

**UNIVERSITY OF BRITISH COLUMBIA
DEPARTMENT OF GEOGRAPHY**

Colloquium / Research Seminar

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**“Land Use / Land Cover Change Impacts to Biodiversity and Carbon Storage
After Five Years of Agriculture Intensification in a Millennium Village in Western Kenya”**



Without increased productivity on existing farmland in sub-Saharan Africa, extensification of agricultural production will likely be required to meet growing food demands. The impacts of the land use/land cover (LULC) change from widespread extensification could substantially reduce biodiversity and increase climate forcing due to carbon dioxide (CO₂) released from vegetation and soils during the conversion to annual farming. Alternatively, increasing productivity on existing land using improved agricultural inputs may reduce extensification. However improving productivity through the applications of nitrogen will likely increase the release of nitrous oxide (N₂O), a greenhouse gas 310 times as powerful as CO₂. The net climate impact of these two alternative development trajectories is not well understood particularly in Sub-Saharan Africa, where yield increases are needed most. To examine the potential tradeoffs between food production and climate mitigation, the impacts of LULC change were analyzed for a 100-km² landscape surrounding a Millennium Village Project site in Western Kenya. Field and remote sensing data were analyzed to determine agriculture productivity and global warming potential (GWP) before and after 5-years of intensification interventions.

**Tuesday, 28 February
Geography Room 200
at 12:30 pm**