Zhang Yunjun (张云俊)

Postdoctoral Scholar in Geodesy and Geophysics
Division of Geological and Planetary Sciences
California Institute of Technology

1200 E California Blvd 252-21
Pasadena, CA 91125, USA
Email: zyunjun@caltech.edu
Website: https://yunjunz.github.io
Google Scholar | GitHub | ORCID

EDUCATION

University of Miami, Coral Gables, Florida, USA *2019*
Ph.D., Marine Geology and Geophysics (Geophysics)

University of Chinese Academy of Sciences, Beijing, China *2014*
M.S., Cartography and Geographic Information System (Geodesy)

Wuhan University, Wuhan, Hubei, China *2011*
B.Eng., Remote Sensing (*outstanding graduate*)

EMPLOYMENT

California Institute of Technology, Pasadena, California, USA *Nov 2019 – present*
Postdoctoral Scholar Research Associate, Division of Geological and Planetary Sciences

Chinese Academy of Sciences, Beijing, China *Jul 2012 – Jun 2014*
Research Assistant, Institute of Remote Sensing and Digital Earth

RESEARCH INTERESTS

SAR / InSAR Algorithm and Tools Development
Geohazards: Earthquakes, Volcanoes, Landslides
Hydro-geodesy: Land Subsidence & Sea Level Rise
Infrastructure Monitoring w/ High Resolution InSAR

TEACHING INTERESTS

Remote Sensing
Satellite Radar Interferometry
Geological Hazards
Applied Geodesy / Geophysics

PUBLICATIONS

[in prep.] **Yunjun, Z.**, Amelung, F., & Aoki, Y., Diverse Volcanic and Anthropogenic Deformation in Kyushu from L-band InSAR Time Series from 1992 to 2019.

[in prep.] **Yunjun, Z.,** Fattahi, H., Brancato, V., Simons, M., Zhu, L., Rosen, P., Absolute Tectonic Displacement Mapping from SAR Offset Time Series: Noise Reduction and Uncertainty Quantification, *Geophysical Research Letters*.

[12] Gregg, P. M., Zhan, Y., Amelung, F., Geist, D., Mothes, P., Koric, S., & **Yunjun, Z.** (2022), Forecasting mechanical failure and the 26 June 2018 eruption of Sierra Negra Volcano, Galápagos,

Ecuador, *Science Advance*, doi:10.1126/sciadv.abm4261.

[11] **Yunjun, Z.,** Fattahi, H., Pi, X., Rosen, P., Simons, M., Agram, P., & Aoki, Y. (2022). Range Geolocation Accuracy of C-/L-band SAR and Its Implications for Operational Stack Coregistration. *IEEE Transactions on Geoscience and Remote Sensing*, doi:10.1109/TGRS.2022.3168509.

[10] Aldaajani, T., Simons, M., **Yunjun, Z.,** Bekaert, D., Almalki, K.A., Liu, Y.K., (2022). Using InSAR time series to monitor surface fractures and fissures in the Al-Yutamah Valley, Western Arabia. *Remote Sensing, 14*(8), 1769, doi:10.3390/rs14081769.

[9] Oliver-Cabrera, T., Jones, C. E., **Yunjun, Z.**, & Simard, M. (2021). InSAR Phase Unwrapping Error Correction for Rapid Repeat Measurements of Water Level Change in Wetlands. *IEEE Transactions on Geoscience and Remote Sensing*, 1-15, doi:10.1109/TGRS.2021.3108751.

[8] **Yunjun, Z.,** Amelung, F., & Aoki, Y. (2021), Imaging the hydrothermal system of Kirishima volcanic complex with L-band InSAR time series, *Geophysical Research Letters*, *48*(11), e2021GL092879, doi:10.1029/2021GL092879.

[7] **Yunjun, Z.**, Fattahi, H., & Amelung, F. (2019), Small baseline InSAR time series analysis: Unwrapping error correction and noise reduction, *Computers and Geosciences, 133*, 104331, doi:10.1016/j.cageo.2019.104331.

[6] Ge, S., Lin, G., Amelung, F., Okubo, P. G., Swanson, D. A., & **Yunjun, Z.** (2019). The accommodation of the south flank's motion by the Koa'e fault system, Kīlauea, Hawai'i: insights from the June 2012 earthquake sequence. *Journal of Geophysical Research: Solid Earth*, 124. doi:10.1029/2018JB016961.

[5] Brothelande, E., Amelung, F., **Yunjun, Z.** & Wdowinski, S. (2018), Geodetic evidence for interconnectivity between Aira and Kirishima magmatic systems, Japan, *Scientific Reports*, *8*(1), 9811, doi:10.1038/s41598-018-28026-4.

[4] Zhang, Y. F., Zhang, Y. J., **Yunjun, Z.** & Zhao, Z., (2017), A Two-step Semi-Global Filtering Approach to extract DTM from Middle Resolution DSM, *IEEE Geoscience and Remote Sensing Letters, 14*(9), 1599-1603, doi:10.1109/LGRS.2017.2725909.

[3] Xie, C., Xu, J., Shao, Y., Cui, B., Goel, K., **Yunjun, Z.**, & Yuan, M. (2015), Long term detection of water depth changes of coastal wetlands in the Yellow River Delta based on distributed scatterer interferometry, *Remote Sensing of Environment*, *164*, 238-253, doi:10.1016/j.rse.2015.04.010.

[2] **Yunjun, Z.**, Wan, Z., Xie, C., Shao, Y., Yuan, M. H., Chen, W. & Wang, X. (2015). Deformation analysis of the seawall in Qiantang Estuary with multi-temporal InSAR. *Journal of Remote Sensing, 19*(2):339-354, doi:10.11834/jrs.20154055.

[1] **Yunjun, Z.**, Xie, C., Shao, Y., & Yuan, M. (2013), Adaptive Spatial Filtering of Interferometric Data Stacking oriented to Distributed Scatterers, *Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci.*, XL-7/W1, 173-178, doi:10.5194/isprsarchives-XL-7-W1-173-2013.

GRANTS, FEOLLOWSHIPS & AWARDS

- NASA Earth and Space Science Fellowship, 2015 - 2018
- Course Travel Grant, International Centre of Theoretical Physics at Trieste, Italy, Oct 2016
- Conference Travel Grant, Earthscope National Meeting at Vermont, USA, Jun 2015
- Course Travel Grant, UNAVCO short course on InSAR Theory and Processing, Aug 2014
- Silver Prize for Undergraduate Science "Challenge Cup", Hubei Provincial Dept. of Edu., 2011
- National Encouragement Scholarship, Ministry of Education of P. R. China, 2010

OPEN-SOURCE SOFTWARES

- **COMPASS** *2021 - present*

  A package for multi-temporal SAR coregistration [in early development].

  Role: Developer.

  Code: https://github.com/opera-adt/COMPASS
- **s1-reader** *2021 - present*

  A package to read Sentinel-1 data in burst [in early development].

  Role: Developer and maintainer.

  Code: https://github.com/opera-adt/s1-reader
- **PySolid** *2021 - present*

  A Python wrapper for solid to compute solid Earth tides.

  Role: Main developer and maintainer.

  Code: https://github.com/insarlab/PySolid
- **MintPy** *2016 - present*

  A Python software for SAR / InSAR time series analysis.

  Role: Main developer and maintainer.

  Code: https://github.com/insarlab/MintPy

OPEN DATASETS

[6] **Yunjun, Z.**, Amelung, F., & Aoki, Y., (2021). InSAR time-series for the Kirishima volcanic complex and InSAR stack of southern Kyushu from ALOS and ALOS-2 (1.1) [Data set]. *Zenodo*. doi:10.5281/zenodo.4661725, 10.5281/zenodo.4499238, 10.5281/zenodo.4499208.

[5] Fattahi, H., & **Yunjun, Z.**, (2020). InSAR stack of the San Francisco Bay in California from Sentinel-1 descending track 42 (1.1) [Data set]. Zenodo. doi:10.5281/zenodo.5152543

[4] **Yunjun, Z.**, Fattahi, H., & Amelung, F. (2019). InSAR time-series for Galápagos volcanoes, Ecuador from ALOS and Sentinel-1 (1.1) [Data set]. *Zenodo*. doi:10.5281/zenodo.4743058

[3] **Yunjun, Z.**, & Amelung, F., (2019). InSAR stack of Fernandina volcano in Galápagos, Ecuador from Sentinel-1 descending track 128 (0.1) [Data set]. Zenodo. doi:10.5281/zenodo.5498198

[2] Hong, S.H., **Yunjun, Z.**, & Amelung, F., (2019). InSAR stack of the 2008 Wells, Nevada EQ from Envisat desc. track 399 (1.4) [Data set]. *Zenodo*. doi:10.5281/zenodo.3952950

[1] **Yunjun, Z.**, Amelung, F., & Aoki, Y., (2017). InSAR stack of Kuju volcano in Kyushu, Japan from ALOS ascending track 422 (1.4) [Data set]. *Zenodo*. doi:10.5281/zenodo.3952917

TEACHING EXPERIENCE

- UNAVCO short course: InSAR Processing & Analysis (ISCE+; instructor) *2021*
  Teaching InSAR time series analysis with MintPy and stack processing with ISCE-2
  Recording: https://youtu.be/oCA3EVsYWk0
  Code: https://github.com/parosen/Geo-SInC/tree/main/UNAVCO2021
  UNAVCO (virtual)
- GE167: Tectonic Geodesy (guest lecturer) *2020*
  One lecture on InSAR time series analysis
  California Institute of Technology
- MGS728: Advanced Seismology (guest lecturer) *2018*
  One lecture on the introduction of Python programming on geophysics
  Code: https://github.com/yunjunz/a_python_guide_to_geophysics
  University of Miami
- MGS586/686: Geological Hazards (teaching assistant) *2016 - 2017*
  Creating and teaching two course projects:
  - Coulomb stress transfer for earthquake triggering via Coulomb3
  - Volcanic ash hazard forecasting via Ash3D

  University of Miami
- MGG620: Satellite Radar Interferometry (guest lecturer) *2014*
  One lecture on the persistent scatterer interferometry
  University of Miami

STUDENT SUPERVISION

Joshua Zahner (undergraduate) *2017 - 2019*

Project: Google Earth visualization of InSAR time series data, which is now part of the MintPy software (https://mintpy.readthedocs.io/en/latest/google_earth/)

University of Miami (Advisor: Falk Amelung)

Alfredo Terreco (undergraduate) *2016 - 2018*

Project: InSAR time series web viewer (https://insarmaps.miami.edu)

University of Miami (Advisor: Falk Amelung)

INVITED TALKS & SEMINARS

- SCEC Community Geodetic Model Workshop, Virtual, Nov 2021.
  Recording: https://youtu.be/SQG7PquayVs
- South Methodist University, Virtual, Oct 2021
- LIESMARS, Wuhan University, Virtual, Jun 2021
- Geoclub seminar, California Institute of Technology, Virtual, May 2021
- Wuhan University, Wuhan, China, Oct 2018
- China Earthquake Administration, Beijing, China, Feb 2018
- State Key Laboratory of Remote Sensing Science, Beijing, China, Feb 2018

ACADEMIC SERVICE

COMMITTEE

- Organizing committee of the 2022 NISAR Community Science Workshop, 2021 - present
- Committee of the Caltech Seismo Lab Brown Bag Seminar, 2021 - present

REVIEWER

- Earth, Planets and Space
- IEEE Transaction on Geoscience and Remote Sensing
- IEEE Geoscience and Remote Sensing Letters
- Journal of Geophysical Research: Solid Earth
- Remote Sensing of Environment
- SoftwareX