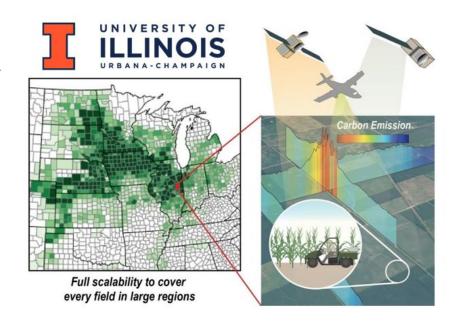# Global Recruitment of Talents: <u>PhD and Postdoc Positions</u> at <u>University of Illinois</u> in <u>Ecosystem Modeling and Remote Sensing</u>

We are recruiting **multiple PhD students** and **two Postdoctoral Researchers** through Institute for Sustainability, Energy, and Environment (iSEE), Department of Natural Resources and Environmental Sciences (NRES) and National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign (UIUC). Funding up to five years is guaranteed for PhD students through fellowship, research-assistant, and/or teaching-assistant. The postdoctoral position is full-time, 1-year duration, with possibility of annual extension, contingent upon performance and funding.

<u>Summary</u>: The successful candidates will work on a few recently funded research projects of developing a "**system of systems**" solution to quantify field-scale carbon credit over the U.S. agroecosystem. Carbon sequestration through adaptive management practices over the cropland may have a great potential to mitigate climate change, improve soil health and sustain crop productivity. However, we are currently lacking scalable and accurate solutions to quantify the changes of soil organic carbon and greenhouse gas emissions at individual field

Full scalability to cover every field in large regions

levels. The successful candidates will use extensive ground observations, multi-source satellite remote sensing and airborne hyperspectral data, advanced process-based modeling, deep learning, and systematic model-data fusion to build such a first-of-its-kind solution. Candidates will directly work with an interdisciplinary team with leading scientists at multiple U.S. institutes and DOE national labs. The research projects are led by Dr. Kaiyu Guan (ecosystem modeling and remote sensing), Dr. Evan DeLucia (ecosystem biogeochemistry), and Dr. Jian Peng (artificial intelligence), with close collaborations with Dr. Jinyun Tang (ecosystem modeling) and Dr. Zhenong Jin (physics-guided machine learning).

Specific responsibilities:
Ecosystem Modelers: improving process-based ecosystem models by developing new biogeochemical/hydrological modules, efficient calibration methods, and advanced model-data fusion; building operational systems for agricultural monitoring and modeling over the U.S. agroecosystems and beyond.

Remote Sensing Scientists: designing and implementing automatic computing pipelines for satellite/airborne-related remote sensing algorithms for monitoring soil organic carbon, soil moisture, management practices, crop growth condition, water use and productivity at a high spatial resolution and over large areas.

Common responsibility: preparing peer-reviewed publications and education materials; managing projects and reporting; and communicating research at professional meetings; postdocs will also mentor graduate and undergraduate students.

Qualifications for PhD student positions: The project will involve intense data processing/analysis, large-scale model simulation, and possibly field work. Strong quantitative and programing skills are required for successful PhD student candidates. **One PhD student will be under direct supervision of both Drs. Jinyun Tang and Kaiyu Guan for developing next-generation biogeochemistry models, and candidates with a background in physics, mathematics or related fields are highly encouraged.** Proficiency in spoken/written English is mandatory. All applicants should meet the minimum requirements of GPA and GRE by the graduate admission (http://www.grad.illinois.edu/admissions/apply/requirements). Information for applying to NRES can be found here: https://nres.illinois.edu/graduate/apply. International students should also meet the minimum requirements of TOEFL (the same link above). Prospective graduate students are encouraged to contact Xin Lin (linxin@illinois.edu) first to share potential research projects and opportunities before applying. When contacting by email, please include the following items: unofficial transcripts, curriculum vitae, GRE score, names and contact information of three references, and a brief personal statement that highlights skills relevant to the above directions. **Starting Date: We accept students at any time of a year, not confined to only fall semester.** Therefore, the enrollment time is **flexible**.

Qualifications for Postdoc positions: Applicants should have a Ph.D. on earth and environmental science, hydrology, remote sensing, environmental engineering, meteorology, geography, mathematics, or a closely related field. Prior research experiences in ecosystem modeling and remote sensing are highly preferred. Strong programming skills (e.g., Python, C/C++, and/or Fortran in the Linux environment) and prior experience in supercomputing or big data analytical systems is **required**, as the applicant will be working routinely in the supercomputer environment. Candidates will be considered if graduation with a Ph.D. is expected by the targeted starting date. Proficiency in spoken/written English is mandatory. The appointment is renewed annually, contingent upon the performance. Salary is competitive and commensurate with experience in relevant research. **Starting Date**: Ideal starting window ranges from **January 1, 2021 to April 1, 2021**, and prefer to start as soon as possible. The position is open till filled.

Application Process: To ensure full consideration, qualified candidates must send a cover letter, CV, and contact information of three references via email to linxin@illinois.edu. All requested information must be submitted to the above email in order for your application to be considered. Incomplete applications will not be reviewed. Qualified applicants will be immediately reviewed upon receiving the application while the search may continue until the position is filled. We will only give feedback to those candidates that we plan to interview. For further information, please contact: Ms. Xin Lin (linxin@illinois.edu).

Dr. Kaiyu Guan's Group: Information can be found at: http://faculty.nres.illinois.edu/~kaiyuguan/. Dr. Guan is a Blue Waters Professor in ecohydrology and remote sensing in the iSEE, NRES, and NCSA at UIUC. Guan's group uses computational models, remote sensing data, field work, machine learning, and supercomputing to address how climate and human practices affect food security, water resources, and ecosystem functioning.

The University of Illinois at Urbana-Champaign (UIUC): UIUC is a world leader in research, teaching and public engagement, distinguished by the breadth of its programs, broad academic excellence, and internationally renowned faculty and alumni. Illinois serves the world by creating knowledge, preparing students for lives of impact, and finding solutions to critical societal needs. **UIUC ranks top worldwide in Environmental Science, Computer Science, and Agricultural Science.** The University of Illinois is an Affirmative Action/Equal Opportunity Employer. The administration, faculty, and staff embrace diversity and are committed to attracting qualified candidates who also embrace and value diversity and inclusivity. Visit www.inclusiveillinois.illinois.edu. **International students have flexibility to study remotely considering the COVID-19 situation.**