



The University of Hong Kong
School of Biological Sciences

**Guest
Seminar**

Vegetation and Climate: How do biophysical feedbacks regulate climate extremes?

Date: 16 Sept 2024 (Mon)

Time: 4:00 PM

Venue: KBSB 6N-11 & Zoom

About the speaker:

Diego Miralles is a professor of Hydrology and Climatology at Ghent University. His research focuses on understanding the interactions between the hydrosphere, biosphere, and climate and the implications for present and future societies. He has been awarded the ERC Startup and Integration Grant, and has been recognized as a Clarivate Highly Cited Fellow.



Abstract:

Land conditions, especially vegetation, are fundamental in shaping Earth's energy, water, and carbon cycles. Vegetation consumes water resources, regulates CO₂, alters surface roughness, and determines net radiation. This influence propagates through the atmosphere, impacting large-scale circulation and the planetary transport of heat and moisture. Understanding feedbacks between land and atmosphere is crucial for predicting hydro-climatic extremes. Compound occurrences of droughts and heatwaves have exacerbated in recent decades due to climate change and land use. This presentation explores complex feedbacks between land and atmosphere, focusing on extreme events that cause direct societal impacts, agricultural loss, forest mortality, and water scarcity. Key questions include the impact of extreme meteorological conditions on ecosystem evaporation, how vegetation regulates atmospheric boundary layer, and how biophysical feedbacks contribute to the inflow of heat and moisture. This presentation also addresses the consequences of land feedbacks for human heat stress and how information on land conditions can predict extreme events timely.

