

Whyjay Zheng

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Education

- Expected 2020 ■ **Cornell University**. Ph.D. program in Geological Sciences
Advisor: Matthew Pritchard
- Jan. 2013 ■ **National Taiwan University**, M.Sc. Geosciences
Class rank: 2 of 16
- Jun. 2010 ■ **National Taiwan University**, B.Sc. Geosciences
Dean's Award. Class rank: 1 of 28
- Jun. 2006 ■ **Jianguo High School**, Taipei, Taiwan
Program for gifted students in math and science

Experience & Professional Training

- 2020 ■ **ICESat-2 Hackweek**, University of Washington, Jun. 8–18 (online program)
Project lead, *ICESat-2 data assimilation with raster format DEMs*
- 2018 – ■ **Graduate Teaching Assistant**, Cornell University
EAS 2500: Meteorological Observations and Instruments (Jan.–May 2020)
EAS 1101: Climate and Energy: a 21st Century Perspective (Aug.–Dec. 2019)
EAS 4370: Field Geophysics (Jan.–May 2019)
EAS 1560: Introductory Oceanography with Lab (Aug.–Dec. 2018), **Lab instructor**
- 2018 ■ **International Summer School in Glaciology**, Jun. 5–15, McCarthy, Alaska
Tidewater glacier cycle constrained by flowline topography
- 2016 – 2019 ■ **Graduate Research Assistant**, Cornell University (in summer)
Tectonic and magmatic processes during early-stage rifting: an integrated study of northern Lake Malawi, Africa
- 2014 – 2015 ■ **Research Assistant**, National Taiwan University
Geophysical Analysis Lab, Institute of Oceanography
- 2013 – 2014 ■ Served in the ROC Army, Matsu Islands, Taiwan
- 2010 – 2011 ■ **Graduate Research Assistant**, National Taiwan University
Sedimentology & Tectonics Lab, Dept. of Geosciences
- 2010 – 2015 ■ **Teaching Assistant**, National Taiwan University
Geo 1008: Introduction to Field Geology (II) (Sep. 2010 – Jan. 2013, May 2014),
Class Coordinator (Aug. 2014 – Jan. 2015)
Ocean 5066: Seminar in Geophysics: General Aspects (Feb.–Jun. 2015)
Ocean 5001: Introduction to Marine Geology (Sep. 2014 – Jan. 2015)
- 2009 – 2011 ■ **Instructor of Magic Club**, Dongshan High School, Taipei, Taiwan
- 2007 – 2008 ■ **Undergraduate Research Assistant**, National Taiwan University
Geodesy & Remote Sensing Lab, Dept. of Geosciences
- 2006 – 2013 ■ Private tutor for math and science in high-school level

Honors, Awards, & Certification

- 2018 ■ Arthur L. Bloom Fund for Geological Sciences Research and Education in the Pacific Region, Cornell University
- 2015 ■ Graduate top-off grant (2015–2018), Cornell University
- 2013 ■ **Overseas Ph.D. scholarship** (2015–2018), Ministry of Education, Taiwan
- Jan. 2012 ■ Poster presentation award, the Physical Society of ROC (Taiwan) Annual Meeting
- 2011 ■ **Certificated applied geotechnical technician**
Ministry of Examination, Taiwan
- Dec. 2007 ■ Third prize, National Science Education Program, Taiwan
- Jan. 2005 ■ **First prize, National Earth Sciences Academic Competence Contest**, Taiwan

Professional Services

- Supervised undergraduate students:
 - Gerald Meyer, Hartwick College, 2020–
Spatial correlation of Mars brain terrain and rock glaciers
 - Leena Sen, Cornell University, 2019–
Satellite observations of glacier changes in Severnaya Zemlya, the Russian Arctic
 - Andy Chiu, National Central University, Taiwan, 2014–2015
Relocating the position of the ocean-bottom seismometers using airgun survey data
- 2016 – ■ Author of **GMT Tutorials**, a website for learning how to make scientific figures using GMT
<http://gmt-tutorials.org/en/>, In both English and traditional Chinese
- 2015 – ■ **Lead developer** of the Cryosphere And Remote Sensing Toolkit (CARST) for processing remote sensing imagery and elevation data
<https://github.com/whyjz/CARST>
- 2013 – ■ **Columnist** at PanSci (largest science communication website in Taiwan)
<https://pansci.asia/archives/author/whyj> (in traditional Chinese)
- 2017 – ■ Member of AGU (American Geophysical Union)
- Member of AAAS (American Association for the Advancement of Science)
- 2016 – 2017 ■ Coordinator of the Earth & Atmos. Sciences Department Seminar, Cornell University
- 2014 ■ Co-founded GSROC (Geodesy Society of the Republic of China), Taiwan
- 2011 ■ Member of AOGS (Asia Oceania Geosciences Society)

Extracurricular Services & Science Outreach

- 2020 ■ Selected for a short demo session entitled “Glacier Flow on Your Desk” at the Expand Your Horizon program, Cornell. The demo session was canceled and postponed to 2021 due to the COVID-19 pandemic.
- Made two videos introducing the research content (the collapse of an ice cap) to the general public. The total views have reached 300k:
<https://youtu.be/jeC47jxiuuA> and <https://youtu.be/WPfvUHFpRhk>
- 2019 ■ **President** of Snee Graduate Organization (the graduate community in Earth & Atmospheric Sciences), Cornell University
- 2018 – ■ **Staff member**, Big Red Barn Graduate and Professional Student Center, Cornell University

Extracurricular Services & Science Outreach (continued)

- 2017 – 2018 ■ Host of the weekly International Coffee Hour at Cornell University
- 2016 ■ Varna after-school program, Varna, New York
Designed scientific activities for people aged 4–11, e.g. making “glacier goo,” simulating volcano eruption using baking soda.

Research

Publications

- 1 Zheng, W., Oliva, S. J., Ebinger, C. J., & Pritchard, M. E. (2020). Aseismic deformation during the 2014 Mw 5.2 Karonga earthquake, Malawi from InSAR and earthquake source mechanisms. *submitted to Geophysical Research Letters*.
- 2 Zheng, W., Pritchard, M. E., Willis, M. J., & Stearns, L. A. (2019, November). The possible transition from glacial surge to ice stream on Vavilov Ice Cap. *Geophysical Research Letters*, 46. This paper has been covered by at least 8 several media outlets including Scientific American and Forbes. Has been Recognized as one of the most downloaded GRL papers during 2018–2019. doi:10.1029/2019GL084948
- 3 Gaherty, J. B., Zheng, W., Shillington, D., Pritchard, M. E., Henderson, S. T., Chindandali, P. R., ... Schaff, D. (2019). Faulting processes during early-stage rifting: seismic and geodetic analysis of the 2009–2010 Northern Malawi earthquake sequence. *Geophysical Journal International*, 217, 1767–1782. doi:10.1093/gji/ggz119
- 4 Willis, M. J., Zheng, W., Durkin, W. J., Pritchard, M. E., Ramage, J. M., Dowdeswell, J. A., ... Porter, C. C. (2018). Massive destabilization of an Arctic ice cap. *Earth and Planetary Science Letters*, 502, 146–155. doi:10.1016/j.epsl.2018.08.049
- 5 Zheng, W., Pritchard, M. E., Willis, M. J., Tepes, P., Gourmelen, N., Benham, T. J., & Dowdeswell, J. A. (2018). Accelerating glacier mass loss on Franz Josef Land, Russian Arctic. *Remote Sensing of Environment*, 211, 357–375. doi:10.1016/j.rse.2018.04.004
- 6 Zheng, W. (2013). Elastic Flexure Model of Iapetus' Equatorial Ridge. *National Taiwan University Master Thesis*. doi:10.6342/NTU.2013.02546

Conference Proceedings

- 1 Zheng, W., Delgado, F., Grandin, R., & Pritchard, M. E. (2019). Evidence for Episodic Magma Injection at Cordón Caulle Volcano (Southern Andes, Chile) During 2004–2019: New Insights from InSAR Time Series and Finite Element Models. In *2019 AGU fall meeting (December 9–13)*. San Francisco, USA.
- 2 Zheng, W., Pritchard, M. E., Gaherty, J. B., Henderson, S. T., & Shillington, D. (2018). Observations of the Karonga earthquake sequence in northern Lake Malawi (Nyasa) using InSAR, seismicity, and surface rupture, as constraints on rifting mechanisms. In *2018 UNAVCO science workshop (March 27–29)*. Denver, USA.
- 3 Zheng, W., Pritchard, M. E., & Willis, M. J. (2018). Measuring glacier changes and mass balance on the Russian Arctic using remote sensing datasets. In *International summer school in glaciology (June 5–15)*. McCarthy, Alaska, USA.
- 4 Zheng, W., Pritchard, M. E., Willis, M. J., Durkin, W. J., & Stearns, L. A. (2018). The evolution of a large glacier surge of Vavilov Ice Cap, Severnaya Zemlya, since 2013. In *2018 AGU fall meeting (December 10–14)*. Washington, D.C., USA.

- 5 Pritchard, M., **Zheng, W.**, Henderson, S., Gaherty, J., Shillington, D., jaye Oliva, S., ... Chindandali, P. (2017). Rifting mechanisms constrained by InSAR, seismicity, GPS, and surface rupture from the Karonga earthquake sequence in northern Lake Malawi (Nyasa). In *2017 AGU fall meeting (December 11-15)*. New Orleans, USA.
- 6 Willis, M. J., Pritchard, M. E., **Zheng, W.**, Durkin, W. J., Ramage, J. M., Dowdeswell, J. A., ... Bassford, R. P. (2017). Rapid Thinning and Acceleration at the Cold-based Vavilov Ice Cap, Severnaya Zemlya, Russia. In *47th Arctic workshop 2017 (March 23-25)*. Buffalo, New York, USA.
- 7 **Zheng, W.**, Pritchard, M. E., & Willis, M. J. (2017). Monitoring Land-ice Elevation Changes in Franz Josef Land Using Remote Sensing. In *47th Arctic workshop 2017 (March 23-25)*. Buffalo, New York, USA.
- 8 Pritchard, M. E., Elliott, J., Durkin, W. J., **Zheng, W.**, Saria, E., Ntambila, D., & Chindandali, P. R. (2016). GPS and InSAR observations of ground deformation in the northern Malawi (Nyasa) rift from the SEGMeNT project. In *2016 AGU fall meeting (December 12-16)*. San Francisco, USA.
- 9 Willis, M. J., **Zheng, W.**, Durkin, W. J., Pritchard, M. E., Ramage, J. M., Dowdeswell, J. A., ... Porter, C. C. (2016). Rapid Collapse of the Vavilov Ice Cap, Russian High Arctic. In *2016 AGU fall meeting (December 12-16)*. San Francisco, USA.
- 10 Willis, M. J., **Zheng, W.**, Pritchard, M. E., Melkonian, A. K., Morin, P., Porter, C., ... Jeong, S. (2016). Ice Mass Changes in the Russian High Arctic from Repeat High Resolution Topography. In *EGU general assembly 2016 (April 17-22)*. Vienna, Austria.
- 11 Chao, B. F., Chang, E. T.-Y., & **Zheng, W.** (2015). On possible physical sources of the common mode error (CME) “signal” in GPS solutions. In *2015 Taiwan geosciences assembly (May 13-14)*. Taipei, Taiwan.
- 12 Willis, M. J., Pritchard, M. E., & **Zheng, W.** (2015). How can we Optimize Global Satellite Observations of Glacier Velocity and Elevation Changes? In *2015 AGU fall meeting (December 14-18)*. San Francisco, USA.
- 13 Chang, E. T.-Y., Chao, B. F., Wu, T.-R., Lai, P.-Y., & **Zheng, W.** (2014). Examining the focal mechanism of the 2009 Samoa Earthquakes by means of Tsunami Observation and Simulation. In *Geodynamics and environment in east-Asia (GEEA) 7th France-Taiwan earth sciences symposium (November 12-18)*. Hualien, Taiwan.
- 14 **Zheng, W.**, Chang, E. T.-Y., Lai, P.-Y., Chao, B. F., & Wu, T.-R. (2014). Study of large earthquake by means of tsunami wave simulation – the 2009 Samoa Earthquake. In *Geodesy symposium 2014 (September 10-12)*. Nantou, Taiwan.
- 15 **Zheng, W.**, Ip, W.-H., & Teng, L. S. (2012). Elastic flexure model of Iapetus’ equatorial ridge. In *EGU general assembly 2012 (April 22-27)*. Vienna, Austria.
- 16 Huang, L.-C., Ip, W.-H., Zhu, M., & **Zheng, W.** (2011). Physical Characteristics of the River Valleys of the Hellas Basin on Mars. In *AOGS 8th annual meeting (August 8-12)*. Taipei, Taiwan.

Skills

Coding	■ Python, PyQGIS, MATLAB, Shell scripting, Fortran
Software	■ Git, Jupyter, QGIS, ArcGIS, GMT, CorelDraw, Adobe Illustrator, Latex, NASA Ames Stereo Pipeline (ASP), InSAR Scientific Computing Environment (ISCE), Generic InSAR Analysis Toolbox (GIAN-T)
Professional Fields	■ Cryosphere studies, Planetary surface processing, Remote sensing, Geodynamics, Machine learning, Inverse problems

Skills (continued)

- Languages ■ Mandarin Chinese (Traditional characters, native speaker), English (Professional working level), Spanish (Intermediate level), Taiwanese (Heritage speaker at intermediate level), Japanese (Beginner level with higher competency of reading)
- Selected Classes ■ Fluid Dynamics, Image Processing, Physics of Planets, Active Tectonics

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