



LSGS & RILS RESEARCH SEMINAR

3D-Explicit Tree Representation for Forest Digital Twins

📅 17 NOV 2026 (TUE)

🕒 10:30 - 12:00

📍 Y305, POLYU

🌐 ENGLISH

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ABSTRACT

Urbanization, industrialization, and globalization have led to increasing environmental issues such as global warming, deforestation, and water shortages. Forests play a fundamental role in the Earth's environment and could help mitigate many environmental problems caused by human actions. Remote sensing (RS) can obtain spatial and temporal information on forest ecosystems to support making informed policies on environmental issues. Radiative transfer models (RTMs) and forest digital twins (FDTs) are fundamental to the retrieval of forest information from RS data. However, the forest structure assumptions currently used in RTMs and FDTs have led to uncertainties in the modeling process. This study analyzed different methodological options for improving RTMs and FDTs by introducing 3D-explicit forest structural representations. This research contributes to reducing uncertainties in RTMs and FDTs and improving our understanding of forest radiative transfer processes.

BIOGRAPHY

Chang LIU is a lecturer at the College of Forestry, Beijing Forestry University. Dr. LIU received the Ph.D. degree in Bioscience Engineering from Ghent University, Belgium, in 2024. His research focused on reducing uncertainties in forest radiative transfer modeling and remote sensing products by introducing 3D-explicit forest representations based on LiDAR. His research interests include radiative transfer model, terrestrial LiDAR, digital twin, and forward modeling and interpretation of remote sensing observation. He participated in the dynamic reconstruction and maintenance of Wytham Woods forest model, and the development of RAPID-RTX 3D RTM. Chang Liu has presented his research at multiple international conferences/workshops and (co)-authored peer-reviewed scientific articles published in Remote Sensing of Environment, Journal of Geophysical Research: Atmospheres, Geoscientific Model Development, and Global Change Biology. He is also the reviewer of Remote Sensing of Environment.

Moderator: Prof. Tiangang YIN, Assistant Professor, LSGS, member of RILS

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