The University of Hong Kong
School of Biological Sciences

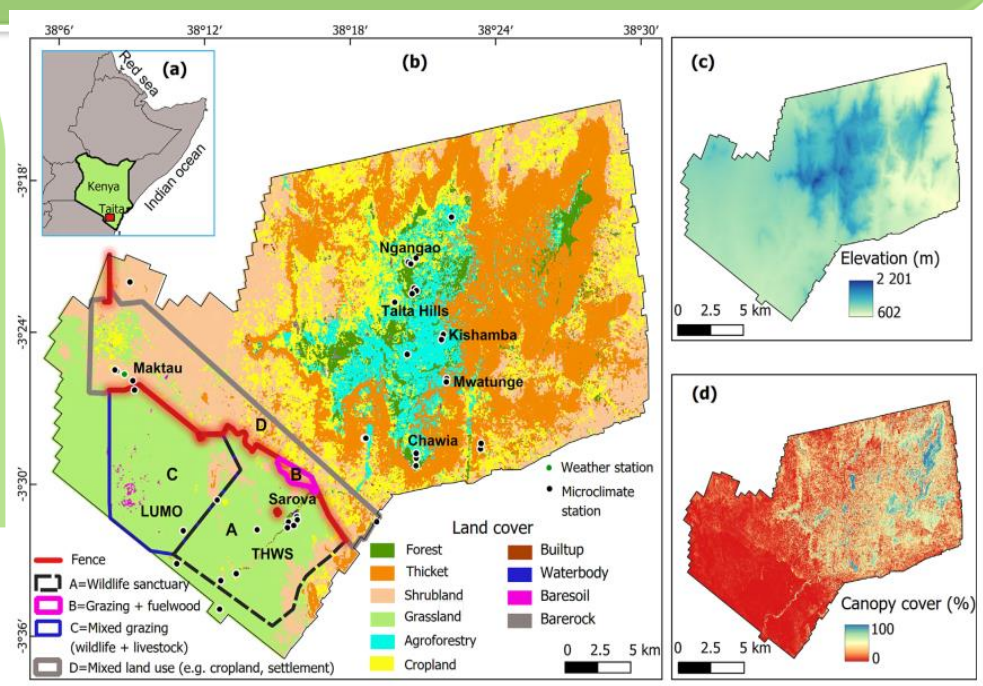
Guest Seminar

Impact of land use change to above ground carbon stocks – case study of Taita Hills in Kenya, Africa

Date: 11 Oct 2023 (WED)

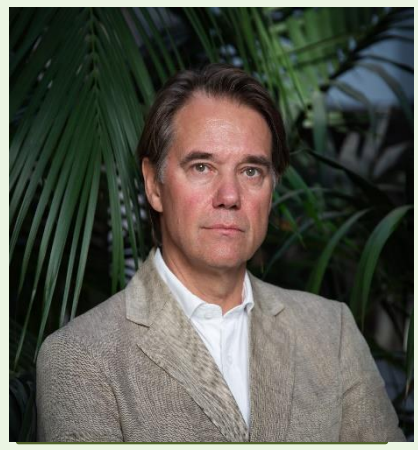
Time: 1400

Venue: KBSB 6N11 + Zoom



About the speaker:

Professor Petri Pellikka is a professor of geoinformatics at the University of Helsinki in Finland and director of Taita Research Station in Kenya. He has been studying land use change and its impacts to ecosystem services by remote and environmental sensing in Africa for 20 years.



Abstract:

Human population of sub-Saharan Africa grows the fastest in the world and needs more cropland to secure its food security. Land use change from forests and bushlands to agricultural fields improves food security first, but has many climate change enhancing consequences on ecosystem services.

We modelled the impacts of land use change on CO_2 sequestration and carbon stocks, water resources and greenhouse gas emissions from soils by remote and environmental sensing in mountainous Taita Hills in Kenya. Our data included satellite and airborne imagery and airborne laser scanning data, spectroscopy, and data from the field experiments on the ground.

Land use change from natural land covers to managed systems, such as croplands, decreases carbon stocks, ability of the vegetation to capture atmospheric water, infiltration of the water to the soil and evapotranspiration. Decreasing canopy cover increases land surface temperatures and albedo. All these lead to climate change enhancing consequences, warming and lack of water. The trend is very similar not only in the Taita Hills, but in the whole of sub-Saharan Africa.

To mitigate climate change, climate smart solutions, such as agroforestry, are needed for landscapes and agricultural practices.