Session title: **Big Data and Ecological Security**

Session Organizer: **Shanghai Normal University**

Short Description

The session will center around the critical theme of "Big Data and Ecological Security" within the FBAS 2023 conference. Esteemed experts and researchers in the field will convene to explore the dynamic interplay between big data applications and the preservation of ecological security. Through insightful presentations, case studies, and discussions, the session aims to illuminate the potential of data-driven approaches in ensuring a sustainable and secure environment.

Objectives

The central objective of this session is to facilitate the exchange of best practices and experiential insights that underscore the significance of big data in fortifying ecological security. By leveraging illuminating presentations and invigorating discussions, the session endeavors to delve into the uncharted territories of innovative big data applications aimed at surmounting challenges intrinsic to maintaining ecological balance. This collective exploration aspires to catalyze profound contemplation among distinguished experts and scholars, cultivating a fertile ground for novel perspectives to flourish.

Expected Results

Through the discussions and interactions in this symposium, we anticipate achieving the following outcomes:

1. Increased Insight: Attendees will gain a deeper understanding of how big data can contribute to ecological security, enhancing their grasp of the potential benefits and applications.

2. Ideas and Innovation: The exchange of perspectives is expected to foster new ideas and innovative approaches at the intersection of big data and ecological security.

3. Catalyst for Future Action: The symposium is likely to inspire participants to further explore collaborations, research directions, and practical implementations that align with the enhancement of ecological security through big data strategies.

Agenda

Time 15:15-16:45, September 6th 2023 Room: 201 B

Moderator:

GAO Jun

Professor

Shanghai Normal University

Professor GAO Jun currently holds several distinguished positions, including being the Director of the National Field Scientific Observation and Research Station for Wetland Ecosystems in the Yangtze River Delta Green Integration Development Demonstration Zone, Chief of the Academic Committee at Shanghai Normal University, Head of the Postdoctoral Mobile Station for Environmental Science at Shanghai Normal University, and Discipline Leader for the Ph.D. program in Environmental Science and Engineering. His extensive experience also encompasses his role as the Head of the Americas Division for the Liaison Group of the Shanghai World Expo 2010 Bid Working Group from 2002 to 2003. With a comprehensive career, Professor Gao has made substantial contributions as Dean of the School of Environmental and Geographical Sciences at Shanghai Normal University, and in various leadership roles in academic and research organizations. His expertise lies in urban ecology, landscape ecology, sustainable sciences, national parks, and ecological tourism, evident through his prolific research and teaching endeavors. Notably, he currently spearheads significant research projects focused on sustainable development models for the Qinghai-Tibet Plateau National Park Cluster and ecological security in the Yangtze Economic Belt. Professor Gao's scholarly influence extends internationally, as evidenced by his collaboration with the United Nations World Tourism Organization and the publication of comparative studies. His contributions encompass over twenty authored or co-authored books and textbooks, as well as over a hundred research papers. His dedication has led to numerous awards, notably including the second prize for academic achievements awarded by the China National Tourism Administration for his work on the Atlas of Shanghai Tourism Resources.

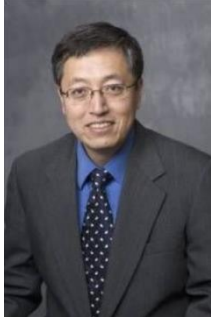**Participants**

Event 1 (15:15-15:45)

Strengthening machine learning reproducibility to secure ecological assessment

SHAO Guofan

Professor

Purdue University

Prof. SHAO Guofan is affiliated with the Department of Forestry and Natural Resources, Purdue University. He serves as Editor-in-Chief for the International Journal of Sustainable Development and World Ecology. His research career started with geospatial applications in forest ecosystem modeling and monitoring. He became a post-doc at the Department of Environmental Sciences, University of Virginia in 1991. He joined Purdue University in 1997, where he has been teaching and studying remote sensing applications in land use and land cover mapping and its accuracy assessment. He has contributed to research on the mixed forests in eastern Eurasia and central hardwood forests in the US. His current research interest focuses on machine learning classification of remotely sensed imagery acquired from different platforms. He and his collaborators invented image classification efficacy as a transformed metric to consistently evaluate the performance of classifiers that deal with datasets with imbalanced classes. He has authored or co-authored 6 books, 23 book chapters, and 192 peer-reviewed journal papers. The book chapters include Satellite Data and Remote Sensing in Encyclopedia of Environmetrics in 2012 and 2016, and Optical Remote Sensing in International Encyclopedia of Geography in 2014 and 2019.

Event 2 (15:45-16:00)

Robustness-Resistance-Recovery based assessment of flood resilience
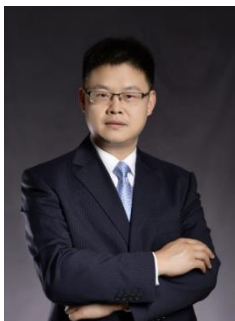
PENG Jian

Professor

Peking University

PENG Jian is a Professor at College of Urban and Environmental Sciences, Peking University, majoring in Landscape Ecology, Ecosystem Servies, and Integrated Physical Geography. His recent research interest is the coupling of landscape patterns and social-ecological processes. He is one of Editors-in-Chief of Applied Geography.

Event 3 (16:00-16:15)

Assessment of urban ecological risks with multimodal remote sensing and interpretable machine learning

WANG Lin

Research associate

Institute of Urban Environment, Chinese Academy of Sciences

WANG Lin is a research associate at the Institute of Urban Environment, Chinese Academy of Sciences. She received PhD degree from University of Chinese Academy of Sciences in 2021 through training at Emory University from 2018 to 2019. Her current work focuses on computer modeling of UERs induced by air pollution and extreme weather events based on big data. She has published 16 research papers in journals such as Remote Sensing of Environment, ISME Communications, Journal of Environmental Management, Proceedings of the Chinese Academy of Sciences and Acta Ecologica Sinica. She is the PI for a Fujian Provincial Natural Science Foundation project (non-joint) and a sub-project of National Key R&D Plan.

Event 4 (16:15-16:30)

Comprehensive assessment of China's SDG 6 progress from 2015 to 2020 supported by big earth data

SONG Xiaoyu

Associate research fellow

Northwest Institute of Ecology, Chinese Academy of Sciences

SONG Xiaoyu is an Assistant Researcher at the Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences. His primary research area is focused on ecological economics. With a strong academic background, he has contributed significantly to his field. Having authored numerous works and garnered substantial citations, Song's research impact is evident with an H-index of 10 and a total of 259 citations. He has received funding from prominent sources such as the National Natural Science Foundation of China, the National Key R&D Program of China, and the Knowledge Innovation Program of the Chinese Academy of Sciences. His involvement in research projects, including the National Natural Science Foundation project focusing on integrated ecological and hydrological processes in the Heihe River Basin, underscores his dedication to advancing understanding in his field.

Event 5 (16:30-16:45)

Comprehensive observation of land surface and its application in ecological security monitoring

LI Weiyue

Associate professor

Shanghai Normal University

LI Weiyue is an Associate Professor and Master's Supervisor at the School of Environmental and Geographical Sciences, Shanghai Normal University. He also serves as the Deputy Director of the National Field Observation Research Station for Urban Wetland Ecosystems in the Yangtze River Delta. With a doctoral degree in Cartography and Geographic Information Engineering from Tongji University in 2014, Li has a strong academic foundation. From 2016 to 2021, he conducted postdoctoral research at the Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences. His research focus lies in areas such as field observation, data integration, multi-source data fusion, and assimilation. He has particularly concentrated on addressing environmental and ecological issues in the Yangtze River Delta and the integration of ecological observation methods to serve environmental security assessments, carbon source-sink estimation, and application demonstrations.