

Lin Xiong, PhD

Assistant Research Professor,
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EDUCATION

- 2020 **Ph.D. in Geophysics**
University of Houston, Department of Earth and Atmospheric Sciences, TX, USA
Thesis: Delineating coastal erosion and landslide using GNSS, LiDAR, and UAV-Borne Photogrammetry integrated methods
Advisor: Dr. Guoquan Wang
- 2015 **M.S. in Geophysics**
Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China
Thesis: Stress evolution around the Yushu-Xianshuihe fault system in the past ~300 years using 3D finite element models
Advisor: Dr. Jiankun He
- 2012 **B.S. in Geology**
Peking University, School of Earth and Space Science, Beijing, China
Thesis: Effects of Wenchuan and Lushan earthquakes on the changes of stress of main active tectonics in the eastern edge of Qinghai-Tibet plateau

RESEARCH INTERESTS

Impacts of climate change, disturbance, and human activity on coastal wetlands structure and carbon dynamics using remote sensing and cloud computing

PROFESSIONAL EXPERIENCE

- 2023 – Present **Assistant Research Professor**
Department of Geography, University of Maryland, College Park
- 2021 – 2023 **Postdoctoral Scholar**
Coastal Studies Institute, East Carolina University
- 2018 – 2020 **Teaching Assistant**
Department of Earth and Atmospheric Sciences, University of Houston
- 2015 – 2017 **Research Assistant**
Department of Earth and Atmospheric Sciences, University of Houston
- 2012 – 2015 **Research Assistant**
Institute of Tibetan Plateau Research, Chinese Academy of Sciences
- 2011 – 2012 **Undergraduate Research Assistant**
School of Earth and Space Science, Peking University

RESEARCH PROJECTS

- 2022 – 2023 **Principal Investigator**
Using Lidar to assess impacts of dune restoration on coastal resilience in North Carolina (NC Seat Grant)
PI: Lin Xiong, Award amount: \$10,000
- 2022 – 2025 **Participated as Researcher**
Coastal resilience over time - feedbacks between coastal ecosystems, cyclone activity, and coastal protection benefits (NASA)
PI: David Lagomasino, Award amount: \$1.4 million

- 2021 – 2024 **Participated as Researcher**
 Blue carbon prototype products for mangrove methane and carbon dioxide fluxes (BLUEFLUX) (NASA)
 PI: Benjamin (Ben) Poulter, Award amount: \$1.5 million
- 2021 – 2022 **Participated as Researcher**
 Linking carbon and water dynamics in the pursuit of predicting peat collapse in coastal blue carbon wetlands (NASA)
 PI: David Lagomasino, Award amount: \$260,000
- 2020 – 2022 **Participated as Researcher**
 Documenting effects of disturbances on federal lands (NASA)
 PI: David Lagomasino, Award amount: \$150,000
- 2015 – 2018 **Participated as Graduate Research Assistant**
 IRES: US-China Collaboration on Landslide Research and Student Training (NSF)
 PI: Guoquan Wang, Award amount: \$245,945
- 2015 – 2016 **Participated as Graduate Research Assistant**
 MRI: Acquisition of GPS equipment for establishing a continuously operating dense GPS network in Houston metropolitan area for urban natural hazards study (NSF)
 PI: Guoquan Wang, Award amount: \$401,374
- 2015 – 2017 **Participated as Graduate Research Assistant**
 Integrating GPS and LIDAR into geoscience education (NSF)
 PI: Guoquan Wang, Award amount: \$168,188

PEER-REVIEWED PUBLICATIONS

Google Scholar: <https://scholar.google.com/citations?user=9yQ4PmEAAA&hl=en>

- [9] **Xiong, L.**, Lagomasino, D., Charles, S.P., Castañeda-Moya, E., Cook, B.D., Redwine, J., Fatoyinbo, L., 2022. Quantifying mangrove canopy regrowth and recovery after Hurricane Irma with large-scale repeat airborne lidar in the Florida Everglades. *International Journal of Applied Earth Observation and Geoinformation*, 114, p.103031. <https://doi.org/10.1016/j.jag.2022.103031>
- [8] Poulter, B., Adams, F., Amaral, C., Barenblitt, A., Campbell, A., Charles, S., Roman-Cuesta, R., D’Ascanio, R., Delaria, E., Doughty, C., Fatoyinbo, T., Gewirtzman, J., Hanisco, T., Hull, M., Kawa, S., Hannun, R., Lagomasino, D., Lait, L., Malone, S., Newman, P., Raymond, P., Rosentreter, J., Thomas, N., Wolfe, G., **Xiong, L.**, Ying, Q., Zhang, Z., 2022. Multi-scale observations of mangrove blue carbon fluxes; the NASA Carbon Monitoring System BlueFlux field campaign. *bioRxiv*. <https://doi.org/10.1101/2022.09.27.509753>
- [7] **Xiong, L.**, Wang, G., Bao, Y., Zhou, X., Wang, K., Liu, H., Sun, X., Zhao, R., 2019. A rapid terrestrial laser scanning method for coastal erosion studies: A case study at Freeport, Texas, USA. *Sensors*, 19(15), p.3252. <https://doi.org/10.3390/s19153252>
- [6] **Xiong, L.**, Wang, G., Bao, Y., Zhou, X., Sun, X., Zhao, R., 2018. Detectability of repeated airborne laser scanning for mountain landslide monitoring. *Geosciences*, 8(12), p.469. <https://doi.org/10.3390/geosciences8120469>
- [5] **Xiong, L.**, Wang, G., Wessel, P., 2017. Anti-aliasing filters for deriving high-accuracy DEMs from TLS data: A case study from Freeport, Texas. *Computers & Geosciences*, 100, pp.125-134. <https://doi.org/10.1016/j.cageo.2016.11.006>
- [4] Zhou, X., Wang, G., Bao, Y., **Xiong, L.**, Guzman, V., Kearns, T.J., 2017. Delineating beach and dune morphology from massive Terrestrial Laser Scanning data using Generic Mapping Tools. *Journal of Surveying Engineering*, 143(4), pp.04017008.

[https://doi.org/10.1061/\(ASCE\)SU.1943-5428.0000223](https://doi.org/10.1061/(ASCE)SU.1943-5428.0000223)

- [3] Xiao, J., **Xiong, L.**, He, J., 2015. Two-dimensional finite element modeling on the crustal shortening and the surface erosion-sedimentation process across northern piedmont of the Tianshan Mountains. *Science China Earth Sciences*, 58(10), pp.1779-1786.
<https://doi.org/10.1007/s11430-015-5135-1>
- [2] **Xiong, L.**, He J., Pan Z., Zhou, Y., Liu Y., 2014. Numerical modeling of static stress changes on main active faults of east Tibetan Plateau by the Wenchuan and the Lushan earthquakes. *Journal of Earth Sciences & Environment*, 36(2), pp.113-122.
<http://ir.itpcas.ac.cn/handle/131C11/6935>
- [1] Li, Y., Jia, D., Wang, M., Shaw, J.H., He, J., Lin, A., **Xiong, L.**, Rao, G., 2014. Structural geometry of the source region for the 2013 Mw 6.6 Lushan earthquake: Implication for earthquake hazard assessment along the Longmen Shan. *Earth and Planetary Science Letters*, 390, pp.275-286. <https://doi.org/10.1016/j.epsl.2014.01.018>

MANUSCRIPTS IN PREPARATION

- [1] Lagomasino, D., Fatoyinbob, T., Payton, A., Lee, S., Trettinc, C., Mangorae, M., **Xiong, L.**, 2022. Large-scale assessment of stand age and growth show rapid colonization in mangrove forests. In submission.
- [2] **Xiong L.**, Lagomasino, D., Charles, S., Fatoyinbo T., 2022. Mapping 30 years of mangrove forest height in South Florida by fusion of ICESat-2, GEDI, and Landsat data with machine learning techniques. In revision.
- [3] Lagomasino, D., S., Sloey, T., Yando, E., Castañeda-Moya, E., Charles, **Xiong, L.**, 2022. Challenges to and importance of considering intermediate ontogenetic stages in mangrove forest recovery and restoration. In revision.
- [4] **Xiong, L.**, Wang, G., Zhou, X., Wang, K., Zhou, F., Law, M., 2022. Fusion of TLS and UAV photogrammetry for coastal erosion monitoring: A Case Study at Freeport, TX. In revision.
- [5] **Xiong L.**, Lagomasino, D., 2022. Quantifying the biomass and structure changes of a ghost mangrove forest in Everglades using multitemporal TLS and G-LiHT data. In preparation.
- [6] Lagomasino, D., Fatoyinbo, T., Payton, Charles, S., **Xiong, L.**, Moreno, S., Blumenthal, K., 2022. Quantifying global mangrove gains with remote sensing techniques. In preparation.

TEACHING EXPERIENCE

- **GEOL 7002/7003 Coastal Geoscience /Lab (Fall 2022). Guest lecturer.**
Department of Coastal Studies, East Carolina University; Credit Hours: 4.0
- **GEOL 7600/7601 Remote Sensing of Coastal Environments (Spring 2022). Guest lecturer.**
Department of Coastal Studies, East Carolina University; Credit Hours: 3.0
- **GEOL 1302 Introduction to Global Climate Change (Spring 2020). Teaching Assistant.**
Department of Earth and Atmospheric Sciences, University of Houston; Credit Hours: 3.0
- **GEOL 3383 and 6325 Remote Sensing (Fall 2019). Teaching Assistant.**
Department of Earth and Atmospheric Sciences, University of Houston; Credit Hours: 3.0
- **GEOL 4355 Geophysics Field Camp (Summer, 2016-2019). Teaching Assistant.**
Department of Earth and Atmospheric Sciences, University of Houston; Credit Hours: 3.0
- **GEOL6323 Geoscience Applications of GPS and LIDAR (Spring 2019). Teaching Assistant.**
Department of Earth and Atmospheric Sciences, University of Houston; Credit Hours: 3.0
- **GEOL 3383 and 6325 - Remote Sensing (Fall 2018). Teaching Assistant.**
Department of Earth and Atmospheric Sciences, University of Houston; Credit Hours: 3.0
- **GEOL 6388 - Geospatial Analysis and Applications (Spring 2018). Teaching Assistant.**
Department of Earth and Atmospheric Sciences, University of Houston; Credit Hours: 3.0
- **GEOL 1130: Physical Geology Laboratory (Spring, Fall, 2017). Teaching Assistant.**

CONFERENCES, WORKSHOPS, AND TALKS

- 09/2022 Oral presentation in NASA Biodiversity and Ecological Forecasting Team Meeting
Title: Mapping 30 years of mangrove forest height in South Florida by fusion of ICESat-2, GEDI, and Landsat data with machine learning techniques.
- 03/2021 Oral presentation at Coastal Studies Institute, ECU
Title: Delineating coastal erosion using GNSS, lidar, and UAV photogrammetry integrated methods
- 07/2020 Oral presentation in the 7th Interdisciplinary Forum of Wuhan University
Title: Evaluating the accuracy of Airborne Laser Scanning for mountain mapping: a case study at the Slumgullion Landslide site in Colorado, US
- 05/2020 Oral presentation in the 5th International Young Scholar Forum of Tongji University
Title: GPS and LiDAR applications in coastal erosion monitoring
- 12/2021 Poster presentation at AGU meeting
Title: Quantifying mangrove forest canopy regrowth after a major hurricane with multiple, large-scale repeat G-LiHT airborne Lidar surveys
- 12/2019 Poster presentation at AGU meeting
Title: TLS-aided mini-UAV photogrammetric surveys for coastal erosion monitoring: a case study at Freeport, TX
- 12/2018 Poster presentation at AGU meeting
Title: Evaluating the accuracy of Airborne Laser Scanning for mountain mapping: a case study at the Slumgullion Landslide site in Colorado, US
- 11/2019 Poster presentation in Robert E. Sheriff Lecture
Title: TLS-aided mini-UAV photogrammetric surveys for coastal erosion monitoring: a case study at Freeport, TX
- 11/2018 Poster presentation in Robert E. Sheriff Lecture
Title: Evaluating the accuracy of Airborne Laser Scanning for mountain mapping: a case study at the Slumgullion Landslide site in Colorado, US
- 04/2019 Poster presentation in Student Research Day, University of Houston
Title: Evaluation of a rapid TLS surveying method for coastal erosion monitoring: a case study at Freeport, Texas
- 04/2018 Poster presentation in Student Research Day, University of Houston
Title: Evaluation of a direct georeferencing TLS survey method for beach and dune mapping: A case study at Freeport, Texas
- 04/2017 Poster presentation in Student Research Day, University of Houston
Title: Anti-aliasing filters for deriving high-accuracy DEMs from TLS data: a case study from Freeport, Texas
- 04/2017 Poster presentation in AAPG Annual Convention & Exhibition
Title: Anti-aliasing filters for deriving high-accuracy DEMs from TLS data: a case study from Freeport, Texas
- 03/2016 Poster presentation at UNAVCO Science Workshop
Title: Anti-aliasing filtering for deriving high-accuracy DEMs from TLS data: a case study at Freeport, Texas
- 12/2014 Oral presentation at Annual Meeting of Chinese Geoscience Union (CGU)
Title: Three-dimensional finite element modeling of earthquake interaction and stress accumulation

SKILLS

- Special skills: Dept of Interior Motorboat Operator Certification Course (MOCC)
- Programming languages: Python, R, Matlab, Shell scripting, Java, JavaScript, C++, Fortran
- Platforms: Google Earth Engine, Linux, Windows
- Software packages: ArcGIS, RiSCAN Pro, Cyclone, Cloud Compare, GMT, Surfer, QGIS, GRASS GIS
- Languages: English (fluent), Chinese (native)

AWARDS

2022	NC Sea Grant Minigrant (\$10,000)
2018	EAS Graduate Scholarship (\$1000)
2018	EAS Travel Award (\$1700)
2017	EAS Graduate Scholarship (\$1000)
2017	EAS Travel Award (\$1700)

TRAINING

10/2022	Motorboat operator certification course
04/2022	Safe zone training at ECU
08/2021	Using Google Earth Engine for land monitoring applications
07/2021	RiSCAN Pro training
12/2019	Using geophysics data to teach in undergraduate majors' courses
10/2018	Introduction to UAV (Drones) aerial surveys and other applications
08/2018	Using kinematic and static GPS in undergraduate field courses
12/2017	Using GPS data in undergraduate courses
10/2017	Processing and analysis of Terrestrial Laser Scanning (TLS) data

FIELD WORK EXPERIENCE

10/2022	NASA BlueFlux field campaign at Everglades and Big Cypress
04/2022	TLS field trip at Rodanthe, NC for coastal geoscience class
03/2022	NASA BlueFlux field campaign at Everglades and Big Cypress
08/2021	Coastal beach and dune laser scanning at OBX with VZ 400i
2015-2020	Large-scale and rapid monthly lidar mapping for 7-km long coastal area in southern Texas
2016,2017,2018	Landslide mapping of Three Georges area in China using GPS and lidar
2019	3D structure mapping of the Longhorn Cavern, Texas with TLS
2017,2018,2019	University of Houston environmental geophysics field camp (<i>Summer</i>)
2015-2017	Permanent GPS station installation under the project of HousontNet
2013-2015	Permanent GPS installation and maintenance in western Tibet, China
07/2011	Geology excursions in the Three Gorges Region
06/2011	Geology excursions in the Wutai Region, Shanxi province
07/2010	Geological investigation & mapping in Xingcheng City, Liaoning province
06/2010	Introduction to field geology

ACADEMIC PROGRAM CERTIFICATES

- Geographical Information Science (GIS) Certificate
Department of Earth and Atmospheric Sciences, University of Houston
- Remote Pilot Certificate from the FAA
- Motorboat Operator Certification Course (MOCC)

ACADEMIC SERVICES AND MEMBERSHIP

- Reviewer for following journals:

Remote sensing

Sensors

ISPRS International Journal of Geo-Information

Journal of Surveying Engineering

Infrastructures

- Professional Memberships:

American Geophysical Union

American Association of Petroleum Geologists

Chinese Geophysical Society