

XIE HU (she/her/hers)
CURRICULUM VITAE

Assistant Professor
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I am the PI of the Geohazards and Shallow Processes Remote Sensing Lab (GSPRS) at Peking University. My research focused on using remote sensing tools, especially Synthetic Aperture Radar (SAR), to characterize ground deformation and surface alternations associated with geohazards and shallow processes in terrestrial planets. I have been working on mapping, monitoring, and modeling landslides, aquifers, dams, mines, earthquakes, coastal and urban subsidence, extreme precipitation events. I am also dedicated to investigating their natural or anthropogenic triggerings and environmental forcings using statistical, analytical, numerical models and artificial intelligence (AI). My multidisciplinary research spans the fields of geomatics, geophysics, hydrology, geology, tectonics, climate change, civil and environmental engineering, and computer science.

EDUCATION

Ph.D.	Geophysics	Southern Methodist Univ. (SMU), Dallas, TX, USA	2014-2018
M.S.	Remote Sensing	Wuhan Univ. (WHU), Wuhan, China	2011-2013
B.S.	GIS	China Univ. of Geosciences (CUG), Wuhan, China	2007-2011

WORKING EXPERIENCE

Assistant Professor (tenure track), Peking University	2021.7-present
Assistant Professor (tenure track), University of Houston	2020.9-2021.6
Postdoctoral Researcher, University of California, Berkeley	2018.9-2020.8
Research Associate, Southern Methodist University	2018.3-2018.8
Graduate Research Assistant, Southern Methodist University	2014.8-2018.3
Research Assistant, King Abdullah University of Science and Technology (KAUST)	2013.7-2013.12
Graduate Research Assistant, Wuhan University	2011-2013

PEER-REVIEWED PUBLICATIONS

†**Students/postdocs advisee** ***Corresponding**

19. Zhou, C., Cao, Y., **Hu, X.**, Yin, K.* , Enhanced dynamic landslide hazard assessment using MT-InSAR method in the Three Gorges Reservoir Area. *Landslides*. (Accepted)
18. **Hu, X.***, Xue, L., Bürgmann, R., Fu, Y., 2021. Stress perturbations from elastic loads and seismicity in the Salt Lake City region. *J. Geophys. Res. Solid Earth*, 126, e2021JB022362. <https://doi.org/10.1029/2021JB022362>.
17. **Hu, X.***, Bürgmann, R., Fielding, E.J., Xu, X., Zhen, L., 2021. Machine-learning characterization of tectonic, hydrological and anthropogenic sources of ground deformation in California. *J. Geophys. Res. Solid Earth*, 126, e2021JB022373. <https://doi.org/10.1029/2021JB022373>
16. **Hu, X.***, Xue, L., Yu, Y., Guo, S., Cui, Y., Li, Y., Qi, S.* , 2021. Remote Sensing Characterization of Mountain Excavation and City Construction in Yan'an, China. *Geophys. Res. Lett.*, 48, e2021GL095230. <https://doi.org/10.1029/2021GL095230>

15. Shi, X.G., **Hu, X.***, Sitar, N., Kayen, R., Qi, S., Jiang, H., Wang, X., 2021. Hydrological control shift from river level to rainfall in the reactivated Guobu Slope besides the Laxiwa hydropower station (China). *Remote Sens. Environ.*, 265, 112664. <https://doi.org/10.1016/j.rse.2021.112664>
14. Yu, H.[†], **Hu, X.**, 2021. Knowledge-aided InSAR phase unwrapping approach. *IEEE Transactions on Geoscience and Remote Sensing*. <https://doi.org/10.1109/TGRS.2021.3081039>
13. Shi, G.Q., Ma, P.* , **Hu, X.**, Song, X., Huang, B., Lin, H., 2021. Surface response and subsurface features during the restriction of groundwater exploitation in Suzhou (China) inferred from decadal SAR interferometry. *Remote Sens. Environ.*, 256, 112327. <https://doi.org/10.1016/j.rse.2021.112327>
12. Shi, Z.M., **Hu, X.**, Wang, C.-Y.* , 2021. Hydro-mechanical coupling in the shallow crust – insight from groundwater level and satellite radar imagery in a mining area. *Journal of Hydrology*, 594, 125649. <https://doi.org/10.1016/j.jhydrol.2020.125649>
11. **Hu, X.***, Bürgmann, R., Schulz, W., Fielding, E.J., 2020. Four-dimensional surface motions of the Slumgullion landslide and quantification of hydrometeorological forcing. *Nature Communications*, 11, 2792. <https://doi.org/10.1038/s41467-020-16617-7>
10. **Hu, X.***, Bürgmann, R., 2020. Aquifer deformation and active faulting in Salt Lake Valley, Utah, USA. *Earth and Planetary Science Letters*, 547. <https://doi.org/10.1016/j.epsl.2020.116471>
9. **Hu, X.***, Bürgmann, R., Fielding, E.J., Lee, H., 2020. Internal kinematics of the Slumgullion landslide (USA) from high-resolution UAVSAR InSAR data. *Remote Sens. Environ.*, 251. <https://doi.org/10.1016/j.rse.2020.112057>
8. **Hu, X.***, Bürgmann, R., 2020. Rheology of a debris slide from the joint analysis of UAVSAR and LiDAR data. *Geophys. Res. Lett.*, 47, e2020GL087452. <https://doi.org/10.1029/2020GL087452>
7. **Hu, X.***, Bürgmann, R., Lu, Z., Handwerger, A. L., Wang, T., Miao, R., 2019. Mobility, thickness, and hydraulic diffusivity of the slow-moving Monroe landslide in California revealed by L-band satellite radar interferometry. *J. Geophys. Res. Solid Earth*, 124. <https://doi.org/10.1029/2019JB017560>
6. **Hu, X.***, Lu, Z., Wang, T., 2018. Characterization of hydrogeological properties in Salt Lake Valley, Utah using InSAR. *J. Geophys. Res. Earth Surface*, 123. <https://doi.org/10.1029/2017JF004497>
5. **Hu, X.***, Lu, Z., Pierson, T. C., Kramer, R., George, D. L., 2018. Combining InSAR and GPS to determine transient movement and thickness of a seasonally active low-gradient translational landslide. *Geophys. Res. Lett.*, 45, 1453–1462. <https://doi.org/10.1002/2017GL076623>
4. **Hu, X.**, Oommen, T., Lu, Z.* , Wang, T., Kim, J. W., 2017. Consolidation settlement of Salt Lake County tailings impoundment revealed by time-series InSAR observations from multiple radar satellites. *Remote Sens. Environ.*, 202, 199–209. <https://doi.org/10.1016/j.rse.2017.05.023>
3. **Hu, X.**, Wang, T., Pierson, T. C., Lu, Z.* , Kim, J. W., Cecere, T. H., 2016. Detecting seasonal landslide movement within the Cascade landslide complex (Washington) using time-series SAR imagery. *Remote Sens. Environ.*, 187, 49–61. <https://doi.org/10.1016/j.rse.2016.10.006>
2. Kim, J.W., Lu, Z.* , Qu, F., **Hu, X.**, 2015. Pre-2014 mudslides at Oso revealed by InSAR and multi-source DEM analysis. *Geomatics, Natural Hazards and Risk*, 6(3), 184–194. <https://doi.org/10.1080/19475705.2015.1016556>
1. **Hu, X.***, Wang, T., Liao, M., 2014. Measuring coseismic displacements with point-like targets offset tracking. *IEEE Geosci. Remote Sens. Lett.*, 11(1), 283–287. <https://doi.org/10.1109/LGRS.2013.2256104>

UNDER JOURNAL REVIEW

[†]Students/postdocs advisee *Corresponding #Equal contribution

3. Li, Y.[†], **Hu, X.**, Cui, Y.* , Ouyang, C., Increasing glacier-related hazards in High Mountain Asia.

2. Cui, Y.[#], Li, Y.^{†#}, **Hu, X.**[#], Lu, Z., Guo, J., Wang, Y., Wang, H., Yao, S., Liu, D., Glacier retreat in Eastern Himalaya drives catastrophic glacier hazard chain.
1. Chen, X., et al., INVC-Investigation of the water vapor channel within the Yarlung Zangbo Grand Canyon, China.

UNDER REVIEW AMONG CO-AUTHORS

†Students/postdocs advisee *Corresponding

3. **Hu, X.**^{*}, Bürgmann, R., Fielding, E.J., Creeping faults and mobile landslides shoulder to shoulder in the East Bay Hills, California.
2. Yu, X.[†], **Hu, X.**^{*}, Wang, G., Wang, K., Chen, X., Machine learning characterization of the 2021 Texas statewide winter storm using SAR imagery.
1. Xue, L.^{*}, **Hu, X.**, et al., Anthropogenic impacts on landscape evolution: A case study of mountain excavation and city construction in Loess Plateau.

RESEARCH GRANTS

External - total grant funding to Hu as PI: \$479,894

The 3rd Research Announcement on the Earth Observations (60 scenes quota; PI) <i>Slow-moving Landslide Characterization Using SAR Remote Sensing</i>	2022-2025
Utilization of TerraSAR-X / TanDEM-X Data for Scientific Use (150 scenes quota; PI) <i>High-accuracy land deformation and surface change mapping for coastal resilience</i>	2021-2023
NASA New (Early Career) Investigator Program in Earth Science (\$375,000; PI) <i>Four-dimensional landslide quantification in the Western U.S. using remote sensing big data</i>	2021-2024
Southern California Earthquake Center (SCEC) (\$20,217; senior participant) <i>Separation of tectonic, hydrological and anthropogenic sources of ground deformation in Southern California</i>	2020-2021
California Energy Commission Program grant (\$148,626; senior participant) <i>Development of an integrated methodology for assessing integrity of levees protecting natural gas infrastructure</i>	2018-2021
NASA Earth Surface & Interior Program grant (\$210,097; senior participant) <i>Environmental controls on landslide motion revealed by InSAR and pixel offset tracking</i>	2015-2019 (join in 2018)
NASA Earth and Space Science Fellowship (\$104,894; PI) <i>Quantifying landslide dynamics using InSAR: applications to landslides in northwestern USA</i>	2015-2018

OTHER HONORS AND AWARDS

Chinese government award for outstanding self-finance students abroad (\$6,000)	2019
Outstanding talk, Youth Forum of 2018 International Symposium on Geodesy and Geodynamics (ISGG)	2018
The Institute for the Study of Earth and Man (ISEM) Research Grants, SMU	2017
Dedman College Interdisciplinary Institute (DCII) Graduate Fellowship, SMU	2017
Research Day Earth Science Dean's Award, SMU	2016

INVITED SEMINARS IN U.S.

University of Texas, Austin	2021.9.17
Washington University in St. Louis	2021.5.17
University of Oregon, Eugene, OR	2020.10.7
Southern Methodist University, Dallas	2020.1.31
University of Houston, Houston, TX	2020.1.29
Berkeley Seismology Lab Earthquake Research Affiliates Meeting	2019.5.1
University of California, Berkeley (Department of Civil and Environmental Engineering), CA	2019.3.20
University of Oregon, Eugene, OR	2018.11.27
U.S. Geological Survey, Menlo Park, CA	2018.11.14
University of California, Berkeley (Berkeley Seismology Lab), CA	2018.9.25

INVITED CONFERENCE/WORKSHOP PRESENTATIONS

Hu, X., 2021, SAR Remote Sensing in shallow processes and hazard monitoring, Structural Geology and Geodynamics Seminar Series (China) (1/30/2021)

Hu, X., 2020, SAR remote sensing in characterizing geohazards and surface processes, The 18th International Symposium on Geo-disaster Reduction & 4th Gu Dezheng Lecture (11/21/2020)

Hu, X., 2020, Characterization of aquifer storage and stress perturbations, 2020 CYWater (8/13/2020)

PROFESSIONAL SERVICES

Editor

Pure and Applied Geophysics (First published in 1939, Springer; Handling submissions on geodesy and remote sensing) 2021-present

Journal of Remote Sensing (Young Editorial Board) 2022-present

Co-convenor

2022 European Geosciences Union Session NH6.1 *Remote Sensing Big Data Analysis and Applications in Geosciences*

2021 European Geosciences Union Session NH6.2 *SAR Remote Sensing for Anthropogenic and Natural Hazards*

OTHER CONFERENCE/WORKSHOP PRESENTATIONS

***Oral †Students/postdocs advisee**

Hu, X., Qi, S., Liang, X., Yu, Y., Guo, S., Cui, Y., Li, Y., 2021, Satellite Deformation Imaging of Mountain Excavation for Urbanization in China, 2021 AGU Fall Meeting.

Yu, X.†, **Hu, X.**, 2021, Machine learning characterization of the 2021 Texas statewide winter storm using SAR imagery, 2021 AGU Fall Meeting.

Hu, X., Bürgmann, R., Fielding, E., 2021, Landslide characterization using hybrid spaceborne and airborne InSAR and pixel offset tracking, 2021 Fringe Workshop.

Hu, X., Bürgmann, R., Fielding, E., Handwerger, A., 2021, Explicit landslide characterization using high-resolution and multi-trajectory airborne UAVSAR data, 2021 EGU Meeting.

***Hu, X.**, Bürgmann, R., Xue, L., Fu, Y., Wang, T., 2020, Poroelastic and elastic deformation and stress changes in the seismically active Salt Lake City region, 2020 AGU Fall Meeting.

*Bürgmann, R., **Hu, X.**, Fielding, E., 2020, Forcings and kinematics of slow-moving landslides revealed by airborne and spaceborne SAR data, 2020 AGU Fall Meeting.

†Ding, J., **Hu, X.**, 2020, Characterization of ground deformation in the Great Houston Area using Sentinel-1A/B data from 2014 to 2020, 2020 AGU Fall Meeting.

***Hu, X.**, 2020, Characterization of hydrologically driven surface and shallow processes using SAR remote sensing, The 4th Satellite Gravity and Hydrology Forum in China (12/6/2020).

Hu, X., Xue, L., Bürgmann, R., Fu, Y., Wang, T., 2020, Interplay between seismicity and hydrological and industrial processes in Salt Lake Valley, Utah, Southern California Earthquake Center (SCEC).

Hu, X., Bürgmann, R., Schulz, W., Fielding, E., 2019, Surface and subsurface dynamics of the Slumgullion landslide, CO from Sentinel-1 and UAVSAR radar images and in-situ observations, 2019 AGU Fall Meeting, San Francisco, USA.

Hu, X., Bürgmann, R., Lu, Z., Handwerger, A. L., Wang, T., Miao, R., 2018, Characterization of slow-moving, deep-seated landslides using geodetic InSAR observations, 2018 AGU Fall Meeting, Washington, D.C., USA.

***Hu, X.**, Lu, Z., 2018, Landslide dynamics revealed by geodetic InSAR and GPS observations, 2018 International Symposium on Geodesy and Geodynamics (ISGG), Kunming, Yunnan, China.

***Hu, X.**, Lu, Z. (Presenter), 2018, Characterize hydrologically driven ground deformation using InSAR and numerical modeling: applications to landslides and mine tailings impoundment, Asia Oceania Geosciences Society (AOGS) 15th Annual Meeting, Honolulu, HI, USA.

*Lu, Z., Kim, J.W., **Hu, X.**, Xu, Y., George, D., 2018, Development of an incorporated platform to characterize hydrology-driven landslide hazards in northwestern US, Asia Oceania Geosciences Society (AOGS) 15th Annual Meeting, Honolulu, HI, USA.

***Hu, X.**, Lu, Z., Barbot, S., Wang, T., 2017, Characterize the hydrogeological properties and probe the stress field in Salt Lake Valley, Utah using SAR imagery, 2017 AGU Fall Meeting, New Orleans, LA, USA.

***Hu, X.**, Lu, Z., Pierson, C. T., Kramer, R., 2017, Seasonal deformation and active landslide thickness revealed by spaceborne InSAR observations: a case study of Crescent lake landslide, WA, 2017 AGU Fall Meeting, New Orleans, LA, USA.

***Hu, X.**, Lu, Z., Pierson, T. C., Wang, T., Kim, J., Cecere, T. H., 2017, Landslide movement and basal geometry revealed by InSAR: a case study of Cascade landslide complex, WA, 2017 Fringe Workshop, Helsinki, Finland.

Hu, X., Lu, Z., Barbot, S., Wang, T. (Presenter), 2017, Aquifer dynamics and its implication to the regional seismicity in Salt Lake Valley, Utah revealed by SAR observations, Asia Oceania Geosciences Society (AOGS) 14th Annual meeting, Singapore.

***Hu, X.**, Lu, Z., Oommen, T., Wang, T., Kim, J. W., 2017, Monitoring and modeling tailings impoundment settlement near Great Salt Lake (Utah) using multi-platform time-series InSAR observations, 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, TX, USA.

Hu, X., Lu, Z., Wang, T., Pierson, T. C., Kim, J., Cecere, T. H., 2017, Time-series InSAR analysis of Cascade landslide complex, Washington, USA, 2017 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), Fort Worth, TX, USA.

Hu, X., Jónsson, S., Wang, T., 2014, Monitoring ground subsidence caused by groundwater over-pumping in Al Ula, Saudi Arabia from time-series InSAR data, 2nd International KACST-KAUST-JCCP Workshop on Surface and Subsurface 4D Monitoring, Jeddah, Saudi Arabia.

Hu, X., Wang, T., Liao, M., 2013, The complete (3-D) co-seismic displacements using point-like targets offset tracking with ascending and descending SAR data, 2013 ESA Living Planet Symposium, Edinburgh, UK.

Hu, X., Liao, M., Wang, T., et al., 2012, Co-seismic rupture mapping from SAR amplitude offset tracking - a case study of the Mw 7.2 El Mayor-Cucapah earthquake, Proc. Dragon 2nd Program Final Results ESA Special Publication 2008-2012, Beijing, China.

STUDENT AND POSTDOC SUPERVISION IN LAB

Postdoctoral researcher (1): Hanwen Yu (UH)

Graduate students (5): Yuqi Song (PKU), Xiao Yu (UH), Qingyu Sui (PKU), Brandon Voelker (UH), Jieying Ding (UH)

TEACHING

CIVE 7397 SAR Remote Sensing (UH; 3 credits)	2020 Fall
Academic Writing (PKU; one lecture)	2021 Fall
Advances in Natural Geography (PKU; one lecture)	2021 Fall
SAR Remote Sensing (Tsinghua; one lecture)	2021 Fall

Professional Development for Teaching Excellence

Earth Educators' Rendezvous, University of Kansas, USA	2018.7
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Journal Reviewer

1. *Nature Communications*; 2. *Nature Reviews Earth & Environment*; 3. *Earth-Science Reviews*; 4. *Geophysical Research Letters*; 5. *Water Resources Research*; 6. *Journal of Geophysical Research Solid Earth*; 7. *Journal of Geophysical Research Earth Surface*; 8. *Remote Sensing of Environment*; 9. *Catena*; 10. *Landslides*; 11. *Engineering Geology*; 12. *Applied Geography*; 13. *Earth, Planets and Space*; 14. *IEEE Geoscience and Remote Sensing Letters*; 15. *IEEE Transactions on Intelligent Transportation Systems*; 16. *Pure and Applied Geophysics*; 17. *Earth and Space Science*; 18. *Scientific Report*