

Yuankun Xu

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EXECUTIVE SUMMARY

- 12 published peer-reviewed papers, 9 as first author
- 2 funded research grants + 3 awarded data proposals + 2 research fellowships
- 7 invited talks + 15 conference presentations
- 4 courses taught as teaching assistant
- 6 mentored graduate/undergraduate students
- 5-10 publication/proposal reviews per year

RESEARCH INTERESTS

- Mechanics of **surface processes** and related **geohazards**, with emphasis on landslide dynamics
- Physics and modeling of **granular-fluid flows**, with specialties in debris flows and floods
- Development and application of **space geodesy**, with expertise in SAR/InSAR

EDUCATION

- 08/2017 – 05/2021 *Ph.D.* in Geophysics
Southern Methodist University, Dallas, TX
 Dissertation: Characterization of Landslide Processes from Radar Remote Sensing and Hydromechanical Modeling
- 09/2011 – 05/2015 *B.S.* in Geospatial Engineering
China University of Mining & Technology, Xuzhou, China
 Thesis: WiFi-based Indoor Positioning with Machine Learning

PROFESSIONAL APPOINTMENTS

- 02/2022 – Present **Postdoctoral Research Associate**
University of California, Berkeley, Department of Earth and Planetary Science
 Advisor: Dr. Roland Bürgmann
- 05/2021 – 01/2022 **Postdoctoral Fellow**
Southern Methodist University, Department of Earth Sciences
 Advisor: Dr. Zhong Lu
- 08/2017 – 05/2021 **Graduate Research Assistant**
Southern Methodist University, Department of Earth Sciences
 Advisor: Dr. Zhong Lu
- 09/2015 – 05/2017 **Graduate Research Assistant**
China University of Mining & Technology, Department of Geosciences and Surveying Engineering
 Advisor: Dr. Kan Wu

PUBLICATIONS

- *In Preparation/Review*

- Xu Y**, Bürgmann R, Fielding E (2023) Surface deformation across western USA driven by climatic, tectonic and anthropogenic disturbances. In preparation.
- Xu Y**, Bürgmann R, George DL, Fielding EJ, Gordillo GS, Borja DY (2023) Forecast of landslide inundation from precursory creep. In review.
- **Published**
- Xu Y**, Lu Z, Bürgmann B, Hensley S, Fielding E, Kim J (2023) P-band SAR for ground deformation surveying: advantages and challenges. *Remote Sensing of Environment*, 287:113474.
- Xu Y**, Lu Z, Leshchinsky B (2022) Kinematics of irrigation-induced landslides in a Washington desert: impacts of basal geometry. *Journal of Geophysical Research - Earth Surface* 127(2), e2021JF006355.
- Xu Y**, Lu Z, Kim JW (2021) P-band InSAR for geohazard detection over forested terrains: preliminary results. *Remote Sensing*, 13(22), 4575.
- Xu Y**, Schulz HW, Lu Z, Kim JW, Baxstrom K (2021) Geologic controls of slow-moving landslides near the U.S. West Coast. *Landslides*, 18(10), 3353-3365.
- Kang Y, Lu Z, Zhao C, **Xu Y**, Kim JW, Gallegos AJ (2021) InSAR monitoring of creeping landslides in mountainous regions: A case study in Eldorado National Forest, California. *Remote Sensing of Environment*, 258:112400.
- Xu Y**, Lu Z, Schulz HW, Kim JW (2020) Twelve-year dynamics and rainfall thresholds for alternating creep and rapid movement of the Hooskanaden landslide from integrating InSAR, pixel offset tracking, and borehole and hydrological measurements. *Journal of Geophysical Research - Earth Surface*, 125, e2020JF005640.
- Xu Y**, George DL, Kim JW, Lu Z, Riley M, Griffin T, de la Fuente J (2020) Landslide monitoring and runout hazard assessment by integrating multi-source remote sensing and numerical models: an application to the Gold Basin landslide complex, northern Washington. *Landslides*, 18(3), 1131-1141.
- Xu Y**, Kim JW, George DL, Lu Z (2019) Characterizing seasonally rainfall-driven movement of a translational landslide using SAR imagery and SMAP soil moisture. *Remote Sensing*, 11(20): 2347.
- Xu Y**, Wu K, Li L, Zhou D, Hu Z (2019) Ground cracks development and characteristics of strata movement under fast excavation: a case study at Bulianta coal mine, China. *Bulletin of Engineering Geology and the Environment*, 78(1): 325-340.
- Zhou D, Wu K, Bai Z, Hu Z, Li L, **Xu Y** (2017) Formation and development mechanism of ground crack caused by coal mining: effects of overlying key strata. *Bulletin of Engineering Geology and the Environment*, 78(2): 1-20.
- Xu Y**, Wu K, Bai Z, Hu Z (2017) Theoretical analysis of the secondary development of mining-induced surface cracks in the Ordos region. *Environmental Earth Science*, 76(20): 703.
- Li L, Wu K, Hu Z, **Xu Y**, Zhou D (2017) Analysis of developmental features and causes of the ground cracks induced by oversized working face mining in an aeolian sand area. *Environmental Earth Science*, 76(3): 135.2.
- **Published Datasets**
- Xu Y**, Lu Z, Kim J, Schulz WH (2021) Slow-moving landslides near the U.S. West Coast mapped from ALOS and ALOS-2 InSAR, 2007-2019. *U.S. Geological Survey*. <https://doi.org/10.5066/P9OY7FZK> (*online tool*)

FUNDED PROJECTS

2022 – 2025	NASA Earth Surface and Interior Program. “Incorporating multi-sensor remote sensing for landslide kinematics characterization and hydromechanical modeling”, Co-I with PI
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Roland Bürgmann (UC Berkeley) and Co-I Eric Fielding (Jet Propulsion Laboratory).
Total costs: \$576,000

- 2022 – 2023 **Esper S. Larsen Jr. Research Fund**
“How do slow-moving landslides put on the brakes?”, **Co-I** with PI Roland Bürgmann (UC Berkeley). Total costs: \$19,600
- 2022 – 2025 **JAXA** (Japan Aerospace Exploration Agency)
The 3rd Research Announcement. “Multi-sensor remote sensing for landslide dynamics characterization”, **Co-I** with PI Roland Bürgmann (UC Berkeley) and Co-I Eric Fielding (Jet Propulsion Laboratory). Awarded data quota: 20 ALOS-2 scenes per year
- 2022 – 2025 **DLR & INTA** (German and Spanish Space Agency)
Joint DLR-INTA Scientific Announcement of Opportunity. “Creeping landslides alongside active Hayward fault in the Berkeley Hills”, **Co-I** with PI Roland Bürgmann (UC Berkeley) and six other international Co-Is. Awarded data quota: 60 TerraSAR-X and PAZ scenes per year
- 2022 – 2025 **DLR & INTA** (German and Spanish Space Agency)
Joint DLR-INTA Scientific Announcement of Opportunity. “Explicit displacement mapping at the Slumgullion landslide (USA) using TSX/TDX/PAZ constellation”, **Co-I** with PI Roland Bürgmann (UC Berkeley) and six other international Co-Is. Awarded data quota: 60 TerraSAR-X and PAZ scenes per year
- 2013 – 2015 **China University of Mining & Technology**
Undergraduate Research Fellowship. “Integrating WiFi and GPS for ubiquitous indoor and outdoor positioning”, **PI**.
- 2012 – 2013 **China University of Mining & Technology**
Undergraduate Research Fellowship. “Development of a GPS monitoring system for mining-induced unstable slopes”, **PI**.

AWARDS & HONORS

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| 2021 | Dean’s Dissertation Fellowship, Southern Methodist University, USA |
| 2018, 2019 | Graduate Student Travel Grant, Southern Methodist University, USA |
| 2016 | National Geoinformation Science and Technology Progress Award, China |
| 2016 | Jiangsu Province Outstanding Undergraduate Thesis Award, China |
| 2015 | First Class Award, Jiangsu Province GIS Programming Contest, China |
| 2015 | National Scholarship, China |
| 2014 | Silver Award, "Challenge Cup" National College Student Entrepreneurship Plan Competition (Jiangsu Province), China |

TEACHING EXPERIENCE

- 05/2021 – 08/2021 *Southern Methodist University, Dallas, TX*
Co-Instructor, Department of Earth Sciences
Course: Geology Field Studies (GEOL 3343)
- Summer field trip to classical geological localities along the way from Dallas, Texas to Grand Canyon, Arizona.
 - Assisted teaching undergraduates on geological formations, rock types, and mineral compositions and field mapping of geological features.
- 01/2020 – 12/2020 *Southern Methodist University, Dallas, TX*

Teaching Assistant, Department of Earth Sciences

Course: Earth Systems (GEOL 1301) – 3 hours of lecture and 2 hours of lab each week

- Taught the hands-on lab session
- Designed lab session curriculum, developed and delivered lab session lectures, ran lab sessions and office hours, and graded lab work. Designed and graded mid-term and final exams.

09/2016 – 05/2017 *China University of Mining & Technology, Xuzhou, China***Teaching Assistant**, Department of Geosciences and Surveying Engineering

Course: Principle and Application of Remote Sensing (GSE 302)

- Assisted teaching several lectures and developing problem sets for final exam.
- Developed and delivered lab session lectures, graded coursework, and ran lab sessions and office hours.

09/2015 – 01/2016 *China University of Mining & Technology, Xuzhou, China***Teaching Assistant**, Department of Geosciences and Surveying Engineering

Course: Introduction to Geodesy (GSE 103)

- Assisted teaching several lectures and developing problem sets for final exam
- Graded coursework and exams and ran office hours.

MENTORING EXPERIENCE

Graduate student

Danielle Lindsay	University of California, Berkeley	2022 – present
Drew Gomberg	University of California, Berkeley	2021 – present
Qingyu Sui	Southern Methodist University	2021 – 2023

Undergraduate student

Jasmine Sizer	University of California, Berkeley	2022 – present
Laura Mercado	University of California, Berkeley	2022 – 2023
Shannon Lee	Southern Methodist University	2021 – 2022

INVITED TALKS

03/2023	Plenary talk at the SAGE/GAGE Community Science Workshop, Pasadena, CA.
03/2023	Guest lecture for the “Sustainability Science” class at Columbia University, NY.
09/2022	Berkeley Seismology Laboratory, UC Berkeley, Berkeley, CA.
04/2022	Institute for Geophysics and Planetary Physics, UC Santa Cruz, Santa Cruz, CA.
02/2022	Department of Earth and Planetary Sciences, University of Washington, Seattle, WA.
07/2021	U.S. Forest Service Webinar Series.
06/2020	Department of Earth Sciences, Southern Methodist University, Dallas, TX.

CONFERENCE PRESENTATIONS

Xu Y, Lindsay D, Bürgmann R, Fielding E (2023) How do creeping landslides respond to earthquake shaking? *SSA Annual Meeting, Puerto Rico*.

Xu Y, Lu Z, Bürgmann R, Fielding E (2022) Synergizing P/L/C-band SAR to monitor landslides along the U.S. west coast. *AGU Fall Meeting, Chicago*.

Xu Y, Bürgmann R (2022) Forecasting landslide inundation from precursory motion: the 2021 Chunchi, Ecuador disaster. *AGU Fall Meeting, Chicago*.

- Xu Y**, Bürgmann R, Schulz WH, Lu Z, George DL (2022) Mobilization and mechanism of diverse landslides near the US west coast. *SZ4D 2022 Community Meeting, Houston*.
- Xu Y**, Bürgmann R, Schulz WH, Lu Z (2022) InSAR imaging of slow-moving landslides across western USA. *NASA Solid-Earth Team Meeting, San Diego*.
- Xu Y**, Lindsay D, Bürgmann R, Schulz WH, Lu Z (2022) Detecting the unseen: Creeping landslides on the radar. *The Joint PI Meeting of JAXA Earth Observation Missions, Tokyo, Japan. (remote)*
- Xu Y**, Bürgmann R (2022) Character and dynamics of creeping landslides along the U.S. west coast. *GSA Annual Meeting, Denver*.
- Xu Y**, Lu Z, Bürgmann R, Hensley S, Fielding E, Kim J (2022) P-band SAR for deformation surveying: advantages and challenges. *EGU General Assembly*.
- Xu Y**, Lu Z, Bürgmann R, George D (2022) Landslides on the radar: detection, monitoring, and runout hazard forecasting. *EGU General Assembly*.
- Xu Y**, Lu Z, Leshchinsky B (2021) Irrigation-induced landslides in a Washington desert: kinematics regulated by slip-surface geometry. *AGU Fall Meeting, New Orleans*.
- Xu Y**, Schulz WH, Lu Z, Kim JW, Baxstrom K (2021) Slow-moving landslides over the U.S. West Coast: InSAR-derived inventory and geologic controls. *AGU Fall Meeting, New Orleans*.
- Xu Y**, Lu Z, Schulz HW, Kim JW (2021) Dynamics and physics-based rainfall thresholds for a deep-seated landslide. *EGU General Assembly*.
- Xu Y**, George DL, Lu Z, Kim JW, Riley M, Griffin T, de La Fuente JA (2020) Movement monitoring and runout simulations of the Gold Basin landslide complex using LiDAR, SAR, and numerical models. *AGU Fall Meeting*.
- Xu Y**, Kim JW, Lu Z (2019) Study of Hoosknaden landslide using InSAR and offset tracking measurements. *AGU Fall Meeting, San Francisco*.
- Xu Y**, Kim JW, Lu Z (2018) Basal geometry and retardation time of seasonal rainfall-triggered landslide revealed by InSAR time series. *AGU Fall Meeting, Washington, D.C.*

PROFESSIONAL AFFILIATIONS

2017 – present	American Geophysical Union (AGU)
2020 – present	European Geophysical Union (EGU)
2022 – present	Seismological Society of America (SSA)
2022 – present	Geological Society of America (GSA)

PROFESSIONAL SERVICE

Proposal reviews:	National Science Foundation (NSF) – Panel reviewer Belgian Earth Observation Program (STEREO) – External reviewer U.S. Geological Survey external grants – Panel reviewer
Guest editor:	<i>Remote Sensing</i> special issue – State-of-The-Art on Satellite and UAV Remote Sensing in Geoscience Research
Journal reviews:	Communications Earth & Environment, Earth Surface Processes and Landforms, Geophysical Research Letters, Geosciences, IEEE–JSTARS, International Journal of Remote Sensing, ISPRS Journal of Photogrammetry and Remote Sensing, JGR-Earth Surface, Landslides, Remote Sensing, Sensors
Conference convener:	2022 & 2023 AGU Fall Meeting – Natural Hazard sessions

FIELD EXPERIENCES

09/2023	Nodal seismometer experiment to monitor “slide quakes” and dynamics of the giant, slow-moving Slumgullion landslide in Colorado.
05/2023	Repeat lidar surveying and GPS and extensometer instrumentation to explore spatio-temporal evolution of landslide dynamics in Colorado.
09/2022	Retrieval of surface soil moisture of a landslide using drone-based thermal sensors, handheld soil moisture sensor, and Electromagnetic induction ski in San Jose, California.
08/2022	Deployment of GPS, creepmeter, and strainmeter and drone-based lidar and optical remote sensing to explore high frequency (sub-minute to daily) dynamics and motion propagation of the Slumgullion landslide in Colorado.
05/2022	Deployment of creepmeters to monitor dynamic creep of the Calaveras and San Andres faults in California.
04/2022	Deployment of borehole inclinometers, extensometers, piezometers, and rain gauges to monitor landslide kinematics and near-surface soil swelling in Zenia, California.
08/2018	Monitoring of stream flow and measurement of soil permeability in Taos, New Mexico.

ADDITIONAL SKILLS

Programming:	Matlab, Python, Shell scripting
SAR/InSAR processing:	GAMMA, ISCE2, StaMPS
RS (remote sensing) packages:	ENVI, Google Earth Engine
GIS tools:	QGIS, ArcGIS, GMT, GDAL
Field instrumentation skills:	GPS, Solar panel and telemetry setup, Borehole drilling, Borehole inclinometer, Rain gauge, Piezometer, Extensometer, Creepmeter, Strainmeter, Handheld soil moisture sensor, Ground penetration radar, Electromagnetic induction ski, Quadcopter drones (with lidar, optical, thermal, and hyperspectral sensors).

PATENTS & COPYRIGHT

Chinese Invention Patent

Xu Y, Yang S, Liu Z (2016) A WiFi-based navigation system for indoor tour-guide robot.

Chinese Software Copyright

Wang Y, Tian P, Li X, Zhang Y, Zhang L, Liu K, **Xu Y** (2013) Three-dimensional indoor positioning and monitoring system, version 1.0.

NEWS PRESS

- **SMU Research News:** *New landslides on US West Coast detected by SMU scientists.*
Shared by 30+ media including [AGU Blog](#), [Phys.org](#), [AAAS Eureka Alert](#), [Flipboard](#), [News Break](#), [Knowledia](#), [Our Daily Planet](#).
- **Op-ed on InsideSources:** *New Technology Mapping Landslides Can Save Lives, Mitigate Damage.*