SHENG WANG

Research Assistant Professor, University of Illinois at Urbana-Champaign (UIUC)

Website: https://shengwang12.github.io/

Address: W417 Turner Hall, 1102 S Goodwin Ave, Urbana, IL 61801

Research Interest

Environmental Engineering, Airborne Sensing, Sensor Payload Design and Manufacturing, Agriculture Sustainability, Eco-hydrology, Hydraulics, Hyperspectral, Geospatial Big Data Analytics, Evapotranspiration, Soil Moisture, Snow Simulations, Remote Sensing, Soil-vegetation-atmosphere Radiative Transfer Modeling

Education

Oct. 2015 – Jan. 2019	Ph.D. in Environmental Engineering, Technical University of Denmark (DTU)
Sep. 2012 – Jul. 2015	M.Sc. in Water and Environment, University of Copenhagen (KU)
Sep. 2012 – Jul. 2015	M.Sc. in Physical Geography, Chinese Academy of Sciences (CAS)
Sep. 2008 – Jul. 2012	B.Sc. in Physical Geography, Nanjing University (NJU)

Work Experiences

Nov. 2021 – Now	Research Assistant Professor, Department of Natural Resources and Environmental Sciences, University of Illinois Urbana-Champaign (UIUC)
Jan. 2021 – Now	Research Scientist, Agroecosystem Sustainability Center (ASC), Institute for Sustainability, Energy, and Environment (iSEE), UIUC
Feb. 2019 – Dec. 2020	Postdoc researcher, iSEE, UIUC

Selected Honors and Awards

✧ 2021, Finalist of the UIUC Carl R. Woese Institute for Genomic Biology (IGB) Young Innovators

✧ 2020, Top Reviewer for *Remote Sensing of Environment* (No. 1 journal in the remote sensing disciplinary)

- ✧ 2019, Young Researcher Award, DTU (0.5% of the whole university Ph.D. students, GPA 4.0/4.0)
- ✧ 2019, Outstanding Self-financed Students Abroad (0.1%, Highest award for Chinese oversea graduate students)
- ✧ 2018, European Union COST Action Short Term Scientific Mission to University of Twente, the Netherlands
- ✧ 2017, Otto Moensted Travel Grant, Denmark
- ✧ 2016, European Union COST Action Short Term Scientific Mission to Spanish National Research Council
- ✧ 2015, Graduation with Honors, Beijing Municipality (1% of graduate students at Beijing)
- ✧ 2015, Graduation with Honors, University of CAS (1% of graduate students at CAS)
- ✧ 2015, Graduation with Honors, Institute of Geographic Sciences and Natural Resources, CAS
- ✧ 2015, Dean's Scholarship, CAS (5% of graduate students at CAS)

Selected Research projects

Funded projects as PI or co-PIs

1. The U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) project, "Towards cover crop sustainable management for the U.S. Central Corn Belt: An integrated approach to quantify cover crop outcome using airborne-satellite sensing, agroecosystem modeling, and economic analysis" Dr. Kaiyu Guan, Dr. **Sheng Wang (co-PI)**, Dr. Andrew Margenot, Dr. Gary Donald Schnitkey (2022-2025).
2. Illinois Nutrient Research and Education Council (Illinois NREC) project, "A missing piece of the Illinois phosphorus puzzle: quantifying statewide streambank erosion to inform effective nutrient loss reduction strategy". Dr. Andrew Margenot, Dr. Shengnan Zhou, Dr. Bruce Rhoads, Dr. **Sheng Wang (co-PI)**, Dr. Kaiyu Guan. (2022-2025)
3. UIUC National Center for supercomputing applications Bluewaters supercomputing project, "High-performance supercomputing for airborne hyperspectral imagery processing". Dr. **Sheng Wang (PI)**, Dr. Matthew Turk, Dr. Elizabeth Ainsworth, Dr. Kaiyu Guan. (2021) https://bluewaters.ncsa.illinois.edu/science-teams?page=detail&psn=bbdv
4. Illinois Discovery Partners Institute (DPI) project, "Advancing Sustainable Agriculture through airborne-satellite-AI integration". Dr. Kaiyu Guan, Dr. Elizabeth Ainsworth, Dr. Daniel S. Katz, Dr. Alex Schwing, Dr. **Sheng Wang (co-PI)**, Dr. Rick Stevens, Dr. Kyle Chard, Dr. Eliu Huerta (2021-2022)

https://dpi.uillinois.edu/advancing-sustainable-agriculture/

5. UIUC Future Interdisciplinary Research Explorations (FIRE) seed funding project, "Integrative airborne-satellite framework to monitor crop and soil traits across the U.S. Corn Belt". Dr. Kaiyu Guan, Dr. **Sheng Wang (co-PI)**, Dr. Elizabeth Ainsworth (2019-2021)
6. UIUC iSEE seed funding project, "Advancing sustainable agriculture: An integrative airborne-satellite framework to monitor crop nitrogen status in the US Corn Belt", Dr. Kaiyu Guan, Dr. **Sheng Wang (co-PI)**, Dr. Elizabeth Ainsworth (2020), https://sustainability.illinois.edu/research/2020-isee-funded-research-projects/
7. UIUC Digital Agricultural Center seed funding project, 'Towards an operational methodology to map crop photosynthetic capacity from airborne remote sensing", Dr. Kaiyu Guan, Dr. Elizabeth Ainsworth, Dr. **Sheng Wang (co-PI)**. (2019-2020) https://digitalag.illinois.edu/research/awards/towards-an-operational-methodology/
8. European Union COST Action, Innovative Optical Tools for Proximal Sensing of Ecophysiological Processes Short Term Scientific Mission. "Evaluating diffuse radiation effects on ecosystem carbon and water fluxes using soil-vegetation radiative transfer modeling" **Sheng Wang**, Dr. Christiaan van der Tol, Dr. Wouter Verhoef. (2018)
9. European Union COST Action, Innovative Optical Tools for Proximal Sensing of Ecophysiological Processes Short Term Scientific Mission. "Radiometric calibration of UAV optical and thermal infrared imaging sensors" **Sheng Wang**, Dr. Pablo Zarco-Tejada. (2016)
10. Technical University of Denmark, Department of Environment funding, "Hyperspatial mapping of water, energy and carbon fluxes with an Unmanned Aerial System", **Sheng Wang**, Dr. Monica Garcia, Dr. Peter Bauer-Gottwein, Dr. Andreas Ibrom, (2015-2018). https://orbit.dtu.dk/en/projects/hyperspatial-mapping-of-water-energy-and-carbon-fluxes-with-unmar

Funded projects as key personnel

11. The U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E): Systems for Monitoring and Analytics for Renewable Transportation Fuels from Agricultural Resources and Management (SMARTFARM). (2019-2021) **key personnel** https://sustainability.illinois.edu/doe-project-will-measure-bioenergy-crop-carbon-emissions/

12. The U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) project: Midwest Bioenergy Crop Landscape Laboratory (MBC-Lab) (2020-2023) **key personnel** https://aces.illinois.edu/news/university-illinois-awarded-45-million-arpa-e-develop-commercial-carbon-credit-tools
13. National Aeronautics and Space Administration (NASA) Commercial Smallsat Data Acquisition (CSDA) program project, "Advancing sustainable agriculture: Integration of airborne and DESIS satellite hyperspectral images to monitor crop nitrogen in the U.S. Corn Belt" (2022-2024) **key personnel.**

PEER-REVIEWED PUBLICATION

Total published: 33, H index: 17, Citations: 631, Under review: 8, First or corresponding author papers: 14, * indicates my role as the corresponding author.

[J33] **Wang, S**.*, Guan K.*, Zhang, C., Jiang, C., Zhou, Q., Li, K., Qin, Z., Ainsworth, E.A., He, J., Wu, J., Schaefer, D., Gentry, L., Margenot, A., Herzberger, L., Airborne hyperspectral imaging of cover crop growth through radiative transfer process-guided machine learning. *Remote Sensing of Environment*.

[J32] Zhou, Q., **Wang, S**.*, Liu, N., Townsend, P., Jiang, C., Peng, B., Verhoef, W., Guan, K.* High-performance atmospheric correction of airborne hyperspectral imaging spectroscopy: model intercomparison, parameter retrieval, and machine learning surrogates. *ISPRS Journal of Photogrammetry and Remote Sensing*.

[J31] **Wang, S**.*, Guan K.*, Zhang, C., Zhou, Q., Wang, S., Wu, X., Jiang, C., Peng, B., Mei, W., Li, K., Li, Z., Yang, Y., Zhou, W., Ma, Z. 2022. Cross-scale sensing of field-level crop residue fraction and tillage intensity: integrating field photos, airborne hyperspectral imaging, and satellite data. *Remote Sensing of Environment*. https://doi.org/10.1016/j.rse.2022.113366

[J30] Zhou, Q., Guan, K.*, **Wang, S**.*, Jiang, C., Huang, Y., Peng, B., Chen, Z., Wang, S., Hipple, J., Schaefer, D., Qin, Z., Stroebel, S., Coppess, J., Khanna, M., Cai, Y., 2022. Recent rapid increase of cover crop adoption across the U.S. Midwest detected by fusing multi-source satellite data. *Geophysical Research Letter*. https://doi.org/10.1029/2022GL100249

[J29] Deines, J., Guan, K., Lopez, B., White, C., **Wang, S.**, Lobell, D., 2022. Recent cover crop adoption is associated with small maize and soybean yield losses in the United States. *Global Change Biology.*

https://doi.org/10.1111/gcb.16489

[J28] Qiu, J., Crow, W.T., **Wang, S**., Dong, J., Li, Y., Garcia, M. and Shangguan, W., 2022. Microwave-based soil moisture improves estimates of vegetation response to drought in China. *Science of The Total Environment*, p.157535. https://doi.org/10.1016/j.scitotenv.2022.157535

[J27] **Wang, S**.*, Guan, K.*, Zhang, C., Lee, D., Margenot, A, J., Ge, Y., Peng, J., Zhou, W., Zhou, Q., and Huang, Y. 2022. Using soil library hyperspectral reflectance and machine learning to predict soil organic carbon: Assessing potential of airborne and spaceborne optical soil sensing. *Remote Sensing of Environment*. https://doi.org/10.1016/j.rse.2022.112914

[J26] Wu, J., Ainsworth, E.A., **Wang, S**., Guan, K., He. J., 2022. Distribution-Informed Neural Networks for Domain Adaptation Regression. *The Thirty-Sixth Annual Conference on Neural Information Processing Systems (NeurIPS 2022)*

[J25] Zhou, W., Guan, K., Peng, B., Margenot, A., Lee, D., Jin, Z., Grant, R., DeLucia, E., Qin, Z., Wander, M., **Wang, S.,** 2022. How does uncertainty of soil organic carbon stock affect cropland carbon budgets and soil carbon credit calculation for the U.S. Midwest? *Geoderma*

[J24] Wu, G., Guan, K., Jiang, C., Kim, H., **Wang, S**., Bernacchi, C., Suyker, A., Yang, X., Magney, T., Frankenberg, C. 2022. Difference in seasonal peak timing of soybean SIF and GPP explained by canopy structure and chlorophyll content. *Remote Sensing of Environment*. https://doi.org/10.1016/j.rse.2022.113104

[J23] Potash, E., Guan, K., Margenot, A., Lee, D., Delucia, E., **Wang, S**., and Jang, C. 2022. How to estimate soil organic carbon stocks of agricultural fields? Perspectives using ex-ante evaluation. *Geodema*. https://doi.org/10.1016/j.geoderma.2021.115693

[J22] **Wang, S.***, Guan, K.*, Wang, Z., Ainsworth, E.A., Zheng, T., Townsend, P.A., Liu, N., Nafziger, E.D., Masters, M.D., Li, K., Wu, G., Jiang, C. 2021. Airborne hyperspectral imaging of nitrogen deficiency on crop traits and yield of maize by machine learning and radiative transfer modeling. *International Journal of Applied Earth Observation and Geoinformation*. https://doi.org/10.1016/j.jag.2021.102617

[J21] Köppl, C.J., Malureanu, R., Dam-Hansen, C., **Wang, S.**, Jin, H., Barchiesi, S., Sandí, J.M.S., Muñoz-Carpena, R., Johnson, M., Durán-Quesada, A.M. et al. 2021. Hyperspectral Reflectance Measurements from UAS under Intermittent Clouds: Correcting Irradiance Measurements for Sensor Tilt. *Remote Sensing of Environment*.

https://doi.org/10.1016/j.rse.2021.112719

[J20] Acharya, B.S., Bhandari, M., Bandini, F., Pizarro, A., Perks, M., Joshi, D.R., **Wang, S**., Dogwiler, T., Ray, R.L., Kharel, G. and Sharma, S., 2021. Unmanned aerial vehicles in hydrology and water management: Applications, challenges, and perspectives. *Water Resources Research*, *57*(11), p.e2021WR029925. https://doi.org/10.1029/2021WR029925

[J19] **Wang, S.** *, Guan, K.*, Wang, Z., Ainsworth, E.A., Zheng, T., Townsend, P.A., Li, K., Moller, C., Wu, G. and Jiang, C., 2021. Unique contributions of chlorophyll and nitrogen to predict crop photosynthetic capacity from leaf spectroscopy. *Journal of Experimental Botany*, 72(2), pp.341-354. https://doi.org/10.1093/jxb/eraa432

[J18] Wu, J., Ainsworth, E.A., **Wang, S**., Guan, K., He. J., 2021. Adaptive Transfer Learning for Plant Phenotyping. *MLCAS*. https://arxiv.org/abs/2201.05261

[J17] Li, K., Guan, K., Jiang, C., **Wang, S.**, Peng, B. and Cai, Y., 2021. Evaluation of four new land surface temperature (LST) products in the US Corn Belt: ECOSTRESS, GOES-R, Landsat, and Sentinel-3. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*. http://doi.org/10.1109/JSTARS.2021.3114613

[J16] Jiang, C., Guan, K., Wu, G., Peng, B. and **Wang, S.**, 2021. A daily, 250 m and real-time gross primary productivity product (2000–present) covering the contiguous United States. *Earth System Science Data*, 13(2), pp.281-298. https://doi.org/10.5194/essd-2020-36

[J15] Wang, C., Guan, K., Peng, B., Chen, M., Jiang, C., Zeng, Y., Wu, G., **Wang, S.**, Wu, J., Yang, X. and Frankenberg, C., 2020. Satellite footprint data from OCO-2 and TROPOMI reveal significant spatio-temporal and inter-vegetation type variabilities of solar-induced fluorescence yield in the US Midwest. *Remote Sensing of Environment*, 241, p.111728. https://doi.org/10.1016/j.rse.2020.111728

[J14] Wu, G., Guan, K., Jiang, C., Peng, B., Kimm, H., Chen, M., Yang, X., **Wang, S.**, Suyker, A.E., Bernacchi, C.J. and Moore, C.E., 2020. Radiance-based NIRv as a proxy for GPP of corn and soybean. *Environmental Research Letters*, 15(3), p.034009. https://doi.org/10.1088/1748-9326/ab65cc

[J13] **Wang, S.***, Garcia, M., Ibrom, A. and Bauer-Gottwein, P., 2020. Temporal interpolation of land surface fluxes derived from remote sensing–results with an unmanned aerial system. *Hydrology and Earth System Sciences*, 24(7), pp.3643-3661. https://doi.org/10.5194/hess-24-3643-2020

[J12] **Wang, S**.* , Garcia, M., Bauer-Gottwein, P., Jakobsen, J., Zarco-Tejada, P.J., Bandini, F., Paz, V.S. and Ibrom, A., 2019. High spatial resolution monitoring land surface energy, water and CO2 fluxes from an Unmanned Aerial System. *Remote Sensing of Environment*, 229, pp.14-31. https://doi.org/10.1016/j.rse.2019.03.040

[J11] **Wang, S.***, Baum, A., Zarco-Tejada, P.J., Dam-Hansen, C., Thorseth, A., Bauer-Gottwein, P., Bandini, F. and Garcia, M., 2019. Unmanned Aerial System multispectral mapping for low and variable solar irradiance conditions: Potential of tensor decomposition. *ISPRS Journal of Photogrammetry and Remote Sensing*, 155, pp.58-71. https://doi.org/10.1016/j.isprsjprs.2019.06.017

[J10] Bandini, F., Olesen, D., Jakobsen, J., Kittel, C.M.M., **Wang, S.**, Garcia, M. and Bauer-Gottwein, P., 2018. Bathymetry observations of inland water bodies using a tethered single-beam sonar controlled by an unmanned aerial vehicle. *Hydrology and Earth System Sciences*, 22(8), pp.4165-4181. https://doi.org/10.5194/hess-22-4165-2018

[J9] Bandini, F., Lopez-Tamayo, A., Merediz-Alonso, G., Olesen, D., Jakobsen, J., **Wang, S.**, Garcia, M. and Bauer-Gottwein, P., 2018. Unmanned aerial vehicle observations of water surface elevation and bathymetry in the cenotes and lagoons of the Yucatan Peninsula, Mexico. *Hydrogeology Journal*, 26(7), pp.2213-2228. https://doi.org/10.1007/s10040-018-1755-9

[J8] **Wang, S.***, Garcia, M., Ibrom, A., Jakobsen, J., Josef Köppl, C., Mallick, K., Looms, M.C. and Bauer-Gottwein, P., 2018. Mapping root-zone soil moisture using a temperature–vegetation triangle approach with an unmanned aerial system: Incorporating surface roughness from structure from motion. *Remote Sensing*, 10(12), p.1978. https://doi.org/10.3390/rs10121978

[J7] **Wang, S.***, Ibrom, A., Bauer-Gottwein, P. and Garcia, M., 2018. Incorporating diffuse radiation into a light use efficiency and evapotranspiration model: An 11-year study in a high latitude deciduous forest. *Agricultural and Forest Meteorology*, 248, pp.479-493. https://doi.org/10.1016/j.agrformet.2017.10.023

[J6] Liu, S., Ding, W., Mo, X., **Wang, S.**, Liu, C., Luo, X., He, D., Bajracharya, S., Shrestha, A., Agrawal, N., 2017. Climate Change and Its Impact on Runoff in Lancang and Nujiang River Basins. *Advances in Climate Change Research*. 13(4): 356-365. https://doi.org/10.12006/j.issn.1673-1719.2016.212

[J5] Qiu, J., Gao, Q., **Wang, S.**, and Su, Z., 2016. Comparison of temporal trends from multiple soil moisture data sets and precipitation: The implication of irrigation on regional soil moisture trend. *International Journal of Applied Earth Observation and Geoinformation*, 48, pp.17-27. https://doi.org/10.1016/j.jag.2015.11.012

[J4] **Wang, S.**, Liu, S., Mo, X., Peng, B., Qiu, J., Li, M., Liu, C., Wang, Z. and Bauer-Gottwein, P., 2015. Evaluation of remotely sensed precipitation and its performance for streamflow simulations in basins of the southeast Tibetan Plateau. *Journal of Hydrometeorology*, 16(6), pp.2577-2594. https://doi.org/10.1175/JHM-D-14-0166.1

[J3] Mo, X., Liu, S., Lin, Z., **Wang, S.**, and Hu, S., 2015. Trends in land surface evapotranspiration across China with remotely sensed NDVI and climatological data for 1981–2010. *Hydrological Sciences Journal*, 60(12), pp.2163-2177. https://doi.org/10.1080/02626667.2014.950579

[J2] Liu, S., **Wang, S.**, Wang, Y., Li, M., Huang, M., Peng, G., Xiao, Z., 2014. Exploring the relationship between polar motion and runoff. *Advances in Meteorological Science and Technology*. 4(3):6-12. https://doi.org/10.3969/j.issn.2095-1973.2014.03.001

[J1] **Wang, S.** and Liu, S., 2013. Exploring the relationship between polar motion and a natural river's runoff based on Granger causality. *IAHS-AISH publication*, 360, pp.131-138. https://dio.org/iahs.info.15559.25-131-138-360-22

Manuscripts under review (available upon request)

[M1] Guan, K., Jin, Z., DeLucia, E.H., West, P., Peng, B., Tang, J., Jiang, C., **Wang, S.**, Kim, T., Zhou, W. and Griffis, T., 2022. A roadmap toward scalably quantifying field-level agricultural carbon outcome. https://eartharxiv.org/repository/view/2905/

[M2] Feng, S., Qiu, J., Crow, W., **Wang, S**. On the impacts of vegetation water content estimation on soil moisture retrieval by L-band radiometer over cropland. *ISPRS Journal of Photogrammetry and Remote Sensing* (2nd round review)

[M3] Zhou, Q., Guan, K.*, **Wang, S**.*, et al., Multi-sensor assessment of cover cropping detection using Harmonized Landsat-8 and Sentinel-2, MODIS, and PlanetScope: spatial, temporal, and radiometric considerations. (Under review)

[M4] Yang, Y., Guan, K., Peng, B., Feng, X., Xu, X., Sloan, B., Zhang, J., Zhou, W., Pan, M., Li, L., Sivapalan, M.,

Wang, S. A unified framework to reconcile theories of modeling transpiration response to drought: plant hydraulics, supply-demand balance, and empirical soil water stress.

[M5] Ye, L., Guan, K., Qin, Z., **Wang, S**., et al., Improved quantification of cover crop biomass and ecosystem services through remote sensing based model-data fusion. *Environmental Research Letter* (Under review)

[M6] Potash, E., Guan, K., Margenot, A., Lee, D., Delucia, E., **Wang, S**., and Jang, C. Multi-site Evaluation of Stratified and Balanced Sampling for Estimating Soil Organic Carbon Stocks in Agricultural Fields. *Global Change Biology* (Under review)

[M7] Ren, Y., Qiu, J., Zeng, Z., Sitch, S., Crow, W., **Wang, S**, Pilegaard, K., Jain, A., Enhanced summer ecosystem carbon sink from the lagged effort of earlier spring greening. *Nature Communications* (Under review)

[M8] Zhou, W., Liu, L., Jin, Z., Peng, B., Margenot, A., Lee, D., Jin, Z., Grant, R., DeLucia, E., Qin, Z., Wander, M., **Wang, S.,** Guan, K. Knowledge-based artificial intelligence for agroecosystem carbon budget and crop yield estimation. *Nature Machine Intelligence* (Under review)

Selected Invited Talks

[T1] **Wang, S.,** Quantifying soil organic carbon through multi-scale sensing from proximal, airborne to spaceborne optical sensing. 2022. European Union Cost Action Program SENSECO.

[T2] **Wang, S**., AI-empowered hyperspectral sensing for advancing agriculture ground truthing across scales. 2022. University of California Merced.

[T3] **Wang, S**., AI-empowered hyperspectral sensing for advancing agriculture ground truthing across scales. 2022. AIFARMS Institute, University of Illinois Urbana-Champaign.

[T4] **Wang, S**., Temporal interpolation of rapidly changing land surface variables estimated from an Unmanned Aerial System. 2018. ITC Faculty Geo-Information Science and Earth Observation, University of Twente. Enschede, the Netherlands.

[T5] **Wang, S**., Hyperspatial mapping of water, energy and carbon fluxes with Unmanned Aerial Vehicles. 2016. Institute for Sustainable Agriculture (IAS), Spanish National Research Council, Spain. Córdoba, Spain.

[T6] **Wang, S**., Hyperspatial mapping of water, energy and carbon fluxes with Unmanned Aerial Vehicles, 2016. Nordic UAS Event, Odense, Denmark.

[T7] **Wang, S**., Hydrological Modeling of Upper Salween and Mekong River Basins: Water Availability and Demand Scenarios. Himalayan Climate Change Adaptation Programme component 1 and 2 knowledge sharing workshop at International Center for Integrated Mountain Development (ICIMOD). 2014. Kathmandu, Nepal.

Selected Conference Presentations

[C1] **Wang, S**., Guan, K., Zhou, Q., Zhang, C., Jiang, C., Li, K., Qin, Z., Ainsworth, E.A., Margenot, A.J., Schaefer, D. and Gentry, L., 2021, December. Airborne hyperspectral imaging of cover crop outcomes and tillage intensity in croplands by machine learning and radiative transfer modeling. *In American Geophysical Union Fall Meeting* 2021.

[C2] **Wang, S**., Guan, K., Wang, Z., Ainsworth, E.A., Townsend, P.A. Airborne hyperspectral imaging of nitrogen deficiency on crop traits and yield by machine learning and radiative transfer modeling. *North American Plant Phenotyping Network annual assembly*. 2021

[C3] **Wang, S**., Guan, K., Lee, D., Jang, C., Zhou, Q., Li, K., Peng, J., Huang, Y., Jiang, C., Peng, B., Cai, Y. Quantification of high-resolution surface soil organic carbon in croplands using airborne imaging spectroscopy, soil database, and deep learning. *In American Geophysical Union Fall Meeting* 2020.

[C4] **Wang, S**., Ibrom, A., Bauer-Gottwein, P., Garcia M. Temporal interpolation of rapidly changing land surface variables estimated from an Unmanned Aerial System, *ES1309 OPTIMISE COST Action - Final Conference*, Sofia, Bulgaria, 21/02/2018-23/02/2018.

[C5] **Wang, S**., Bandini, F., Jakobsen, J., Zarco Tejada, P.J., Köppl, C.J., Olesen, D.H., Ibrom, A., Bauer-Gottwein, P., Garcia, M. A continuous hyperspatial monitoring system of evapotranspiration and gross primary productivity from Unmanned Aerial Systems, *In American Geophysical Union Fall Meeting* 2017.

[C6] **Wang, S**., Ibrom, A., Pilegaard, K., Bauer-Gottwein, P., Garcia, M. A continuous hyperspatial monitoring system of evapotranspiration and gross primary productivity from Unmanned Aerial Systems, Geophysical Research Abstracts, European Geoscience Union General Assembly Conference, 2017, vol. 19, *EGU2017-12865-2*.

[C7] **Wang, S**., Ibrom, A., Pilegaard, K., Bauer-Gottwein, P. and Garcia, M., 2017, April. Effects of diffuse radiation on carbon and water fluxes of a high latitude temperate deciduous forest. Geophysical Research Abstracts, European Geoscience Union General Assembly Conference, 2017 p. 12865.

[C8] **Wang, S**., Zarco-Tejada P.J., Garcia, M. Radiometric calibration of MS UAV camera (tetra-cam), ES1309 *OPTIMISE COST Action - Annual Conference*, Limassol, Cyprus, 22/02/2017-24/02/2017.

[C9] **Wang, S**., Dam-Hansen, C., Zarco Tejada, P.J., Thorseth, A., Malureanu, R., Bandini, F., Jakobsen, J., Ibrom, A., Bauer-Gottwein, P., Garcia, M. Optimizing sensitivity of Unmanned Aerial System optical sensors for low zenith angles and cloudy conditions, *10th EARSeL SIG Imaging Spectroscopy Workshop*, 2017, Zurich, Switzerland.

[C10] **Wang, S**., Köppl, C.J., Bandini, F., Jakobsen, J., Olesen, D.H., Ibrom, A., Bauer-Gottwein, P., Garcia, M. Hyperspatial mapping of water, energy and carbon fluxes with Unmanned Aerial Vehicles. *Nordic Unmanned Aerial System Event*, 2016, Odense.

[C11] **Wang, S**., Liu, S. Exploring the relationship between polar motion and a natural river's runoff based on Granger causality. *International Association of Hydrological Sciences annual assembly*, 2013, Gothenburg, Sweden.

TEACHING ACTIVITIES

✧ **Instructors / guest lectures**:

Terrestrial Remote Sensing Applications (UIUC NRES-598, Year 2019, 2021)

Ecosystem Biogeochemistry (UUC NRES-512, 2022)

Ecohydrology and Water Management (UIUC NRES-499, Year 2019)

*Hydrology (*University of Copenhagen, Sino-Danish Center master course, Year 2017*)*

✧ **Teaching assistant***:*

Hydrology (University of Copenhagen, Sino-Danish Center master course, Year 2015)

Surface Water Hydrology (Technical University of Denmark master course, Year 2016, 2017)

✧ **Graduate student supervision as advisor or committee member (thesis projects)**

1. Qu Zhou. Leveraging multi-scale remote sensing for cover crop monitoring. (PhD project at University of Illinois at Urbana-Champaign, 2020-now, awarded Future Investigators in NASA Earth and Space Science and Technology (FINESST) Fellowship)
2. Dylan R. Kerr. Hyperspectral remote sensing of detecting soybean dicamba stresses. (PhD project at University of Illinois at Urbana-Champaign, 2021-now)
3. Xin Liu, Estimation of Soil Moisture from Unmanned Aerial System based multispectral and thermal

imagery (Sino-Danish Center master thesis project, 2017-2018)

4. Verónica Sobejano Paz, Analysis of Vegetation Biophysical Properties and Anisotropy Effects using Images from an Unmanned Aerial System (Technical University of Denmark master thesis project, 2016-2017)
5. Christian Köppe. Calibration of thermal infrared camera for monitoring ecohydrological processes. (Technical University of Denmark master thesis project, 2015-2016)

✧ **Student supervision as advisor (non-thesis projects):** Chenhui Zhang (UIUC, Computer Science major undergraduate, 2021-now, awarded Fiddler Innovation Fellowship), Shrey Sarswat (UIUC, Computer Science master student, 2022-now), Jingtang Ma (UIUC, Computer Science master student, 2022-now), Alison Jia (UIUC, Computer Science undergraduate student, 2022-now)

Synergistic Activities

✧ **Proposal reviewer**: National Aeronautics and Space Administration (NASA, 2021), Foundation for Food and Agriculture Research (FFAR, 2022), Canada Alberta Innovates (2021), Illinois Discovery Partners Institute (DPI)-Argonne Research Partnerships Grants (2022), UIUC Future Interdisciplinary Research Explorations (FIRE) Grants (2021), UIUC Campus Research Board Grants (2022)

✧ **Working Group Member**: National Ecological Observatory Network (NEON) foliar trait group (2022-now)

✧ **Student Judge**: Judge for AGU Fall Meeting Outstanding Student Paper Award (OSPA) (2019-2021)

✧ **Certificates**: Licensed pilot to fly drones over populated areas

✧ **Memberships***: American Geophysical Union (AGU), European Geoscience Union (EGU), North American Plant Phenotyping Network (NAPPN), International Association of Hydrological Science (IAHS)*

✧ **Journal Guest Editor**: Remote Sensing Special Issue "*Remote Sensing for Advancing Nature-Based Climate Solutions*" with researchers from Chinese Academy of Sciences and Massachusetts Institute of Technology https://www.mdpi.com/journal/remotesensing/special_issues/rs_advancing_nature_climate_solutions

✧ **Journal reviewer**: 113 manuscripts from 28 journals (*Proceedings of the National Academy of Sciences of the United States of America*, *Remote Sensing of Environment*, *Nature Scientific Report*, *Agricultural and Forest Meteorology*, *Journal of Experimental Botany*, *The Plant Journal*, *Biogeosciences*, *Precision Agriculture*, *Ecological Applications*, *European Journal of Agronomy*, *European Journal of Remote Sensing*, *Aerospace*,

Water Resource Research, *Remote Sensing*, *Forests*, *Atmosphere*, *Journal of Hydrology*, *Journal of Hydrometeorology*, *Electronics*, *Applied Sciences*, *Sensors*, *Sustainability*, *International Journal of Digital Earth*, *Environmental Research Letter*, *Environmental Research Communications*, *Information Fusion*, *Earth System Science Data)*

Full contact information for references

Dr. Kaiyu Guan
Position: Blue Waters Associate Professor, University of Illinois at Urbana Champaign
Email: kaiyug@illinois.edu
Mail address: W503, Turner Hall, 1102 S. Goodwin, Urbana, Illinois 61801
Website: http://faculty.nres.illinois.edu/~kaiyuguan/

Dr. Peter Bauer-Gottwein
Position: Professor, Technical University of Denmark
Expertise: Hydrology, Water resources management, Remote sensing of hydrology
Email: pbau@dtu.dk
Mail address: Building 115, 2800 Kgs. Lyngby, Denmark
Website: https://orbit.dtu.dk/en/persons/peter-bauer-gottwein

Dr. Andreas Ibrom
Position: Senior Scientist Professor, Technical University of Denmark
Expertise: Biometeorology, Ecology, Ecosystem carbon dynamics
Email: anib@env.dtu.dk
Mail address: Building 115, 2800 Kgs. Lyngby, Denmark
Website: https://www.dtu.dk/english/service/phonebook/person?id=38743&tab=1

Dr. Philip A. Townsend
Position: Professor, University of Wisconsin Madison
Email: ptownsend@wisc.edu
Mail address: Russell Labs, 1630 Linden Drive, Madison, WI 53706
Website: https://forestandwildlifeecology.wisc.edu/people/faculty-and-staff/philip-townsend/

Dr. Pablo J. Zarco-Tejada
Position: Professor, University of Melbourne
Email: pablo.zarco@unimelb.edu.au
Mail address: Grattan Street, Parkville, Victoria, 3010, Australia
Website: https://findanexpert.unimelb.edu.au/profile/835498-pablo-zarco-tejada