

Yufeng Wang

Visiting Student Researcher

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Education

- 2018.9-2019.9 **VSR in Geophysics**, Stanford University, CA, USA
Thesis: Efficient and stable seismic attenuation compensation via inversion and imaging (supervised by Prof. Jerry M. Harris)
- 2016.9-Present **Ph.D in Geophysics**, China University of Petroleum, Beijing, China
Thesis: Seismic Attenuation Modeling and Compensation (supervised by Prof. Hui Zhou)
- 2014.9-2016.6 **MSc in Geophysics**, China University of Petroleum, Beijing, China
Thesis: Viscoelastic reverse time migration and compensation (supervised by Prof. Hui Zhou)
- 2010.9-2014.6 **BSc in Geophysics**, Yangtze University, Wuhan, China

Research Interests

- Fractional attenuation models and Fractional calculus;
- Seismic attenuation compensation via imaging and inversion;
- Seismic signal processing and Physical informed deep learning;
- Multisource full waveform inversion;
- High performance computing and Open source development.

Professional Societies & Activities

- 2012 – 2013 National Undergraduate Training Programs for Innovation and Entrepreneurship
- 2013.12 Field practice of seismic data acquisition and processing in Honghu, China
- 2014 – present Member of the Society of Exploration Geophysicists (SEG)
- 2014 – present Member of the European Association of Geoscientists & Engineers (EAGE)
- 2016 – 2017 Teaching Assistant of Advanced Mathematics for undergraduate
- 2017 – present Peer-reviewer of scientific journals: **Geophysics**, **Computers and Geosciences**, **Journal of Applied Geophysics**, **IEEE Geoscience and Remote Sensing Letters**.

Awards & Honors

- 2018 National Scholarship for Doctoral Students, Ministry of Education, China [**top 5%**]
- 2018 CSC scholarship for visiting Ph.D, China Scholarship Council
- 2018 **Outstanding Contribution in Reviewing**, Journal of Applied Geophysics Editors,
- 2018 **Geophysics Bright Spots Paper**, Geophysics Editors, doi:[10.1190/tle37020152.1](https://doi.org/10.1190/tle37020152.1)
- 2016 Outstanding Graduate Scholarship, China University of Petroleum, Beijing, China
- 2014 Outstanding Undergraduate Student, Yangtze University, Wuhan, China [**top 10%**]
- 2012 Second Prize in Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM), China Society for Industrial and Applied Mathematics (CSIAM)

Peer-reviewed Publications

14. **Wang, Y.**, Zhou, H., Zhao, X., & Chen, Y. (2019). Q -compensated viscoelastic reverse time migration using mode-dependent adaptive stabilization scheme. **Geophysics**. Accept.
13. **Wang, Y.**, Zhou, H., Zhao, X., & Chen, Y. (2019). Cu Q -RTM: A CUDA-based code package for stable and efficient Q -compensated RTM. **Geophysics**, 84(1), F1–F15. doi:[10.1190/GEO2017-0624.1](https://doi.org/10.1190/GEO2017-0624.1)
12. **Wang, Y.**, Ma, X., Zhou, H., & Chen, Y. (2018). L_{1-2} minimization for exact and stable seismic attenuation compensation. **Geophysical Journal International**, 213(3), 1629-1646. doi:[10.1093/gji/ggy064](https://doi.org/10.1093/gji/ggy064)
11. **Wang, Y.**, Zhou, H., Chen, H., & Chen, Y. (2018). Adaptive stabilization for Q -compensated reverse time migration. **Geophysics**, 83(1), S15–S32. doi:[10.1190/geo2017-0244.1](https://doi.org/10.1190/geo2017-0244.1)
10. **Wang, Y.**, Zhou, H., Zu, S., Mao, W., & Chen, Y. (2017). Three-Operator Proximal Splitting Scheme for 3-D Seismic Data Reconstruction. **IEEE Geoscience and Remote Sensing Letters**, 14(10), 1830-1834. doi:[10.1109/LGRS.2017.2737786](https://doi.org/10.1109/LGRS.2017.2737786)
9. Chen, Y., Chen, X. **Wang, Y.**, & Zu, S. (2019). Deblending of simultaneous-source data using a structure-oriented space-varying median filter. **Geophysical Journal International**, 216(2), 1214-1232. doi:[10.1093/gji/ggy487](https://doi.org/10.1093/gji/ggy487)
8. Chen, Y., Chen, X., **Wang, Y.**, & Zu, S. (2019). The interpolation of sparse geophysical data. **Surveys in Geophysics**, 40(1), 73-105. doi:[10.1007/s10712-018-9501-3](https://doi.org/10.1007/s10712-018-9501-3)
7. Zhao, X., Zhou, H., **Wang, Y.**, Chen, H., Zhou Z., Sun P., & Zhang J. (2018). A stable approach for Q -compensated viscoelastic reverse time migration using excitation amplitude imaging condition. **Geophysics**, 83(5), S459–S476. doi:[10.1190/geo2018-0222.1](https://doi.org/10.1190/geo2018-0222.1)
6. Fang, J., Zhou, H., Chen, H., Wang, N., **Wang, Y.**, Sun P., & Zhang J. (2019). Source-independent elastic least-squares reverse time migration. **Geophysics**, 84(1), S1–S16. doi:<https://doi.org/10.1190/geo2017-0847.1>
5. Xia, M, Zhou, H, Li, Q, Chen, H, **Wang, Y.**, & Wang, S. (2017). A General 3D Lattice Spring Model for Modeling Elastic Waves. **Bulletin of the Seismological Society of America**, 107(5), 2194-2212. doi:[10.1785/0120170024](https://doi.org/10.1785/0120170024)
4. Chen, H., Zhou, H., Li, Q., & **Wang, Y.**(2016). Two efficient modeling schemes for fractional laplacian viscoacoustic wave equation. **Geophysics**, 81(5), T233-T249. doi:[10.1190/geo2015-0660.1](https://doi.org/10.1190/geo2015-0660.1)

3. Chen, Y., Chen, W., & **Wang, Y.**(2019) Least-squares decomposition with time-space constraint for denoising microseismic data. **Geophysical Journal International**. Accept.
2. Chen, Y., Bai M., Zhou, Y., Zhang, Q., **Wang, Y.**, & Chen, H. (2019) Substituting smoothing with lowrank decomposition - applications to least-squares reverse time migration of simultaneous source and incomplete seismic data. **Geophysics**. Accept.
1. Wang, L., Zhou, H., & **Wang, Y.**(2019) Three parameters prestack seismic inversion based on L_{1-2} minimization. **Geophysics**. Accept.

Papers submitted/under revision

2. Wang, N., Zhou, H., Chen, H., **Wang, Y.**, & Fang, J. An optimally Parallelized high-order SGFD modeling package for 3D seismic wave propagation. submitted to **Computers & Geosciences**. minor revision.
1. Ma, X., Li, G., & **Wang, Y.**, Seismic deconvolution using L_{1-2} constrained compressed sensing approach. submitted to **IEEE Geoscience and Remote Sensing Letters**. Major revision.

Meeting Abstracts

9. **Wang, Y.**, Li, D., & Jerry M. Harris (2019). A generalized stabilization scheme for seismic Q compensation. Abstract at 2019 SEG Annual Meeting, San Antonio, TX, USA.
8. **Wang, Y.**, Zhou, H., Li, Q., Zhao, X. & Zhao, X. (2017). Regularized Q-RTM using time-variant filtering in the k-space. Abstract presented at 2017 EAGE Annual Meeting, Paris, France. doi:[10.3997/2214-4609.201700676](https://doi.org/10.3997/2214-4609.201700676)
7. **Wang, Y.**, Zhou, H., Zhao, X., Zhang, Q. & An, Y. (2017). Wavefield reconstruction in attenuating media using time-reversal checkpointing and k-space filtering. Abstract presented at 2017 EAGE Annual Meeting, Paris, France. doi:[10.3997/2214-4609.201701152](https://doi.org/10.3997/2214-4609.201701152)
6. **Wang, Y.**, Zhou H., Zhao, X., Xia, M., An, Y. & Cai, X. (2017). The k-space Greens functions for decoupled constant-Q wave equation and its adjoint equation. Abstract presented at 2017 EAGE Annual Meeting, Paris, France. doi:[10.3997/2214-4609.201701153](https://doi.org/10.3997/2214-4609.201701153)
5. **Wang, Y.**, Zhou, H., Li, Q., Chen, H. Gan, S., & Chen, Y. (2015). An unsplit convolutional perfectly matched layer for visco-acoustic wave equation with fractional time derivatives. Abstract presented at 2015 SEG Annual Meeting, New Orleans, LA, USA. doi:[10.1190/segam2015-5835254.1](https://doi.org/10.1190/segam2015-5835254.1)
4. Wang, N., Zhou H., Chen, H., **Wang, Y.**, Yu, B., & Zhou, Z. (2017). Modelling Viscoelastic Waves Using Constant Fractional-order Spatial Derivatives. Abstract presented at 2017 EAGE Annual Meeting, Paris, France. doi:[10.3997/2214-4609.201701109](https://doi.org/10.3997/2214-4609.201701109)
3. Zhao, X., Zhou H., Li, Q., & **Wang, Y.**. (2017). A Method to Avoid the Snapshots Wavefields Storage in Reverse Time Migration. Abstract presented at 2017 EAGE Annual Meeting, Paris, France. doi:[10.3997/2214-4609.201700679](https://doi.org/10.3997/2214-4609.201700679)
2. Wang, N., Zhou H., Chen, H., **Wang, Y.**, & Fang, J. (2018). High-order Time Accuracy Fractional Laplacian Viscoacoustic Simulation Scheme Using Nonstandard Pseudospectral Method. Abstract presented at 2018 EAGE Annual Meeting, Copenhagen, Denmark. doi:[10.3997/2214-4609.201801447](https://doi.org/10.3997/2214-4609.201801447)
1. Wang, L., Zhou, H., **Wang, Y.**, Yu, B., & Long, T. (2018). Elastic-impedance inversion based on L1-2 minimization. Abstract presented at 2018 SEG Annual Meeting, Anaheim, CA, USA. doi:[10.1190/segam2018-2983903.1](https://doi.org/10.1190/segam2018-2983903.1)

Talks

7. **Wang, Y.** Physics-informed neural networks for seismic modeling and inversion. **SWP report**, Stanford, CA. May. 14, 2019.
6. **Wang, Y.** Seismic attenuation models: multiple and fractional generalizations. **SWP report**, Stanford, CA. Mar. 5, 2019.
5. **Wang, Y.** A generalized stabilization scheme for seismic Q compensation. **SWP report**, Stanford, CA. Jan. 29, 2019.
4. **Wang, Y.** Seismic attenuation compensation via inversion and imaging. **SWP report**, Stanford, CA. Nov. 30, 2018.
3. **Wang, Y.** An overview of fractional attenuation models in exploration geophysics. **SWP report**, Stanford, CA. Nov. 06, 2018.
2. **Wang, Y.** L_{1-2} minimization for seismic deconvolution. **Geophysical Annual meeting**, Qingdao, China. Jul. 12, 2018.
1. **Wang, Y.** My Journey on Madagascar and Reproducible Research – cuQ -RTM: A CUDA-based open-source package for stable and efficient Q -compensated RTM. **2017 Madagascar School in Shanghai**, Shanghai, China. Jul. 11, 2017.

Open Source Software

*Year indicates when the project was started. All projects are currently ongoing.

2017 **CuQ-RTM** – A CUDA-based code package for stable and efficient Q -compensated RTM.
<https://github.com/Super-Messiah/cuQRTM>

2018 **L1-2-Minimization** – L1-2 minimization code package for exact and stable seismic attenuation compensation.
<https://github.com/Super-Messiah/L12Minimization>

Expertise & Skills

Languages	Mandarin Chinese, English.
Programming	C, Fortran, Matlab, python, CUDA.
Geophysical Tools	Madagascar, SeismicUnix, ObsPy.
Synthetics	Fourier Pseudospectral Method, Finite Difference Method, Fractional Calculus, Nonconvex Optimization, Proximal Splitting Algorithm.
Others	GitHub, Hugo, LaTeX, Markdown, Tensorflow.