From global savannahs to Swedish agriculture - the pathway of a former COMPUTE student

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2006-2011

Student in physical geography , Lund University

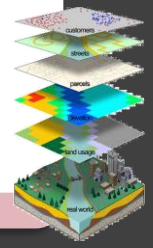
2009-2010

Exchange in Canada

2012-2017

PhD Student in Physical Geography.

COMPUTE
Scientific Discovery Using Computers



2018-2020

Postdoc in farm2forest at CEC, Lund

Current

Researcher at CEC

LUND UNIVERSITY

PHD

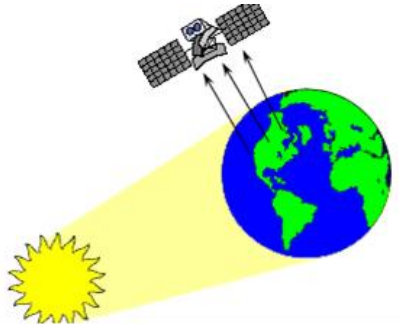
STUDENT

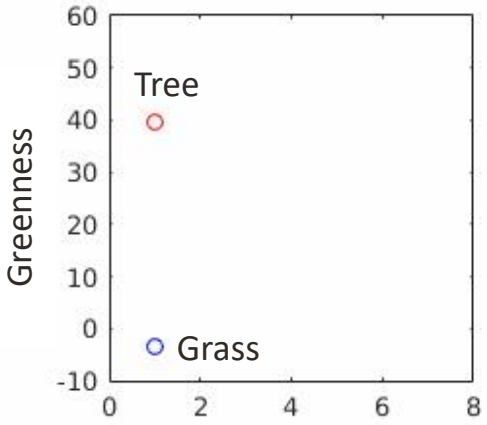
Department of Physical Geography and Ecosystem Science

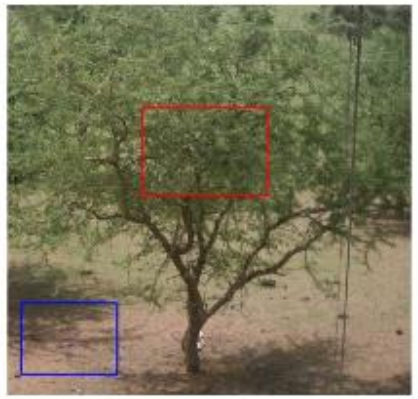
FACULTY OF SCIENCE | LUND UNIVERSITY

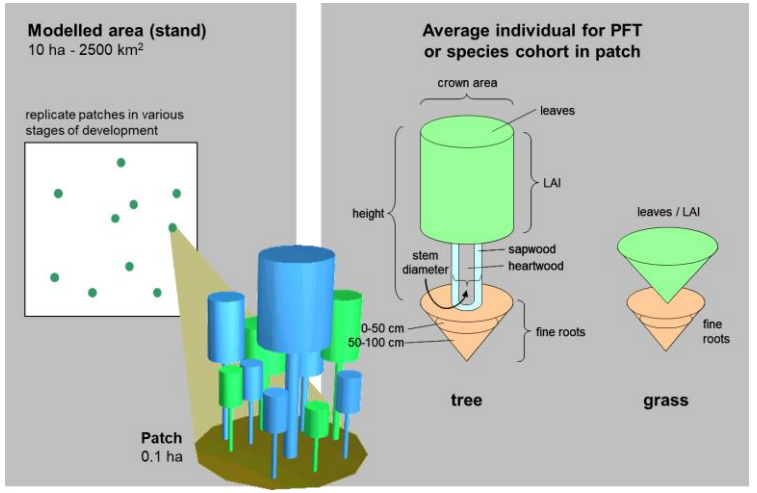
My Phd Studies 2012-2017
Global Savannah Phenology

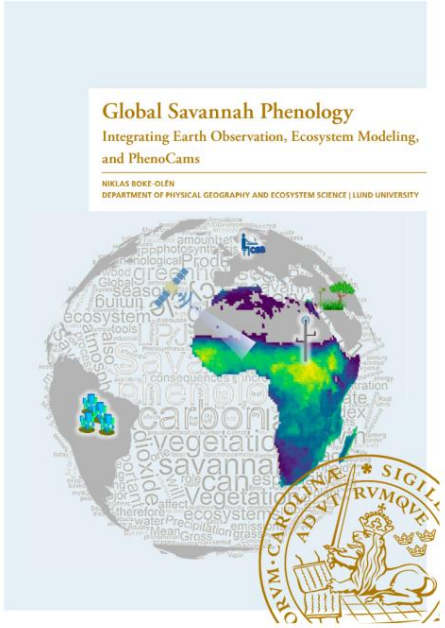
1. Earth Observation
2. Ecosystem Modelling
3. PhenoCams



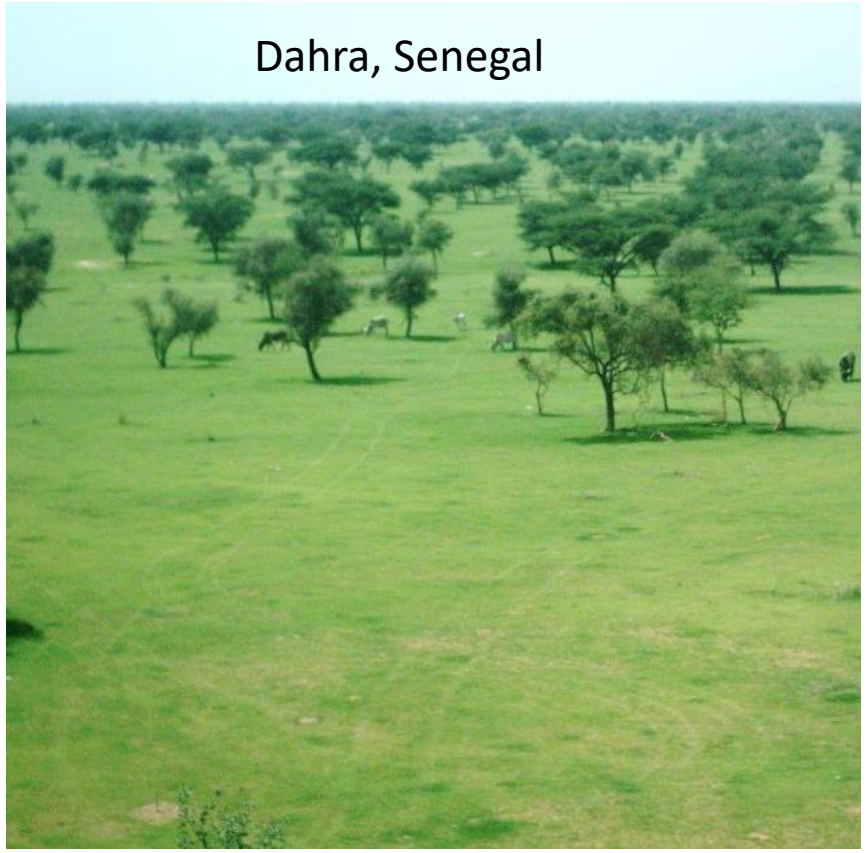




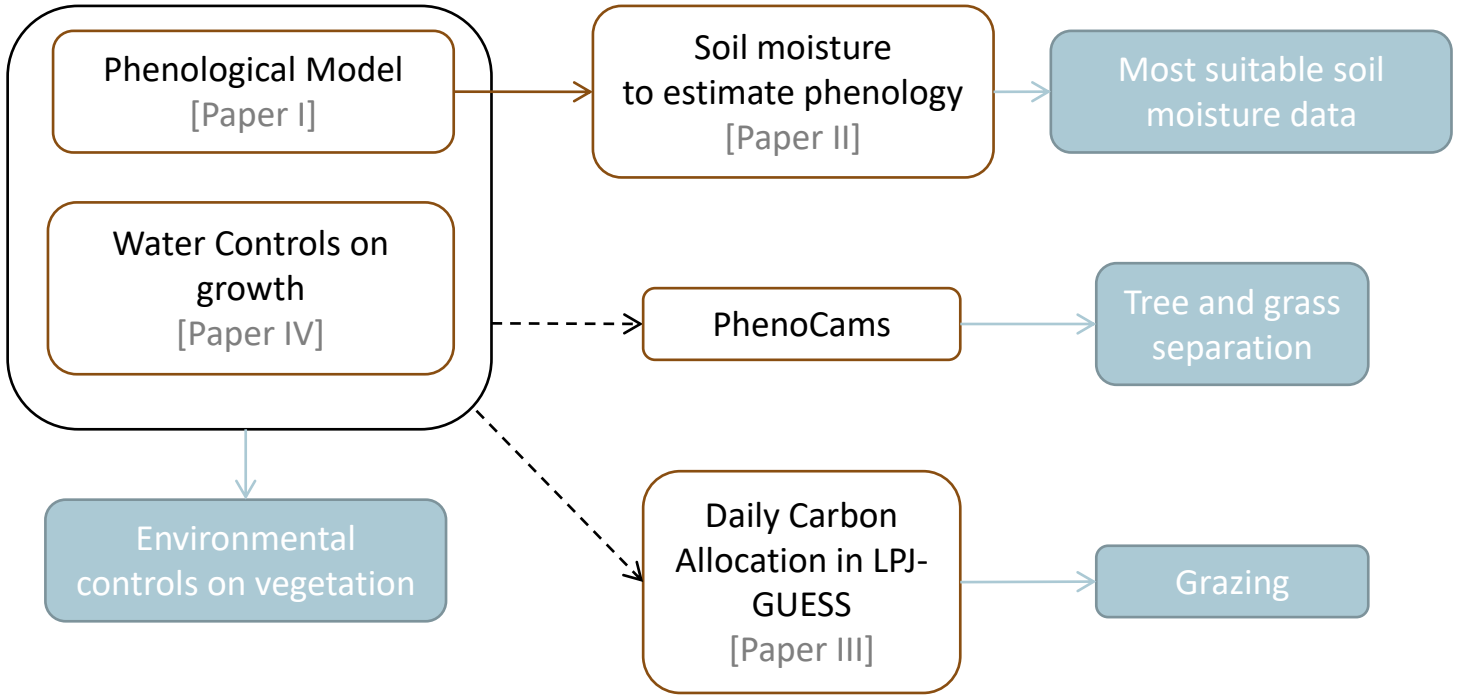




Savannahs



- Tree and grass together 
- Typically two seasons
- ~1/6 of the world land surface
- Important for global carbon studies


Phenological Model
[Paper I]
Water Controls on growth
[Paper IV]
Soil moisture to estimate phenology
[Paper II]
Most suitable soil moisture data
PhenoCams
Tree and grass separation
Environmental controls on vegetation
Daily Carbon Allocation in LPJ-GUESS
[Paper III]
Grazing

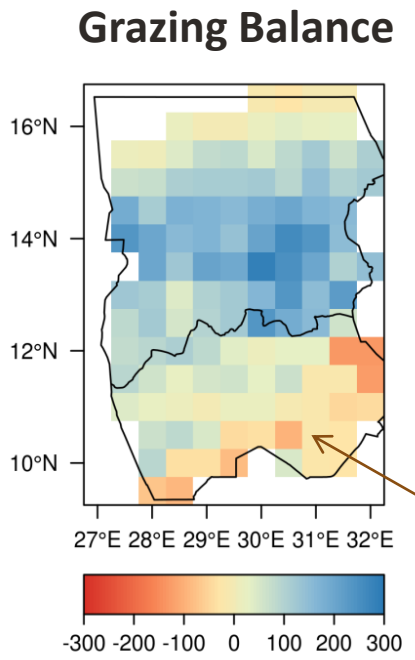
Main findings of my thesis

Water availability

- Water availability is the main controlling factor of vegetation growth in Savannah ecosystems.

Grazing potential for Kordofan +122 %

- The inclusion of daily carbon allocation into the dynamic vegetation model allowed for a detailed grazing study, which showed an unused potential for Kordofan region in Sudan.



+122 %

Over usage in Southern Part

Side projects

Future supply and demand of net primary production in the Sahel

Florian Sallaba, Stefan Olin, Kerstin Engström, Abdulhakim M. Abdi, Niklas Boke-Olén, Veiko Lehsten, Jonas Ardö, and Jonathan W. Seaquist

Does Large-Scale Gold Mining Reduce Agricultural Growth?

Case studies from Burkina Faso, Ghana, Mali and Tanzania

Magnus Andersson[1], Ola Hall[2], Niklas Olén[3], and Anja Tolonen[4]

SCIENTIFIC DATA

OPEN

Data Descriptor: High-resolution African population projections from radiative forcing and socio-economic models, 2000 to 2100

Received: 11 July 2016
Accepted: 25 November 2016
Published: 17 January 2017

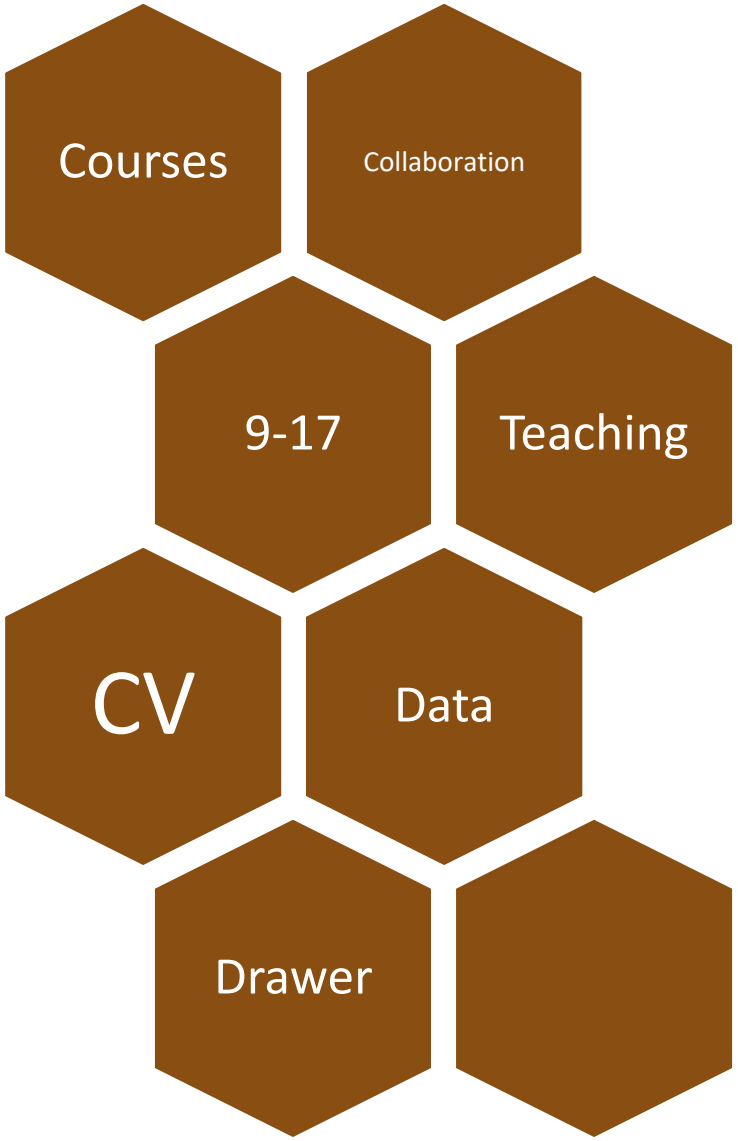
Niklas Boke-Olén[1], Abdulhakim M. Abdi[1], Ola Hall[2] & Veiko Lehsten[1,3]

Population centroids of the world administrative units from nighttime lights 1992-2013

Ola Hall, Maria Francisca Archila Bustos, Niklas Boke Olén & Thomas Niedomysl

Scientific Data **6**, Article number: 235 (2019) | Cite this article

Advice



POSTDOC

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YOU'RE
HIRED

Farm2Forest

Agricultural structure

EU subsidies

Agent based Agricultural model

Farmer

Artifical Landscapes

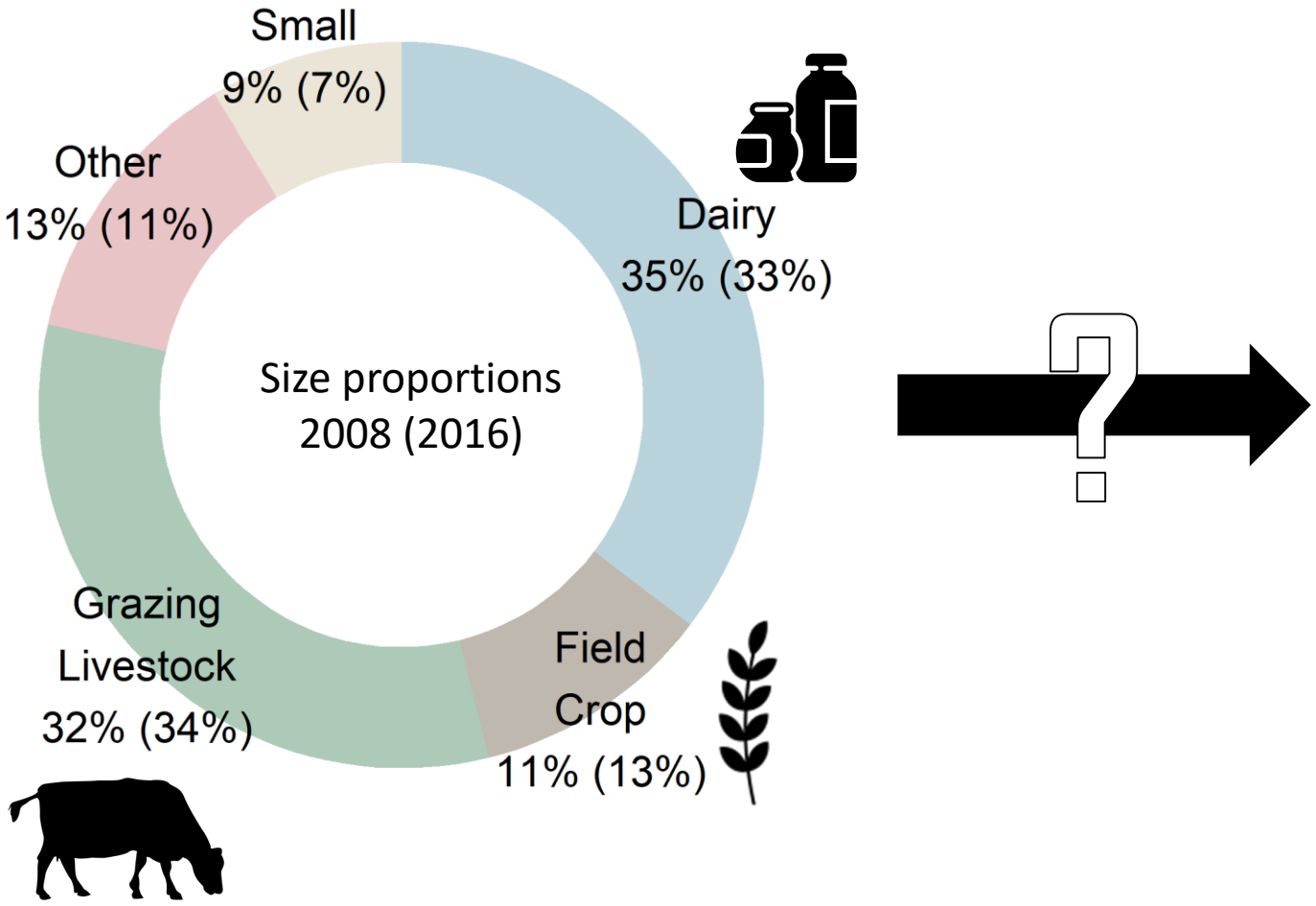
Landscape

Biodiversity

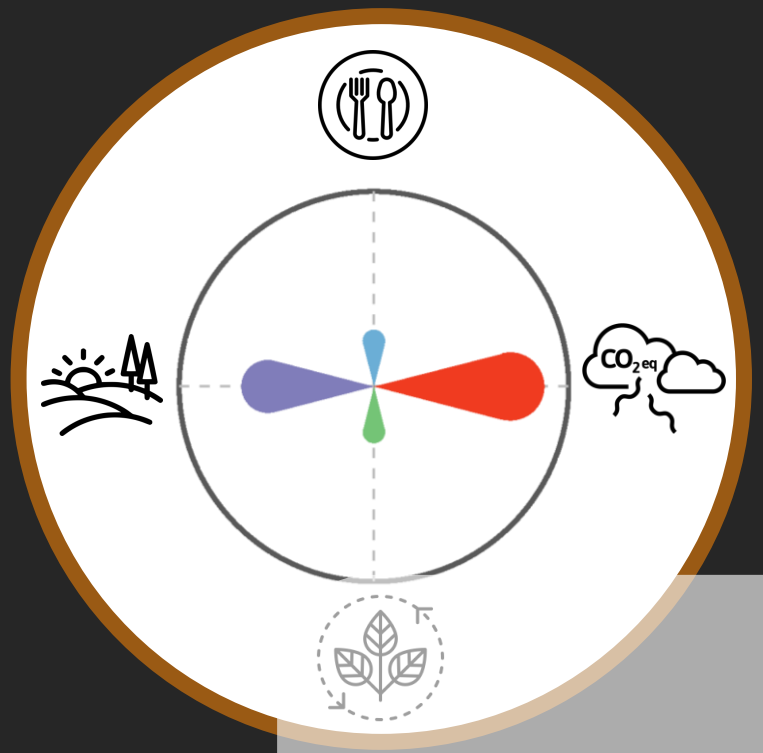
Ecosystem Services and biodiversity

https://www.cec.lu.se/farm2forest

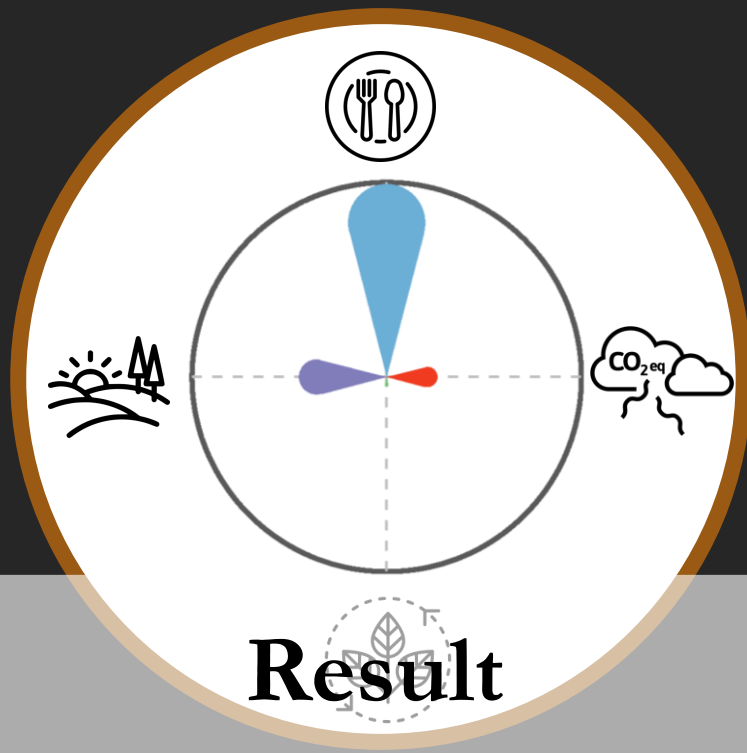

Västerbotten County
Jönköping County
Northern Skåne
Who am I?
Jordbruks verket


Small
9% (7%)
Other
13% (11%)
Dairy
35% (33%)
Size proportions
2008 (2016)
Grazing
Livestock
32% (34%)
Field
Crop
11% (13%)

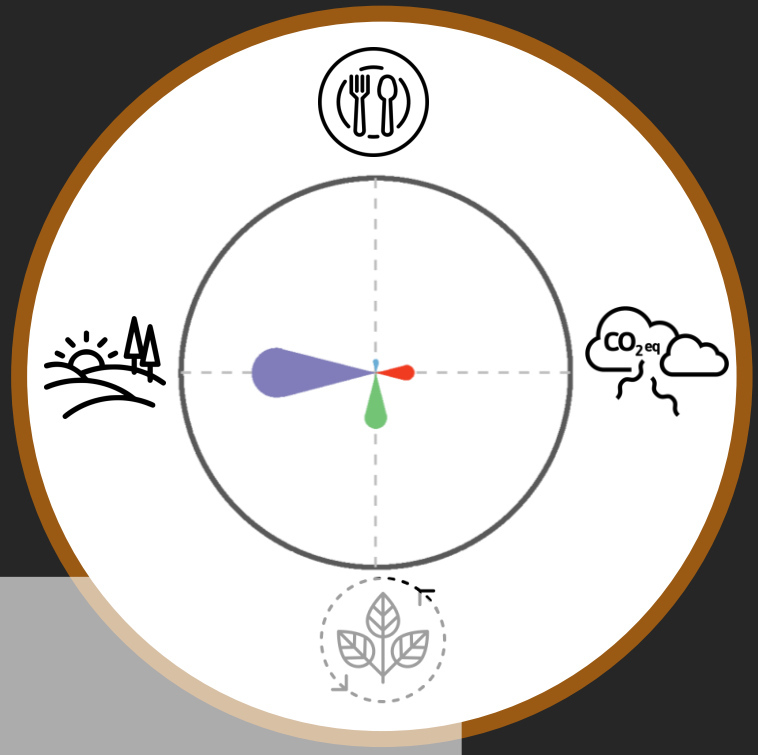
Dairy



Field Crop



Grazing Livestock

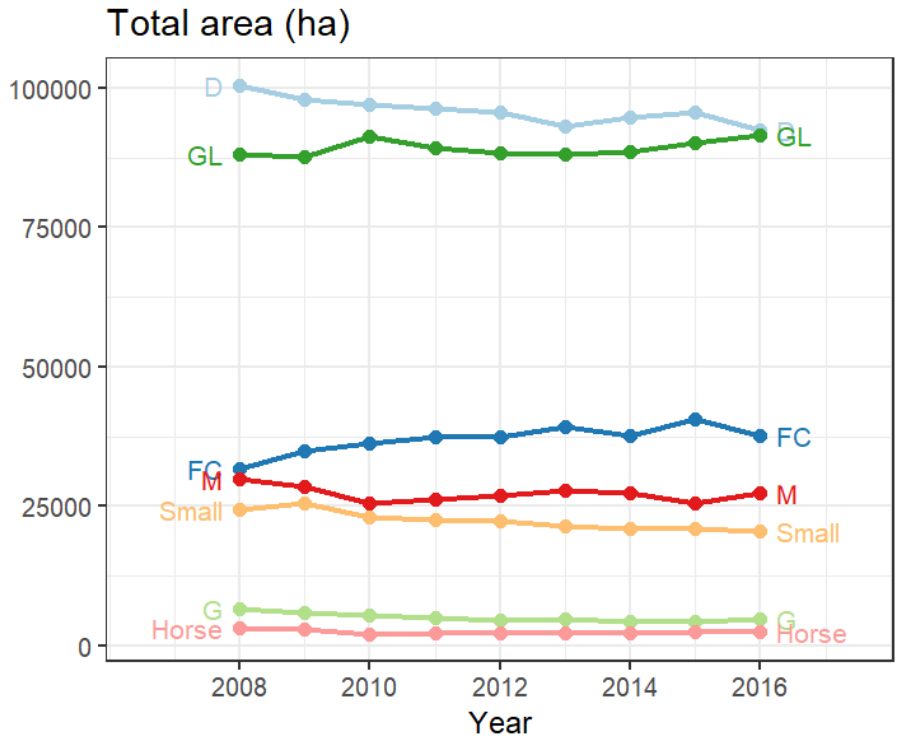


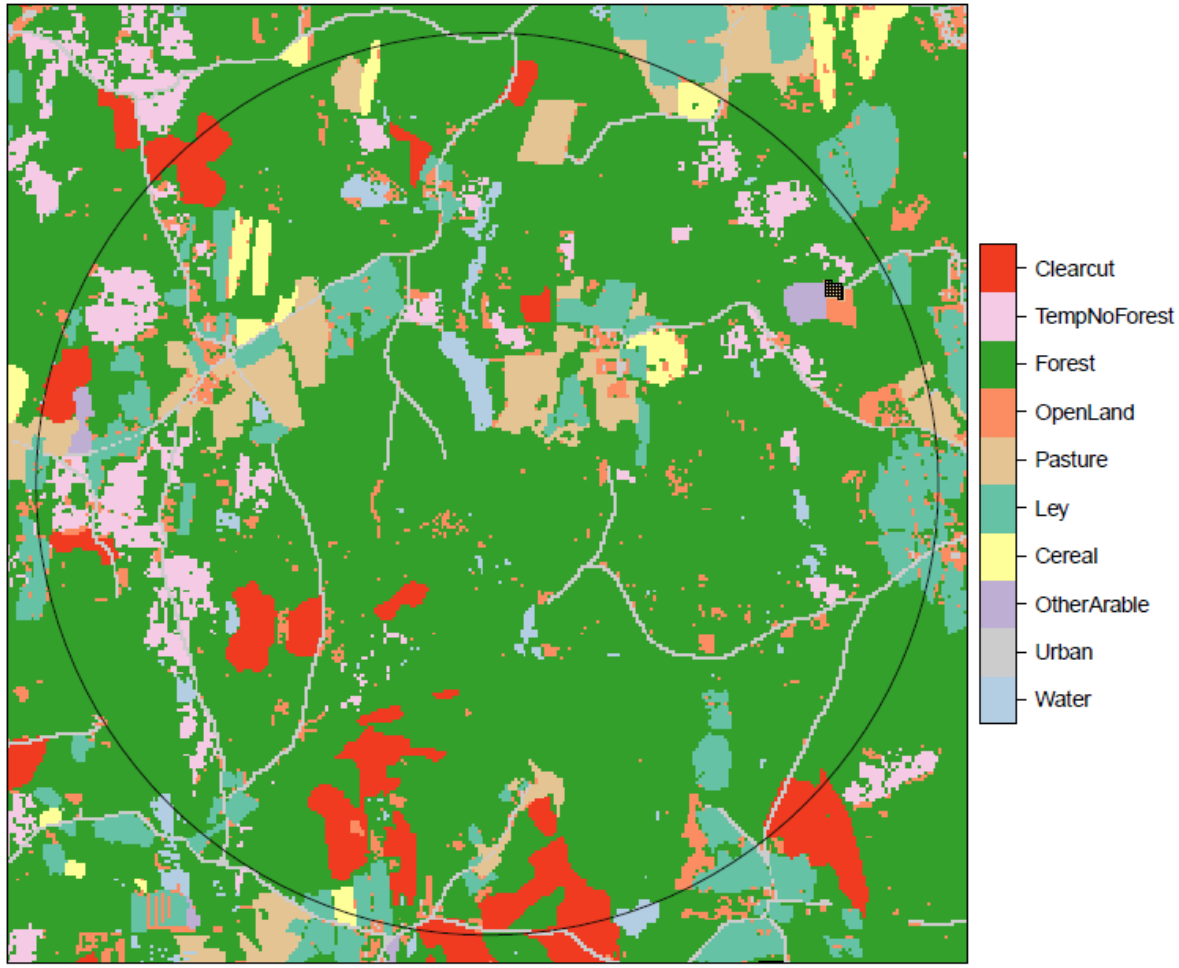
Result

Potentially large benefits of reducing intensive dairy farming, and instead increase intensive cropping and grazing livestock to maintain food production, openness, and biodiversity.

Create new artifical landscapes

scenario	replicatio	iteration	farm_ID	farm_nam	display_m	ha		ST_BORRC	EC_INTER	V_HIRED_	V_OFF_FA	AGRI_S
0	0	0	0	CROP1	1	20		0	519430	0.4	0	
0	0	0	1	CROP1	1	20		0	519430	0.4	0	
0	0	0	2	CROP1	1	20		0	527447	0.4	0	
0	0	0	3	CROP1	1	20		0	469484	0.4	0	
0	0	0	4	CROP1	1	20		0	571286	0.4	0	
0	0	0	5	CROP1	1	20		0	476002	0.4	0	
0	0	0	6	CROP1	1	20		0	476002	0.4	0	
0	0	0	7	CROP1	1	20		0	571286	0.4	0	
0	0	0	8	CROP1	1	20		0	611334	0.4	0	
0	0	0	9	CROP1	1	20		0	511647	0.4	0	
0	0	0	10	CROP1	1	20		0	571286	0.4	0	
0	0	0	11	CROP1	1	20		0	600874	0.4	0	
0	0	0	12	CROP1	1	20		0	561993	0.4	0	
0	0	0	13	CROP1	1	20		0	611334	0.4	0	
0	0	0	14	CROP1	1	20		0	489631	0.4	0	
0	0	0	15	CROP1	1	20		0	496754	0.4	0	
0	0	0	16	CROP1	1	20		0	544209	0.4	0	





RESEARCHER

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Nature-based solutions

- Urban landuse
- Ecosystem Services in cities

Biodiversity in agricultural landscapes

- Agricultural intensity
- Remote sensing
- Selection of sites

Twitter data analysis

Adapting agriculture to climate change

Take home message

If you get the opportunity to collaborate with others, DO IT

Questions

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