# Falu Hong

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## Short Biography

Falu Hong is an Assistant Professor / Lecturer at the School of Geospatial Artificial Intelligence, East China Normal University. He earned his Ph.D. in the Department of Natural Resource and the Environment at University of Connecticut (UConn), where he worked with Dr. Zhe Zhu. He has a strong background in remote sensing with interdisciplinary knowledge from geography and ecology science. His research focuses on integrating time-series and machine learning models to map land cover and land use, detect and simulate land change, such as deforestation and urbanization, and evaluate their impacts on socio-economic systems and biodiversity loss. Prior to his doctoral studies, Falu received his master's degree under the supervison of Dr. Wenfeng Zhan, with a research focus on the theory and applications of thermal remote sensing, particularly diurnal and annual land surface temperature dynamics.

## Education

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| **01/2021 – 08/2025** | **University of Connecticut, Connecticut, U.S.A.**<br>Ph.D. in Natural Resources and the Environment<br>Dissertation: *Remote Sensing the Human Impact: Mapping impervious Surface Dynamics, Primary Forest Loss, and Biodiversity Extinction Risk*<br>Advisor: Zhe Zhu |
| **09/2017 – 06/2020** | **Nanjing University, China**<br>Master in Cartography and Geographic Information System<br>Dissertation: *Estimation and Validation of Global Physically True Daily Mean Land Surface Temperature*<br>Advisor: Wenfeng Zhan |
| **09/2013 – 07/2017** | **Nanjing University, China**<br>Bachelor in Geographic Information Science |

## Appointments

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| 01/2026 – | Assistant Professor/Lecturer, School of Geospatial Artificial Intelligence, East China Normal University |
| 08/2025 – 11/2025 | Research Technican, University of Connecticut |

## Research Interests

Remote sensing, land cover and land use change, land change simulation, deforestation, biodiversity, urbanization, impervious surface, machine learning, urban heat island, land surface temperature

## Research Experiences

**Decoding primary forest (PF) change in Haiti and the Dominican Republic**
**Supervised independent research** **01/2022 – 2024-06**

- Use all available Landsat data and COLD (COtinous Monitoring of Land Disturbance) algorithm to map PF change in Haiti and the Dominican Republic.
- Comprehensively compare the PF status between Haiti and the Dominican Republic, including PF conversion pattern, PF change inside and outside protected area, PF topography characteristics and fragmentation level.
- Identify the primary PF loss drivers and quantify the PF loss area caused by fire, tree-cutting, hurricanes, and landslides.

**Forecast the biodiversity extinction risk using land change simulation**
**Supervised independent research** **01/2022 - present**

- Simulate the historical and future land change change in Haiti and the Dominican Republic.
- Link the primary forest change with the area of habitat change for threatened species.
- Quantify the biodiversity extinction risk and protected area effectiveness.

**CONUS-wide subpixel impervious surface percentage (ISP) dynamics: Mapping and spatiotemporal trends**
**Supervised independent research** **01/2021 - present**

- Employ massive very-high-resolution land cover data to create the ISP map for training.
- Train the deep learning model with the ISP map and Continuous Change Detection outputs.
- Generate the 30-meter resolution subpixel-level ISP dataset for the conterminous United States (CONUS).
- Analyze the spatiotemporal changes of CONUS impervious surface during the past four decades.
- Link the impervious surface area dynamic with socio-economic changes.

**Generation of global seamless daily mean land surface temperature (LST) dataset**
**Supervised independent research** **09/2017 – 12/2020**

- Enhancement of annual temperature cycle model by combining reanalysis data.
- Design a framework to generate physically true daily mean land surface temperature by combining the diurnal and annual temperature cycle models.
- Generate global daily mean LST from 2003 to 2019 and characterize the global LST trend.
- Validate the generated products with widely distributed *in-situ* measurements.

**Comprehensive assessment of diurnal land surface temperature cycle (DTC) models under clear-sky condition**

**Supervised independent research** **09/2016 – 05/2018**

- Obtain nine representative four-parameter DTC models with a set of parameter-reduction strategies.
- Comprehensive assessment of the DTC models with geostationary satellite data and in-situ measurements.
- Provide the parameter-reduction order and the best-performance four-parameter DTC model.

## Publications

[1] Qiu, S., Zhu, Z., Yang, X., Woodcock, C. E., Fahey, R. T., Stehman, S., Zhang, Y., Cullerton, M., Grinstead, A., **Hong, F.**, Song, K., Suh, J. W., Li, T., Ren, W., & Nemani, R. R. (2025). A shift from human-directed to undirected wild land disturbances in the USA. *Nature Geoscience*, 18(10), 989-996.

[2] **Hong, F.***, Hedges, S. B., Yang, Z., Suh, J. W., Qiu, S., Timyan, J., & Zhu, Z. (2025). Decoding primary forest changes in Haiti and the Dominican Republic using Landsat time series. *Remote Sensing of Environment*, 318, 114590.

[3] **Hong, F.**, Zhan, W., Göttsche, F. M., Liu, Z., Dong, P., Fu, H., Hunag, F., Zhang, X. (2022). A global dataset of spatiotemporally seamless daily mean land surface temperatures: generation, validation, and analysis. *Earth System Science Data*, 14(7), 3091-3113.

[4] Liu, Z., Zhan, W., Lai, J., Bechtel, B., Lee, X., **Hong, F.**, Li, L., Huang, F., Li, J. (2022). Taxonomy of seasonal and diurnal clear-sky climatology of surface urban heat island dynamics across global cities. *ISPRS Journal of Photogrammetry and Remote Sensing*, 187, 14-33.

[5] Li, J., Zhan, W., **Hong, F.**, Lai, J., Dong, P., Liu, Z., Wang, C., Huang, F., Li, L., Wang, C., Fu, Y., (2021). Similarities and disparities in urban local heat islands responsive to regular-, stable-, and counter-urbanization: A case study of Guangzhou, China. *Building and Environment*, 199, 107935.

[6] Jiang, L., Zhan, W., Hu, L., Huang, F., **Hong, F.**, Liu, Z., Lai, J., Wang, C. (2021). Assessment of different kernel-driven models for daytime urban thermal radiation directionality simulation. *Remote Sensing of Environment*, 263, 112562.

[7] **Hong, F.**, Zhan, W., Göttsche, F.-M., Lai, J., Liu, Z., Hu, L., Fu, P., Huang, F., Li, J., Li, H., & Wu, H. (2021). A simple yet robust framework to estimate accurate daily mean land surface temperature from thermal observations of tandem polar orbiters. *Remote Sensing of Environment*, 264, 112612.

[8] Lai, J., Zhan, W., Quan, J., Liu, Z., Li, L., Huang, F., **Hong, F.**, Liao, W. (2021). Reconciling debates on the controls on surface urban heat island intensity: Effects of scale and sampling. *Geophysical Research Letters*, 48(19), 2021GL094485.

[9] Du, H., Zhan, W., Liu, Z., Li, J., Li, L., Lai, J., Miao, S., Huang, F., Wang, C., Wang, C.,

Fu, H., Jiang L., **Hong, F.**, Jiang, S. (2021). Simultaneous investigation of surface and canopy urban heat islands over global cities. *ISPRS Journal of Photogrammetry and Remote Sensing*, 181, 67-83.

[10] Jiang, S., Zhan, W., Yang, J., Liu, Z., Huang, F., Lai, J., Li, J., **Hong, F.**, Huang, Y., Chen, J., Lee, X., (2020). Urban heat island studies based on local climate zones: A systematic overview. *Acta Geographica Sinica*, 75(9), 1860-1878. In Chinese.

[11] Wang, C., Zhan, W., Liu, Z., Li, J., Li, L., Fu, P., Huang, F., Lai, J., Chen, J., **Hong, F.**, Jiang, S. (2020). Satellite-based mapping of the Universal Thermal Climate Index over the Yangtze River Delta urban agglomeration. *Journal of Cleaner Production*, 277, 123830.

[12] Liu, Z., Zhan, W., Lai, J., **Hong, F.**, Quan, J., Bechtel, B., Huang, F., Zou, Z. (2019). Balancing prediction accuracy and generalization ability: A hybrid framework for modelling the annual dynamics of satellite-derived land surface temperatures. *ISPRS Journal of Photogrammetry and Remote Sensing*, 151, 189-206.

[13] Lai, J., Zhan, W., Huang, F., Voogt, J., Bechtel, B., Allen, M., Peng, S., **Hong, F.**, Liu, Y., Du, P. (2018). Identification of typical diurnal patterns for clear-sky climatology of surface urban heat islands. *Remote Sensing of Environment*, 217, 203-220.

[14] Zou, Z., Zhan, W., Liu, Z., Bechtel, B., Gao, L., **Hong, F.**, Huang, F., Lai, J. (2018). Enhanced modeling of annual temperature cycles with temporally discrete remotely sensed thermal observations. *Remote Sensing*, 10(4), 650.

[15] **Hong, F.**, Zhan, W., Göttsche, F.M., Liu, Z., Zhou, J., Huang, F., Lai, J., Li, M. (2018). Comprehensive assessment of four-parameter diurnal land surface temperature cycle models under clear-sky. *ISPRS Journal of Photogrammetry and Remote Sensing*, 142, 190-204.

## Professional Services

Journal review (number of review times)

[1] Remote Sensing of Environment (21)
[2] ISPRS Journal of Photogrammetry and Remote Sensing (4)
[3] International Journal of Applied Earth Observation and Geoinformation (3)
[4] Science of Remote Sensing (11)
[5] Journal of Selected Topics in Applied Earth Observations and Remote Sensing (2)
[6] Sustainable Cities and Society (8)
[7] Building and Environment (5)
[8] Journal of Cleaner Production (4)
[9] Science of The Total Environment (2)

## Awards and Honors

- Conference Participation Award, University of Connecticut 2023
- Jorgensen Fellowship, University of Connecticut 2020-2025
- National Scholarship, Nanjing University 2019

- Best poster award of 4th Quantitative Remote Sensing Forum 2019
- Outstanding postgraduate students in Nanjing University 2018

## Skills

- Computer language: Python, Linux, High-Parallel Computing, Google Earth Engine
- Software: QGIS, ArcGIS, ENVI, OriginLab
- Language: Chinese as mother language; Fluent in English