Huihui Weng

Associate Professor, Nanjing University, China

Contact Information	Nanjing University Xianlin Campus, 163 Xianlin Road, Nanjing, China — weng@nju.edu.cn
Homepage	https://huihuiweng.github.io/en/

Education

University of Science and Technology of China (USTC)

Ph.D., Geophysics, *2010 - 2015*

Academic Employments

Associate Professor (tenure-track) 2022 to present
School of Earth Sciences and Engineering, Nanjing University

Post-doctorant 2018 - 2022
Géoazur, Université Côte d'Azur, CNRS
Supervisor: Jean-Paul Ampuero

Postdoctoral Fellow 2015 - 2018
The Chinese University of Hong Kong (CUHK)
Supervisor: Hongfeng Yang

Research Interests

Earthquake source physics and dynamics; Fracture mechanics; Slow and fast earthquakes; Earthquake cycle and nucleation processes; Seismic radiation

Publications

Google Scholar ***Publons profile***

Submitted / in preparation (student/postdoc shown in italics):

S11. *D. Zhao*, **H. Weng**, Q. Wang, Y. Zhou, H. Chen, "Multiscale fault-zone structures governed by earthquake rupture dynamics." Submitted. *Preprint*

S7. L. Buijze, **H. Weng**, and J.P. Ampuero, "Physics-based estimates of the maximum magnitude for induced earthquakes in the Groningen gas field." In manuscript

S6. **Weng, H.**, L. Buijze, and J.P. Ampuero, "A theoretical model for physics-based estimation of maximum earthquake sizes." In manuscript

S4. **Weng, H.** and J.P. Ampuero, "Toward assessing seismic hazard from laboratory observations of rate-and-state frictional parameters." In manuscript, 2020

S3. **Weng, H.** and J.P. Ampuero, "The theoretical energy release rate of in-plane elongated ruptures." In manuscript, 2020

Published (student/postdoc shown in italics):

17. **Weng, H.**, "The dynamics of fast and slow earthquake ruptures in viscoelastic materials" *Journal of Geophysical Research: Solid Earth*, 2025, *https://doi.org/10.1029/2024JB030663*

16. Diao, F., **H. Weng**, J. P. Ampuero, Z. Shao, R. Wang, F. Long and X. Xiong, "Physics-based assessment of earthquake potential on the Anninghe-Zemuhe fault system in southwestern China." *Nature Communications*, 2024, *https://doi.org/10.1038/s41467-024-51313-w*

15. *D. Zhao*, C. Qu, X. Shan, W. Gong, **H. Weng**, H. Chen, D. Wu, "An updated fault coupling model along major block-bounding faults on the eastern and northeastern Tibetan Plateau from a stress-constrained inversion of GPS and InSAR data." *Journal of Geophysical Research: Solid Earth*, 2024, *https://doi.org/10.1029/2023JB028483*

14. H. Yang, L. Moresi, **H. Weng**, and J. Giordani, "Numerical modelling of earthquake cycles based on Navier-Stokes equations with Viscoelastic-plasticity rheology." *Geochemistry, Geophysics, Geosystems*, 2023, *https://doi.org/10.1029/2023GC010872*

13. **Weng, H.** and J.P. Ampuero, "Integrated rupture mechanics for slow slip events and earthquakes." *Nature Communications*, 2022, *https://doi.org/10.1038/s41467-022-34927-w*

12. **Weng, H.** and J.P. Ampuero, "Continuum of earthquake rupture speeds enabled by oblique slip." *Nature Geoscience*, 2020, *https://doi.org/10.1038/s41561-020-00654-4*

11. Oral, E., **H. Weng**, and J.P. Ampuero, "Does a damaged fault zone mitigate the near-field impact of supershear earthquakes? Application to the 2018 Mw 7.5 Palu earthquake." *Geophys. Res. Lett.*, 47, e2019GL085649, 2019, *https://doi.org/10.1029/2019GL085649*

10. **Weng, H.** and J.P. Ampuero, "The dynamics of elongated earthquake ruptures." *Journal of Geophysical Research: Solid Earth*, 124, 2019. *https://doi.org/10.1029/2019JB017684*

9. Yang, H., S. Yao, B. He, A. Newman, and **H. Weng**, "Deriving rupture scenarios from interseismic locking distributions along the subduction megathrust." *Journal of Geophysical Research: Solid Earth*, 2019. *https://doi.org/10.1029/2019JB017541*

8. **Weng, H.** and H. Yang, "Constraining frictional properties on fault by dynamic rupture simulations and near-field observations." *Journal of Geophysical Research: Solid Earth*, 123(8), 6658-6670, 2018. *https://doi.org/10.1029/2017JB015414*

7. **Weng, H.** and H. Yang, "Seismogenic width controls aspect ratios of earthquake ruptures." *Geophys. Res. Lett.*, 44(6): 2725-2732, 2017. *https://doi.org/10.1002/2016GL072168*

6. **Weng, H.**, H. Yang, Z. Zhang, and X. Chen, "Earthquake rupture extents and coseismic slips promoted by damaged fault zones." *Journal of Geophysical Research: Solid Earth*, 121(6): 4446-4457, 2016. *https://doi.org/10.1002/2015JB012713*

5. Yin, J., H. Yang, H. Yao, and **H. Weng**, "Coseismic radiation and stress drop during the 2015 Mw8.3 Illapel, Chile megathrust earthquake." *Geophys. Res. Lett.*, 43: 1520-1528, 2016. *https://doi.org/10.1002/2015GL067381*

4. **Weng, H.**, J. Huang, and H. Yang, "Barrier-induced supershear ruptures on a slip-weakening fault." *Geophys. Res. Lett.*, 42(12): 4824-4832, 2015. *https://doi.org/10.1002/2015GL064281*

3. **Weng, H.** and J. Huang, "Numerical simulations about subduction earthquake cycles: The case of Japan Tohoku Mw9.0 earthquake." *Journal of Geodesy and Geodynamics (in Chinese)*, 2015

2. **Weng, H.** and J. Huang, "Numerical simulations about the influence of stress disturbance on earthquake cycle and seismic moment." *Acta Seismologica Sinica (in Chinese)*, 2015

1. Diao, F., X. Xiong, R. Wang, Y. Zheng, T. R. Walter, **H. Weng**, and J. Li, "Overlapping post-seismic deformation processes: afterslip and viscoelastic relaxation following the 2011 Mw 9.0 Tohoku (Japan) earthquake." *Geophys. J. Int.*, 196(1): 218-229, 2014. *https://doi.org/10.1093/gji/ggt376*

Teaching

- **Seismology**, Nanjing University

- **International summer schools**:
  2019 Advanced Workshop on Earthquake Fault Mechanics: Theory, Simulation and Observations at ICTP, Trieste, Italy

Awards

Travel Awards

- Visiting Student Programme at CUHK, Hong Kong 2015
- International Summer School on Earthquake Science, Japan 2015

Student Awards

- AEGON-INDUSTRIAL Global Responsibility Scholarship 2014
- Full Scholarship for Enrolled Graduate Student 2010
- First Prize, 35th Chinese Physics Olympiad for high school students (China Fujian Province) 2004

Invited Talks (English)

- Slow slip events are regular earthquakes, *Isterre, Universit Grenoble Alpes*, 2021

- Anticipating rupture speed and size of future earthquakes, *GeoScience Café, Wuhan University*, 2020

- Anticipating rupture speed and size of future earthquakes, *Géoazur Laboratory*, Valbonne, 2020

- The dynamics of elongated earthquake ruptures and its implications, *Géoazur Laboratory*, Valbonne, 2019

- The dynamics of elongated earthquake ruptures and its implications on large earthquakes, *LMU Munich*, Munich, 2019

- Constraining frictional properties on fault by dynamic rupture simulations, *Géoazur Laboratory*, Valbonne, 2018

- Effects of fault heterogeneities on dynamic rupture, *Chengdu University of Technology*, Chengdu, 2016

- Effects of fault heterogeneities on dynamic rupture, *South China Sea Institute of Oceanology*, Guangzhou, 2016

Conference Presentations (English)

- **Weng, H.**, Viscoelastic ruptures unbounded by classical speed limits, *Workshop: Numerical Modeling of Earthquake Motions: Waves and Ruptures*, Smolenice Castle near Bratislava, Slovakia, 2024

- **Weng, H.**, Integrated rupture mechanics for slow slip events and earthquakes, *AOGS*, Singapore, 2023

- **Weng, H.** and J.P. Ampuero, Constraining fracture energies of globally-observed elongated earthquakes by physical-based equation-of-motion of rupture tip, *AGU Fall Meeting*, 2021

- **Weng, H.**, Slow slip events are regular earthquakes, *Cargse School on Earthquakes*, 2021

- **Weng, H.**, J.P. Ampuero, and Loes Buijze, Physics-based estimates of the maximum magnitude of induced earthquakes in the Groningen gas field, *EGU General Assembly*, 2021

- **Weng, H.** and J.P. Ampuero, Slow supershear (sub-Eshelby) earthquake ruptures on long faults, *AGU Fall Meeting*, San Francisco, USA, 2019

- **Weng, H.** and J.P. Ampuero, The dynamics of elongated earthquake ruptures, *Workshop: Numerical Modeling of Earthquake Motions: Waves and Ruptures*, Smolenice Castle near Bratislava, Slovakia, 2019

- **Weng, H.** and J.P. Ampuero, Dynamics of elongated earthquake ruptures, *EGU General Assembly*, Vienna, Austria, 2019

- **Weng, H.** and J.P. Ampuero, Theoretical insights on the evolution of earthquake rupture speed on long faults, *AGU Fall Meeting*, DC, USA, 2018

- **Weng, H.** and J.P. Ampuero, Theoretical insights on the evolution of earthquake rupture speed on long faults, *KAUST Workshop on Seismic*

Hazard Assessment, Thuwal, Saudi Arabia, 2018

- **Weng, H.**, H. Yang, and J.P. Ampuero, Frictional parameters of the 2015 Nepal earthquake: constrained by dynamic simulation, *KAUST Workshop on Seismic Hazard Assessment*, Thuwal, Saudi Arabia, 2018

- **Weng, H.** and H. Yang, Dynamic parameters of the 2015 Nepal Gorkha Mw7.8 earthquake constrained by multi-observations, *AGU Fall Meeting*, New Orleans, USA, 2017

- **Weng, H.** and H. Yang, Rupture dynamics of the 2015 Nepal Gorkha Mw7.8 earthquake, *Workshop: Frontiers in Studies of Earthquakes and Faults*, Shenzhen, China, 2017

- **Weng, H.** and H. Yang, Effects of bounded fault on seismic radiation and rupture propagation, *AGU Fall Meeting*, San Francisco, USA, 2016

- Yang, H. and **H. Weng**, Frictional properties and fracture energy constrained from frequenc-dependent coseismic radiations of great earthquakes, *AGU Fall Meeting*, San Francisco, USA, 2016

- **Weng, H.** and H. Yang, Effects of fault heterogeneities on earthquake rupture propagation, *Tsinghua Sanya International Mathematics Forum*, Sanya, China, 2016

- **Weng, H.** and H. Yang, Effects of along-strike fault heterogeneity on rupture propagation, *AGU Fall Meeting*, San Francisco, USA, 2015

- Yang, H. and **H. Weng**, Effects of a barrier on earthquake ruptures: stop or supershear? *AGU Fall Meeting*, San Francisco, USA, 2015

- **Weng, H.** and H. Yang, Barrier-induced supershear ruptures on a slip-weakening fault, *International Summer School on Earthquake Science*, Yamanakako, Japan, 2015

- **Weng, H.** and J. Huang, Numerical simulations on the seismic cycles at the Northeastern Japan subduction zone, *AGU Fall Meeting*, San Francisco, USA, 2014

Professional Activities

Proposal reviewer for ***National Science Foundation***, ***Marsden Fund***, ***National Natural Science Foundation of China***

Journal reviewer for ***JGR***, ***GRL***, ***Nature Communications***, ***GJI***,

Tectonophysics, ***BSSA***, ***SRL***, ***Terra Nova***, ***Pure and Applied Geophysics***, ***Scientific Reports***, ***JAES***, ***GMD***, ***Earthquake Science***

Technical Skills

Computer Languages:
Python, Matlab, Fortran, Shell scripts, and C++

Numerical modeling:
Finite Element Tool, Pylith, Specfem3D, sem2dpack, QDYN

Others:
Generic Mapping Tools, CUBIT, Latex
My GitHub tools for Specfem3D