz M. D., Gaudreau É., Karasözen E., & **Tan, F.** (2020). The 2020 M_w 6.8 Elazığ (Turkey) earthquake reveals rupture behavior of the East Anatolian Fault. *Geophysical Research Letters*, 47, e2020GL088136.
- Visser R., Kao H., Smith B., Goerzen C., Kontou B., Dokht R.M.H., Hutchinson J., **Tan, F.**, & Babaie Mahani, A. (2020). *A comprehensive earthquake catalogue for the Fort St. John-Dawson Creek region, British Columbia, 2017–2018* (Open File No. 8718). Geological Survey of Canada.
- **Tan F.**, Kao H., Nissen E., & Eaton D. (2019). Seismicity-Scanning based on Navigated Automatic Phase-picking. *Journal of Geophysical Research: Solid Earth*, 124, 3802–3818.
- **Tan F.**, Ge Z., Kao H., & Nissen E. (2019). Validation of the 3-D Phase-Weighted Relative Back Projection Technique and its Application to the 2016 M_w 7.8 Kaikōura Earthquake. *Geophysical Journal International*, 217(1), 375–388.
- Nissen E., Ghods A., Karasözen E., Elliott J. R., Barnhart W. D., Bergman E. A., Hayes G. P., Jamal-Reyhani M., Nemati M., **Tan, F.**, Abdulnaby W., Benz H. M., Shahvar M. P., Talebian M., & Chen L. (2019). The 12 November 2017 M_w 7.3 Ezgeleh-Sarpolzahab (Iran) earthquake and active tectonics of the Lurestan Arc. *Journal of Geophysical Research: Solid Earth*, 124, 2124–2152.
- Gaudreau É., Nissen E., Bergman E., Benz H., **Tan F.**, & Karasozen E. (2019). The August 2018 Kaktovik earthquakes: active tectonics in Northeastern Alaska revealed with InSAR and seismology. *Geophysical Research Letters*, 46, 14412–14420.

Conference Publications

- **Tan F.**, Fan W., & Shearer P., Searching for glacier-related seismic events in Greenland with waveform similarity and machine learning. Submitted to *Seismological Society of American (SSA) 2026 Annual Meeting*.
- Ulrich T., Zou X., Schliwa N., Marchandon M., **Tan F.**, Gabriel A., Fan W., Shearer P., & Fialko Y., Could the complex rupture dynamics of the 2025 Mw 7.8 Myanmar Earthquake have been predicted? Submitted to *European Geophysical Union (EGU) General Assembly 2026*.
- **Tan F.**, Fan W., Shearer P., Behn M., McGuire J., Warren J., Collins J., & Boettcher M., Variations in mechanical properties control segmentation of oceanic transform faults. *American Geophysical Union (AGU) 2025 Fall Meeting* poster presentation (S43D-0288).
- Tian W., Yu H., **Tan F.**, & Jiang G., Comparative study of earthquake detection and location methods based on phase identification and waveform stacking: Taking injection-induced earthquake in Lu County, Sichuan as an example. *AGU 2025 Fall Meeting* poster presentation (S41E-0238).
- Gabriel A., Ulrich T., Zou X., Schliwa N., Marchandon M., **Tan F.**, Fan W., Shearer P., & Fialko Y., Can the complex dynamic rupture behaviour of the 2025 Myanmar earthquake be predicted from its static slip distribution alone? *AGU 2025 Fall Meeting* **oral** presentation (S33A-08).
- Fialko Y., Ulrich T., Zou X., Schliwa N., Marchandon M., **Tan F.**, Gabriel A., Fan W., & Shearer P., Rupture Geometry and Slip Distribution of the 2025 Mw 7.8 Myanmar Earthquake Constrained by Sentinel-1A/2 and ALOS-2 Satellite Data. *AGU 2025 Fall Meeting* poster presentation (G41B-0304).
- **Tan F.**, Fan W., Shearer P., Behn M., & McGuire J., Variations in mechanical properties control segmentation of oceanic transform faults. *Statewide California Earthquake Center (SCEC) 2025 annual meeting* poster presentation.
- **Tan F.**, Nissen E., & Kao H., The Kahramanmaras (Turkey) earthquake multiplet sequence revealed by deep learning computer vision. *SSA 2024 Annual Meeting* **oral** presentation.
- **Tan F.**, Nissen E., & Kao H. Untangling the complexity of the 2016 Kaikōura earthquake sequence by artificial intelligence image recognition. *Canadian Geophysical Union (CGU) 2023 Meeting* **oral** presentation (S05a-01).
- **Tan F.**, Kao H., Yi K. M., Goerzen C., Hutchinson J., Gao D., Farahbod A., & Nissen E., Source Untangler Guided by Artificial intelligence image Recognition (SUGAR). *AGU 2022 Fall Meeting* **oral** presentation (S52A-03).
- Karasozen E., Pousse-Beltran L., Buyukakpinar P., Dogan G. G., Goldberg D., Floyd M., **Tan F.**, Bergman E., Nissen E., Ozacar A., & Yalciner A. C., The 2020 October 30 Mw 7.0 Samos earthquake. *The 37th Assembly (2021) of the European Seismological Commission* **oral** presentation (38-206).
- Schaeffer A., **Tan F.**, Hale C., Kao H., Mulder T., & Paul C., Examining micro-seismicity across southern Vancouver Island: applying automated detection to augment existing seismic catalogues. *AGU 2021 Fall Meeting* poster presentation (T15D-0195).

- Salomon G., **Tan F.**, Nissen E., Pousse-Beltran L., Bergman E. & Karasozen E. Tectonic setting of the Koryak region, Siberia from the 2020 M 6.4 Chukotskiy earthquake. *AGU 2021 Fall Meeting* poster presentation (EP55A-1059).
- **Tan F.**, Kao H., & Nissen E. Tracking earthquake sequences in real time: application of Seismicity-Scanning based on Navigated Automatic Phase-picking (S-SNAP) to the 2019 Ridgecrest, California sequence. *AGU 2020 Fall Meeting* poster presentation (S038-0016).
- Pousse-Beltran L., Nissen E., Bergman E., Cambaz D., Gaudreau É., Karasözen E., & **Tan F.** Rupture behavior of the 2020 Mw 6.8 Elazig (Turkey) earthquake and its tectonic implications. *AGU 2020 Fall Meeting* poster presentation (T054-0009).
- **Tan F.**, Kao H., & Nissen E. Source-Scanning based on Navigated Automatic Phase-Picking (S-SNAP) for delineating the spatiotemporal distribution of earthquake sequence in real time: application to the 2019 Ridgecrest, California sequence. *SSA 2020 Annual Meeting* **oral** presentation (*Seismological Research Letters* (2020) 91 (2B): 1258.).
- Kao H., Visser R., Dokht R. M. H., Venables S., Mahani A. B., Liu Y., & **Tan F**. Quantitative relationship between injection operations and induced seismicity in the Southern Montney Play, British Columbia, Canada. *AGU 2019 Fall Meeting* **oral** presentation (S12A-08).
- **Tan F.**, Kao H., Nissen E., & Eaton D. Seismicity-Scanning based on Navigated Automatic Phase-picking (S-SNAP). *AGU 2018 Fall Meeting* poster presentation (S31F-0568).
- Nissen E., Ghods A., Karasözen E., Elliott J. R., Barnhart W. D., Bergman E. A., Hayes G. P., Jamal-Reyhani M., Nemati M., **Tan F.**, Abdulnaby, W., Benz, H. M., Shahvar, M. P., Talebian, M., & Chen L. The 12 November 2017 Mw 7.3 Ezgeleh-Sarpolzahab (Iran) earthquake and active tectonics of the Lurestan arc. *AGU 2018 Fall Meeting* poster presentation (G23B-0581).
- **Tan F.**, Wang G., Chen C., Ge Z. Comparison of different approaches of back projection method in retrieving the rupture process of large earthquakes. *AGU 2016 Fall Meeting* poster presentation (S23C-2784).

Invited Talks

- Variations in mechanical properties control segmentation of oceanic transform faults
  Seminars in:

  California Institute of Technology, Pasadena, USA Oct 2025
  University of Southern California, Los Angelas, USA, online Oct 2025
- Detecting and locating earthquakes by computer vision—rapid response and fault structure insights in the 2023 Turkey earthquake sequence
  Seminar in:

  University of California, San Diego, USA Jan 2025
- Earthquake detection and location using AI and computer vision
  Seminars in:

  Peking University, Beijing, China Sep 2024
  Southern University of Science and Technology, Shenzhen, China Sep 2024

Zhejiang University, Hangzhou, China Sep 2024
Ocean Networks Canada, Victoria, Canada Jul 2024

- Untangling complex earthquake sequences by artificial intelligence image recognition: preliminary results of the 2023 M7.8 Turkey-Syria earthquake
  Seminars in:
  McGill University, Montreal, Canada Jul 2023
  University of Ottawa, Ottawa, Canada Jul 2023
- Innovative earthquake location methods and their applications
  Seminar in:
  University of Victoria, Victoria, Canada Apr 2023
- Seismicity-Scanning based on Navigated Automatic Phase-Picking (S-SNAP)
  Presentation for Environmental Geoscience Program in:
  Geological Survey of Canada, Canada, online Jan 2022

Professional Services

- **Scientific journal reviewer**
  - *Seismological Research Letters* (8).
  - *Earth, Planets and Space* (5).
  - *Journal of Geophysical Research: Solid Earth* (2).
  - *Scientific Reports* (2).
  - *Seismica* (1).
  - *Tectonophysics* (1).
  - *New Zealand Journal of Geology and Geophysics* (1).
  - *Earth Science Informatics* (1).
- **Scientific conference session convenor**
  - Session convener and chair of S05 "New methods and findings on seismic and aseismic events" in CGU annual meeting. 2023
- **Mentoring**
  - Mentored a PhD student detecting and locating landslides around Douglas Channel, BC, Canada using a machine learning method. 2023–2024
  - Mentored an undergraduate student detecting and locating micro earthquakes in southern Vancouver Island, BC, Canada. 2021
- **Academic teaching (beyond TA role)**
  - Delivered guest lecture in SIO 161 "Seismology", UCSD. 2025
  - Delivered guest lecture in EOS 170 "Natural Hazards", UVic. 2022
  - Designed and delivered graduate workshops on "Earthquake Relocation" and "Seismic Tomography", UVic. 2022

Public Education and Outreach

- Taught Earth Science (Grades 7–8), Selkirk Montessori School, Victoria, Canada 2022
- Led "Earthquake Shakedown" outreach event for K–12 students, Science Rendezvous Canada, Victoria, Canada 2022
- Delivered invited talks on "Career Planning and Major Choice—Earth Sciences" for high school students, High School Affiliated to Renmin University of China 2015–2017