

Présentations flash des doctorant·e·s

Assemblée Générale MathNum 2026

Remote Sensing and Spatial Modelling of Large Herbivores' Populations and Health in Response to Environmental Changes in the Amboseli Ecosystem, Kenya

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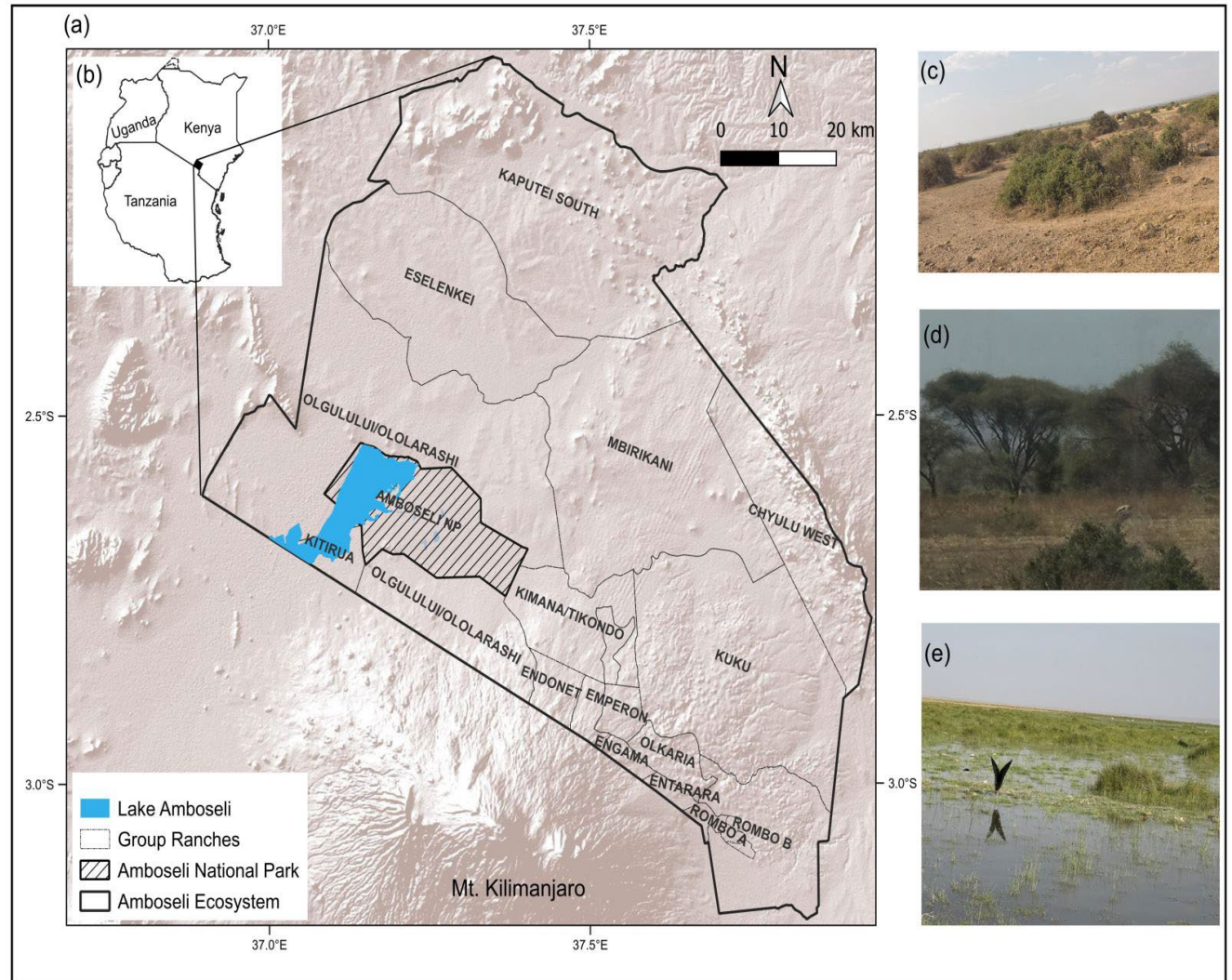
Co-supervisors: Dr. Renaud Marti and Dr. Victor N. Mose



CONTEXT

Large herbivores like elephants (*Loxodonta africana*) shape vegetation, drive nutrient cycling, and maintain trophic dynamics — yet their **distribution** and **health** face growing threats from **climate change** (including drought and reduced forage quality) and **habitat fragmentation** due to **land-use change**.

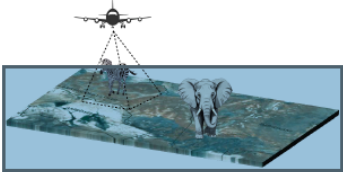
AMBOSELI ECOSYSTEM, KENYA



APPROACH OVERVIEW

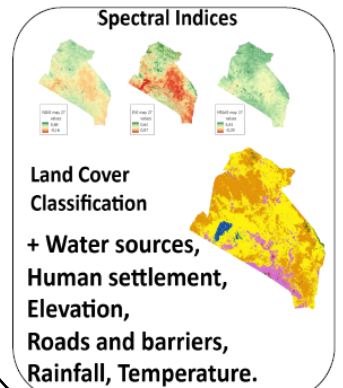
a) Animals Aerial Count & Telemetry data

- Animal Population ⁴
- Geo-location
- Animal movement ecology



b) Environmental Variables Dataset

- Aggregated dataset for Amboseli ecosystem in May 2024 ⁵



c) Daily Time budget



06h00 - 10h00
Morning foraging

10h00 - 12h00
Move to water sources

12h00 - 14h00
Drinking/ rest

14h00 - 18h00
Afternoon foraging

18h00 - 02h00
Night foraging Home

02h00 - 6h00
Primary rest/ deep sleep



06h00 - 12h00
Morning foraging/move

12h00 - 16h00
Rest/ drinking

16h00 - 18h00
Afternoon foraging

18h00 - 20h00
Evening foraging/move

20h00 - 23h00
Early night rest

23h00 - 02h00
Night foraging

02h00 - 06h00
Rest/safety



06h00 - 08h00
Morning foraging/move

08h00 - 13h00
Grazing / water seeking

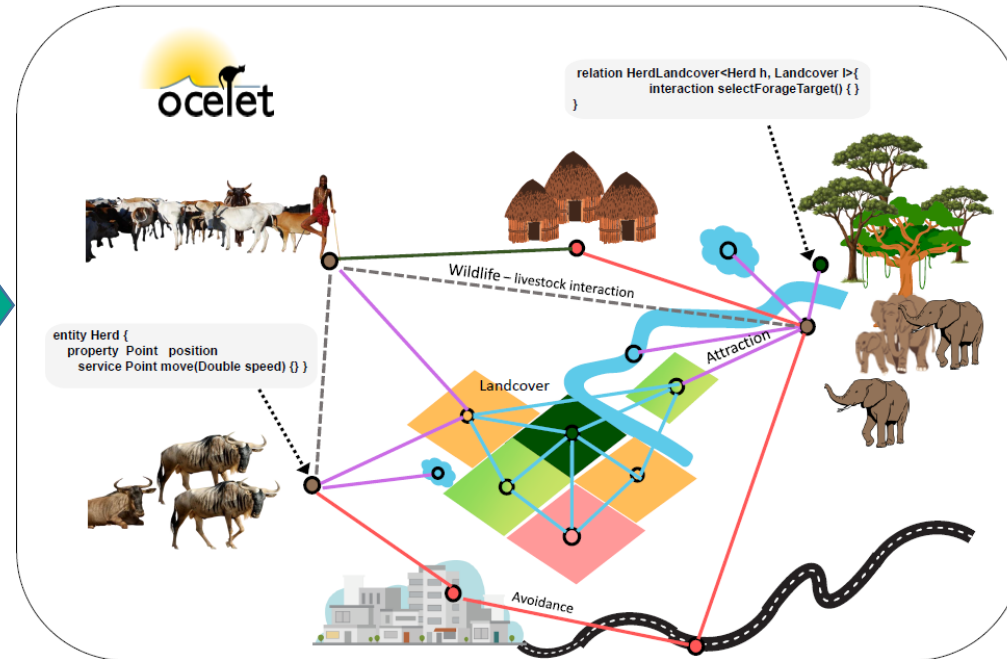
13h00 - 14h00
Midday rest

14h00 - 16h00
Foraging/ water seeking

16h00 - 18h00
Return to boma

18h00 - 06h00
At boma / rest

d) Agent-based Model



e) Output

Species mobility mapping

- Movement maps (trajectories, points of contacts)
- Connectivity loss (movement corridors, barrier effects)

Environment variables impacts on species

- Health maps (disease risk)
- Risk hotspots (resource scarcity, human pressure)

Future trends on animal distribution

Scenario projections



SHALL WE TALK ABOUT IT AT THE POSTER?

Modelling Dynamic Interspecific Contact Networks at the Wildlife-Livestock Interface in Amboseli Ecosystem, Kenya