Falu Hong

Email: faluhong@uconn.edu Phone: (959)-929-8684 Homepage: https://faluhong.github.io/

Short Biography

Falu Hong is a Ph.D. student in the Department of Natural Resource and the Environment at University of Connecticut (UConn) working with Dr. Zhe Zhu. He has a strong background in remote sensing with interdisciplinary knowledge from geography, ecology, and climate science. He is now focusing on using dense Landsat time-series and machine learning models to map land cover, detect land cover change, monitor the impervious surface percentage, and model the land cover change. Before working at UConn, Falu majored in the theory and application of thermal remote sensing, with more attention to the diurnal and annual land surface temperature dynamics.

Education

09/2020 - present	**University of Connecticut, Connecticut, U.S.A.**
	Ph.D. in Natural Resources: Land, Water, and Air
09/2017 – 07/2020	**Nanjing University**
	Master in Cartography and Geographic Information System
09/2013 – 07/2017	**Nanjing University**
	Bachelor in Geographic Information Science

Research Interests

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

Research Experiences

Monitoring and forecasting the forest change in Haiti and Dominican Republic
Supervised independent research **01/2022 - present**

- Use all available Landsat data to detect the land cover change in Haiti and Dominican Republic.
- Generate the annual land cover data to analyze the primary and secondary forest change.
- Simulating the historical and future land cover change with land change model.

Continuous estimation of impervious surface percentage (ISP)
Supervised independent research **01/2021 - present**

- Employ the very-high-resolution land cover data to create the ISP map.
- Train the convolution neural network with the ISP map and CCDC (Continuous Change Detection and Classification) algorithm outputs.
- Generate the 30-meter resolution ISP dataset over an extensive scale.

Global seamless daily mean land surface temperature generation
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.

Evaluations of diurnal land surface temperature cycle (DTC) models under clear-sky
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] **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.cccc

[2] 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.

[3] 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.

[4] 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.

[5] **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.

[6] 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.

[7] 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.

[8] 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.

[9] 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.

[10] 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.

[11] 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.

[12] 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.

[13] **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

Reviewer for:

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

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