Proposed research and analysis for assessing REDD+ opportunities in Southern Africa

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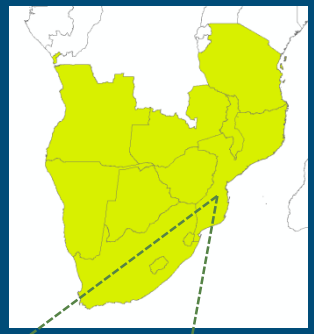
Concept of the thesis

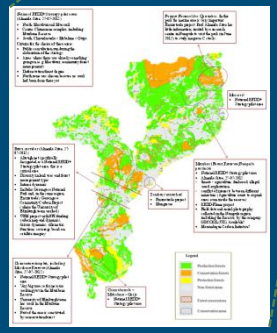
Focus: REDD+ in dry forests of Southern Africa

- ✓ Objective 1: Characterisation of forest and carbon change, as well as proximate drivers, with available global, regional and national data

- ✓ Objective 2: Characterisation of carbon change for different carbon pools in forest and agriculture, in view of the whole landscape approach



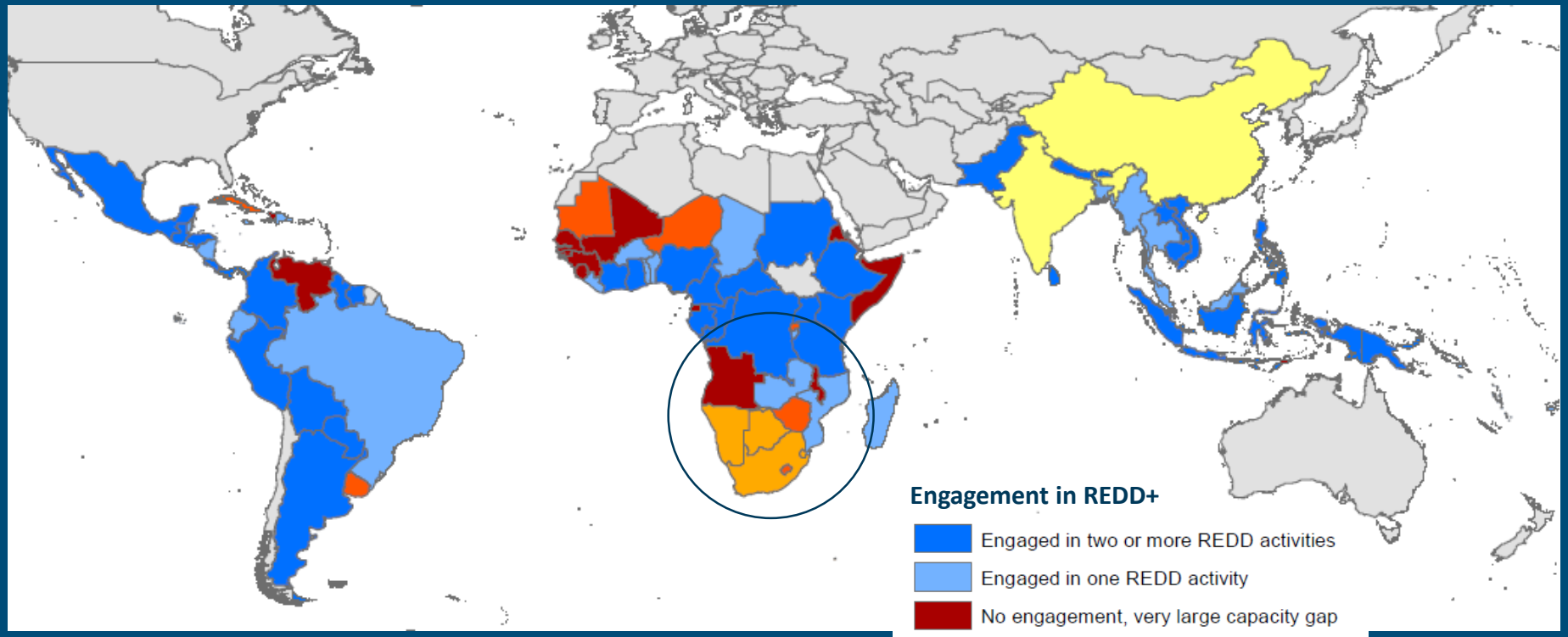
Regional and national scales



Sub-national scale

Regional forest change - Motivation

- Less is known about forest and carbon change
- Large gaps in REDD+ monitoring capacity and engagement



Monitoring capacity gap adapted from Romijn *et al.* (2012)
Engagement: UN-REDD, WB-FCPF, Norway NIFCI

Regional forest change - Objective

Describe forest and carbon stock dynamics, and their relation with proximate drivers and fire:

- in dry forests of Southern Africa
- using global, regional and national data
- to better inform the REDD+ process in the region

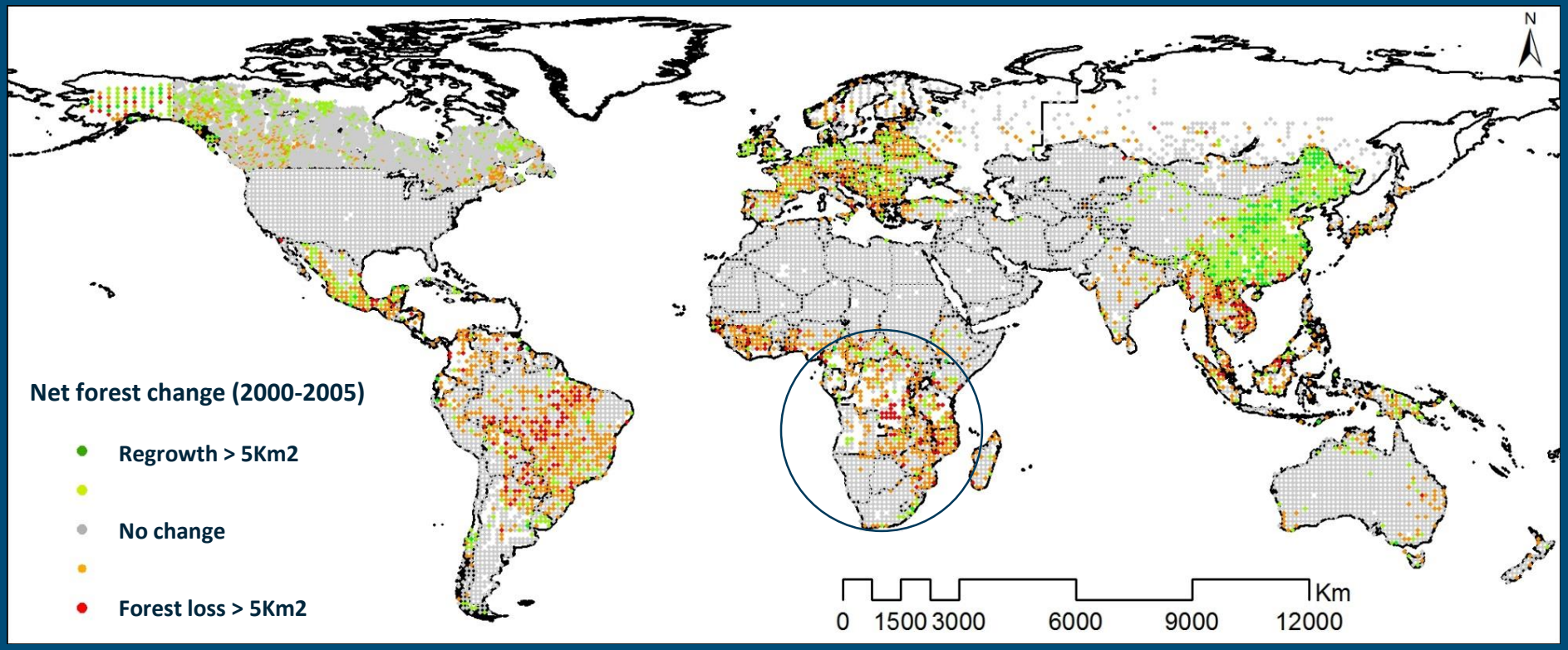
Regional forest change - Questions

WHAT DO I WANT TO CONSIDER IN TERMS OF FOREST DYNAMICS?

Where and when ?	Why ?	What impacts ?
Forest and land cover/use dynamics	Proximate drivers of forest change Relation with fire	Carbon stocks and related emissions

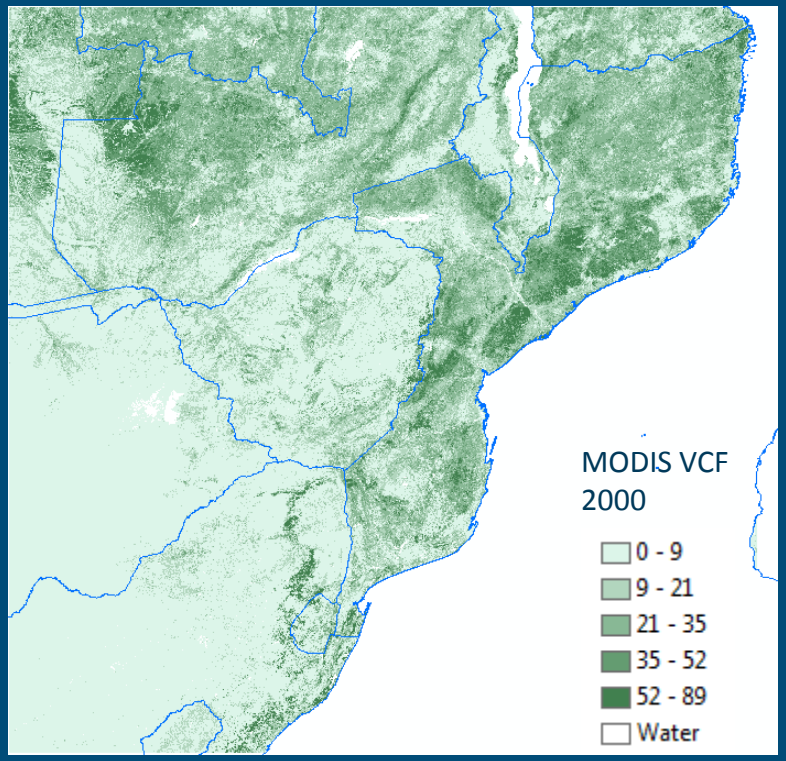
Regional forest change - Data

- FAO Forest Resources Assessment 2010 Remote Sensing Survey (FRA 2010 RSS)



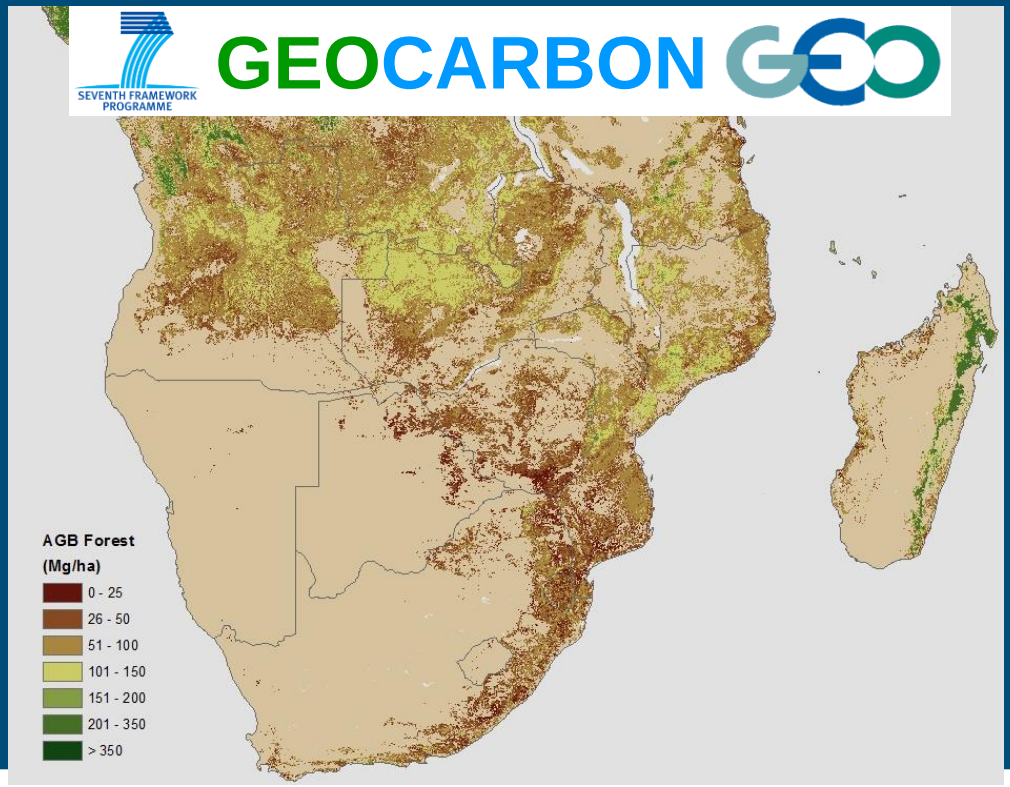
Regional forest change - Data

- MODIS Vegetation Continuous Fields (VCF) at 250 m for 2000 – 2010
- MODIS burned area product at 500 m for 2000 - 2012



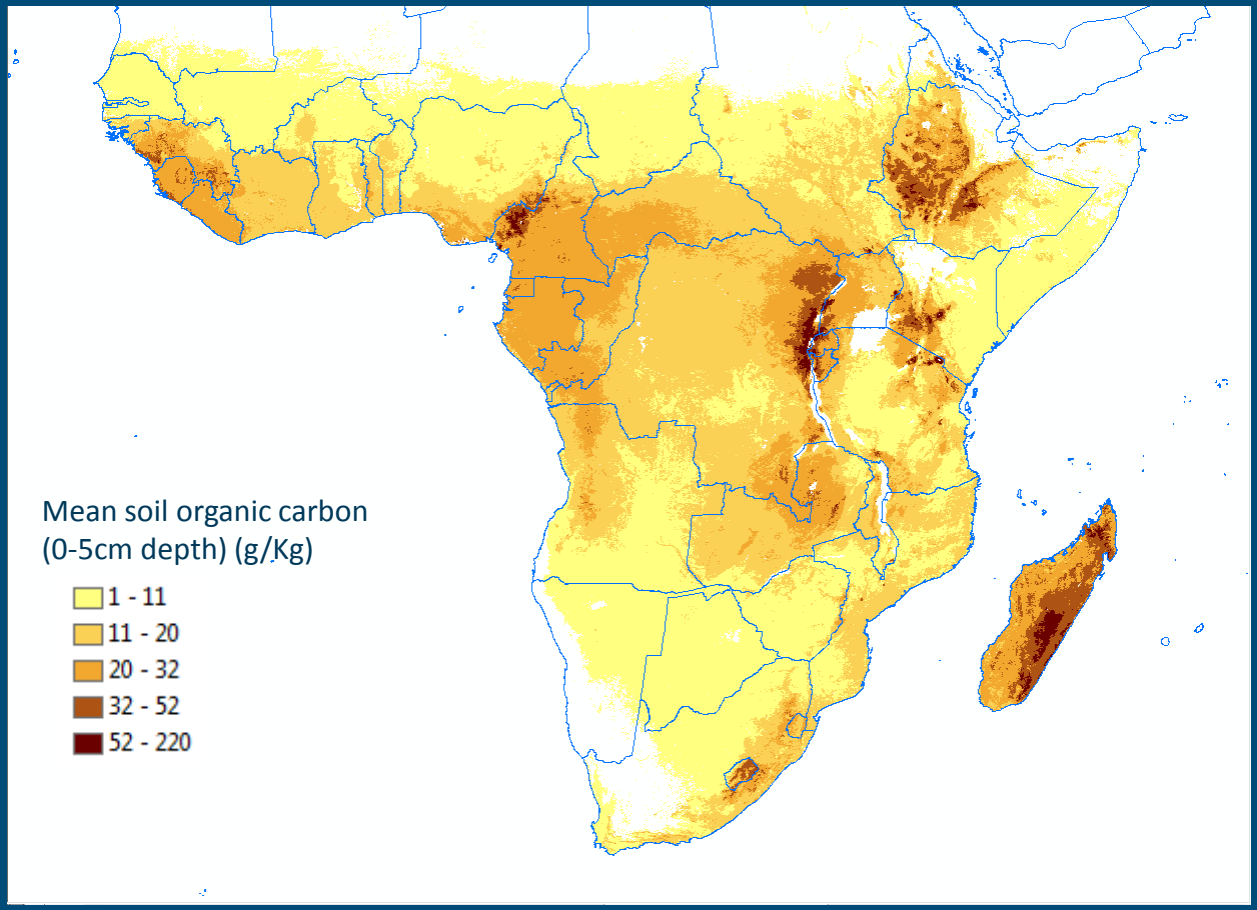
Regional forest change - Data

- Global Forest Biomass at 1 km for 2000 (GEOCARBON product)
- Pantropical Forest Biomass at 500 m for 2007-08 (Baccini *et al.*, 2012)
  - For the tropics, regional weighted integration of the Saatchi *et al.* (2011) and Baccini *et al.* (2012) datasets using high quality reference data



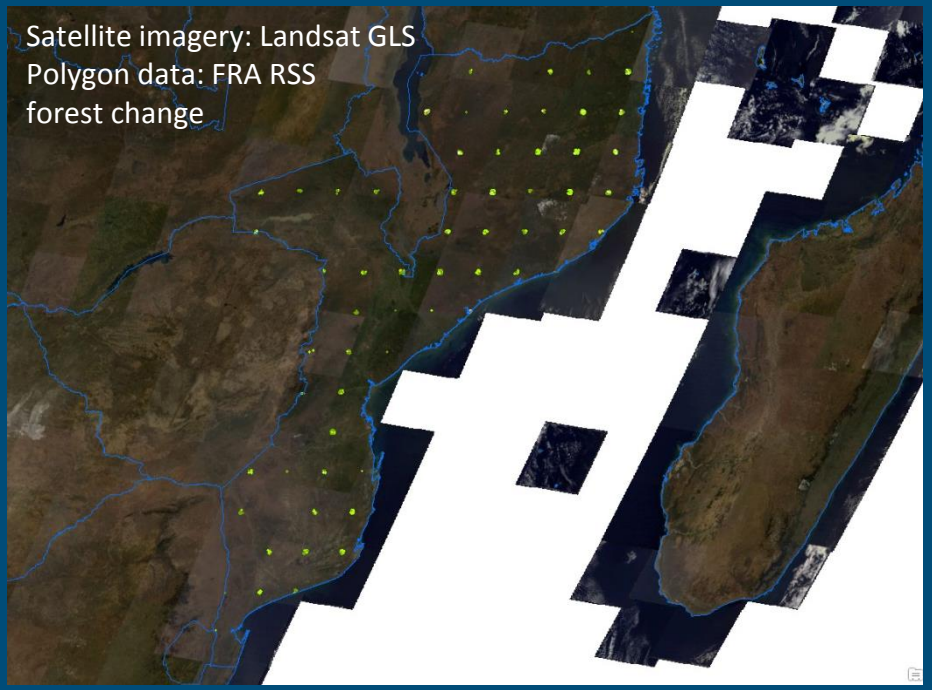
Regional forest change - Data

- ISRIC Maps of Soil Properties of Africa at 1 Km



Regional forest change - Analysis of drivers

- Analysis of proximate drivers based on visual interpretation of the FRA RSS forest change data (1990-2000; 2000-2005; 2005-2010)
- Visual interpretation relies on: Landsat, Google Earth imagery and auxiliary national datasets, if available



Regional forest change - Analysis of drivers

Drivers classification		
Level 1 (basic goal)	*Level 2 (try to achieve this level)*	*Level 3 (difficult to achieve)*
Forest (100)	Natural forest (110)	
	Plantation forest (120) *Note: for timber*	
Agriculture (200)	Small-holder crop agriculture (210)	e.g. Shifting cultivation (211)
	Commercial crop agriculture (220)	e.g Grain (221)
	Tree crops (230)	e.g. Palm oil (231)
	Pasture (grazing land) (240)	
Built-up (300)	Urban (310)	
	Infrastructure (320)	e.g. Roads (321)
Mining (400)		
Other (500)	Bare land (510)	
	Other land with tree cover (if not plantation forest or tree crops) (520)	
	Grass and herbaceous (if not grazing land) (530)	
	Wetlands (540)	
Water (600)	Natural (river, ...) (610)	
	Artificial (reservoir, ...) (620)	
No data (999)		

Classification of follow-up land use to infer proximate drivers of forest change

Regional forest change - Outputs

Characterise forest change, carbon stocks and drivers:

- Where most changes occur
- What are the most important drivers

In order to:

- ✓ Have a better overview of the REDD+ opportunities in Southern Africa
- ✓ Support countries in the region to plan and design REDD+ strategies and establish priorities

Regional forest change - National focus

- Mozambique as case-study
  - Motivation: rate of forest change; some engagement in REDD+
  - Objective: more detailed analysis than in the regional study, if national data are available

Botswana

CHLU_90_00, CHLU_00_05	Count
Forest - Forest, Change	0
Forest - Change, No change	9
Forest - Change, Change	0
Forest - Change, Change (to Forest)	0
Change (to Forest), Change	0
Transitions involving No data	0
Forest - Water, Water - Water	0
	9

Mozambique

CHLU_90_00, CHLU_00_05	Count
Forest - Forest, Change	1062
Forest - Change, No change	868
Forest - Change, Change	203
Forest - Change, Change (to Forest)	18
Change (to Forest), Change	28
Transitions involving No data	231
Forest - Water, Water - Water	0
	2410

Namibia

CHLU_90_00, CHLU_00_05	Count
Forest - Forest, Change	29
Forest - Change, No change	33
Forest - Change, Change	6
Forest - Change, Change (to Forest)	0
Change (to Forest), Change	0
Transitions involving No data	0
Forest - Water, Water - Water	0
	68

South Africa

CHLU_90_00, CHLU_00_05	Count
Forest - Forest, Change	73
Forest - Change, No change	52
Forest - Change, Change	24
Forest - Change, Change (to Forest)	0
Change (to Forest), Change	21
Transitions involving No data	0
Forest - Water, Water - Water	0
	170

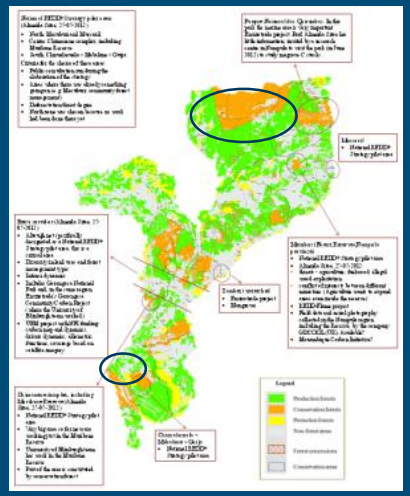
Zimbabwe

CHLU_90_00, CHLU_00_05	Count
Forest - Forest, Change	102
Forest - Change, No change	138
Forest - Change, Change	28
Forest - Change, Change (to Forest)	0
Change (to Forest), Change	0
Transitions involving No data	0
Forest - Water, Water - Water	2
	270

FRA RSS forest change: categories of change and number of polygons

Sub-national analysis

- Local case-study to explore carbon dynamics in forest and agriculture (whole landscape approach)
- Integration of subnational and national scales
- Collection of field data



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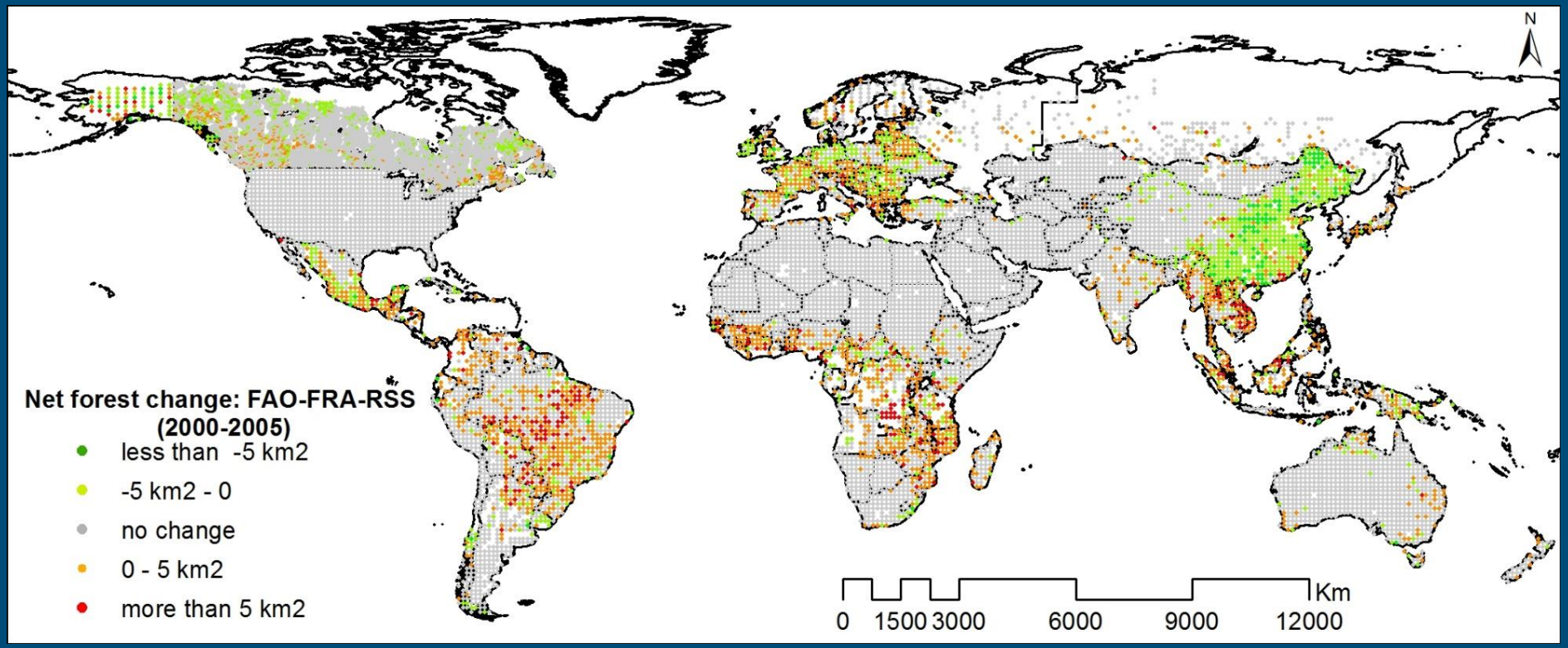
Regional forest change - Data

- FAO Forest Resources Assessment 2010 Remote Sensing Survey (FRA 2010 RSS)



Regional forest change - Analysis of drivers

FRA original land use classification

Land·use·class·(code)·FRA·original¤	
Forest·(11)¤	¤
Other·wooded·land·(12)¤	¤
Other·land·use·(30)¤	Other·land·with·tree·cover·(13)¤
	Grass·and·herbaceous·cover·(14)¤
	Agricultural· crops·(15)¤
	Built-up· habitation· (16)¤
	Bare·land· (17)¤
	Wetlands·(19)¤
Water·(18)¤	¤
No·data·(99)¤	¤