



## Karissa Pepin

Physical Sci Res Scientist  
Geophysics

### Bio

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#### BIO

Before coming to Stanford Geophysics, Karissa has lived in Minnesota, South Dakota, Pennsylvania, and Texas. Her work is inspired by the human connection to the planet: how humans affect the subsurface environment and how the response, in turn, affects humans and ecosystems. When not working on her research, Karissa is actively involved in SE3 Wellness Initiatives, DEI efforts, and mentoring/teaching opportunities. She loves water sports (both open and ice), animals, and creating music.

#### ACADEMIC APPOINTMENTS

- Phys Sci Res Assoc, Geophysics

#### HONORS AND AWARDS

- Outstanding Student Presentation Award, American Geophysical Union, 2022 Fall Meeting (Dec 2022)
- Stanford Earth Special Service Award for DEI, Stanford School of Earth, Energy, and Environmental Sciences (June 2021)
- Stanford-USGS Fellowship, Stanford School of Earth, Energy, and Environmental Sciences & USGS (April 2021)
- Centennial Teaching Assistant Award - Geophysics, Stanford School of Earth, Energy, and Environmental Sciences (June 2020)
- Community Impact Award, Stanford Alumni Association (June 2020)
- Virgil Kauffman Interdisciplinary Fellowship, Stanford Geophysics (February 2020)

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Karissa explores the use of interferometric synthetic aperture radar (InSAR), a remote sensing tool that measures mm-scale surface deformation at a resolution of 5-20 m, to study the subsurface response to fluid extraction and injection at wells, including induced seismicity, aquifer compaction, and changes in fluid flow. She also studies the InSAR signal with the goal of generating accurate time series.

### Publications

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#### PUBLICATIONS

- **Aliasing in InSAR 2-D Phase Unwrapping and Time Series** *IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING*  
Pepin, K., Zebker, H.  
2024; 62
- **Managed aquifer recharge site assessment with electromagnetic imaging: Identification of recharge flow paths** *VADOSE ZONE JOURNAL*  
Pepin, K., Knight, R., Goebel-Szenher, M., Kang, S.

2022

- **Shallow Aseismic Slip in the Delaware Basin Determined by Sentinel-1 InSAR** *JGR: Solid Earth*

Pepin, K. S., Ellsworth, W. L., Sheng, Y., Zebker, H.

2022; 127 (2)

- **HIGH-PASS FILTERS TO REDUCE THE EFFECTS OF BROAD ATMOSPHERIC CONTRIBUTIONS IN SBAS INVERSIONS: A CASE STUDY IN THE DELAWARE BASIN**

Pepin, K., Zebker, H. A., Ellsworth, W., IEEE

IEEE.2020: 1030-1033