

I am a professor of geoinformatics at the Department of Geosciences and Geography since 2002 with affiliation to Institute for Atmospheric and Earth System Research (INAR). My primary focus in research has been on remote sensing applications on land cover and impact of human-nature interactions on the environment. My research group Earth Change Observation Laboratory (ECHOLAB) applies remote sensing data including airborne hyperspectral data and laser scanner data to study the impacts of land use and land cover change on ecosystem services, climate and livelihoods.
<https://www.helsinki.fi/en/researchgroups/earth-change-observation-laboratory>

Since 2003, my research on land use and land cover change has focused on Taita Taveta County in Kenya, which is also a location of Taita Research Station of the University of Helsinki. The research infrastructure includes multitemporal geospatial database on land cover and topography and climate with environmental sensing by two eddy covariance flux towers, weather stations and tens small-scale soil and air temperature and humidity sensors in the landscape. My projects also manage agricultural test fields, lighthouses, in various agroecological zones of the Taita Hills since 2012.

The focus has been in East Africa, and particularly land cover and land use change caused by agricultural expansion and conservation. My research has been funded by Research Council of Finland, Ministry for Foreign Affairs of Finland and European Commission. Cooperation has been practiced with many national and international research organization in Kenya and Ethiopia, but also in Tanzania and in West Africa.

Earlier I have been involved in remote sensing of glaciers as indicators of climate change and developing remote sensing systems and correction procedures for radiometry and geometry of the data especially collected by airborne sensors. Those corrections include spectral corrections for bidirectional effects (BRDF), topography and sensor induced effects, like light falloff.

I did my MSc thesis in Taita Hills, Kenya, studying land use by satellite remote sensing. That was in 1989 after which I worked in Sudan in a development project as a remote sensing specialist. I did my PhD studies at Ludwig-Maximilian University of Munich in Germany and post doc studies at Carleton University in Ottawa, Canada. The topic of those studies was phenology of beech forest in various elevation zones in Bavarian Alps, and forest damage caused by ice storm in Quebec, Canada. I had short periods at University of Turku and Finnish Geodetic Institute as a scientist before I was nominated as the first professor of geoinformatics at the University of Helsinki in 2002. While still working in Helsinki, I was leading a European Commission funded project OMEGA on remote sensing of glaciers for the University of Turku as an adjunct professor.

In 2009, I proposed that University of Helsinki should establish research station in the Taita Hills at the premises we have been using as base camp since 2004. I was nominated as a director of Taita Research Station in 2009, and after serving for 15 years, I stepped down in 2024. The station provides research questions and solutions from sustainability science to Earth system science for students and staff of our university and others. It is a gateway to Africa to many young researchers. Please read more activities of it at the Taita Research Station homepages:
<https://www.helsinki.fi/en/research-stations/taita-research-station>

Even if I stepped down from director's position, I am still carrying out my research projects in Taita, REACT project funded by Research Council of Finland, and ESSA project funded by DeSIRA programme of the DG International Partnerships of the European Commission. REACT deals with regenerative climate smart agriculture in agroecological zones of Kenya, while ESSA deals with climate smart sustainable livestock management in Kenya and Ethiopia.
<https://www.helsinki.fi/en/projects/climate-smart-agropastoral-ecosystem-transformation-east-africa>

As reflected in the projects and my papers on the portal, my background is in physical geography and development geography, which I currently still work on with the tools and methods provided by geoinformatics. Currently I am open to see environmental problems in a holistic way in the field of Earth system science and Sustainability Science.