

September 29th - 30th, 2016
Palmeraie Golf Palace,
Marrakesh



29 - 30 septembre 2016
Palmeraie Golf Palace,
Marrakech

HIGH-LEVEL MEETING ON THE INITIATIVE FOR THE ADAPTATION OF AFRICAN AGRICULTURE TO CLIMATE CHANGE "AAA"

RENCONTRE DE HAUT NIVEAU SUR L'INITIATIVE
POUR L'ADAPTATION DE L'AGRICULTURE AFRICAINE
AUX CHANGEMENTS CLIMATIQUES "AAA"

TONY SIMONS

Director General
World Agroforestry Centre (ICRAF)



The Promise of Agroforestry within the AAA Initiative

A photograph showing a person sitting on a rocky outcrop on the right side of the frame. They are looking out over a vast, green valley that is partially obscured by thick, white mist or clouds. The sky above is overcast. In the foreground, there are some green plants and grass. The overall scene is one of a rural, possibly African, landscape.

Tony Simons, ICRAF
29-30 September, Marrakech

The Promise of Agroforestry in AAA

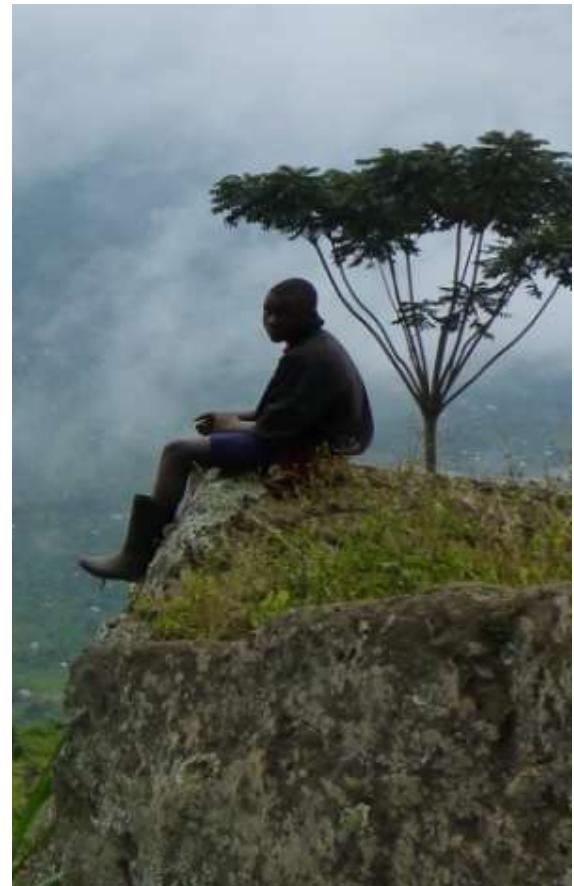
1. Why Agroforestry/Africa?

2. Past global promises

3. Showcase examples

4. Delivering on the AF promises

5. Sign up to AAA now !!!



1. Why agroforestry?

why trees in agricultural landscapes?

Nothing is better than a tree at:

Changing microclimate

Fixing Nitrogen from the air

Bringing up water from depth

Sequestering carbon from the atmosphere

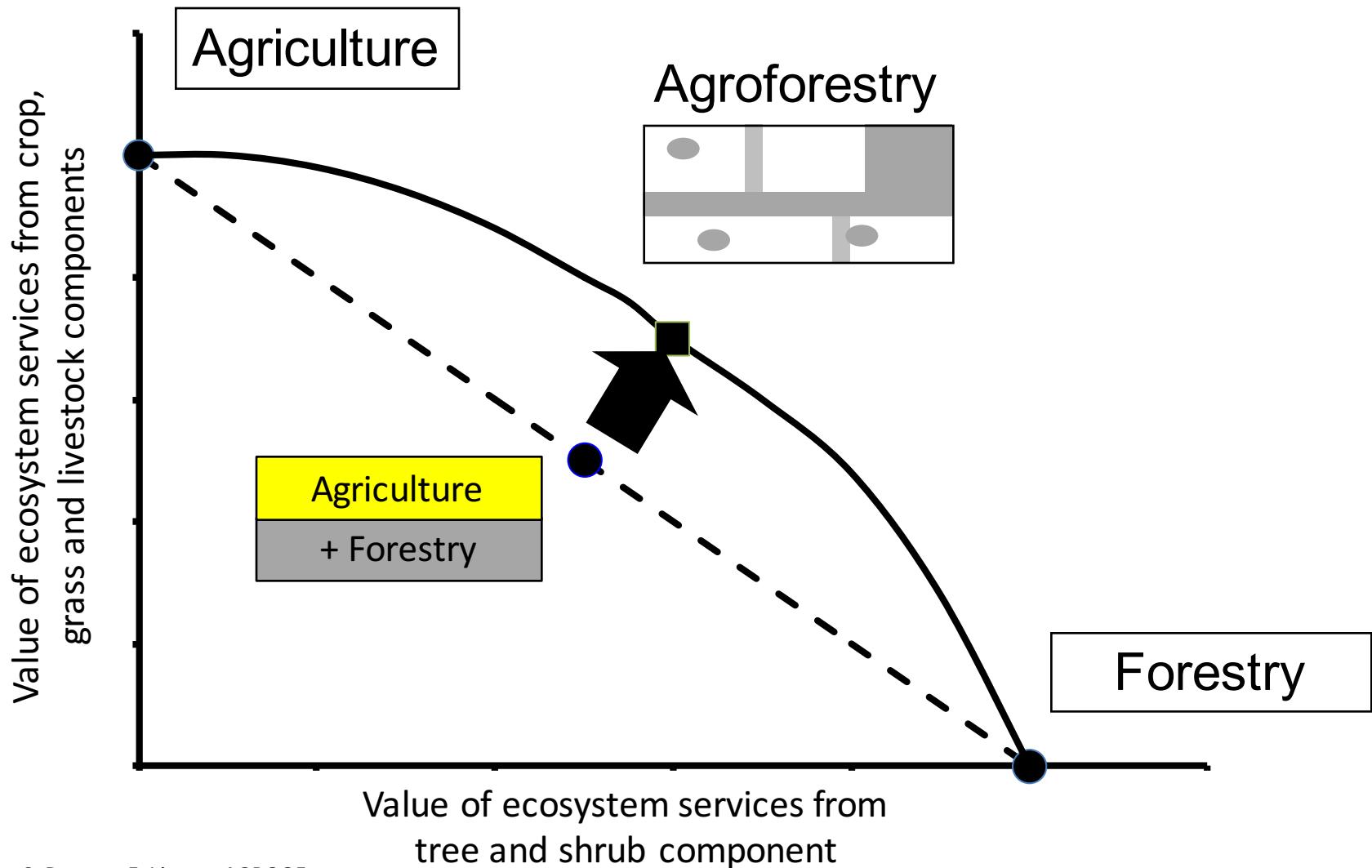
Providing framework for biodiversity to flourish

Adding oxygen to the biosphere

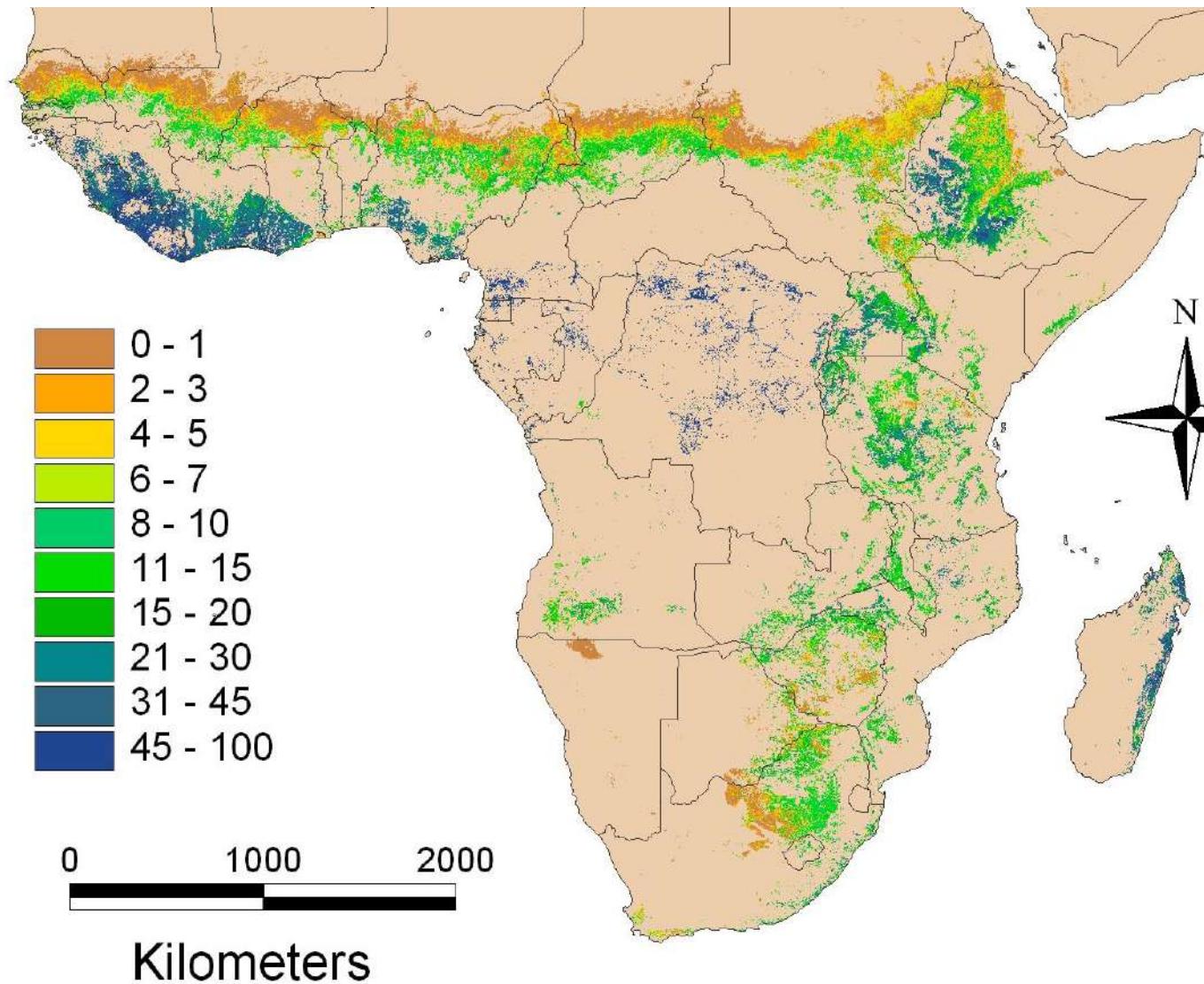
Diversifying farming enterprises

75% of on-farm biomass is associated with trees

Land Equivalent Ratios (LERs)

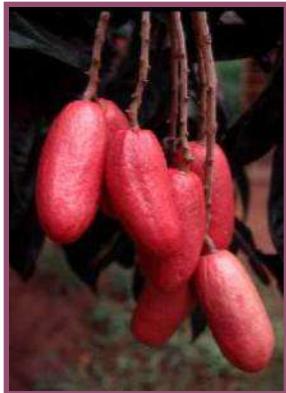


Tree cover on agricultural land in sub-saharan Africa varies



The Right Tree for the Right Place

A. Trees for Products



fruit



firewood



medicine



income



sawnwood



fodder

B. Trees for Services



soil
fertility



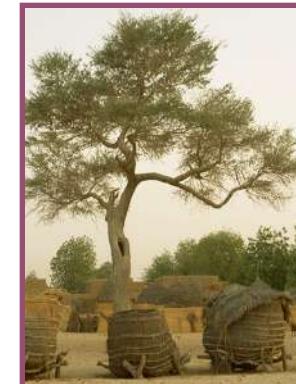
carbon
sequestration



soil
erosion



watershed
protection



shade



biodiversity

2. Past Global Promises

- a. keep within 2 degree temp rise
- b. Land degradation neutrality
- c. Net zero deforestation
- d. 4 per mille soil carbon
- e. AFR100
- f. Forestry 1.5% of GDP
Agriculture 6% of GDP
- g. Double food yields

2. Past Global Promises

a. ~~keep within 2 degree temp rise~~

a. Reduce ambient temp by 2-6 degrees

b. ~~Land degradation neutrality~~

b. Positive land restoration

c. ~~Net zero deforestation~~

c. Net positive afforestation

d. ~~4 per mille soil carbon~~

d. Up to 40 per mille soil carbon

e. ~~AFR100~~

e. 300 million ha greater tree cover

f. ~~Forestry 1.5% of GDP~~

f. Agroforestry contribute up to
10% Agric GDP

~~Agriculture 6% of GDP~~

Climate Smart Agriculture

Triple win of Productivity – Mitigation - Adaptation

But is it always a win? (could be win, neutral or lose)

Then win-win-win is just one of 27 outcomes

**If it is climate smart then Mitigation and Adaptation
have to be either neutral or win, it cannot be a lose scenario**

This leaves 12 possible outcomes (3 x 2 x 2)

What metrics do we use for each of Prodn, Mitigation & Adaptation

Productivity & Mitigation are easier and quantitative

Adaptation/Resilience more complex & includes qualitative measures

3. Showcase examples of Agroforestry



Land degradation





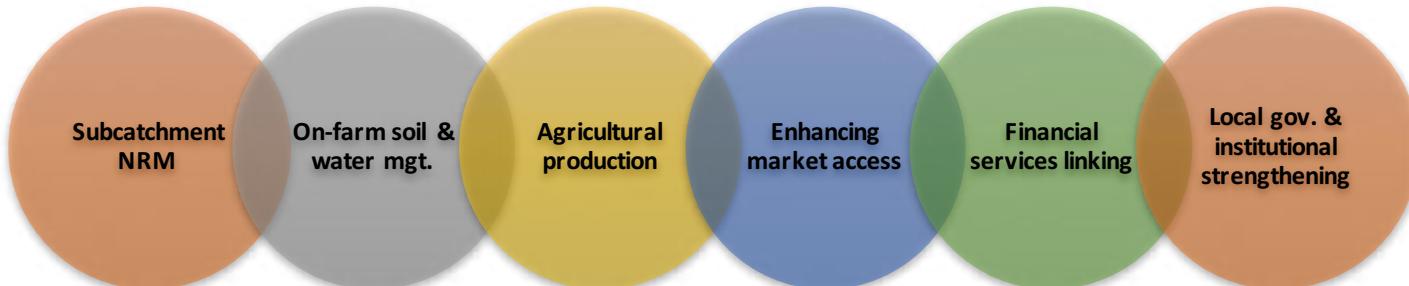
Benefits of agroforestry on phosphorus mining restoration





The Drylands Development Programme (DryDev):

- A farmer-led programme to enhance water management, food security, and rural economic development
- Implemented in semi-arid areas of Burkina Faso, Mali, Niger, Ethiopia, and Kenya
- Value = \$50 million
- Farmers to reach = 250,000
- ICRAF convening 21 NGOs
- Aug. 2013 to July 2018



Simple examples from southern Africa

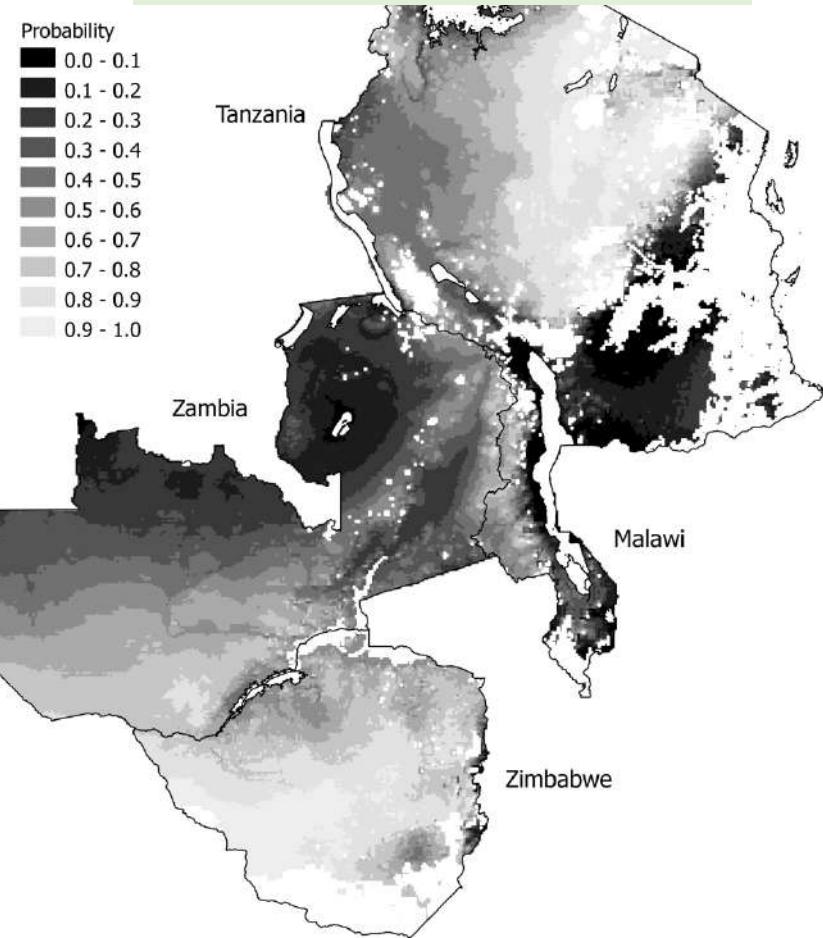
Gliricidia effects

Landscape position	Effect (t/ha)	Elevation Effect (m)	(t/ha)
foot	1.38	500	1.63
ridge	0.21	1000	0.46
slope	0.68	1500	-0.74
upland	0.81		

Faidherbia effects

Crop	Effect (t/ha)
cotton	-0.25
groundnut	0
maize	+3.40
soya	+0.70

Sesbania effects



+ Social, economic

+ other performance measures

Agroforestry Oil Palm systems: lessons from Brazil

Mono-crop vs Agroforestry: Oil Palm



**Conventional oil palm
Mono-crop system**



**Oil palm + agroforestry experiment, Year 5,
Tomé Açu, Pará, Brazil. Photo: Debora Castellani**

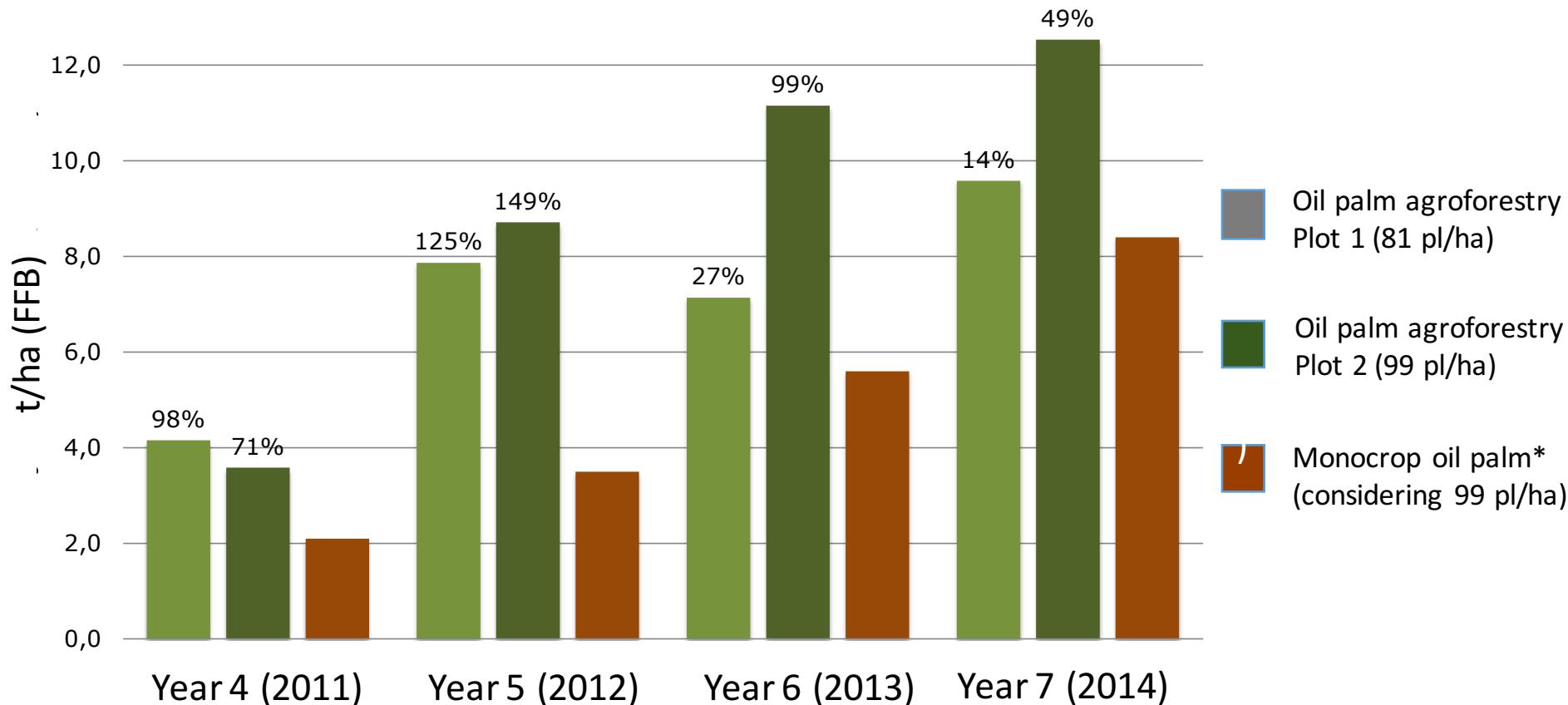
Andrew Miccolis, ICRAF Brazil

Biodiverse agroforestry oil palm (yr 7), Pará , Brazil



(Photos: Andrew Miccolis)

Oil palm yields : agroforestry vs. monocrop systems (% above avg. monocrop yields at same age)



*Average yields at the same age in the same region according to Perez et al. 2007

Viabilidade de extração de óleo de dendê no Estado do Pará. Viçosa, UFV. 2007.

http://portal.mda.gov.br/portal/saf/arquivos/view/biodisel/18_-_Dende.pdf

Source: adapted from Castellani et al 2014, Internal Report

EU - Allanblackia Case Study



State of world's research

January 2004



Fruit characterization and germination experiments



Rural Resource Centre – New Edubiase)

Village tree planting launch May 2006, Tanzania





First time fruiting of a 6-year old tree, producing 80 fruits

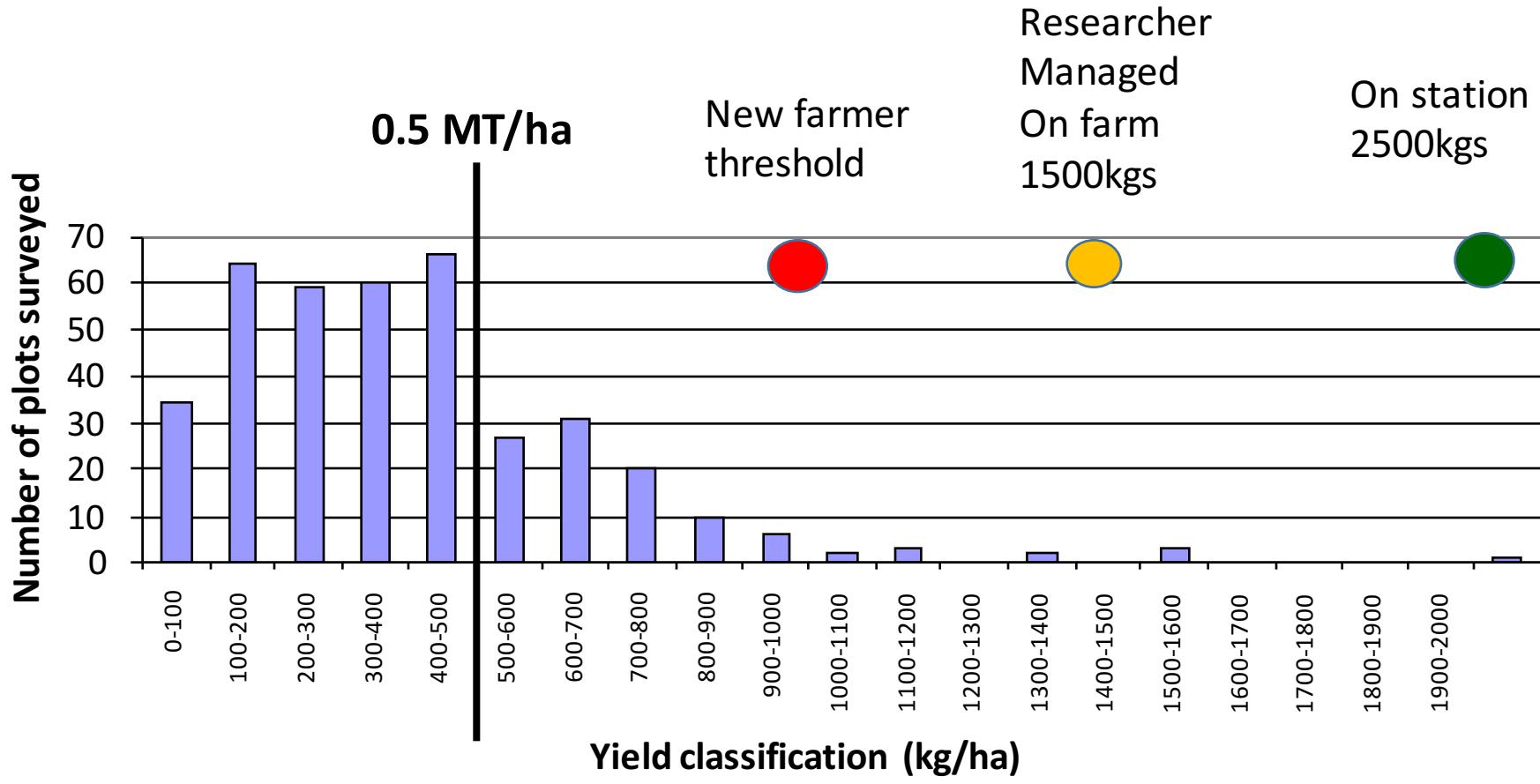
Unilever's new AB product: Fruit d'Or 100% Vegetal

New marketing/branding approach:

- The allanblackia oil which is contained in Fruit d'Or 100% Vegetal has excellent properties to give it its creamy texture.
- Using allanblackia seed oil, Fruit d'Or 100% Vegetal contributes to restoring and conserving the forest landscape offering additional income to local farmer communities especially in Tanzania.

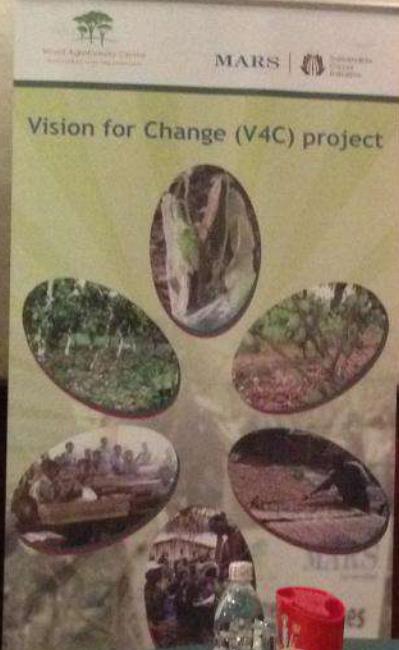


Cocoa Yields are too low

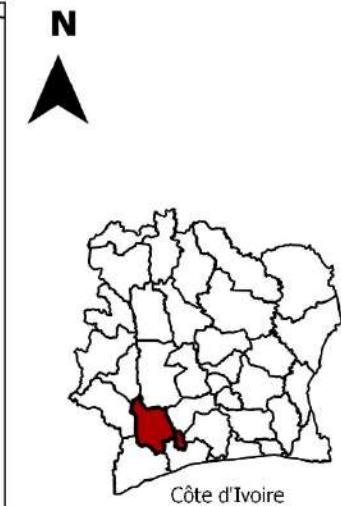
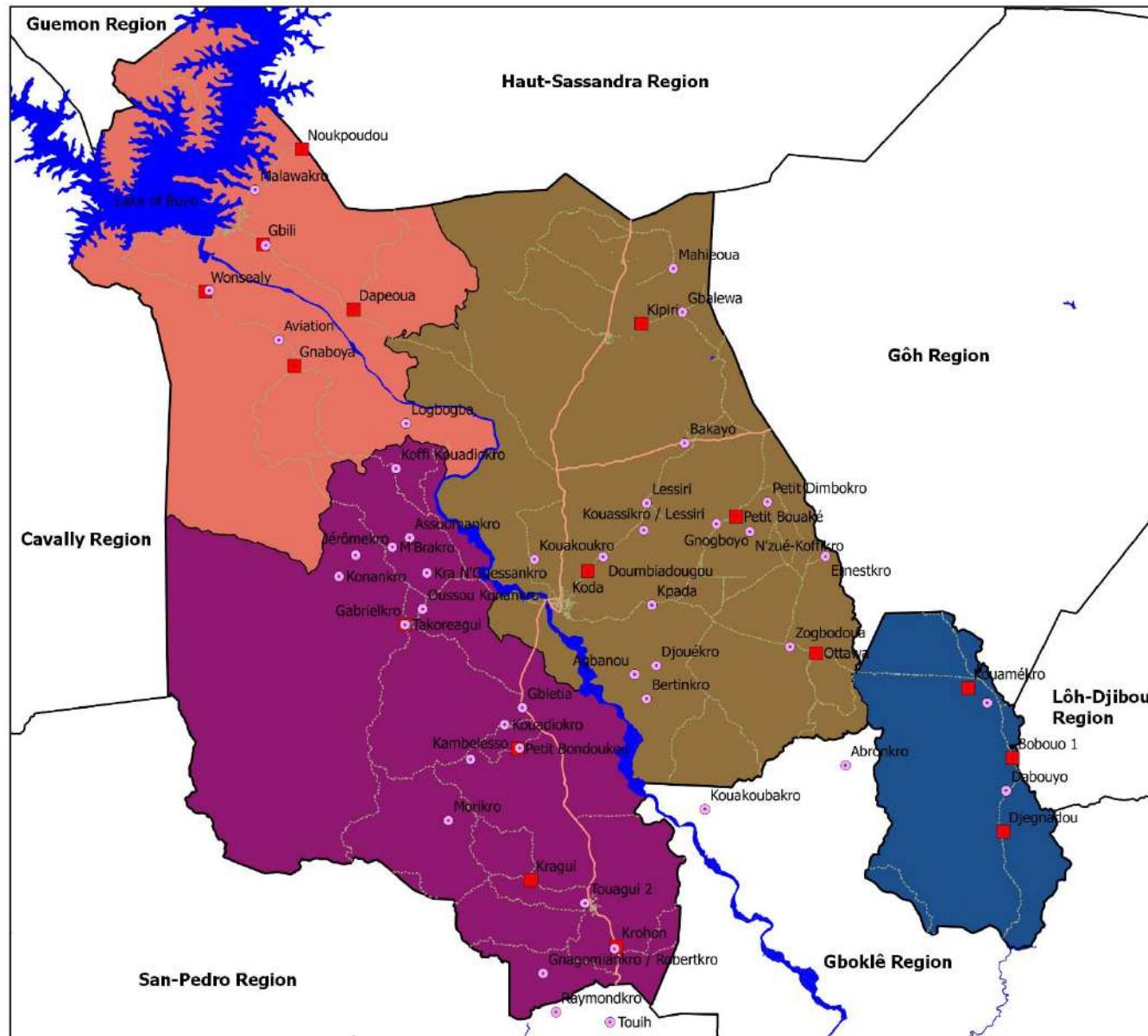


Source: *Etude sur les revenus et les investissements des producteurs de café et de cacao en Côte d'Ivoire*,
Agrisystems Consortium, 2008

MARS-ICRAF-CDI Government Public Private Partnership



V4C project implementation area with the 16 Cocoa Development Centre (CDC) and 47 Cocoa Village Centre (CVC)



Use of clones and hybrid seeds



Seedlings of improved cocoa varieties produced in V4C nursery at Soubre



Newly grafted seedlings for the establishment of clonal gardens



22 months after side grafting, from 4-5 pods to 20-30 pods per tree

4. Delivering on the AF promises

Global development professionals network

'No one leaves any more': Ethiopia's restored drylands offer new hope

Migration is no longer the only option for many young Ethiopians, as careful restoration revives livelihoods on eroded and deforested land

Cathy Watson in Mekelle,
Ethiopia

Wednesday 3 August 2016 07.00 BST



< Shares Comments

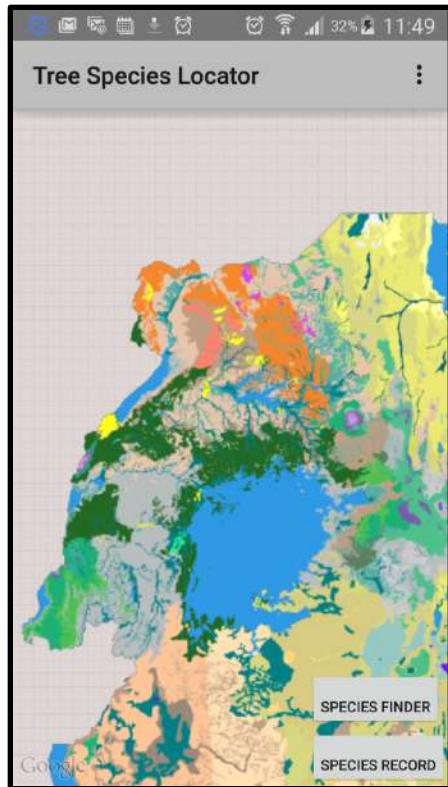
1,371 24

Save for later



Boosting Investment and Returns in Perennial Crops

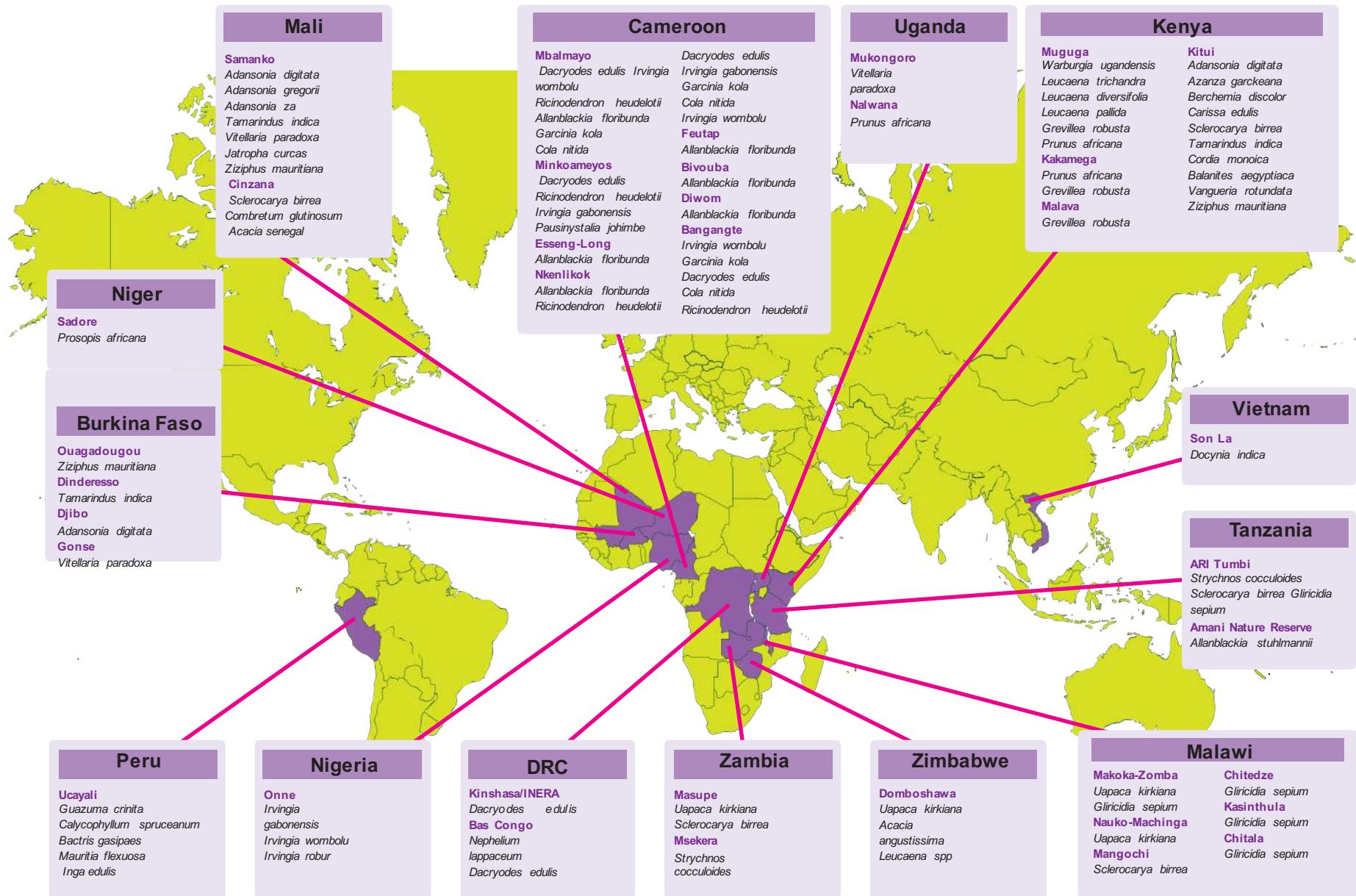
TAAT (AfDB)



Agroforestry Value Proposition

<u>Technical Solutions</u>	<u>Evidence, Analytics</u>	<u>Planning, Design</u>	<u>Promotion, Champion, Convene</u>	<u>Capacity, Capability</u>
Enterprises	Datasets	Investments	Scaling Up	Form partnerships
Practices	Databases	Trade-offs	Demonstrations	Institutional Capacity
Tools	Diagnoses	Targeting	Interfacing	Individual Capacity
Methods	Decision Support	Project Plans	Communications	Instruct. materials
Concepts	Analyses	Strategies	Policy Options	Equipment
Standards	Baselines	Risk Identification	Group formation	Nurseries
Guidelines	Inventories	Value Chains	Social inclusion	Rural Res. Centres
Protocols	Indices	Rural Advisory	Facilitation	Finance
Manuals	Monitoring	Implem. Plans	Access	
Portfolios	Interpretations	Reviews	Negotiation Support	
Germplasm	Demonstrations		Networks	
Apps	Forecasts		Extrapolations	
	Journal publics.		(Advocacy)	

Agroforestry Tree Field Genebanks





ECOSYSTEM HEALTH

Explore our work on the mapping of ecosystem health at multiple spatial scales.



Welcome to the Landscapes Portal!

Our mission is to further the application of GeoScience in assessing coupled social-ecological processes in landscapes.

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The Landscapes Portal provides users with a platform for visualizing and sharing spatial data and maps, as well as map stories.



EXPLORE SPATIAL DATA



INTERACTIVE MAPPING



TOOLS

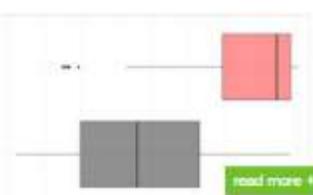
Latest Blog

The Land Degradation Surveillance Framework

LDSF

Field Guide

[read more +](#)



Mapping the source of soil erosion

Conventional soil erosion models are generally based on the Universal Soil Loss Equation (USLE), or a revised (RUSLE) or modified (Williams and Bremfet (1977)) version of the USLE. Betrie et al (2011) used the Soil and Water Assessment Tool (SWAT), ...



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Landscapes Portal



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[read more +](#)

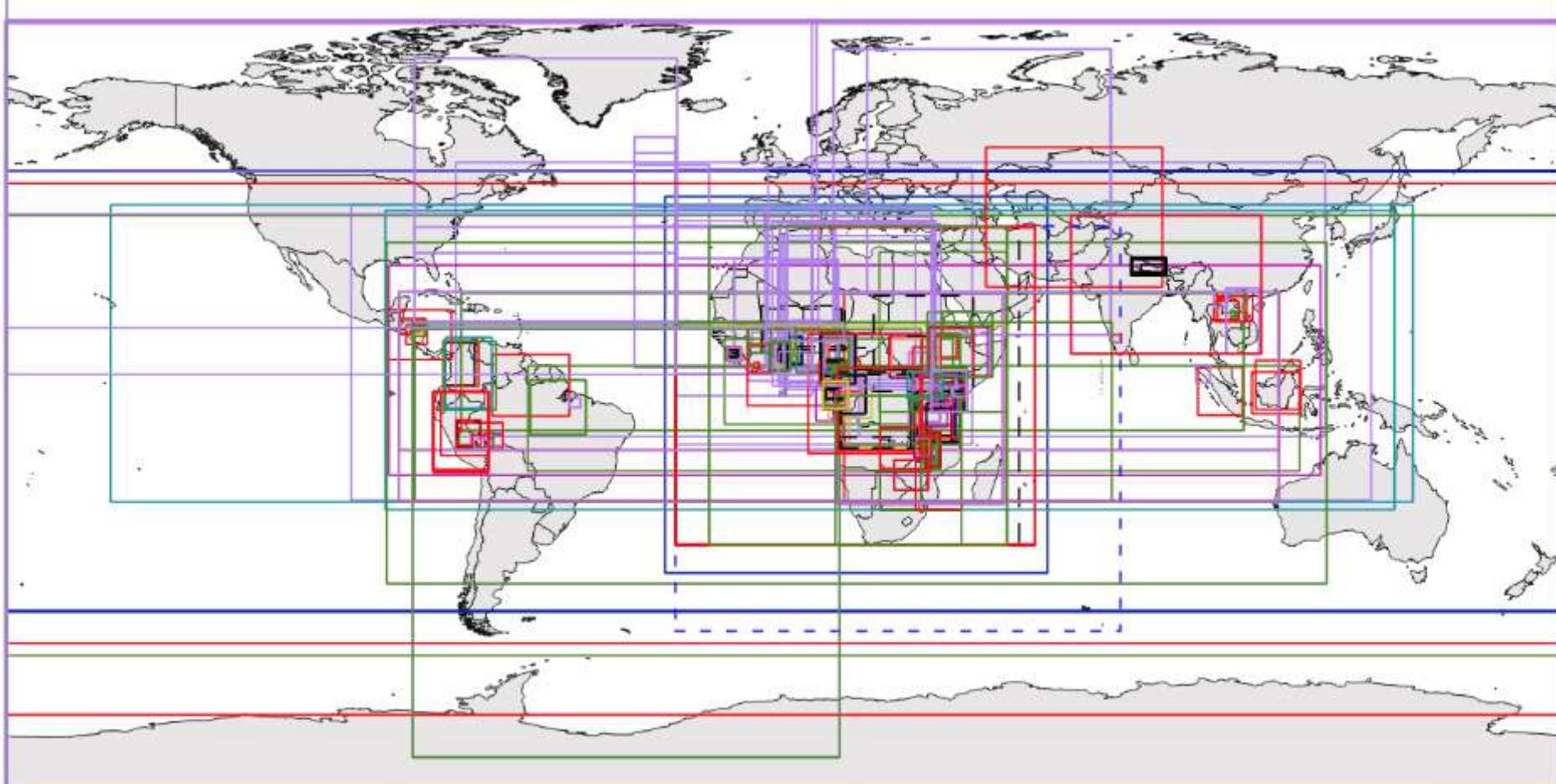
Want to know what we are up to?

In the GeoScience Lab we are constantly pushing the envelope on what we do with models and maps. This presentation gives you an idea of what we are up to at the moment:

Mapping soil functional properties using multilevel models

In this document we present examples of R functions and scripts that may be used to generate local maps of soil functional properties based on for example remote sensing data, climate surfaces and/or digital elevation models and their derivatives

Over 1800 Datasets



climatology
 economy
 imagery

Meteorology
 BaseMaps
 EarthCover

environment
 boundaries
 biota

location
 oceans
 society
 structure
 transportation

Best Practices Support on:



Where to plant – trees suitable for your area



What to plant – trees suitable for your purposes



Which to plant – sources of tree seeds



How to plant – good tree nursery practices



How to engage communities and scale up

IUCN Mobile Phone App



A screenshot of the Google Play Store listing for the 'Africa Tree Finder' app. The app icon shows a tree. The title is 'Africa Tree Finder' by 'Erick Omwando - Books & Reference'. It has a rating of 3 stars and a message stating 'You don't have any devices'. A green 'Installed' button is visible. Below the store listing are three screenshots of the app's interface: 1) 'Tree Species Locator' showing a map of a region with colored overlays. 2) 'Major Uses (Afromontane dry t...)' showing a list of uses with icons: Wood use, Human Consumption, Animal use, Environmental use, and Others uses. 3) 'Specific Use (Afromontane dry t...)' showing a list of specific uses with icons: Firewood, Charcoal, Timber, Furniture, Construction, Poles, Posts, Flooring, Panelling, Beehives, Veneer, Plywood, and Tools, Tool handles, shafts. A purple curved arrow points from the top right towards the first screenshot, and a pink curved arrow points from the top right towards the second screenshot.

Screenshots of the 'Tree Species Locator' app. The first screenshot shows a map of East Africa with various vegetation types. The second screenshot is a permission dialog box asking for access to Location, Photos/Media/Files, and Camera, with an 'ACCEPT' button. The third screenshot is a promotional banner at the bottom of the app store page for the app, featuring the text 'Find the right tree species for the right place' and a 'READ MORE' link. A grey洒水壶 icon is positioned in the top right corner of the slide.

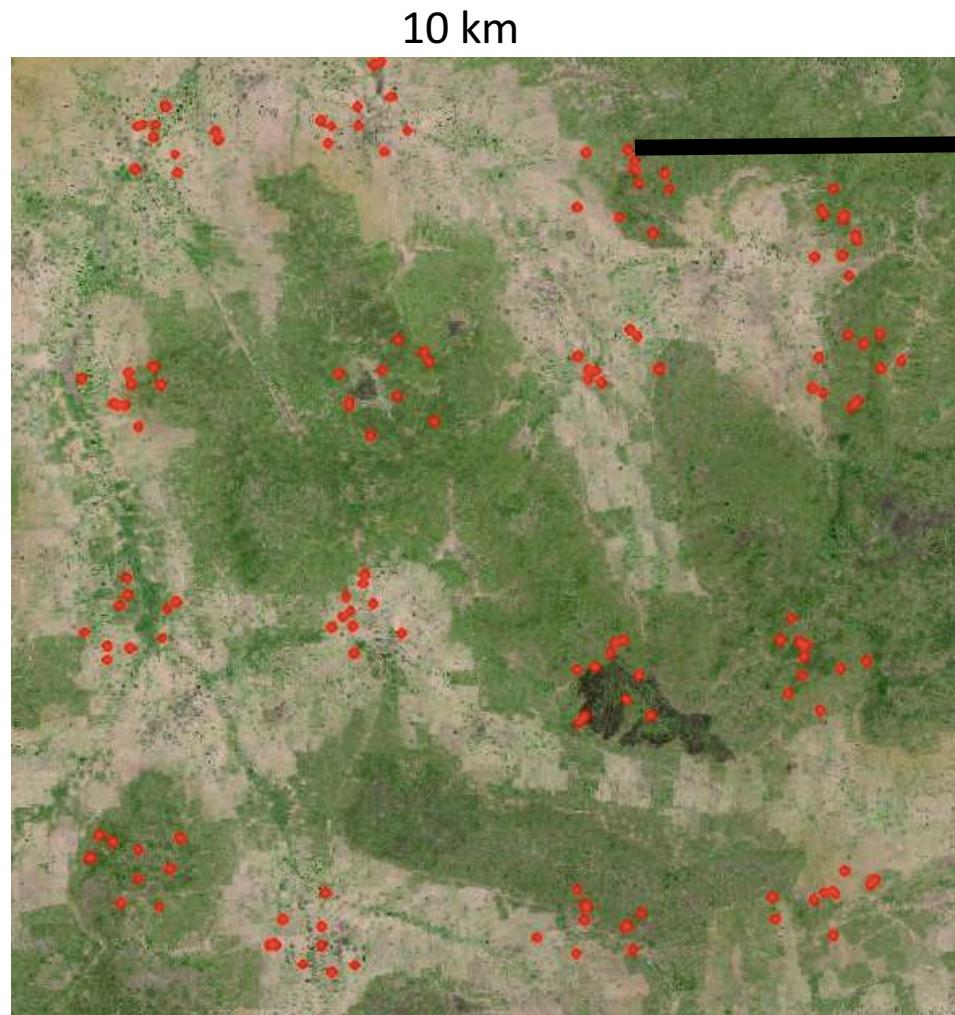
www.vegetationmap4africa.org



System resilience depends on diversity at a range of scales

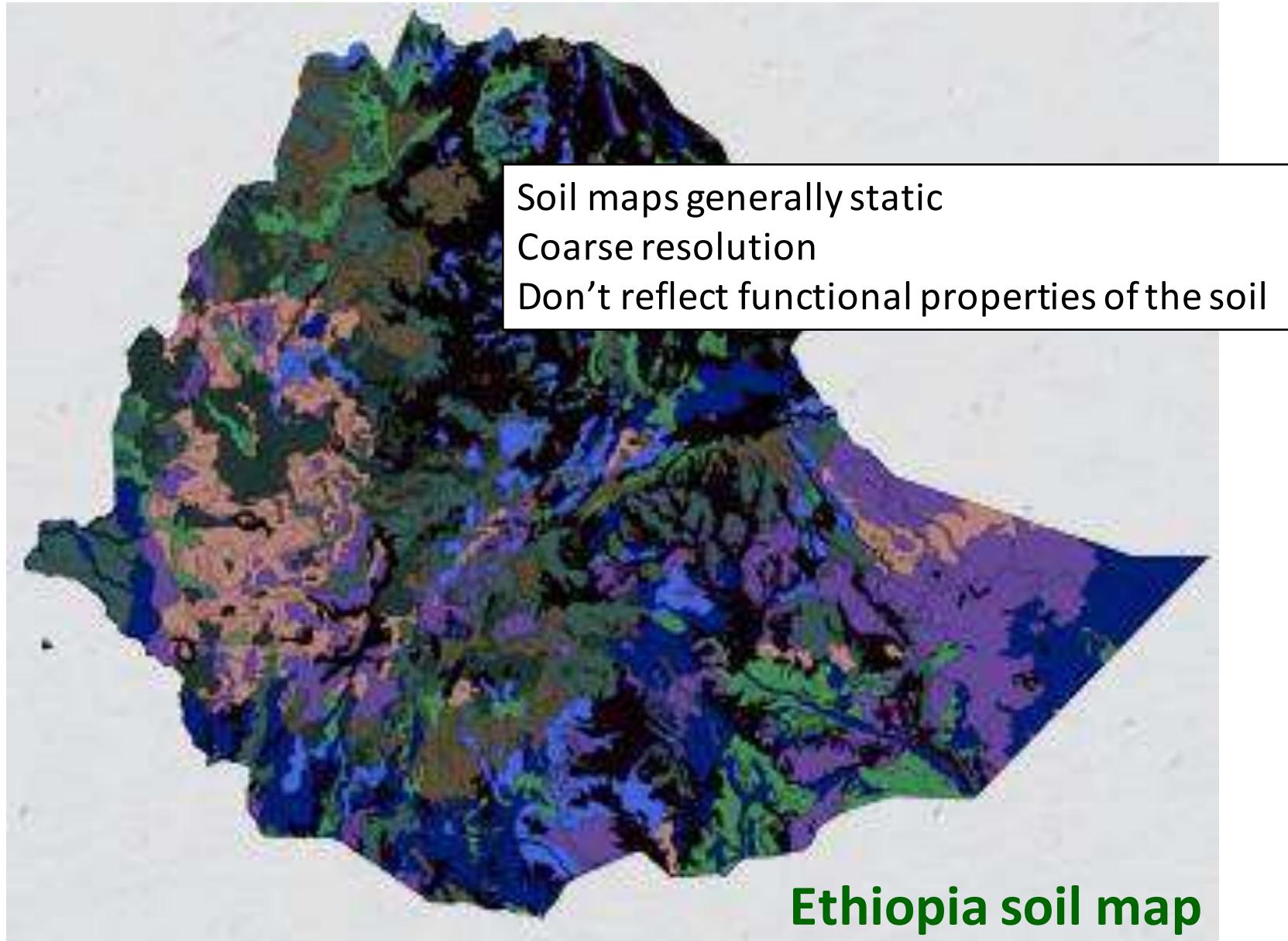
Land Degradation Surveillance Framework

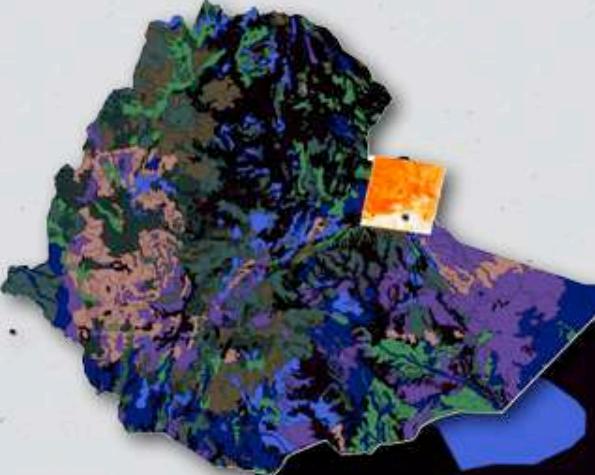
LDSF



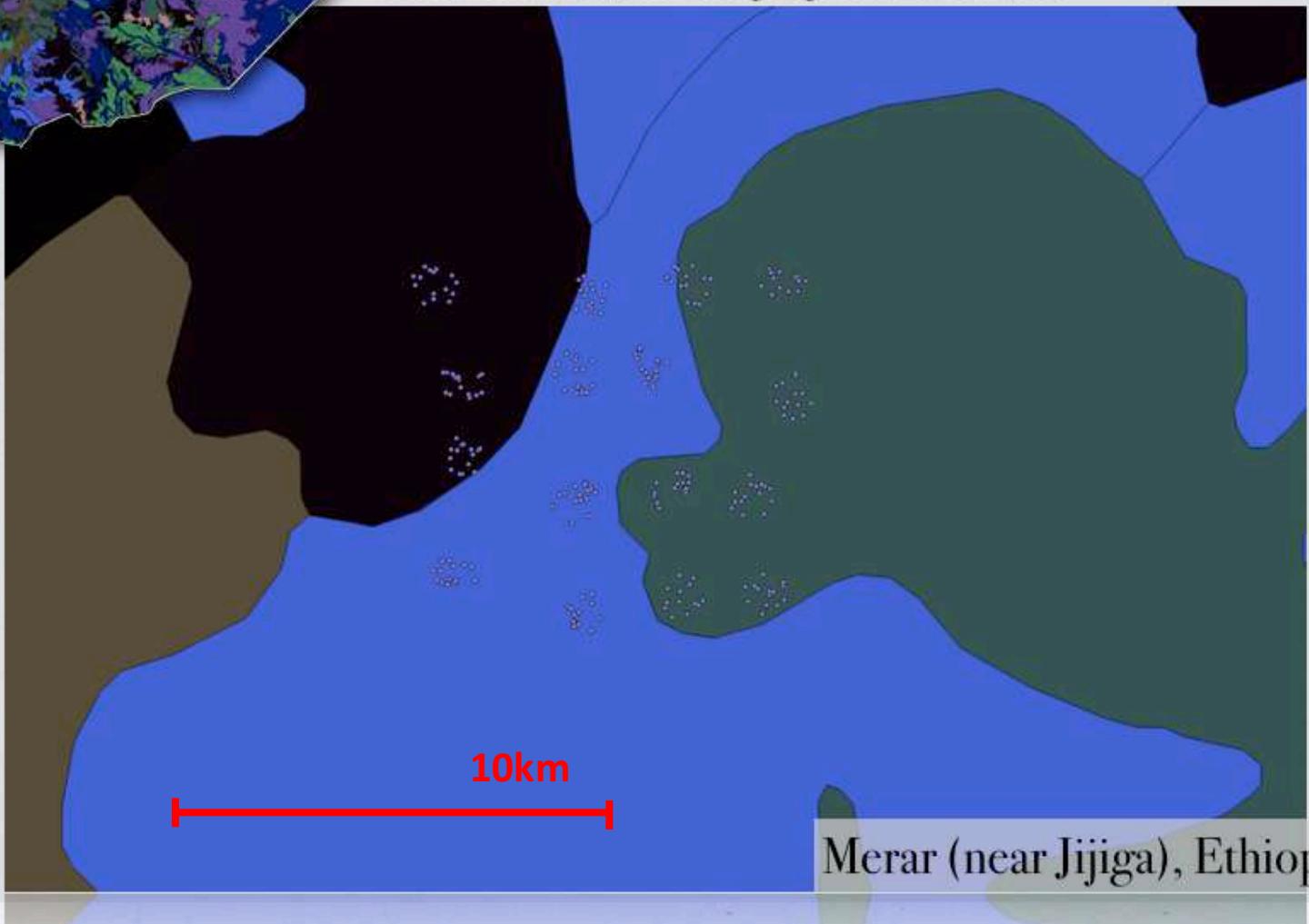
- 160 plots (1000 m^2)
- Severe erosion (0/1)
 - Topsoil organic carbon (g/kg)
 - Sand content (%)
 - Herb/grass cover (1-5)
 - Tree inventory (spp identification & DBH)

GeoScience





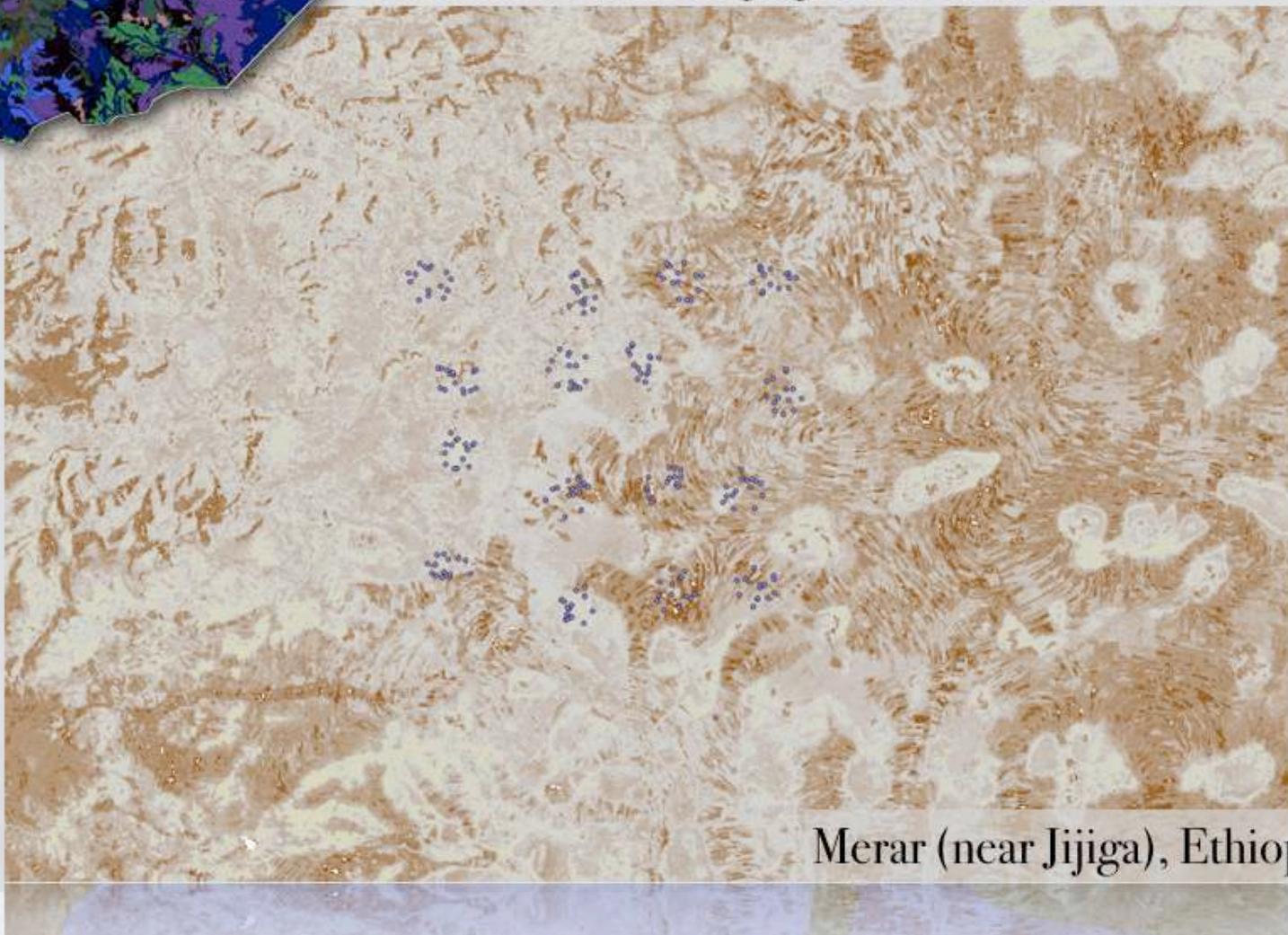
**But what does it mean?
and how can we use it?**





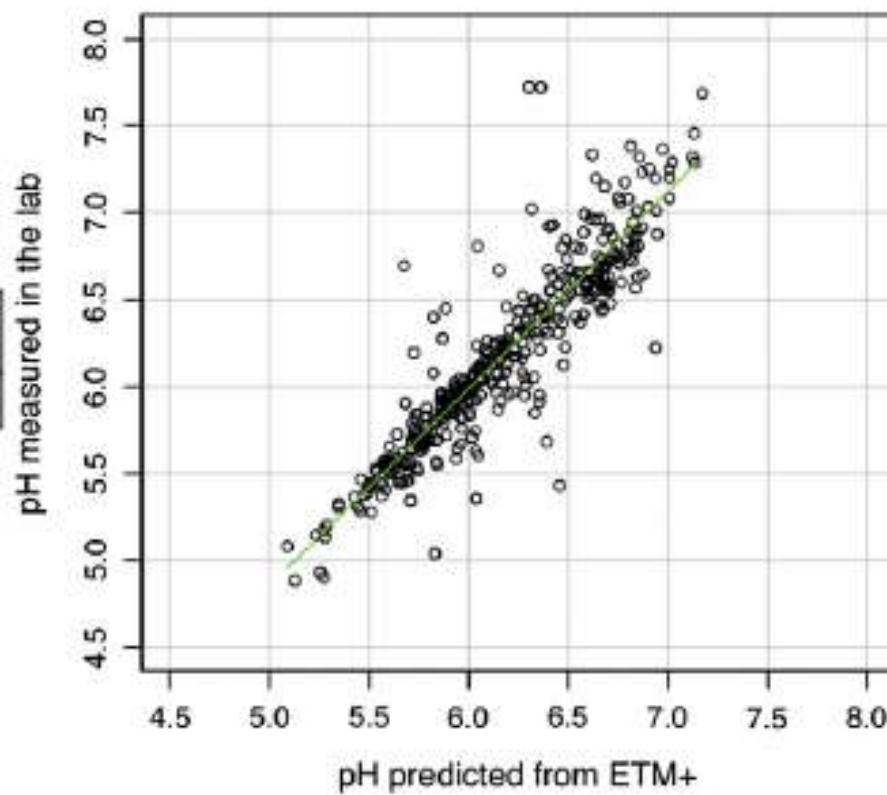
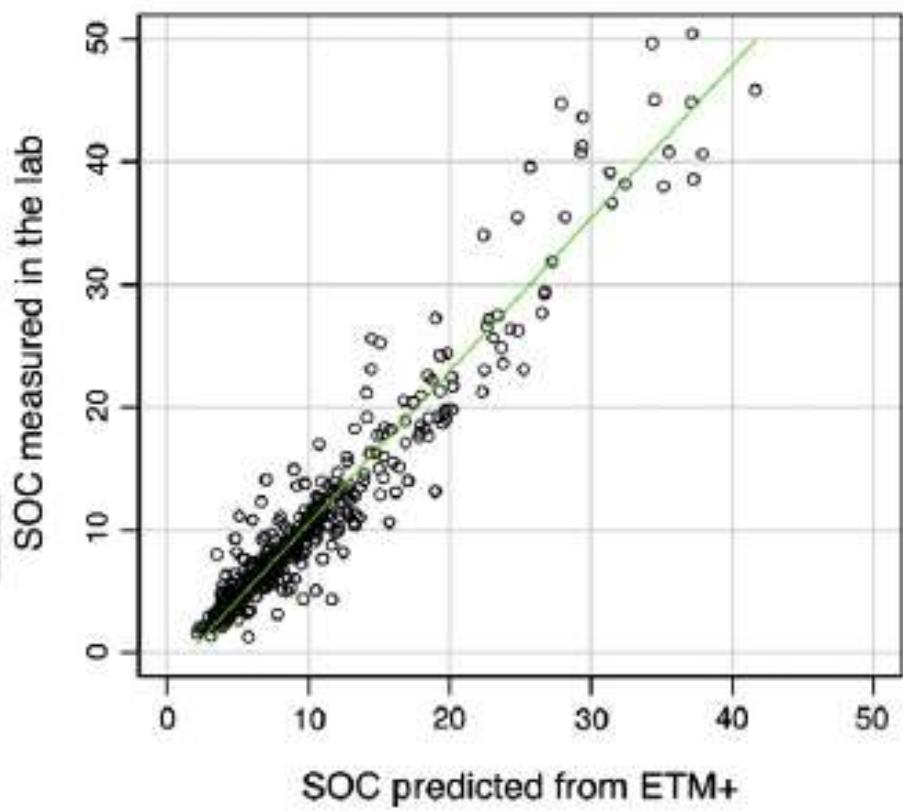
Soil Carbon (30m x 30m)

Can guide better decisions



Remote Sensing of Environment

journal homepage: www.elsevier.com/locate/rse





World Agroforestry Centre publications

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TURKANA COUNTY

DASHBOARD

DROUGHT

LAND HEALTH

EDUCATION

HEALTH

SECURITY

Turkana County Resilience Dashboard

Tor-Gunnar Vägen, April 2015

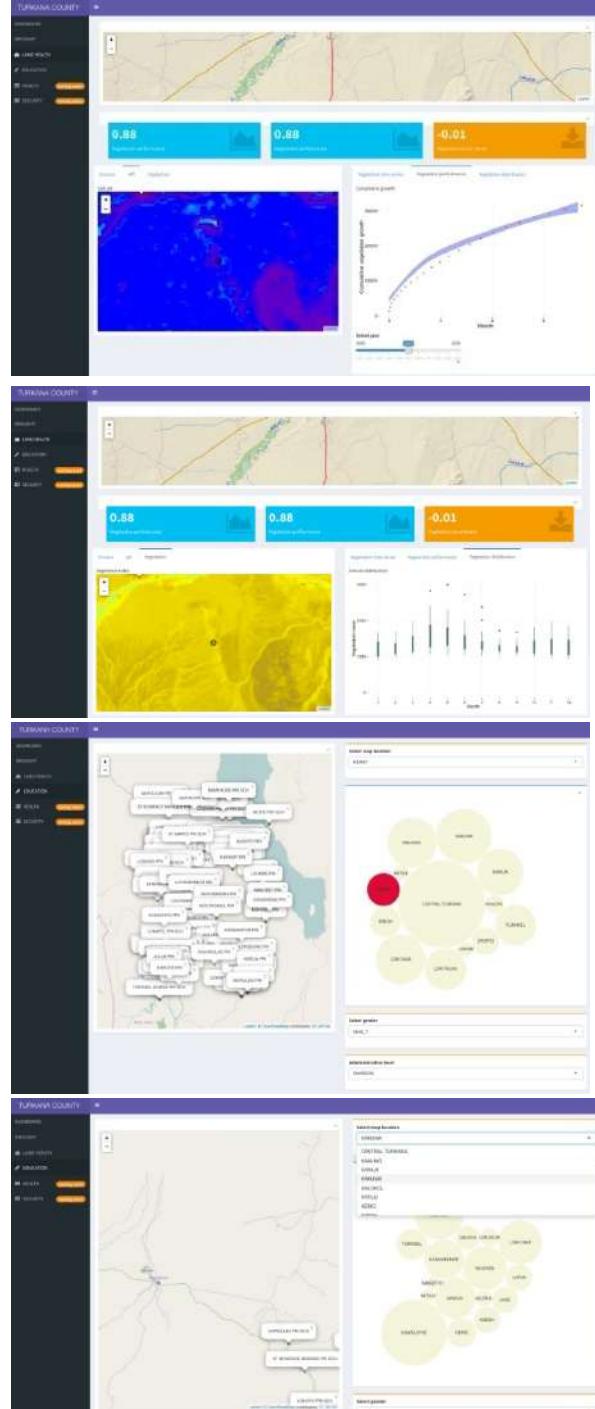
The SHARED process is comprised of four inter-related phases, applied on a case by case basis. These are tailored to the specific context of decision makers, stakeholders and resources. Working with the Turkana County Government, the National Drought Management Authority (NDMA) and UNICEF, the ICRAR SHARED team is integrating technical and human resources with the development of tools to support informed decision making at various scales.

From Data to Decision Support Systems

The SHARED resilience Dashboard aims to integrate a number of different tools and analytical packages, ranging from biophysical data and processes to education, health and security related information.

In summary the TOOL provides actionable information on:

- Soil properties:
 - Soil organic carbon (SOC)
 - Soil pH (alkalinity)
 - Soil texture (Sand)
 - Degradation risk
 - Soil erosion
 - Root depth restrictions
- Vegetation cover:
 - Herbaceous cover
 - Woody cover
- Vegetation performance:
 - Crop yield
 - Cereal yield
 - Yield per hectare
 - Yield per capita
 - Yield per household
 - Yield per girl child
 - Yield per boy child
- Distribution of health centers
 - Distribution of hospitals
- Security
 - A tracking system for security-related incidences in the county.



Data

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EXPLORE LAYERS

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faosoil_unit_cover

Layer from egogo, 1 week, 4 days ago

No abstract provided

0 views

Average rating (0 votes)

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Soil erosion prevalence - Blue Nile Basin, Ethiopia

Map from tor, 4 months ago

Map showing predicted soil erosion prevalence in the Blue Nile Basin, Ethiopia.

271 views

Average rating (0 votes)

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nyando_u_soils

Layer from admin, 7 months, 2 weeks ago

Derived from 2003 landsat image by the GIS unit ICRAF.

3 views

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faosoil_plus_soilnames

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Soil Surface Wetness Index for Tropical Ecosystems

Layer from tor, 4 months, 1 week ago

Cite as: Gumbrecht, T (2014). A global soil surface wetness index from optical satellite image data. Submitted. Satellite derived estimates of soil surface wetness over extended regions are restricted to interpretations of passive microwave brightness temperatures. Very few studies have adopted optical image data due to limitations caused by cloud and cloud shadow contamination, atmospheric attenuation, biomass perturbation, weak relations, and minimal depth penetration. This map uses the 16-day composite products from the Moderate Resolution Imaging Spectroradiometer (MODIS/MCD43A4) to generate a novel soil wetness index (the Transformed Wetness Index (TWI)), after first unmixing pixels to remove vegetation effects at an unprecedented scale of 472m.

71 views

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MSAV12_173_61_1995

Layer from tor, 8 months ago

Modified Soil Adjusted Vegetation Index (MSAV12) as per Qi J., Chehbouni A., Huete A.R., Kerr Y.H., 1994.

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fao_soil_2

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1 view

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Virunga Landscape - 1995 to 2013

Map from emilie5, 4 months, 3 weeks ago

Vegetation cover in the Virunga landscape (DRC) using the MSAV12 vegetation index. MSAV12 is a soil adjusted vegetation index that seeks to address some of the limitation of NDVI when applied to areas with a high degree of exposed soil surface. The problem with the original soil-adjusted vegetation index (SAVI) is that it required specifying the soil-brightness correction factor (L) through trial-and-error based on the amount of vegetation in the study area. Not only did this lead to the majority of people just using the default L value of 0.5, but it also created a circular logic problem of needing to know what the vegetation amount/cover was before you could apply SAVI which was supposed to give you information on how much vegetation there was. Qi et al. (1994a) developed the MSAV1, and later the MSAV12 (Qi et al. 1994b) to more reliably and simply calculate a soil brightness correction factor.

71 views

Average rating (0 votes)

[Download](#)[Create a map](#)

MSAV12_173_59_1995

Layer from tor, 8 months ago

Modified Soil Adjusted Vegetation Index (MSAV12) as per Qi J., Chehbouni A., Huete A.R., Kerr Y.H., 1994.

42 views

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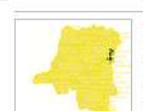
faosoil_limitations_inc

Layer from egogo, 1 week, 4 days ago

No abstract provided

0 views

Average rating (0 votes)

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fao_fcc_plus_p_limitation

Layer from egogo, 1 week, 4 days ago

No abstract provided

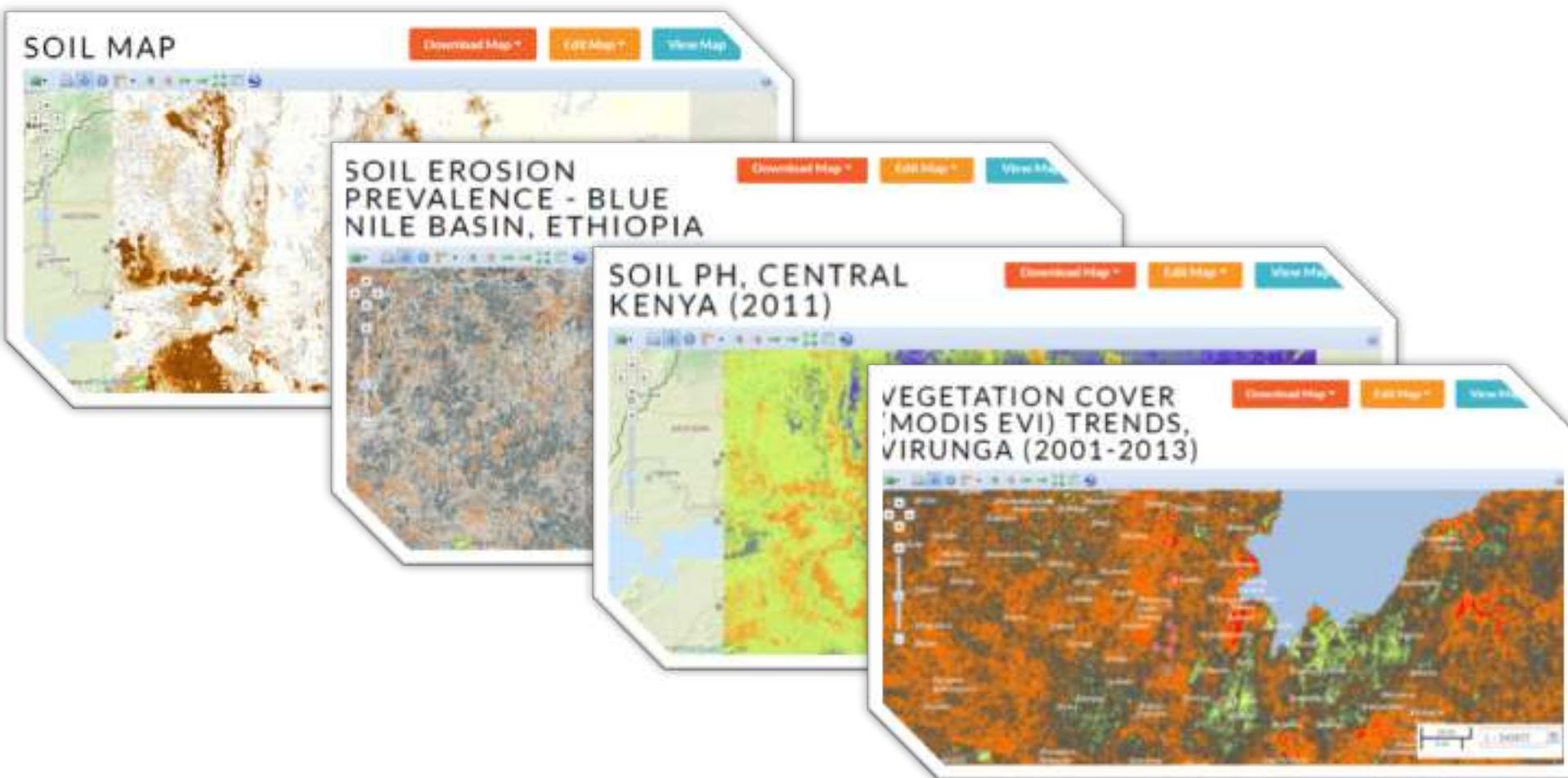
0 views

Average rating (0 votes)

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Project spatial progress updates

Models



vegetationmap4africa

http://www.vegetationmap4africa.org/Vegetation_map.html

1 Home

2 Vegetation map

Individual PNVs

Mobile maps

Webmaps

3 Species

4 Documentation

5 Data

6 About

7 News

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A vegetation map for eastern Africa

The map of potential natural vegetation of eastern Africa, gives the distribution of potential natural vegetation in Ethiopia, Kenya, Tanzania, Uganda, Rwanda, Burundi, Malawi and Zambia. The map distinguishes 48 vegetation types, divided in four main vegetation groups: 16 forest types, 15 woodland and wooded grassland types, 5 bushland and thicket types and 12 other types. Furthermore, a number of compound vegetation types are mapped, which include vegetation mosaics, catena's and transitional zones. The current version is 2.0. The map is available in various formats, listed below. Before using the maps, please consult the [terms of use](#).

Web-based maps



View the interactive online map in your browser and quickly find out more about the natural vegetation and its species for any location. [Click here](#)

Maps in mobile format

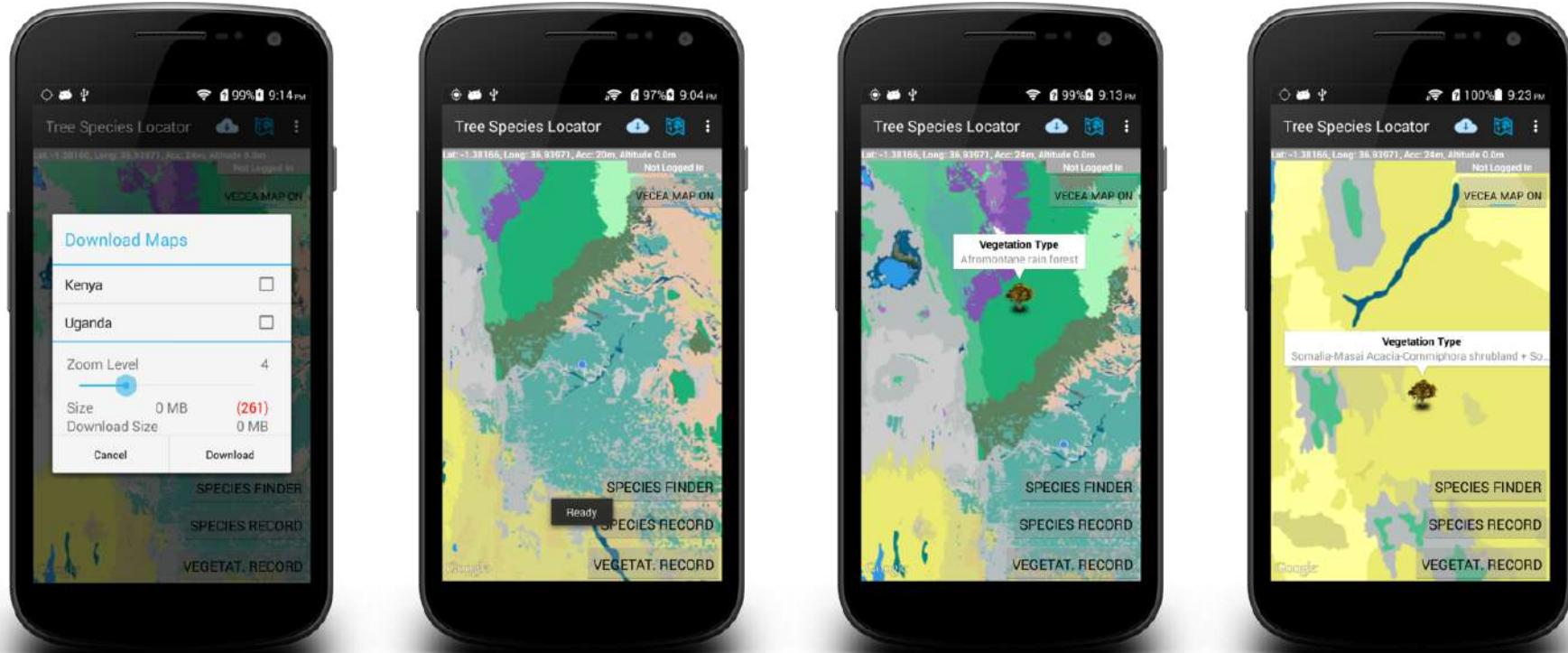


Bring the map with you in the field and know the natural vegetation where ever you are. Download the map for use on your favorite mobile map viewer - [Click here](#).

Africa Tree Finder

<https://play.google.com/store/apps/details?id=org.icraf.gsl.iucn.treespecieslocator&hl=en>

- App developed with IUCN (DFID)
- Stand-alone app for basic Android smart phone



The CGIAR in support of AAA Initiative

