Huan Li

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Profile

With a strong passion for Remote Sensing and Geographic and Information Science, I have explored various Earth Science applications through interdisciplinary collaborations. I specialized in processing, analyzing, and visually exploring extensive RS and geospatial datasets based on cloud platforms like Google Earth Engine, with a focus on Cryosphere, global water cycle, ecological environment, economy, and climate change. Notably, I pioneered innovative algorithms for satellite altimetry to accurately retrieve sea ice thickness and volume using high-performance computing, revealing spatiotemporal patterns in circum-Antarctic sea ice. My expertise in remote sensing and geospatial big data processing have also contributed to commercial applications for several companies.

Professional experience

Balaton Limnological Research Institute, Hungary
01/04/2022 – present, Senior Research fellow, **Remote Sensing-based environment monitoring**

Peking University, School of Earth and Space Sciences, China
13/09/2018 – 31/03/2022, Post-doc, **Cryosphere and big data mining**

Tsinghua University, State Key Laboratory of HydroScience and Engineering, China
15/07/2016 – 15/07/2018, Post-doc, **Remote sensing hydrology and economic application**

Education

Wuhan University, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, China
01/09/2012 – 01/07/2016, **Ph.D.**, Cartography and Geographic Information Engineering
-Thesis: *Active On-demand Real-time Provision for the High Frequency and Low Volume Sensor Web Data* (**Supervisor**: Prof. Hong Fan)
01/09/2010 – 01/07/2012, **M.S.**, Surveying Engineering (**Supervisor**: Prof. Hong Fan)

Wuhan University, School of Remote Sensing and Information Engineering, China
01/09/2006 – 01/07/2010, **B.S.**, Geographic Information System

Huazhong University of Science and Technology, School of Foreign Languages, China
01/09/2008 – 01/07/2010, **B.S.**, Japanese

Publications (Since 2020, H-index:16, i10-index:17, Citations: 800+)

Peer-reviewed articles as the (co-)first author or last author (D1 is 10% ranking journals, * is corresponding)

1. **Li, H.**, Somogyi, B., Chen, X., Luo, Z., Blix, K., Wu, S., Duan, Z. and Tóth, V.R. (2025) Leveraging Landsat and Google Earth Engine for long-term chlorophyll-a monitoring: A case study of Lake Balaton's water qualit y. *Ecological Informatics* 90, 103245. (**D1**)
2. Luo, Z., …. and **Li, H.**. (2025) A novel method for correcting water budget components and reducing their un certainties by optimally distributing the imbalance residual without full closure. *Hydrology and Earth System Sciences* 2025, 1-59. (Accepted, **D1**)
3. Lin, S., Chen, X., Liang, S., Liu, Y., Li, Y. and **Li, H.** (2025) Monthly 0.05° winter months snow depth datase t for the Northern Hemisphere from 21 CMIP6 models. *Scientific Data* 12(1), 603. (**D1**)
4. Hu, J., Luo, Z., Gao, Y., Wang, L., Huang, H., Chen, X., and **Li, H.** (2025). 'A century-long streamflow recon struction reveals significant streamflow increases in the upper Yangtze River basin' *Catena* 250, 108774. (**D1**)
5. **Li, H.,** Sun, J., Zhou, Q., Sojka, M., Ptak, M., Luo, Y., Wu, S., Zhu, S. and Tóth, V.R. (2024), '150-year daily data (1870–2021) in lakes and rivers reveals intensifying surface water warming and heatwaves in the Pannon ian Ecoregion (Hungary).' *Journal of Hydrology: Regional Studies* 56, 101985. (**Q1**)
6. **Li, H.**, et al. (2024), 'Exploring spatiotemporal features of surface water temperature for Lake Balaton in the 21st century based on Google Earth Engine'. *Journal of Hydrology* 640, 131672. (**D1, *Highlighted by Hunga rian news media***: *Facebook BalatonScience and https://hun-ren.hu/tudomanyos_hirek/2000-ota-folyamatosan-mele gszik-a-balaton-keszthelynel-csaknem-2c-kal-emelkedett-az-atlaghomerseklet-106347*)
7. Zhu, S., Wan, W.*, Zhang, G., …, and **Li, H*.** (18 authors in total, 2024). 'Exploring the topographical pattern beneath the water surface: Global Bathymetric Volume-Area-Height curves (BVAH) of inland surface water bodies.' *Geodesy and Geodynamics*. (**Q2, guiding the doctoral student first author**)
8. **Li, H.,** et al. (2023), 'Inspects and prospects of satellite remote sensing monitoring ability for land surface water in China,' *National Remote Sensing Bulletin*: 27. (**A review article in Chinese**)
9. **Li, H.,** et al. (2021). "A remote sensing-based area dataset for approximately 40 years that reveals the hydrological asynchrony of Lake Chad based on Google Earth Engine. *Journal of Hydrology* 603:126934. (**D1**)

10. Li, B., Y. Cui, X. Geng and **Li, H.** (2021). "Improving the Evapotranspiration Estimation under Cloudy Condition by Extending the Ts-VI Triangle Model." *Remote Sensing* 13(1516): 1516 (**Q1, guiding the doctoral student first author**)
11. Chen, X., Y. Yang, Y. Ma and **Li, H.** (2021). "Distribution and Attribution of Terrestrial Snow Cover Phenology Changes over the Northern Hemisphere during 2001–2020." *Remote Sensing* 13(9): 1843. (**Q1**)
12. Wang, X., W. Jiang, H. Xie, S. Ackley and **Li, H.** (2020). "Decadal variations of sea ice thickness in the Amundsen-Bellingshausen and Weddell Seas retrieved from ICESat and IceBridge laser altimetry, 2003-2017." *Journal of Geophysical Research: Oceans:* e2020JC016077. (**D1**)
13. **Li, H.,** Wan, W., Hong, Y., et al. (2019), "A Google Earth Engine-Enabled Software for Efficiently Generating High-Quality User-Ready Landsat Mosaic Images." *Environmental Modelling & Software* 112 (**D1**)
14. Fang, Y. #, **Li, H.#,** Wan, W., Zhu, S., Wang, Z., et al. (2019). "Assessment of Water Storage Change in China's Lakes and Reservoirs over the Last Three Decades." *Remote Sensing* 11(12): 1467. (**Co-first author, Q1**)
15. **Li, H.,** Xie, H.*, Kern, S., Wan, W., Ozsoy, B., Ackley, S., Hong, Y. (2018), "Spatio-temporal variability of Antarctic sea-ice thickness and volume obtained from ICESat data using an innovative algorithm." *Remote Sensing of Environment* 219: 44-61. (**D1**)
16. **Li, H.,** Fan, H. and Mao, F. (2016). "A Visualization Approach to Air Pollution Data Exploration—A Case Study of Air Quality Index (PM2.5) in Beijing, China." *Atmosphere* 7(3): 35. (**Q2**)
17. **Li, H.,** Fan, H., Li, J. and Chen, N. (2016). "Pull-Based Modeling and Algorithms for Real-Time Provision of High-Frequency Sensor Data from Sensor Observation Services." *ISPRS International Journal of Geo-Information* 5(4): 51. (**Q2**)
18. **Li, H.,** Fan, H. and Feng, H. (2012). "Real-time snow and rain rendering in 3D GIS environment," *Journal of Image and Graphics*: 1548-1553. (**In Chinese**)

Peer-reviewed articles as second and/or corresponding author (* is corresponding)

1. Somogyi, B., **Li, H.,** et al. (2024), "Regime shift in microalgal dynamics: Impact of water level changes on planktonic and benthic algal biomass". *Science of The Total Environment* 929,172351(**D1, geospatial analysis**)
2. Luo, Z., **Li, H.***, et al. (2023), "A Novel Two-Step Method for Enforcing Water Budget Closure and an Intercomparison of Budget Closure Correction Methods Based on Satellite Hydrological Products', *Water Resources Research*:59. (**D1, equal contribution as the first author**)
3. Geng, X., **Li, H.***, et al. (2022), "Potential of ANN for Prolonging Remote Sensing-based Soil Moisture Products for Long-term Time Series Analysis', *IEEE Geoscience and Remote Sensing Letters*: 19. (**Q1, guiding the master first author**)
4. Xu, Y**., Li, H.*,** Liu, B., Xie H., and Ozsoy-Cicek B. et al. (2021), 'Deriving Antarctic Sea-Ice Thickness From Satellite Altimetry and Estimating Consistency for NASA's ICESat/ICESat-2 Missions', *Geophysical Research Letters*. e2021GL093425 (**D1, guiding the undergraduate first author**)
5. Wan, W., **Li, H.,** Xie, H., Hong, Y., Long, D., Zhao, L., et al. (2017). "A comprehensive data set of lake surface water temperature over the Tibetan Plateau derived from MODIS LST products 2001-2015," *Scientific Data*, vol. 4, p. 170095. (**D1, core data producer**)

Peer-reviewed articles as co-author

1. Zhu, S., Tang, G., Yan, S., Du, Y., Xu, Y., Zhang, M., Chen, M., **Li, H.** and Hong, Y. (2025) A New Approach to Identifying and Analyzing Precipitation Events and Their Typical Lifecycles Over Conterminous United States. *Geophysical Research Letters* 52(14), e2025GL115640.
2. Ptak, M., Zhu, S., Amnuaylojaroen, T., **Li, H.**, et al. (2024), "Utilizing Multi-Source Datasets for the Reconstruction and Prediction of Water Temperature in Lake Miedwie (Poland)". *Remote Sensing*, 16(15), 2753.
3. Liu, B., Wan, W., Tang, G., **Li, H.**, et al. (2022) Statistical Analysis of CyGNSS Speckle and Its Applications to Surface Water Mapping. *IEEE Transactions on Geoscience and Remote Sensing* 60, 1-15.
4. Luo, Z., Q. Shao, W. Wan, **Li, H.,** et al. (2021). "A new method for assessing satellite-based hydrological data products using water budget closure." *Journal of Hydrology* 594: 125927.
5. Wan, W., R. Ji, B. Liu, **Li, H.** et al. (2020). "A Two-Step Method to Calibrate CYGNSS-Derived Land Surface Reflectivity for Accurate Soil Moisture Estimations." *IEEE Geoscience and Remote Sensing Letters*.
6. Fang, W., Wang C., Chen, X., Wan, W., **Li, H.,** et al. (2019). " Recognizing Global Reservoirs From Landsat 8 Images: A Deep Learning Approach." *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.
7. Liu B., Wan, W., Xie, H., **Li H.,** Zhu, S., Zhang, G., Wen, L., Hong, Y. (2019), "A long-term dataset of lake surface water temperature over the Tibetan Plateau derived from AVHRR 1981–2015."*Scientific Data* 6(1):48
8. Zhu, S., Liu, B., Wan, W., Xie, H., Fang, Y., Chen, X., **Li H.,** et al. (2019). "A New Digital Lake Bathymetry Model Using the Step-Wise Water Recession Method to Generate 3D Lake Bathymetric Maps Based on DEMs." *Water* 11(6): 1151.

9. Chen, X., Shen, X., **Li, H.,** et al. (2019) "Construct Channel Network Topology from Remote Sensing Images by Morphology and Graph Analysis." *IEEE Geoscience and Remote Sensing Letters*: 1-5.
10. Wan, W., Zhao, L., Xie, H., Liu B., **Li, H.,** et al. (2018). "Lake surface water temperature change over the Tibetan Plateau from 2001–2015: A sensitive indicator of the warming climate." *Geophysical Research Letters* 45(20): 11-177
11. Zhu, S., Wan, W., Liu, B., **Li, H.,** et al. (2018), "An Efficient and Effective Approach for Georeferencing AVHRR and GaoFen-1 Imageries Using Inland Water Bodies," *IEEE Journal of selected topics in applied earth observations and remote sensing* 11(7): 2491-2500
12. Wang, Y., Fan, H., Chen, R., **Li, H.,** et al. (2018), "Positioning Locality Using Cognitive Directions Based on Indoor Landmark Reference System," *Sensors*: 1049.
13. Yu, Y., Guan, X., **Li, H.,** Wu, H. (2017). "Design and optimization of real-time sensor data ingestion based on linear programming." *Journal of Geomatics*: 35-38. (*In Chinese*)

Peer-reviewed conference papers

1. **Li, H.,** Blix, K., Somogyi, B., Tóth V., et al. (2023), "Retrieving chlorophyll-a concentration for lake Balaton with Landsat based on Google Earth Engine," *IEEE Geoscience and Remote Sensing Symposium*.
2. Chen, X., Sheti, W., **Li, H**., et al. (2020), "Ship Navigation Route Planning Using Topology of Sea Ice Channels Extracted from High Resolution Satellite Images," *IEEE Geoscience and Remote Sensing Symposium*. (***Contribution:*** *I joined the design of the route planning algorithm*)
3. **Li, H.,** Zeng, C., Wan, W., Hong, Y., et al. (2019), "A Remote Sensing-based Vacancy Area Index for Estimating Housing Vacancy and Ghost Cities in China," *IEEE Geoscience and Remote Sensing Symposium*.
4. **Li H.,** C. Zeng, W. Wan, Y. Cui, Y. Hong and W. Fan (2019). A Remote Sensing-based Vacancy Area Index for Estimating Housing Vacancy and Ghost Cities in China. IGARSS 2019-*2019 IEEE International Geoscience and Remote Sensing Symposium, IEEE*.
5. **Li, H.,** et al. (2018). "Can Crowdsourcing Support Remote Sensing Image Classification?", *The 26th International Conference on GeoInformatics*.
6. Zhao, S., Fan, H., and **Li, H.** (2016). "The relationship between cigarette sales and the economy in Guizhou province," *2016 Fifth International Conference on Agro-Geoinformatics*: 1-5. (***Contribution:*** *All experiments*)
7. Fan, H., **Li, H.*** (2015). "An on-demand provision model for geospatial multisource information with active, self-adaption services, " in *2015 SPIE Ninth International Symposium on Multispectral Image Processing and Pattern Recognition*: 98150B-98150B-8.
8. **Li, H.,** Fan, H., et al. (2014). "ReSDaP: A Real-Time Data Provision System Architecture for Sensor Webs," In *2014 Web and Wireless Geographical Information Systems*, Springer: 85-99.

Book chapter

Shi, W., **Li, H.,** Hong Y. (2017). "Dynamic correlation analysis of the stock markets of China and United States based on big financial system data," *In "Practical Case Study of Big Data in Financial Industry," Editor Liu, S. Economic Science Press:* 145-164. (*In Chinese*)

Conference Presentations

14/03/2025 "Remote Sensing Supported Long-term and Large-scale Surface Water Data Retrieval", *Fresh Blood for Freshwater 2025*, HUN-REN Institute of Aquatic Ecology, Hungary (**Invited as a session chair**)

02/10/2024 "Exploring Spatiotemporal Patterns of Surface Water Temperature: Lake Balaton in the 21st Century and Pannonian Rivers and Lakes Over 150 Years", *Hydrobiological Day 2024*, Tihany, Hungary

17/04/2024 "Unveiling Spatio-Temporal Patterns of Water Temperature in Lake Balaton Through Remote Sensing Data Analysis", *European General Assembly 2024* (EGU 2024), Vienna, Austria

17/07/2023 "Remote sensing-based nearly 40-year Chlorophyll-a concentration retrieval for Lake Balaton", *International Geoscience and Remote Sensing Symposium 2023* (IGARSS 2023), Pasadena, USA

27/04/2023 "Small lakes on Tibetan Plateau act as a climate change indicator", *EGU 2023*, Vienna, Austria

20/10/2020 "Hydrological features of Lake Chad revealed by nearly 50-year water area dataset based on GEE", *Google Geo for Good 2020 user summit*, California, USA

17/10/2020 "Latest progress of global surface water mapping with Google Earth Engine", *The second national geospatial big data and cloud-computing workshop*, by State Key Laboratory of RS Science, China

01/11/2019 "Review of global surface water mapping with Google Earth Engine", *The first national geospatial big data and cloud-computing workshop*, held by State Key Laboratory of RS Science, China

17/10/2019 "AWATer: water area and quality change for global lakes", *Google Geo for Good,* California, USA

02/08/2019 "A Remote Sensing-based Vacancy Area Index for Estimating Housing Vacancy and Ghost Cities in China", *International Geoscience and Remote Sensing Symposium 2019*, Yokohama, Japan

14/12/2018 "Improved Antarctic sea ice thickness and volume retrieval and trend analysis", *AGU 2018,* USA

23/06/2018 "Spatial Variabilities and Trend Analysis of the Antarctic Sea Ice with ICESat", *POLAR 2018*, Davos, Switzerland

01/11/2015 "An on-demand provision model for geospatial multisource information with active, self-adaption services", *Ninth International Symposium on Multispectral Image Processing and Pattern Recognition* (MIPPR 2015), Hubei, China

Prizes and Awards

20/12/2021 **Annual Best Paper**, Institute of Remote Sensing and Geographic Information System (IRGIS), Peking University, China
26/05/2019 **First Prize**, The First Youth Forum of IRGIS, Peking University, China
24/12/2018 **Annual Best Paper**, IRGIS, Peking University, China
15/10/2017 **Second prize**, The seventh Teaching Contest of Young Teachers of School of Civil Engineering, Tsinghua University, China
27/11/2015 **Excellent paper award**, The Fourth Graduate Student Forum of National Remote Sensing and Geographic Information Science, Nanking University, China
08/12/2013 **Third prize**, The Third Graduate Student Forum of National Remote Sensing and Geographic Information Science, Wuhan University, China
18/09/2011 **Excellent paper award**, The Second Graduate Student Forum of National Remote Sensing and Geographic Information Science, Chinese Academy of Sciences, China

Fundings Received

01/09/2025 – 31/12/2025 **HUN-REN – NTU AI Research Cooperation Programme 2025**
-Title: *Perceptual Al Framework for Integrated Satellite and Multi-Source Aquatic Environment Monitoring* (**NTU: Nanyang Technological University**)
01/05/2023 – 01/05/2024 **European Space Agency Network of Resources (NoR) Sponsorship**
-Title: *Mining spatio-temporal patterns of 40-year surface water temperature for lakes and rivers in the Pannonian ecoregion*
01/01/2020 – 31/12/2022 **Youth Found of National Natural Science Foundation of China**
-Title: *Retrieving key parameters of circum-Antarctic sea ice with altimeter satellites and their spatio-temporal changes*
01/09/2019 – 01/09/2021 **China Post-doc Foundation**
-Title: *Retrieving Antarctic sea-ice thickness and volume from ICESat and spatio-temporal variability analysis*

Granted Chinese Patents

18/08/2023 **Li H.**, Ji R., Wan W., Hong Y., A method and system for large-scale surface water extent detection based on optical remote sensing imagery (ZL 202110570863.2)
20/12/2022 Chen X., Cui Y., Wen C., Yang T., **Li H.**, et al. "A method and system to measure universe water width for rivers" (ZL 202011285535.X) (***Contribution:*** *I participated in designing the algorithm for detecting water width*)
25/06/2021 Chen X., Cui Y., Wan W., Lei T., **Li H.**, et al. "A method and system to construct topology for river channel networks" (ZL 201910937320.2) (***Contribution:*** *I took in charge of vectorizing the river channel networks*)

Granted Chinese Software Copyright

01/11/2023 Xu Y., Liu B., Xiao L., **Li H.**, Polar Sea Ice Key Parameter Retrieval Algorithm Software V1.0 (ID: 2023SR1391226)

Participation in Industrial Innovation

01/02/2023 – present Technical consulting of Environmental, Social, and Governance, ESGreen LLC., New York, USA
01/04/2022 – 01/04/2024 Technical consulting of Remote Sensing applications, DataSea Inc., (NASDAQ: DTSS), Nevada, USA

Teaching

19/09/2022 **Invited lecturer**, "Image Classification using Machine Learning with Google Earth Engine", UiT the Arctic University of Norway, Norway – Graduate
11/03/2022 **Invited lecturer**, "Remote Sensing of Cryosphere", Peking University, China – Graduate
16/04/2021 **Invited lecturer**, "Cryosphere: Snow Cover, Glacier, Polar Ice Sheet, and Sea Ice", Peking University, China – Graduate
16/05/2020 **Invited lecturer**, "Cryosphere", Peking University, China – Graduate
06/05/2019 **Invited lecturer**, "Sea Ice Thickness and Volume Retrieval for Antarctic and Glacier Extent Delineation on Tibetan Plateau", Peking University, China – Graduate

Supervising and Mentoring

01/09/2019 – 01/04/2022 Instructing an undergraduate student at Peking University, China
- publish a paper in ***Geophysical Research Letters*** on sea ice
- win **Excellent Award** of "Undergraduate Scientific Research Training of Peking University"
- win **Best Presenter** of "2021 International Graduate Workshop on Geoinformatics"
- obtain **software copyright** for the key parameter retrieval of polar sea ice
- get admitted as a **doctoral candidate** of Peking University with **full scholarship**

01/09/2012 – 01/07/2016 Instructing master students at Wuhan University, China

Serving as a Reviewer

- Remote Sensing of Environment
- Water Research
- Earth Science Reviews
- The Cryosphere
- Earth System Science Data
- Journal of Hydrology
- Hydrological Sciences Journal
- Results in Engineering
- Remote Sensing
- Sustainability
- Frontiers in Earth Science
- IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE Geoscience and Remote Sensing Letters
- Hydrology and Earth System Sciences
- Environmental Modelling and Software
- International Journal of Applied Earth Observation and Geoinformation
- International Journal of Digital Earth
- Journal of Hydrology: Regional Studies
- Terrestrial, Atmospheric and Oceanic Sciences

Shared Codes, Datasets and Software

- Satellite-based monitoring reveals climate-driven phenological shifts and spatial heterogeneity in shallow lake chlorophyll-a dynamics: https://github.com/Scarlett-Huan-Li/shallow-water-chla
- An interoperable software for inspecting the concentration of Chlorophyll-a in Lake Balaton from 1984 to present: https://lihuan.projects.earthengine.app/view/chla-balaton (***Ecological Informatics***, 2025)
- A 150-year daily water temperature record (1870–2021) for lakes and rivers in Central Europe: https://doi.org/10.6084/m9.figshare.25549561.v1 (***Journal of Hydrology: Regional Studies***, 2024)
- Open code on GEE https://code.earthengine.google.com/?accept_repo=users/lihuan/Share_LakeBalaton and an online software for water temperature of Lake Balaton in the 21st century, Hungary: https://lihuan.users.earthengine.app/view/balaton (***Journal of Hydrology***, 2024)
- Code and dataset for the global water budget with an innovative correction algorithm: https://doi.org/10.6084/m9.figshare.20208026 *(**Water Resources Research**, 2023)*
- Dataset for seasonal and monthly circum-Antarctic sea ice thickness (10 km grid scale) based on ICESat/ICESat-2: https://doi.org/10.6084/m9.figshare.12910121 (***Remote Sensing of Environment***, 2018; ***Geophysical Research Letters***, 2021)
- Code, dataset and an online interoperable software for inspecting 40-year area change of Lake Chad, Africa: https://lihuan.users.earthengine.app/view/lakechad (***Journal of Hydrology***, 2021)
- Code and online software for generating global high-quality user-ready Landsat mosaics: https://gist.github.com/scarlettlee/eda18ca801213429636e7a0764b5b59f (***Environmental Modelling & Software***, 2019)