Bo YANG, Ph.D.

Interdisciplinary Postdoctoral Scientist
Department of Sociology and the UCF College of Sciences Geospatial Technologies Cluster
University of Central Florida (UCF)
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EDUCATION

- **Ph.D., Geography** – October 2018, University of Cincinnati, USA
- **MA, Geographic Information System (GIS)** – June 2013, University of Cincinnati, USA
- **MS, Computer Science** – July 2011, Capital Normal University, Beijing, China
- **BS, Applied Mathematics** – July 2008, Shaanxi Normal University, Shaanxi, China

ACADEMIC POSITIONS

- **Interdisciplinary Postdoctoral Scientist**
  2018.10 – Present, Department of Sociology and College of Sciences Geospatial Technologies Cluster, University of Central Florida
- **Adjunct Assistant Professor**
  2018.01– Present, Department of Geology and Geography, UC Clermont College
- **Teaching Assistant**
  2013.08 – 2018.07, Department of Geography, University of Cincinnati
- **Research Assistant**
  2011.08 – 2013.07, Department of Geography, University of Cincinnati

RESEARCH INTERESTS

- **Data science in GIS and spatio-temporal modeling**
  - Spatio-temporal data assimilating and blending, forecasting and hindcasting
  - Spatial statistics; Big data processing; Machine learning; Geo-intelligence
  - High-performance computing; Parallel computing; Cloud computing
- **UAV & satellite remote sensing**
  - Coastal UAV/Drone mapping; Geographical fieldwork
  - Multi-spectral, Hyper-spectral, Thermal, LiDAR, Radar, Nightlight remote sensing
  - Image classification and segmentation, Object-oriented image analysis
- **Environmental and sociological modeling**
  - Coastal management and conservation; Eelgrass wasting disease
  - Urban heat island; Heatwave; Global warming
  - Sociological modeling; Crime prediction

PEER-REVIEWED PUBLICATIONS

1. **Yang, B.,** Tong, S., & Fan, R., (2020). Using high-resolution images from UAV and satellite remote sensing for best management practice (BMP) analyses. *Journal of Environmental Informatics* (In press). (IF: 4.521)
2. **Yang, B.,** Liu, L., Lan, M., Wang, Z., Zhou, H., Yu, H., Wang, Z. (2020). A spatio-temporal method for crime prediction using historical crime data and transitional zones identified from nightlight imagery. *International Journal of Geographical Information Science*, 1–25. (IF: 3.545) **DOI:** 10.1080/13658816.2020.1737701
3. Shu, S., Liu, H., Beck, R., Frappart, F., Korhonen, J., Xu, M., **Yang, B.,** Hinkel, K., Huang, Y., Yu, B., (2020). Analysis of Sentinel-3 SAR Altimetry Waveform Retracking Algorithms for Deriving Temporally Consistent Water Levels over Inland Lakes. *Remote Sensing of Environment*, 239, 111643. (IF: 8.791) **DOI:** 10.1016/j.rse.2020.111643
4. Sun, H., Cai, C., Liu, H. and **Yang, B.,** (2020). A model for disaggregating microwave satellite soil moisture with land surface evapotranspiration products and gridded meteorological data, *Remote Sensing*, (IF: 4.118) **DOI:**10.3390/rs12060980
5. **Yang, B.,** Hawthorne, T., Torres, H., Feinman M. (2019). Using Object-Oriented Classification for Coastal Management in the East Central Coast of Florida: A Quantitative Comparison between UAV, Satellite, and Aerial Data. *Drones*, 3(3), 60. (IF: 3.176) **DOI:** 10.3390/drones3030060
6. **Yang, B.,** Tong, S., & Fan, R. (2019). Sharpening land use maps and predicting the trends of land-use change using high-resolution airborne image: a geostatistic approach. *International Journal of Applied Earth Observation and Geoinformation*, *79*, 141-152. (IF: 4.846) **DOI:** 10.1016/j.jag.2019.03.010
7. Zhou, H., Liu, L., Lan, M., **Yang, B.,** Wang, Z. (2019) Assessing the Impact of Nightlight Gradients on Street Robbery and Burglary in Cincinnati of Ohio State, USA. *Remote Sens. 11*, 1958. (IF: 4.118) **DOI:** 10.3390/rs11171958
8. Sun, H., Cai, C., Liu, H. and **Yang, B.,** (2019). Microwave and Meteorological Fusion: A method of Spatial Downscaling of Remotely Sensed Soil Moisture. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 12(4), pp.1107-1119. (IF: 3.392) **DOI:** 10.1109/JSTARS.2019.2901921
9. Xu, M., Liu, H., Beck, R., Lekki, J., **Yang, B.,** Shu, S., et al., (2019). Regionally and Locally Adaptive Models for Retrieving Chlorophyll-a Concentration in Inland Waters From Remotely Sensed Multispectral and Hyperspectral Imagery. *IEEE Transactions on Geoscience and Remote Sensing*, 57(7), 4758-4774. (IF: 5.63) **DOI:** 10.1109/TGRS.2019.2892899
10. Beck, R., Xu, M., Zhan, S., Johansen, R.A., Liu, H., Tong, S., **Yang, B.**, Shu, S., et al., (2018). Comparison of satellite reflectance algorithms for estimating turbidity and cyanobacterial concentrations in productive freshwaters using hyperspectral aircraft imagery and dense coincident surface observations. *Journal of Great Lakes Research*. 45(3), 413-433. (IF: 2.175) **DOI:** 10.1016/j.jglr.2018.09.001
11. Xu, M., Liu, H., Beck, R., Lekki, J., **Yang, B.,** Shu, S., et al., (2018). A spectral space partition guided ensemble method for retrieving chlorophyll-a concentration in inland waters from Sentinel-2A satellite imagery. *Journal of Great Lakes Research*. 45(3), 454-465. (IF: 2.175) **DOI:** 10.1016/j.jglr.2018.09.002
12. Johansen, R., Beck, R., Nowosad, J., Nietch, C., Xu, M., Shu, S., **Yang B.**, et al. (2018) Evaluating the portability of satellite derived chlorophyll-a algorithms for temperate inland lakes using airborne imagery and dense surface observations. *Harmful algae,* 76, 35-46. (IF: 5.012) **DOI:** 10.1016/j.hal.2018.05.001

13. Beck, R., Xu, M., Zhan, S., Liu, H., Johansen, R.A., Tong, S., **Yang, B.**, et al. (2017). Comparison of Satellite Reflectance Algorithms for Estimating Phycocyanin Values and Cyanobacterial Total Biovolume in a Temperate Reservoir Using Coincident Hyperspectral Aircraft Imagery and Dense Coincident Surface Observations. *Remote Sensing,* 9(6), p.538. (IF: 4.118) **DOI:** 10.3390/rs9060538
14. Beck, R. A., Hinkel, K. M., Eisner, W. R., Whiteman, D., Arp, C. D., Machida, R., **Yang, B.**, et al. (2013). Contrasting historical and recent breakup styles on the Meade River of Arctic Alaska in the context of a warming climate. *American Journal of Climate Change*, 2(2), **DOI:**10.4236/ajcc.2013.22016
15. Beck, R., Zhan, S., Liu, H., Tong, S., **Yang, B.**, Xu, M., et al. (2016). Comparison of satellite reflectance algorithms for estimating chlorophyll-a in a temperate reservoir using coincident hyperspectral aircraft imagery and dense coincident surface observations. *Remote Sensing of Environment,* 178, 15-30 (IF: 8.791) **DOI:** 10.1016/j.rse.2016.03.002
16. Zhang, W. G., **Yang, B.,** Ding, R., & Hu, Y. Q. (2010). Design of High-Speed Decoder for New High-Speed Bus. In *Applied Mechanics and Materials*, 20, 958-962. **DOI:** 10.4028/www.scientific.net/AMM.20-23.958

PEER-REVIEWED MANUSCRIPTS UNDER REVIEW & IN PROGRESS

- **Yang, B.,** Liu, H., Kang, E., Hawthorne, T., Tong, S., Shu, S., Impacts of traffic volume on the intensity and spatial extent of urban heat island (Under review in *Remote Sensing of Environment*)
- **Yang, B**., Liu, H., Kang, E., Shu, S., Xu, M., Wu, B., Beck, R., Hinkel, K., & Yu, B., Spatio-temporal Cokriging method for blending and downscaling multi-scale remote sensing data. (Under review in *Remote Sensing of Environment*)
- **Yang, B.,** Hawthorne, T., Feinman, M., Searson, H., Hessing-Lewis, M., Reshitnyk, L., Duffy, E., Implementing an introductory drone mapping training program for coastal seagrass monitoring (To be submitted to *Drones*)

CONFERENCE PAPERS

- Liu, H., **Yang, B.,** & Kang, E. (2015, July). Cokriging method for spatio-temporal assimilation of multi-scale satellite data. In *2015 IEEE International Geoscience and Remote Sensing Symposium (IGARSS)* (pp. 3314-3316). IEEE. **DOI:** 10.1109/IGARSS.2015.7326527
- **Yang, B.,** & Zhang, W. (2011, October). Intelligent learning system based on HMM model. In *2011 Fourth International Symposium on Knowledge Acquisition and Modeling* (pp. 490-492). IEEE. **DOI:** 10.1109/KAM.2011.133

CONFERENCE PRESENTATIONS

- **Bo Yang,** Timothy Hawthorne, Michael Feinman, Hunter Searson, (2020) High-resolution UAV mapping for investigating eelgrass wasting disease over the west coast of North America. In AGU Ocean Sciences Meeting. San Diego, CA
- **Bo Yang,** Timothy Hawthorne (2019) A spatio-temporal geostatistical approach for sharpening multi-spectral satellite imagery using high-resolution UAV data. In, AAG Annual Meeting. Washington, D.C.

- Hongjie Yu, Lin Liu, **Bo Yang** (2019) Crime Prediction with Historical Crime and Potential Offender Data Using a Spatio-temporal Cokriging Method. In, AAG Annual Meeting. Washington, D.C.
- **Bo Yang**, Hongxing Liu, Emily Kang, Bailang Yu, Changchun Feng, Min Liu, Jianping Wu (2016) Analysis of impact of traffic regulation on spatial extent and intensity of urban heat islands with satellite thermal remote sensing. In, International Geographical Congress. Beijing, China
- **Bo Yang**, Hongxing Liu, Emily Kang, Richard A. Beck, Kenneth M. Hinkel, Lei Wang (2016) Spatio-temporal Cokriging: A multi-scale assimilation method for downscaling, hindcasting, and forecasting. In, AAG Annual Meeting. San Francisco, CA
- **Bo Yang**, Hongxing Liu, Emily Kang (2015) Spatio-temporal Assimilation of Multi-scale Data Sets within a Cokriging Framework. In, AAG Annual Meeting Spatial Analysis and Modeling (SAM) paper competition. Chicago, IL
- Heather Barrett, Mark Krekeler, Josh Crumbaker, **Bo Yang**, Angie Bittner (2015) Preliminary materials investigations to support search and recovery using hyperspectral remote sensing: Initial geomaterials and clothing results. In Geological Society of America (GSA) Annual Meeting in Baltimore, MD
- **Bo Yang**, Hongxing Liu, Emily Kang (2014) Assimilation of multi-scale thermal remote sensing data using spatio-temporal cokriging method. In, AAG Annual Meeting. Tampa, FL
- **Bo Yang**, Emily Kang, Hongxing Liu (2013) Spatiotemporal (ST) cokriging to Fuse Images of Multi-Sensor Land Surface Temperature. In, Statistics 2013. Columbus, OH
- Hongxing Liu, **Bo Yang**, Song, Shu, K KM Hinkel, RA Beck, EL Kang, (2013). Spatio-temporal analysis of surface temperature and water level variability of thermokarst lakes on the Arctic Coastal Plain of northern Alaska using multiscale satellite thermal images and ICESat laser altimetry. In AGU Fall Meeting. San Francisco, CA
- **Bo Yang**, Hongxing Liu, Emily Kang, Qiusheng Wu (2013). Spatiotemporal cokriging (ST) for multi-sensor images fusion of daily surface temperature over thaw lakes on north Alaska. In, AAG Annual Meeting. L. A., CA
- **Bo Yang**, Hongxing Liu, Qiusheng Wu, Richard Beck, Ken Hinkel, Emily Kang (2012). Derivation of daily surface temperature and emissivity measurements over the Maumee River watershed by integrating multi-scale thermal remote sensing data. In, AAG Annual Meeting. NYC
- Richard Beck, Hongxing Liu, **Bo Yang**, Qiusheng Wu (2012). Aircraft Sensing of Microcystis In, Workshop for Remote Sensing of Coastal and Inland Waters. University of Wisconsin-Madison

INVITED PRESENTATIONS

- "Drone Mapping for Coastal Seagrass Monitoring and Citizen Science" in Department of Geography colloquium, University of Florida, Gainesville, FL, October 10, 2019.
- "Multi-spectral drone mapping over Indian River Lagoon" in UCF research week kick-off event, University of Central Florida, Orlando, FL, 2018, April 5, 2019.
- "Spatio-temporal Cokriging Method for Blending and Downscaling Multi-scale Data" in UC geography colloquium series, University of Cincinnati, Cincinnati, OH, October 13, 2017

RESEARCH PROJECT

- **Lead post-doc scientist for NSF funded collaborative research: The role of a keystone pathogen in the geographic and local-scale ecology of eelgrass decline in the eastern Pacific (**$1,300,000**), 2018 – present**

  Leading intensive fieldwork along the west coast of North America, including Washington, Oregon, North & South California, and Alaska; Processing and managing field data; budgeting the funds and coordinating with partners; leading the UCF fieldwork team, developing a training course for all research partners and community outreach.

  Project page: http://www.citizensciencegis.org/projects/drone-mapping/

- **Lead post-doc scientist for NSF Research Experiences for Teachers (RET) (**$36,000**), 2019 – present**

  As the supplementary project for NSF & Smithsonian eelgrass mapping project, I lead the NSF RET project to build mutually rewarding partnerships with K-12 science teachers to transfer teachers' experience in cutting edge research to the broader impact content in the classroom. My drone mapping team work with teachers participating fieldworks along west coast and developing a science unit of 5-7 classroom lessons using fieldwork data and drone mapping principles to support inquiry-based learning with students.

- **Research assistant for NASA-funded Water Quality Remote Sensing and Harmful Algal Blooming (HABs) project, 2013-2018 summers**

  Leading the field sampling survey team, planning and coordinating survey tasks for water sampling in the Ohio River, Harsha Lake, and Brookville Lake, operating fieldwork instruments (UAVs, ASD spectrometer, YSI water sonde, Trimble Differential GPS, etc.).

- **Principal Investigator (PI) for Open Source Geospatial Foundation (OSGeo) for Google Summer of Code (GSoC) GRASS branch (**$10,000**), 2016**

  Develop and update satellite image segmentation module (i.segment) using python and C programing language in GRASS 7 platform with the OSGeo development team.

  GRASS 7 repository (https://trac.osgeo.org/grass/browser/sandbox/bo/i.segment.gsoc2016).

- **Research assistant for USDA-funded Project "LiDAR remote sensing of deforestation and forest fragmentation in Appalachian region", 2016-2018**

  Processing multi-platform remote sensing imagery for mapping forest fragmentation, collecting and processing drone imagery with *in situ* measurements.

- **Research assistant for NSF-funded Project "Circum-arctic Lakes Observation Network (CALON)", 2011-2014**

  Designing and implementing a multi-sensor image fusion software using Python for blending multi-source imagery in Alaska.

- **Research assistant for China NSF-funded project on highly-reliable & high-speed system, 2009-2011**

  Developing of highly-reliable & high-speed embedded decoding system in CNU

- **PI for Graduate Innovation Fund (**￥2,000**) in Capital Normal University, Beijing**

  Developing a hidden Markov Model (HMM) based machine-learning algorithm.

TEACHING EXPERIENCE

2020S *SYA6356 GIS in Society* – **Instructor**, University of Central Florida
Geog1005 *Human Geography in Action* – **Instructor,** UC Clermont College
Geog1021 World Regional Geography – **Instructor,** UC Clermont College
2019F *SYA6458: Advanced Topics in GIS and Society* – **Guest Lecturer,** University of Central Florida
Geog1021 World Regional Geography – **Instructor,** UC Clermont College
2019S *SYA6458: Advanced Topics in GIS and Society* – **Guest Lecturer,** University of Central Florida
Geog1021 World regional Geography – **Instructor,** UC Clermont College
2018F *SYA6458 Advanced Topics in GIS and Society* – **Guest Lecturer,** University of Central Florida
Geog1021 World Regional Geography – **Instructor,** UC Clermont College
2018S *Geog1001 Introduction to Physical Geography* – **Instructor,** University of Cincinnati
Geog1012 Landform and soils – **Instructor,** UC Clermont College
Geog1040 Earth from Space – **Instructor,** University of Cincinnati
2017S *Geog1001 Introduction to Physical Geography* – **Instructor,** University of Cincinnati
Geog1040 Earth from Space – **Instructor,** University of Cincinnati
Geog1044 Natural Hazards and Disasters – **Instructor,** University of Cincinnati
2016F *Geog6091 Advanced GIS* – **TA,** University of Cincinnati
2016S *Geog6081C Intermediate GIS* – **TA,** University of Cincinnati
2015F *Geog6089 Digital Terrain and Watershed Analysis* – **TA,** University of Cincinnati
2015S *Geog1044 Introduction to Natural Hazards and Disasters* – **TA,** University of Cincinnati
Geog6086 Intermediate Remote Sensing – **TA,** University of Cincinnati
2014F *Geog6076C Introduction to Remote Sensing* – **TA,** University of Cincinnati
2014S *Geog6096C Advanced Remote Sensing & Image Analysis* – **TA,** University of Cincinnati
2013F *Geog6075 Quantitative Geography and Spatial Statistics I* – **TA,** University of Cincinnati
2012F *Geog585 Intro GIS* – TA**,** University of Cincinnati – **TA,** University of Cincinnati

PROFESSIONAL ORGANIZATIONS & SERVICES

- **Member,** *American Association of Geography (AAG)*
- **Member,** *American Geophysical Union (AGU)*
- **Member,** *National Postdoctoral Association (NPA)*
- **Reviewer Board Member,** *International Journal of Environmental Research and Public Health*
- **Reviewer,** *International Journal of Geographical Information Science*
- **Reviewer,** *Applied Geography*
- **Reviewer,** *Remote Sensing*
- **Reviewer,** *ISPRS International Journal of Geo-Information*
- **Reviewer,** *Journal of Water Resources Planning and Management – ASCE*
- **Reviewer,** *Journal of Hydrology: Regional Studies*
- **Reviewer,** *Science of the Total Environment*
- **Reviewer,** *International Journal of Environmental Science and Technology*
- **Reviewer,** *Drones*
- **Reviewer,** *Urban Water Journal*
- **Reviewer,** *Applied Sciences*
- **Reviewer,** *Electronics*

- **Reviewer,** *Water*
- **Reviewer,** *Sustainability*
- **Reviewer,** *Environmental Engineering and Management Journal*
- **Developer,** *Open Source Geospatial Foundation (OSGeo)*
- **Drone mapping team leader,** *Citizen Science GIS Group, University of Central Florida*
- **2+2 international exchange program coordinator,** University of Cincinnati, Geography
- **Technical Support,** Center for Geospatial Information & Environmental Sensor Networks (GIESN), University of Cincinnati
- **Debate team leader & President of debate association,** Capital Normal University, Beijing, China