A joint initiative of Angola, Botswana, Namibia, South Africa and Zambia, in cooperation with the German Federal Ministry of Education and Research (BMBF)

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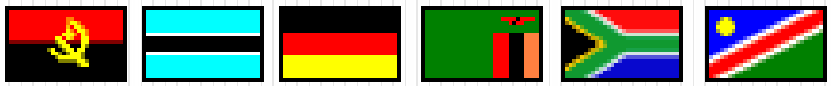
Aims and potential for collaboration with the Miombo Network

Jörg Helmschrot
University of Hamburg, Germany

Miombo Network Meeting, Maputo, 23-25 July 2013



Federal Ministry of Education and Research

Projektträger im DLR

SASSCAL: Motivation

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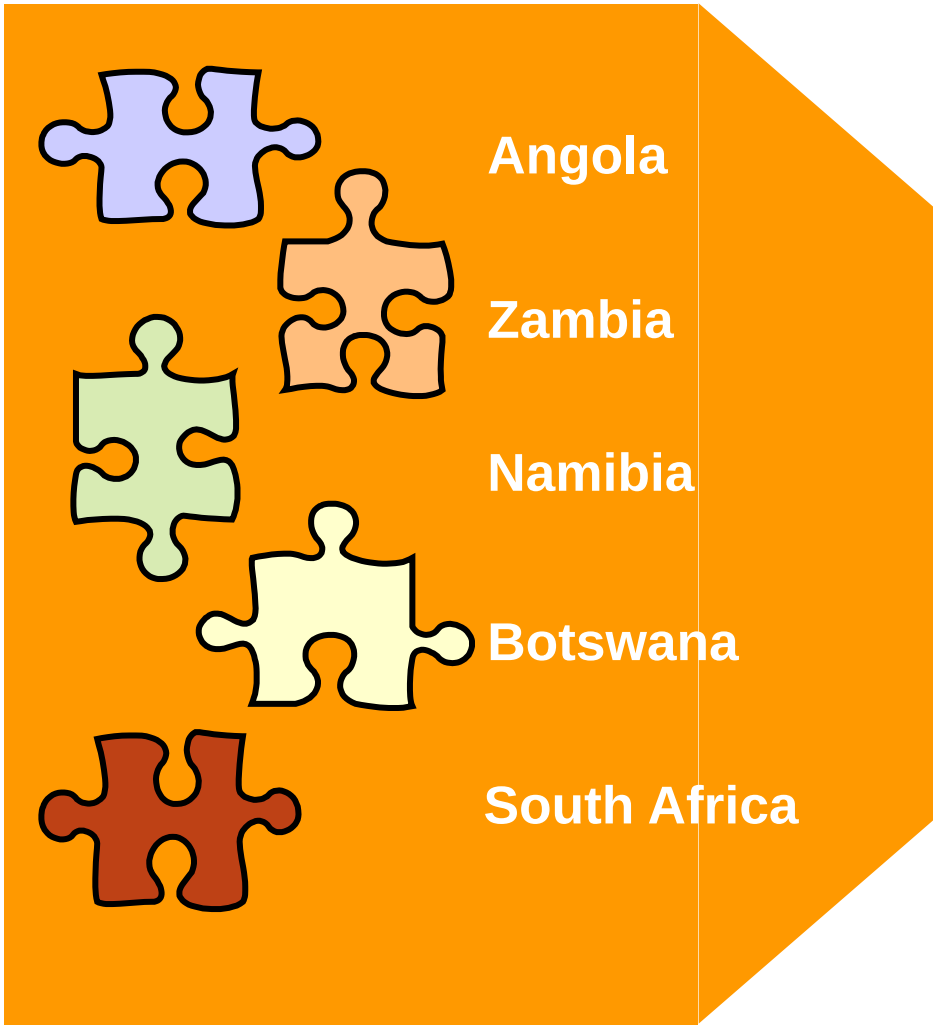
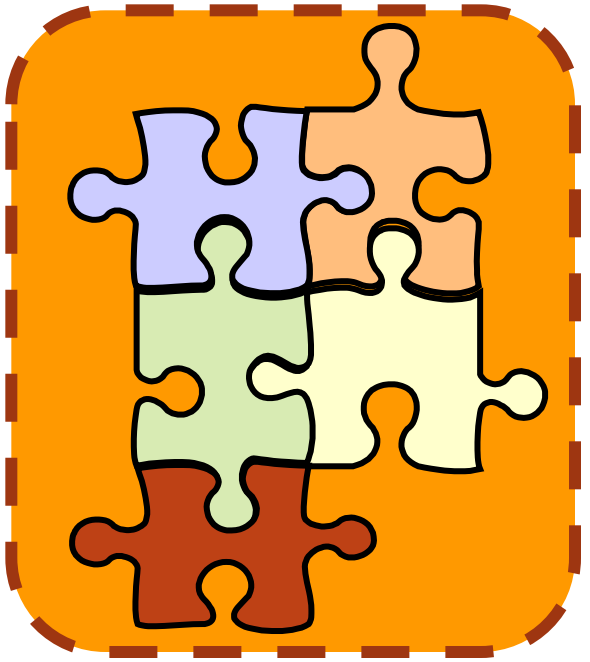


A novel type of institution: The „added value“ of a **Regional** integrated view



The adequate response to trans-boundary environmental problems and their solution

SASSCAL: VISION

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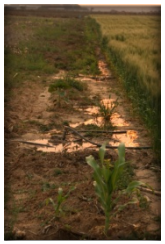
"SASSCAL is the **REGIONAL** driver for innovation and knowledge exchange to enhance adaptive land use and sustainable economic development in a highly vulnerable region of Southern Africa under global change conditions."








SASSCAL: OBJECTIVES

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Improving the regional capacity for knowledge-based decision making towards an efficient and sustainable resource management for societal & economic stability, poverty alleviation, disaster reduction, and robust and sustainable development, by providing Regional Scientific Services addressing:

(a) the future trends of global change,

(b) the risks & vulnerability for & of societies and ecosystems

(c) improved management of natural ressources and ecosystem services

SASSCAL: Set up

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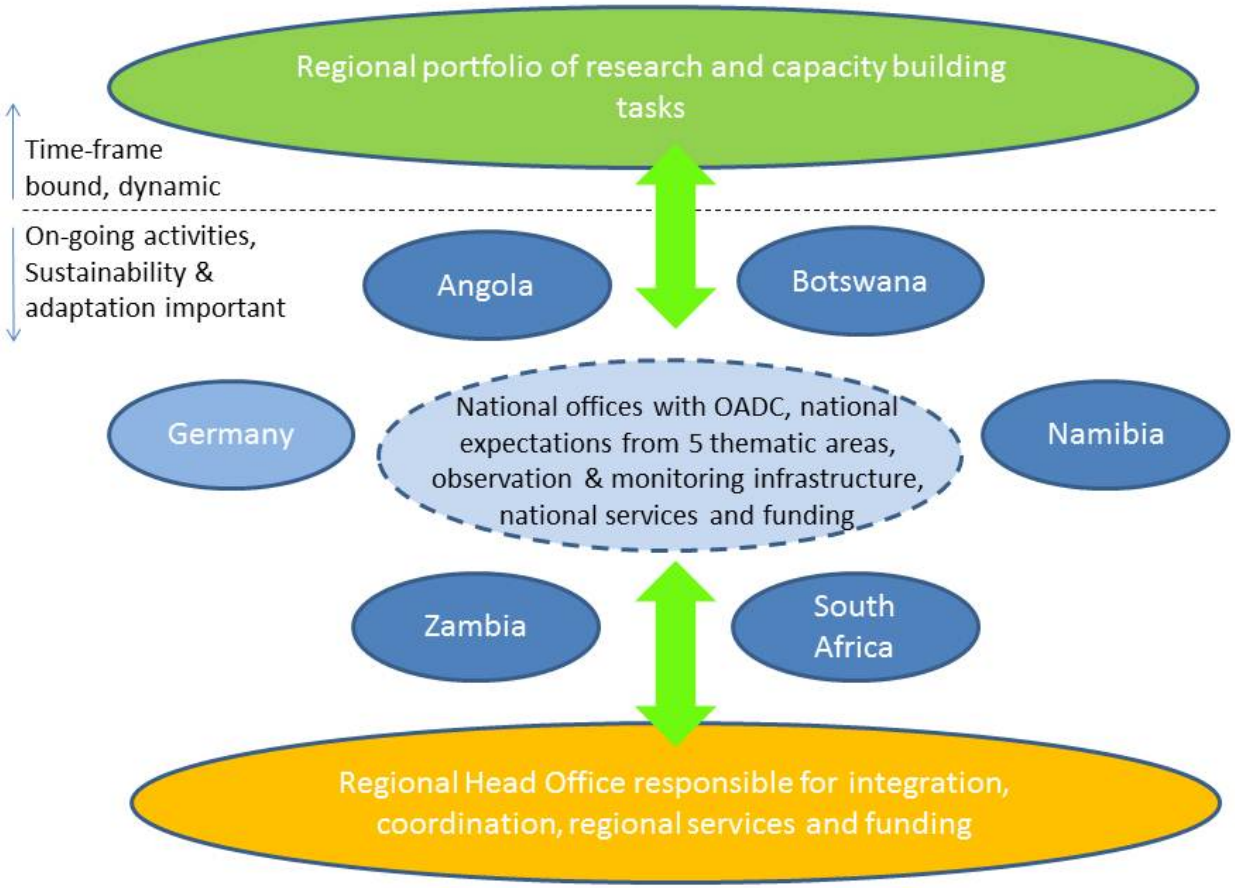

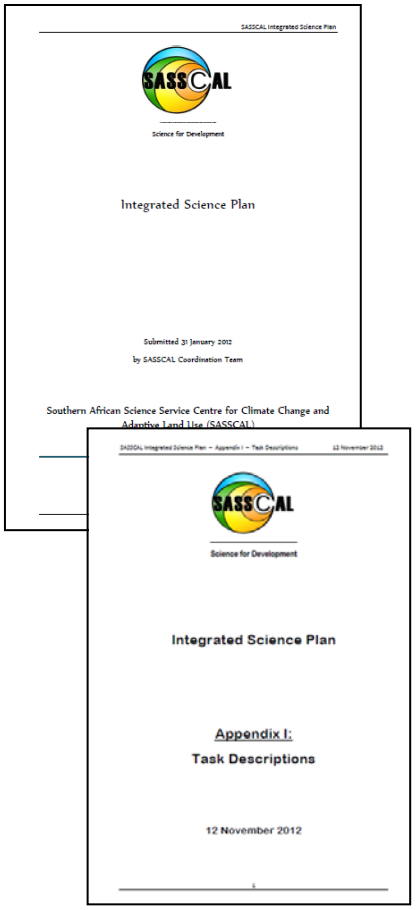

Initial Funding (4 yrs): ~ 50 Mio. € (BMBF)

SASSCAL: STRUCTURE

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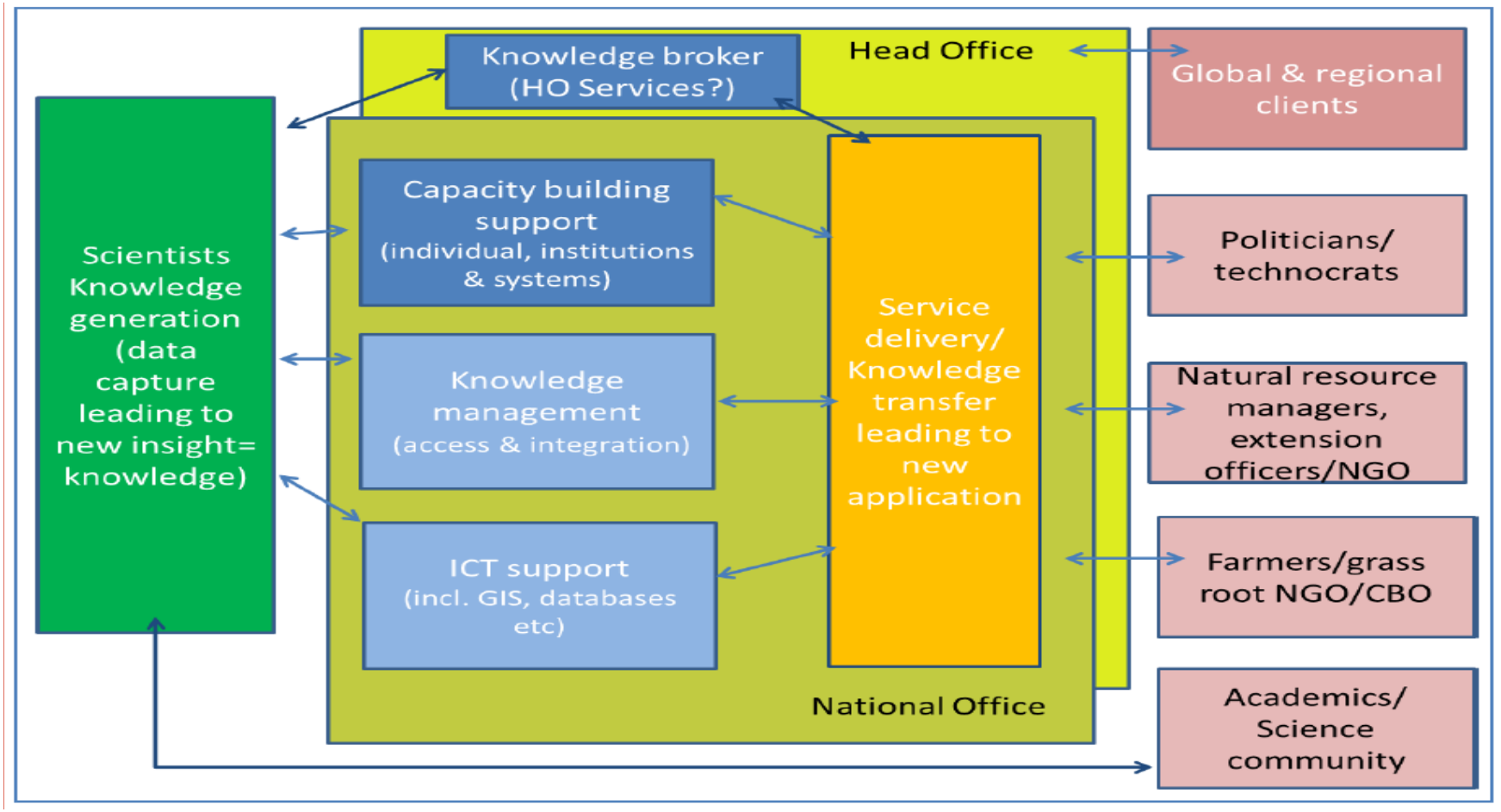
Research - Capacity development - Services



SASSCAL: RES. THEMES

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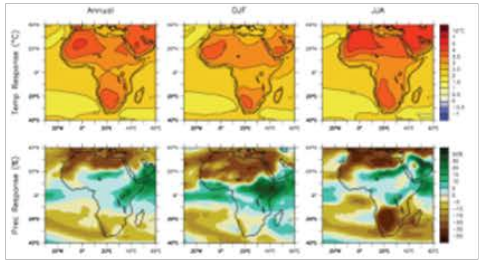

Climate

Water

Agriculture

SASSCAL Institution (OADC)

Forestry

Biodiversity and Wildlife

Service deliveries

SASSCAL: STATUS (7/2013)

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- Launch of the Institution SASSCAL
  - → International contracts signed in April 2012 (ministry level)
  - → set up of national nodes and coordinators (2012)
  - → set up of the secretariate in Windhoek (2012)
  - → appointment of an Executive Director (July 2013)

- Research Portfolio
  - → NEA-UHH/BMBF contracts signed in June/July 2013 (except South Africa)
  - → 87 thematic tasks start in 2013 (August, SA open)
  - → high variety (integrated and specific projects)
  - → 34+ research, academic and non-/governmental institutions
  - → Inter- and multidisciplinary team (natural sciences, economics, ethnology …)
  - → Thematic, scientific (Kick-off) workshops (Oct 2013)

SASSCAL: RES. THEMES

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Thematic area	Angola	Botswana	Germany	Namibia	South Africa	Zambia	Total
Climate	1	3	3	2	1	1	11
Water	3	2	6	2	2	2	17
Forestry	1	2	2	3	1	3	12
Agriculture	3	2	8	3	1	4	21
Biodiversity	4	3	2	6	1	2	18
Cap-Dev	1	2	1	2	0	2	8
Total	13	14	22	18	6	14	87

SASSCAL: Miombo research

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Deforestation monitoring in Huambo province from 2002-2012 using detection technologies and geographic information systems

- Country: Angola
- PI: Virgina Lacerda Quartin, UJES
- Focus: Monitoring, assessment, change analysis, rates of deforestation, capacity development

Contribute to a Biodiversity Observation Network in the Region by improving and expanding the BIOTA Biodiversity Observatory network

- Countries: Angola
- PI: Fernanda Lages, ISCED
- Focus: biodiversity, status, transitions, land management impacts, ground truth for EO application

SASSCAL: Miombo research

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Deforestation and Development: The changing value of natural forest for rural livelihoods, incl. wood consumption, not-timber products

- Countries: Angola, Zambia
- PI: Michael Schnegg, UHH
- Focus: historic, spatial and social dimension of deforestation, valuation, perceptions

The impacts of fire on biodiversity and ecosystem processes in woodland savanna

- Countries Namibia (Botswana, Zambia, Angola)
- PI: David Joubert, PoN
- Focus: spatio-temporal impact of fire regimes (soils, soil water, soil carbon properties etc.), fire-grazer interactions

SASSCAL: Miombo research

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Improved forest resource assessment including socioeconomic baseline in Botswana

- Countries: Botswana (Zambia)
- PI: Joyce Lepetu, BCA
- Focus: household dependencies, attitudes, willingness regarding conservation, openess for management options, valuation, perceptions

Vegetation survey in Botswana

- Countries: Botswana
- PI: Koketso Tshireletso, BCA
- Focus: inventory, mapping (various scales)

SASSCAL: Miombo research

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Exploring Human-Wildlife Interactions in Agro-Ecosystems in northern Botswana

- Countries: Botswana
- PI: Gaseitsiwe Smollie Masunga, ORI
- Focus: human-wildlife conflicts (HWC), status, spatio-temporal dynamics, socio-ecological pattern and underlying processes, socio-economic impacts

A Critical Assessment of the Economic and Environmental Sustainability of the Namibian Indigenous Forest/ Timber Industry

- Countries: Namibia, Angola, Zambia
- PI: Gillian Maggs-Kolling
- Focus: trade dynamics (from Miombo woodlands), legality framework, monitoring, regulation methodologies, awareness and capacities

SASSCAL: Miombo research

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Capacity Building in Bee-Keeping and Honey Production Value-chain

- Countries: Zambia
- PI: Malunga M. Mwape, MuU
- Focus: economic impact, constraints regarding developing, improvements, institutional support, climate change impacts on honey production

Adaptation strategies for the South African, Namibian and Zambian dryland forests (natural and plantation) to climate change

- Countries: South Africa, Namibia, Zambia
- PI: Sasha Naidoo, CSIR
- Focus: models for assessments of climate change impact on forest productivity, forest mapping (various EO data sets), adaptation strategies

SASSCAL: Miombo research

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Management of the Zambezi teak Baikiaea plurijuga forests and other associated woodlands in western Zambia in a changing climatic regime

- Countries: Zambia
- PI: Lishoma Mulongwe, FRO
- Focus: forest types, carbon stock, sequestration potential, regeneration levels, forest management structures, indigenous knowledge

Forest resource assessment in the Mopane (Colophospermum) eco-region

- Countries: Zambia
- PI: Patrick Matakala, CERED
- Focus: woodland cover change, threats and drivers, socio-economic contributions to local economies, permanent sampling plots establishment

SASSCAL: Miombo research

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Improved forest resource assessment (including dryland forests)

- Countries: Botswana, Zambia, Angola, Namibia, South Africa
- PI: Joachim Hill, UT
- Focus: multiscale mapping, forest cover trends, degradation, deforestation, carbon stocks, forest stress mapping, REDD+ pilot project

Baseline inventorying and monitoring of Zambia's biodiversity

- Countries: Zambia
- PI: Keith J. Mbata, UZam
- Focus: baseline data review, evaluation of existing data, flora and fauna checklists, biodiversity maps (inc. flora and fauna)

SASSCAL: Miombo research

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Development of strategies for sustainable use and management of savannah ecosystem resources and services in northern Botswana through remote sensing based spatial database tools

- Countries: Botswana
- PI: Richard Fynn, ORI
- Focus: inventory, change analysis tools, seasonal pattern, data integration for habitat management

Strengthening a regional Biodiversity Observation Network in the region

- Countries: All
- PI: Norbert Jürgens, UHH
- Focus: biodiversity, status, transitions, land management impacts, ground truth for EO application

SASSCAL: Forestry research

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Development of a national forest monitoring programme

- Countries: Namibia
- PI: Patrick Graz, PoN
- Focus: current and past deforestation rates, carbon storage (above/below ground), remote sensing, soil respiration, rapid appraisal methods

Forest regeneration, growth rates, threads and trends in different forest types

- Countries: Namibia
- PI: Patrick Graz, PoN
- Focus: harvesting quotas, rotations, measures for deforestation, restoration and regeneration, forest threats and trends

SASSCAL: Cap Dev

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Education and training for evaluation, monitoring and management of biodiversity

- Countries: Angola
- PI: Fernanda Lages, ISCED

Development of Regional Masters Programme on Dryland Forestry

- Countries: All
- PI: Ben du Toit, SUN

Post graduate Programme in Applied Science in Earth Observation, GIS and Remote Sensing

- Countries: All
- PI: Carl-Thom Bayer

SASSCAL: Weather net

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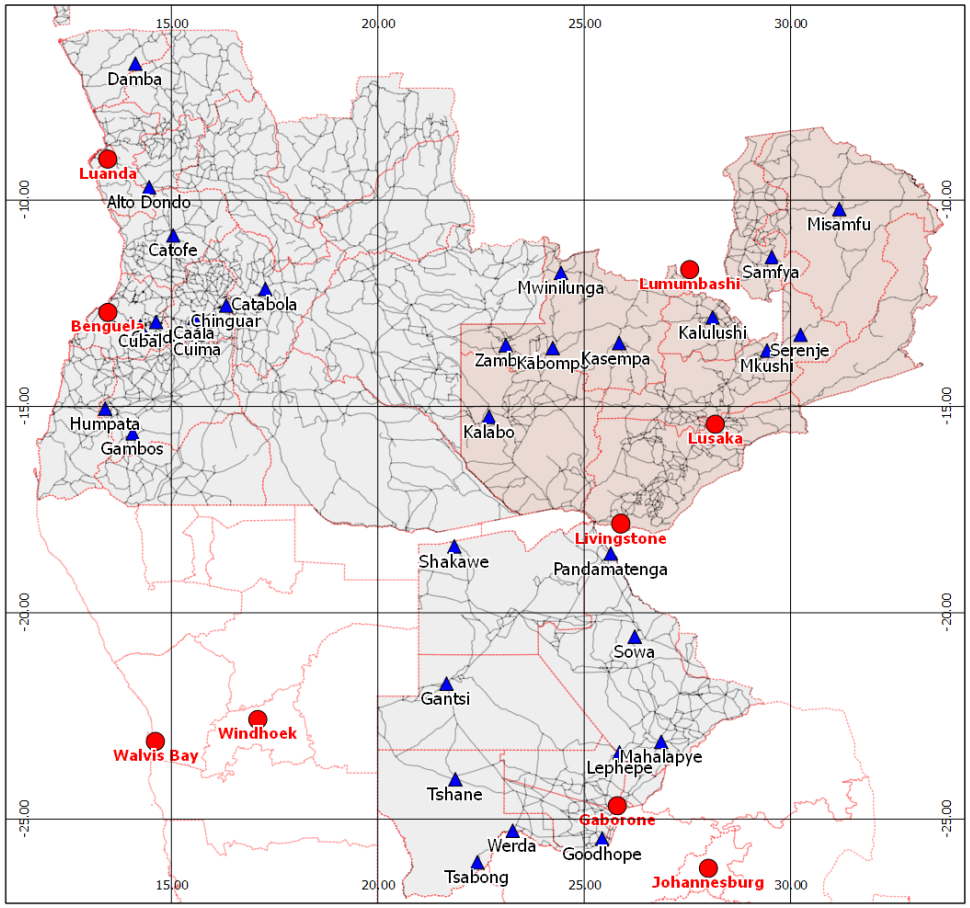
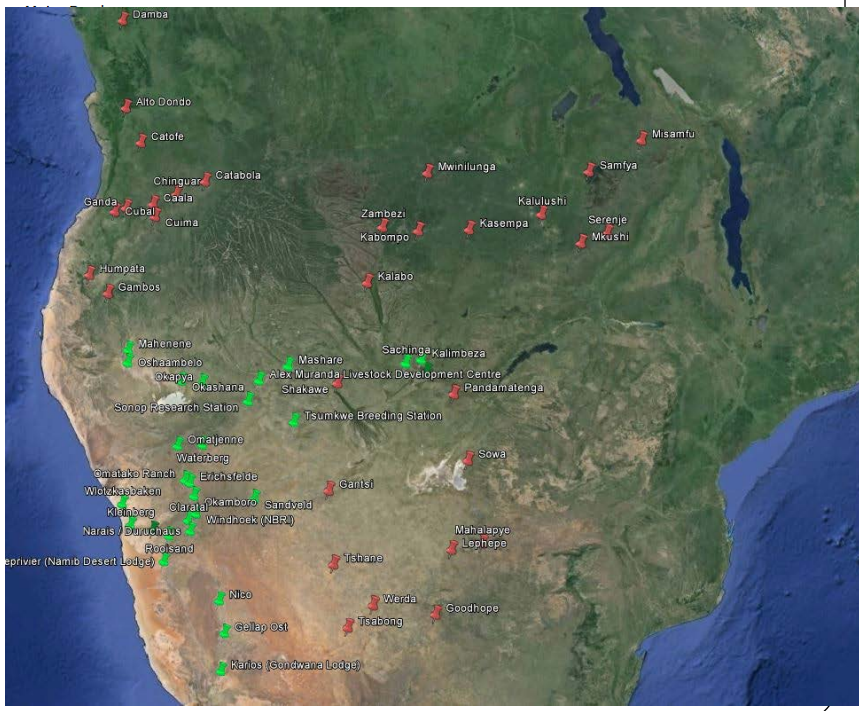
- 30 AWS to be installed in 2013 (Angola, Botswana, Zambia)
- Possible extension by 50 AWS in 2014/15



Legend

SASSCAL AWS 2013

Major Cities



Current activities (TFO)

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TFO
THE FUTURE OKAVANGO

- environmental gradients (climate, soils, topography)
- species compositions
- Ecosystem Services/Functions (analysis, assessment, values)
- socio-economic studies in Miombo Woodlands (trade, craft industry, illegal logging …)
- soil hydrological studies in Miombo ecosystems
- hydrological assessments and modelling (sub-basin scale)
- resilience studies
- Agro-ecosystem productivity

Activities (TFO)

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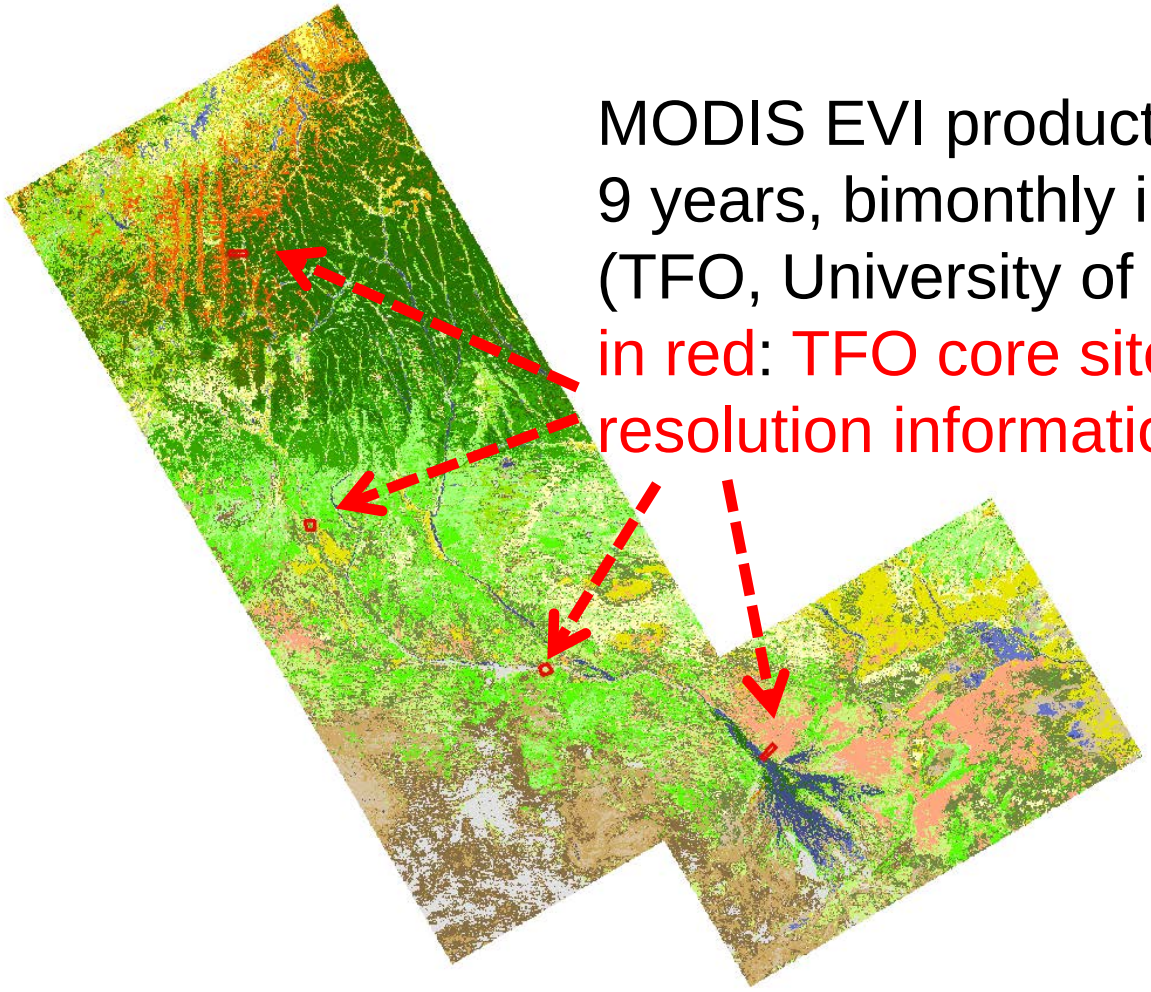
TFO
THE FUTURE OKAVANGO

Land cover map as basis for vegetation mapping



MODIS EVI product (composite, 9 years, bimonthly images) (TFO, University of Trier)
in red: TFO core sites (high-resolution information >100km²)

- „classic“ Miombo woodland
- Baikiaea / Kalahari woodlands
- dwarf shrub vegetation in valley, central plateau

Acitvities (TFO)

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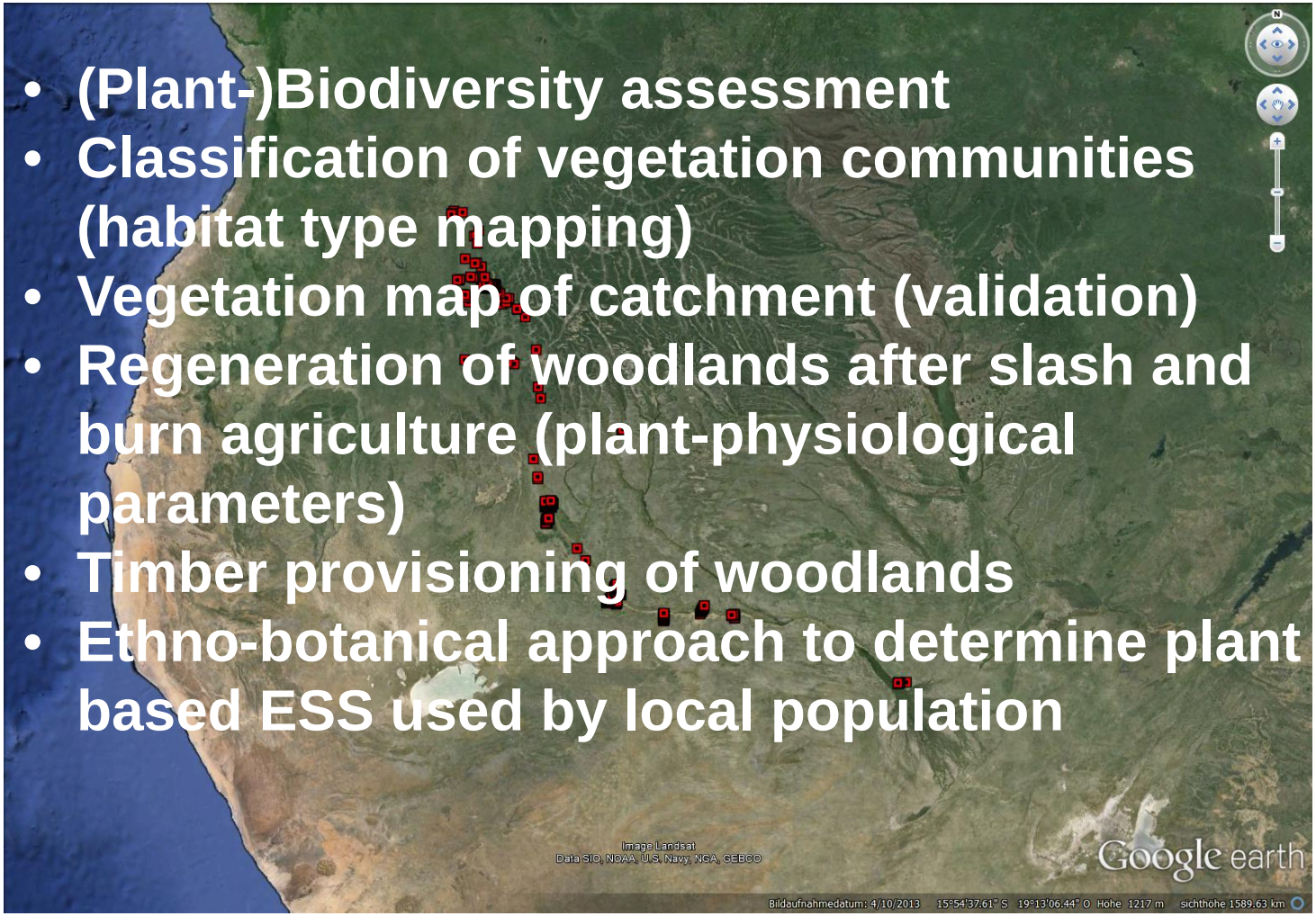
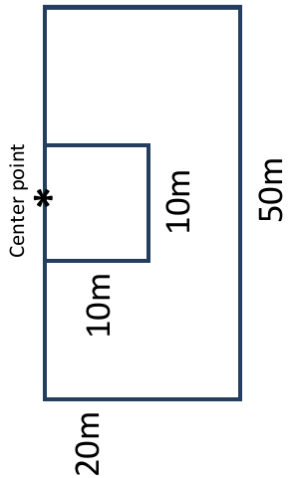
TFO
THE FUTURE OKAVANGO

Research in Miombo woodlands (40 plots)



- (Plant-)Biodiversity assessment
- Classification of vegetation communities (habitat type mapping)
- Vegetation map of catchment (validation)
- Regeneration of woodlands after slash and burn agriculture (plant-physiological parameters)
- Timber provisioning of woodlands
- Ethno-botanical approach to determine plant based ESS used by local population



Activities (TFO)

Species richness

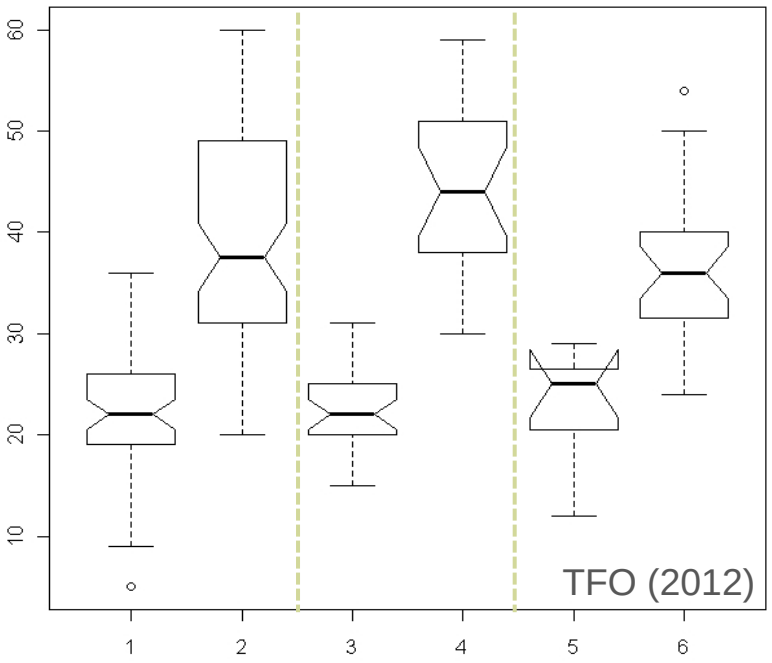


Figure. Comparison of alpha biodiversity on the two TFO core sites in Angola

1-2) southern core site Caiundo versus northern core site Chitembo (over all vegetation units) (n_1=55, n_2=72)

3-4) Baikiaea Woodlands Caiundo versus Brachystegia Woodlands Chitembo (n_3=27, n_4=21)

5-6) open Savanna / grassland Caiundo versus dwarfshrub- / grassland Chitembo (n_5=8, n_6=27)

The notches of the boxes represent a 95% confidence interval.

Acitvities (ongoing)

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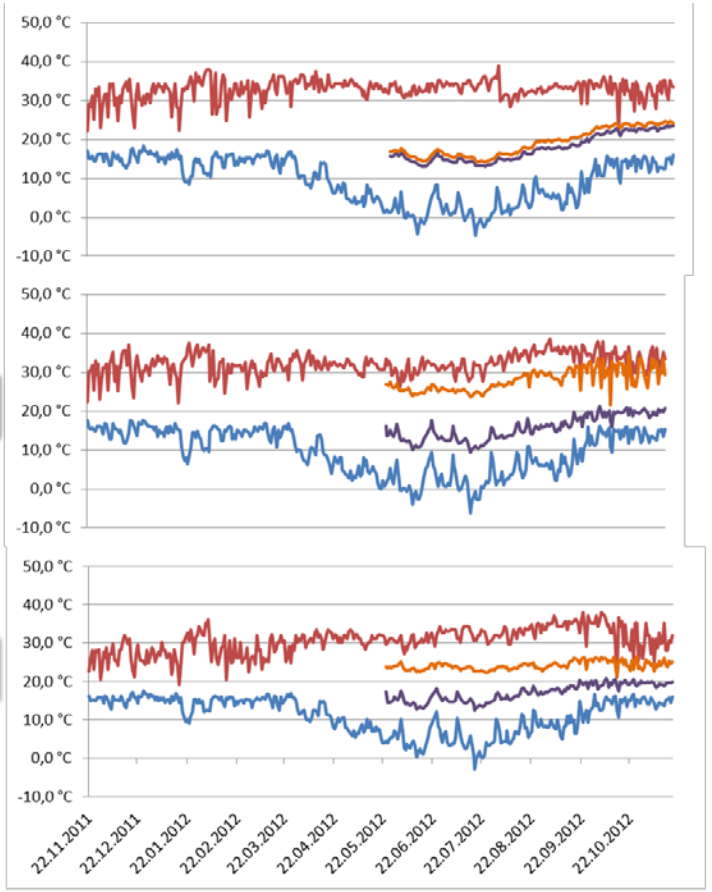
TFO
THE FUTURE OKAVANGO

Micro-climate as governing factor of vegetation pattern in the central plateau, Bié, Angola

peat land

open land

woodland



Frost days

19

20

2

TFO (2012)

Activities (TFO)

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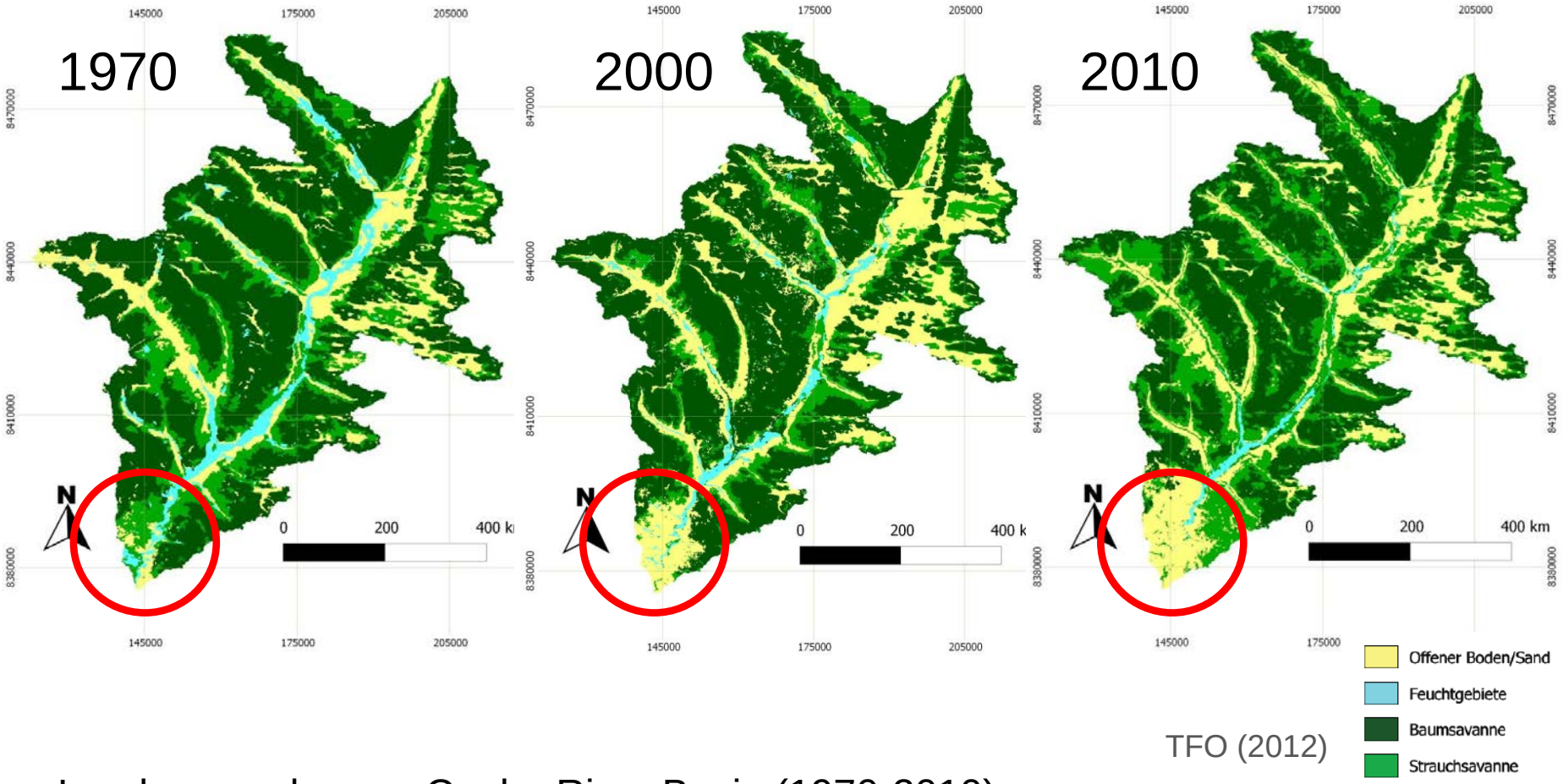

TFO (2012)

Land cover change, Cuebe River Basin (1970-2010)

Activities (ongoing)

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BIOTA observatories

BIOTA
biota-africa.org

- since 2002 (Namibia, South Africa)
- Monitoring of various ecosystem types
- continuous measuring of environmental parameters (climate stations, biodiversity mapping, soils)

SASSCAL: implementation of permanent monitoring sites (several observatories sized 1km² using the BIOTA design, extending the transect to Angola and Zambia)

Miombo Network

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Further points for discussion

(beyond LC monitoring, carbon stocks, fire management and REDD+)

- Ecosystem Services and Functions of Miombo ecosystems
- Feedbacks and self-regulating mechanisms
- Benefits and alternative uses
- Markets and economic drivers
- Climate change impacts (shifts, transition)
- Diversity (flora and fauna)
- Institutional environment (regulations, laws …)
- Valuation studies (economically)
- Human-wildlife interactions
- Successional states of woodlands (drivers, impact, threats)
- ….

SASSCAL & Miombo Ntwrk

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Potential for collaboration

- → Sharing the awareness of challenges due to global changes at local, regional, national and trans-national level --> common interests
- → standardization of methods (monitoring, assessments)
- → supporting integrated scientific cooperation (e.g. science partnerships) to target global change issues
- → cooperating in academic/non-academic capacity development programmes
- → Information exchange on strategies and ‚best practice' guidelines for knowledge implementation
- → Linking infrastructures (technical, institutional)
- → …

SASSCAL: CONTACT

Federal Ministry of Education and Research

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Southern African Science Service Centre for Climate Change and Adaptive Land Management

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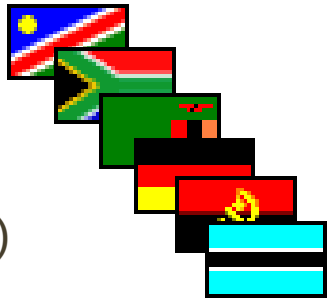
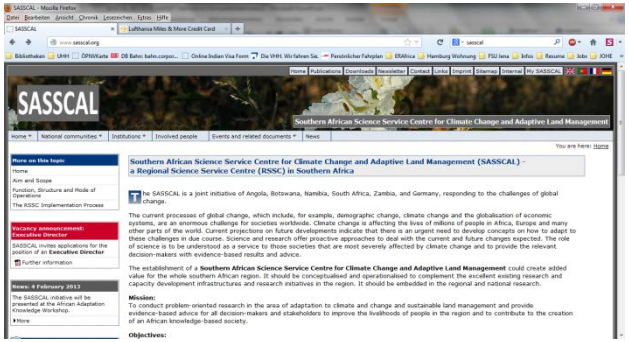


W³: www.sasscal.org



Muito obrigado! Thanks!