



Agroecological Transition of Food Systems in Africa

Agroecology transition and adoption: Transforming agri-food systems

Rik van den Bosch, ISRIC

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Funded by
the European Union





Agroecological
Transition of
Food Systems
in Africa



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Agroecology transition and adoption:
Transforming agri-food systems

SOIL INFORMATION SYSTEM FOR AFRICA



COLLABORATIVE IDEA OF THE EU AND AU FOR FOOD SECURITY



ISRIC
World Soil Information



WAGENINGEN
UNIVERSITY & RESEARCH



FARA
Forum for Agricultural Research in Africa



MATE
HUNGARIAN UNIVERSITY OF
AGRICULTURE AND LIFE SCIENCES



ARC • LNR
Transforming African Agriculture



IITA
Transforming African Agriculture



CGIAR



IBEC
INTERNATIONAL
ENVIRONMENT CENTER



**UNIVERSITEIT
STELLENBOSCH
UNIVERSITY**



REGIONAL CENTRE FOR
MAPPING OF RESOURCES
FOR DEVELOPMENT



CIFOR



**World
Agroforestry**



INRASA



KALRO



SGS



JRC
EUROPEAN COMMISSION

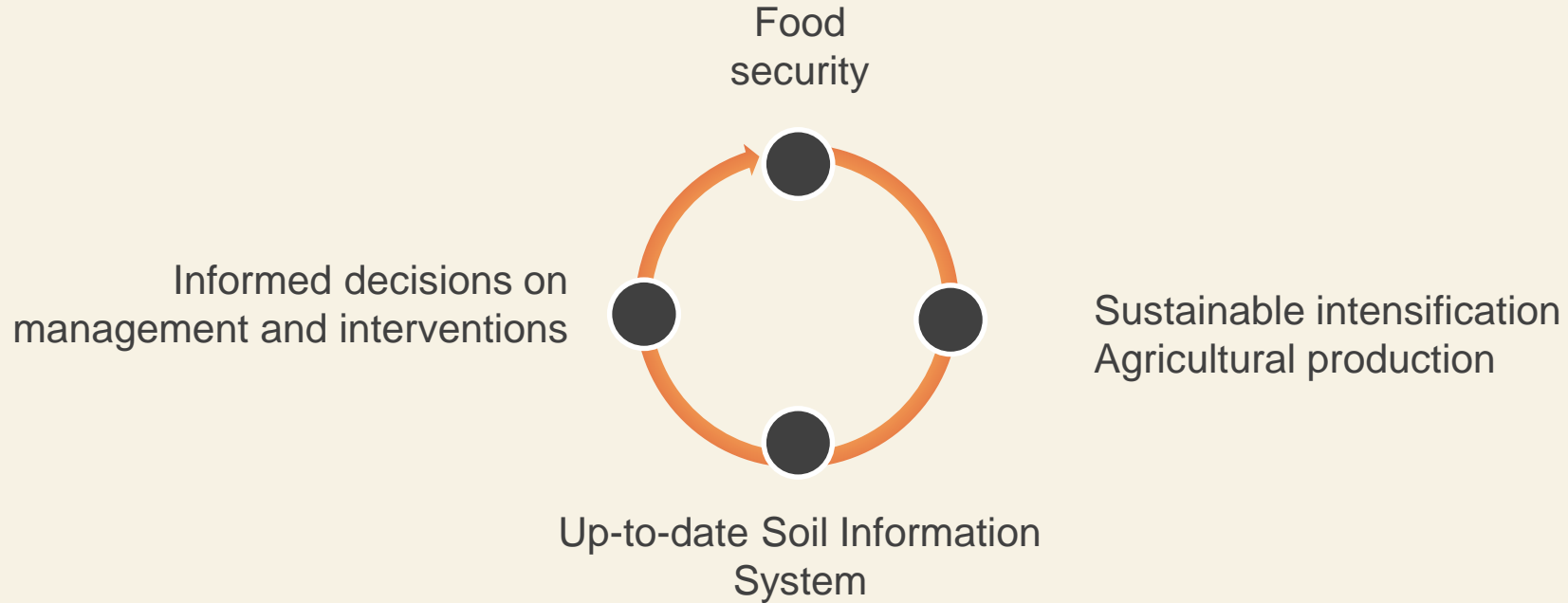


JRC



MATE

WHY A Soil Information System?



AIM OF THE PROJECT

TO DEVELOP AN AFRICAN SOIL INFORMATION
SYSTEM

SET OF **KEY INDICATORS**



OPEN & FAIR DATA



SOIL **MONITORING**
METHODOLOGY



**FNSSA KNOWLEDGE & INFORMATION
PLATFORM**




**HOSTED AFRICAN
INSTITUTION**



Objectives

- an open-access **soil information system** with
- a set of **key indicators** and underpinning data
- a **methodology** for repeated soil monitoring across Africa.

Data should give a **baseline assessment** of the  **state of soil** of **Africa's agricultural land**.



Methods data collection & analyses

- Field sampling, data collection and laboratory analysis with **consistent methods** supported by manuals and video instructions.
- Samples collected using a **sampling design** that supports future (statistical) monitoring of soil status
- **46 soil chemical and physical properties**, including a suite of heavy metals
- At each sampling location **43 field characteristics** are described (terrain, land cover, erosion, land use & management)
- Assessment of **>150 pesticide compounds** at 250 locations

Progress data collection & analyses

- ~**13,700** locations sampled in agricultural land (target: 15,000)
- in **32 countries**
- **1,084** samples with wet chemistry analytics (799 locations)
- **9,396** samples spectrally modelled (5,214 locations)



Outputs | Outcomes

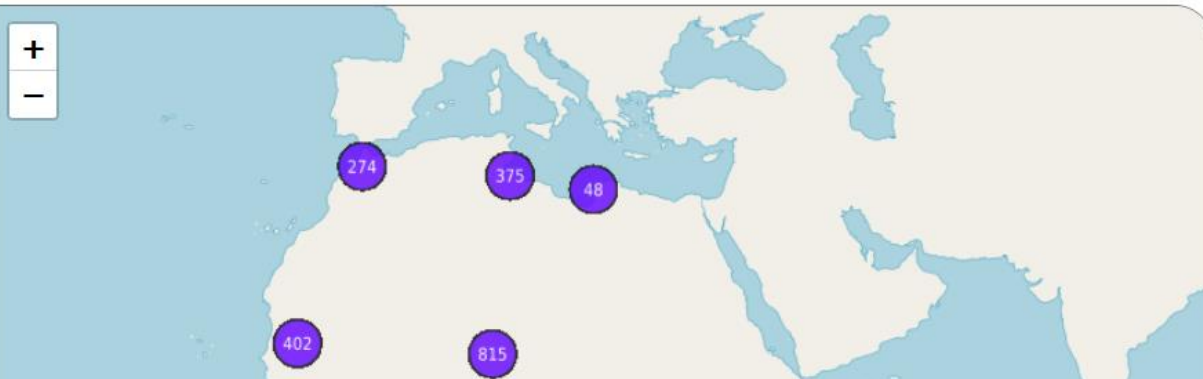


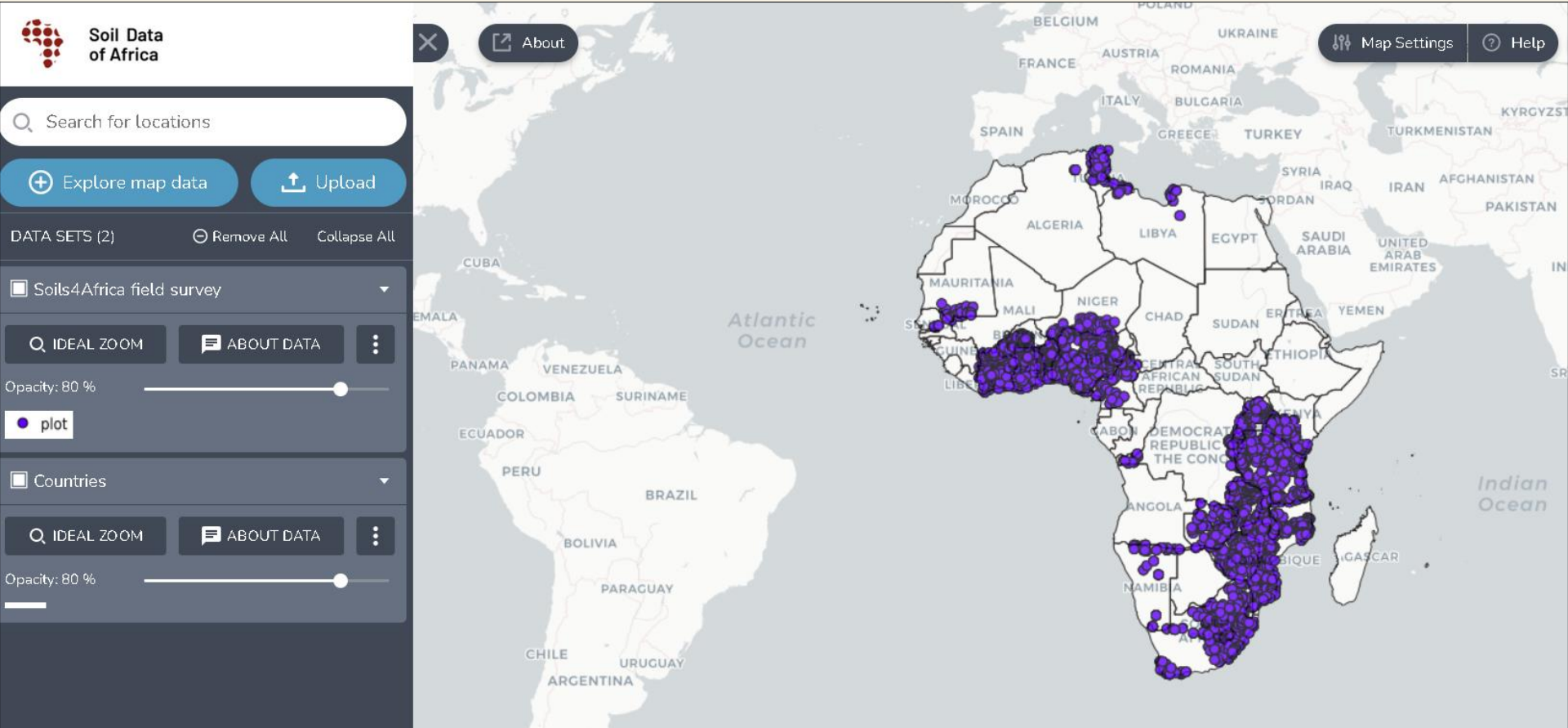
Soil Data of Africa

Continent-wide soil data and soil information relevant for sustainable intensification of agriculture in Africa.


[Read more](#)

Map Viewer

[+ Explore map data](#)[↓ Download data](#)



Outputs | Outcomes

Soil Data of Africa

Map ViewerDashboardData CatalogueDocs & Media

Home / Catalogue

Geospatial data of Africa

This catalogue is part of the Africa soil information system that was developed under the Solis4Africa project. In this catalogue you can explore and discover continental-level geospatial datasets relevant for agricultural and environmental development in Africa.


[Discover Catalogue](#)

Search in the Catalogue

Search

Recent Changes

Farming systems 1 2022-10-25	Agricultural Land Classes of Africa (version 2) 2023-03-01	Africa Topographic Position 2023-03-01	Africa Isobioclimates 2023-03-01	Africa Surface Lithology 2023-03-01
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Soil Data of Africa

Map ViewerDashboardData CatalogueDocs & MediaTech CornerAbout

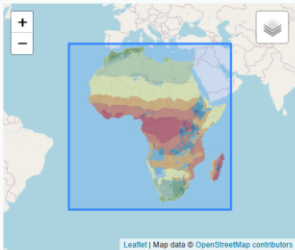
Home / Catalogue / List / Agro-ecological Zones of Africa

JSONXML

Agro-ecological Zones of Africa

Agroecological zones (AEZs) are geographical areas exhibiting similar climatic conditions that determine their ability to support rainfed agriculture. At a regional scale, AEZs are influenced by latitude, elevation, and temperature, as well as seasonality, and rainfall amounts and distribution during the growing season. The resulting AEZ classifications for Africa have three dimensions major climate zone (tropics or subtropics), moisture zones (water availability) and highland/lowland (warm or cool based on elevation). This layer is a GeoTiff version of the AEZ map developed by IFPRI that is distributed via the Harvard Dataserve (<https://doi.org/10.7910/DVN/HJYYTI>)

[Suitability](#)[Agroecological zones](#)[Ecosystem](#)[agriculture](#)[Agro-Ecological Zones](#)[climate](#)[temperature](#)[rainfall](#)[altitude](#)[agroecology](#)



Leaflet | Map data © OpenStreetMap contributors

[Open 004_afr-aez_09 in map](#)

Contacts

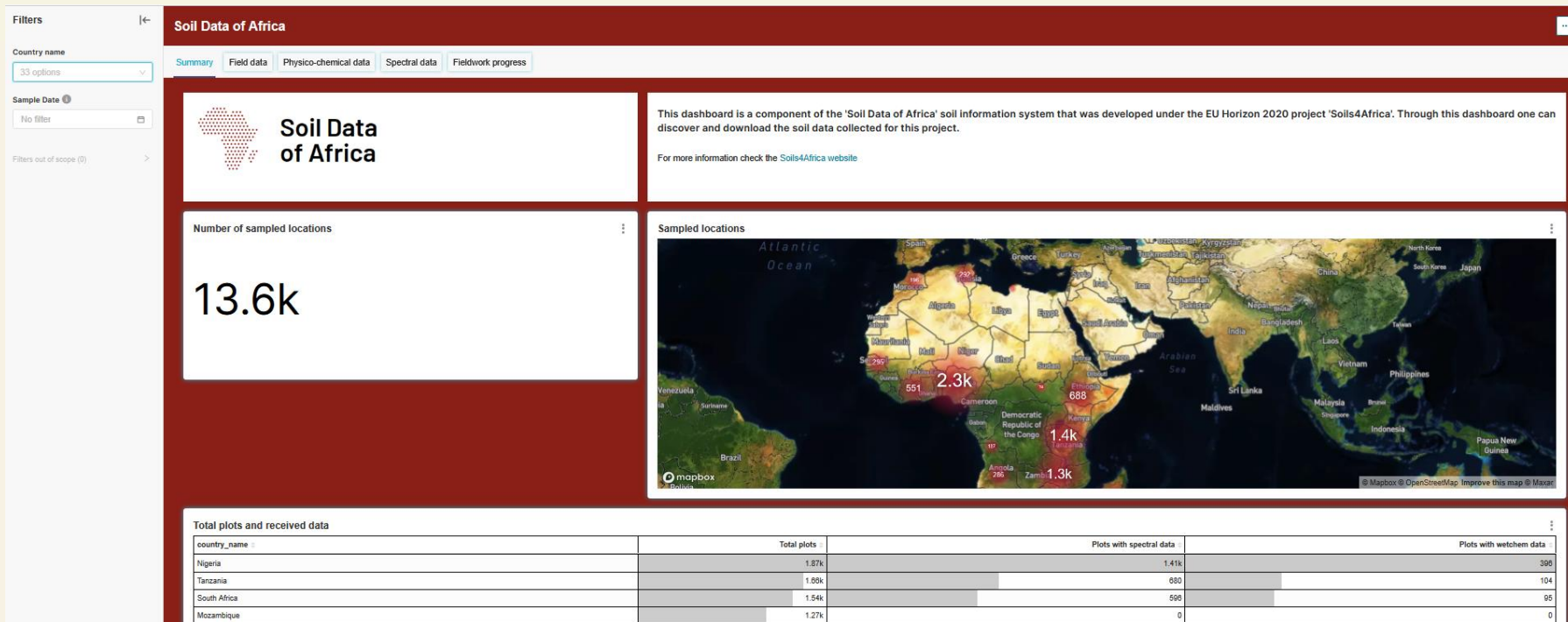
Sebastian, Kate. International Food Policy Research Institute (IFPRI)
Role: author

Links

https://files.africasis.isric.org/aez/004_afr-aez_09.tif
<https://africasis.isric.org/wws/aez?service=WMS&request=GetCapabilities>



Outputs | Outcomes



Outputs | Outcomes

Soil Data of Africa

SummaryField dataPhysico-chemical dataSpectral dataFieldwork progress

Download field data (all countries)

Properties	CSV format	Shapefile format	Geopackage format
All	Download csv	Download shapefile	Download geopackage
Soil surface (plots)	Download csv	Download shapefile	Download geopackage
Terrain (plots)	Download csv	Download shapefile	Download geopackage
Land cover use (plots)	Download csv	Download shapefile	Download geopackage
Land management (plots)	Download csv	Download shapefile	Download geopackage
Grazing (plots)	Download csv	Download shapefile	Download geopackage

Check documentation on <https://africasis.isric.org>

Explore field data (you can apply filters in this section)

Plot field data

Show 50 entries

plot_code	country_name	obstruct_tyr	depth_restriction_cause	sign_of_erosion	rill_erosion	gully_erosion	mass_erosion	stone_pedestals	stone_pavement
NG018-7-1	Nigeria	N/A	N/A	Yes	Yes	No	No	No	No

Filters

Country name

Cote d'Ivoire

Sample Data

No filter

Filters out of scope (0)

APPLY FILTERS




Soil Data of Africa

SummaryField dataPhysico-chemical dataSpectral dataFieldwork progress

plot_code	country_name	obstruct_tyr	depth_restriction_cause	sign_of_erosion	rill_erosion	gully_erosion	mass_erosion	stone_pedestals	stone_pavement	soil_surface_area	soil_surface_area_unit	soil_surface_area_value	soil_surface_area_value_unit	soil_surface_area_value_value	soil_surface_area_value_unit_value	soil_surface_area_value_value_value	soil_surface_area_value_value_value_value
CG070-2-1	Cote d'Ivoire	30	Dominant coarse fragments (stones, gravel)	No	N/A	N/A	N/A	N/A	N/A	No	No	Common (5-10%)	Stones (5-20 cm)	Level land (0-10%)	Very g (0-10%)	Very g (0-10%)	Very g (0-10%)


Plots and respective photos

Show 10 entries

plot_code	country_name	horizontal_down_photo	horizontal_up_photo	vertical_photo
CG004-1	Cote d'Ivoire			



Outputs | Outcomes

Soil Data of Africa

Map ViewerDashboardData Catalogue

DocumentsProceduresVideos


Procedures and Protocols

This page list the standard operating procedures, guidelines and protocols developed and used by Soils4Africa project for continental soil monitoring and assessment, as well as several other relevant resources for continental-level soil survey in Africa

Guidance for Fieldwork+

Guidance for Laboratory Analysis+

Protocol for Field Survey+

Soil Data of Africa

Map ViewerDashboardData CatalogueDocs & Media


DocumentsProceduresVideos


Videos


The [Soils for Africa](#) project produced a series of videos, published on YouTube, on various topics including guides and protocols for field survey and field survey management in different languages. A selection of these videos can be accessed from this page. For an overview of all videos, visit the [Soils4Africa YouTube channel](#).

Soils4Africa Field Protocol

This playlist contains ten videos documenting the field protocols for soil sampling and observations, which guided the fieldwork in the Soils4Africa project. Videos are available in English, French and Arabic.

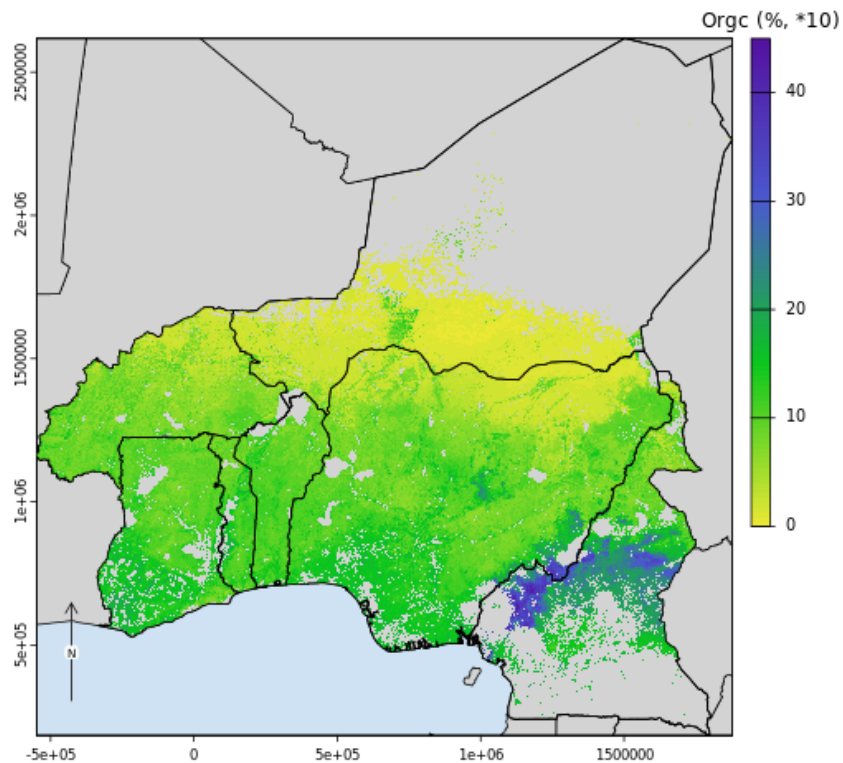

Field protocol (English)


Field protocol (French)

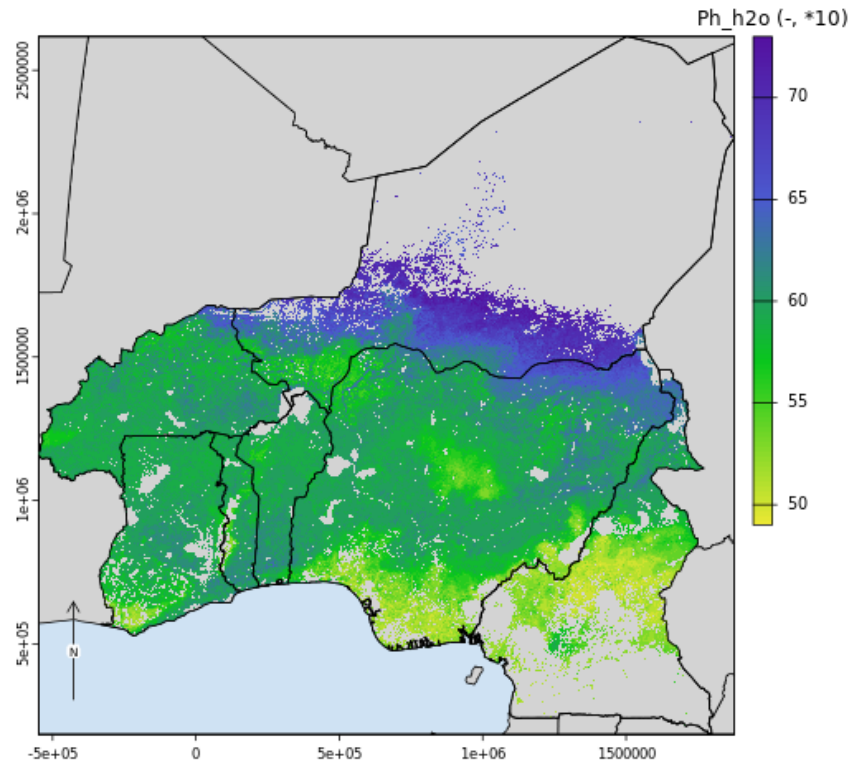

Field protocol (Arabic)

Outputs | Outcomes

Soil organic carbon (0-20 cm)



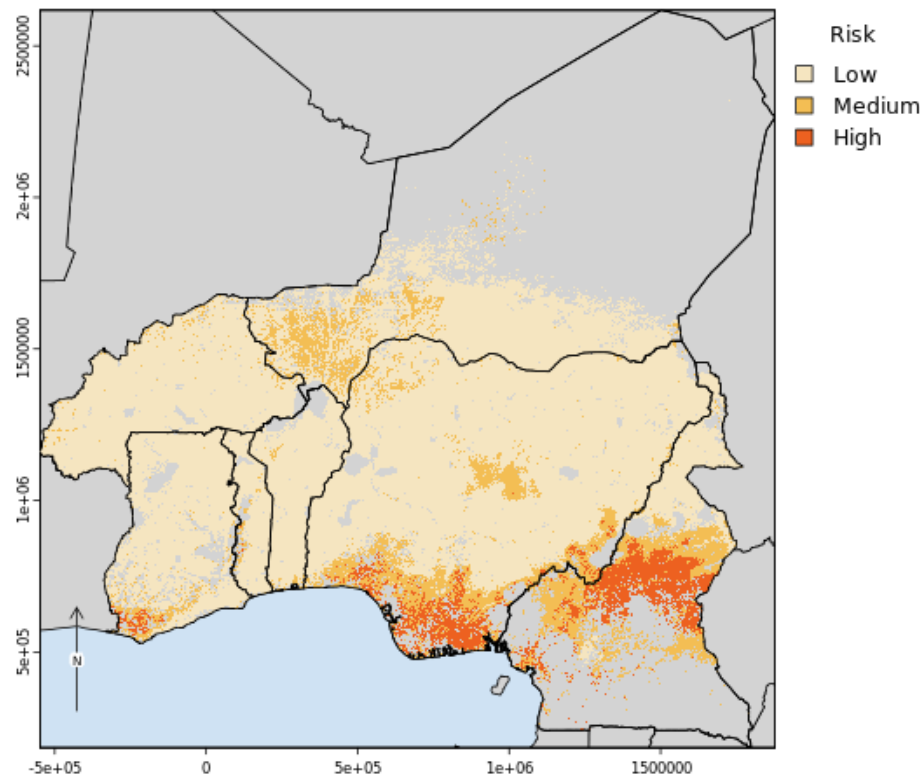
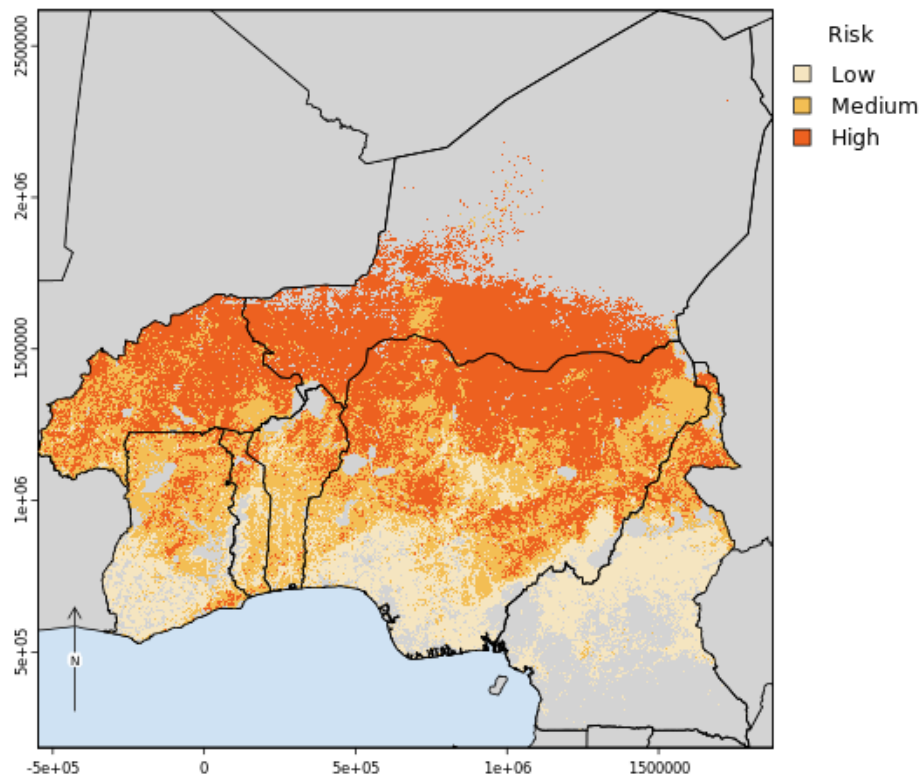
pH (0-20 cm)



Outputs | Outcomes

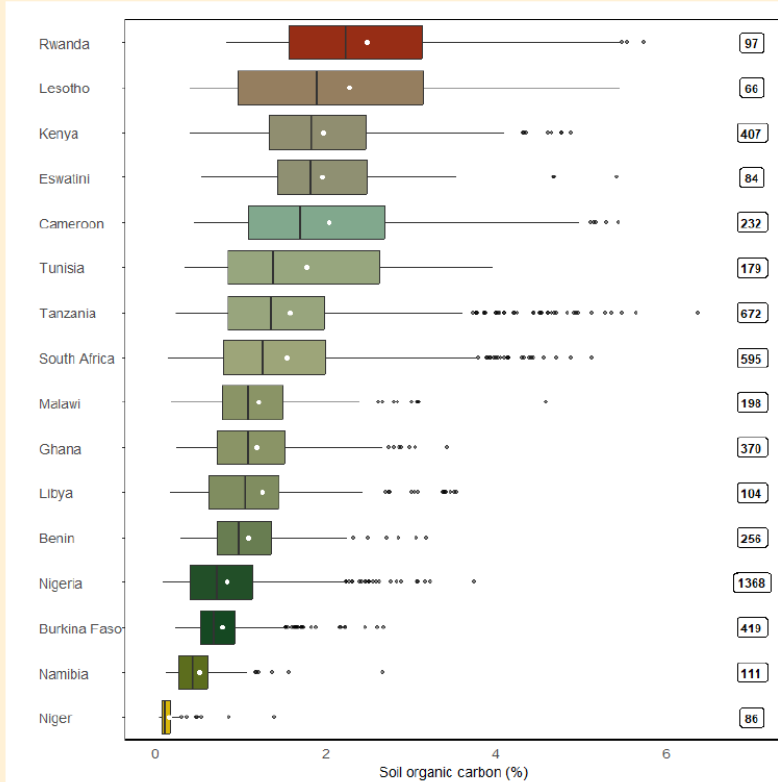
Risk of soil organic carbon < 1%

Risk of pH < 5.5

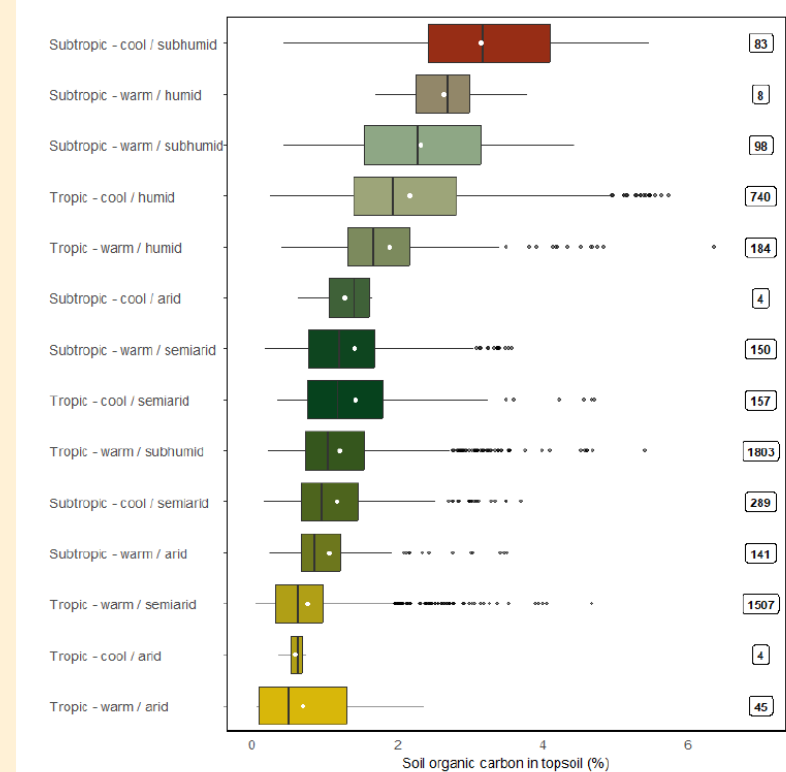


Outputs | Outcomes

SOIL ORGANIC CARBON

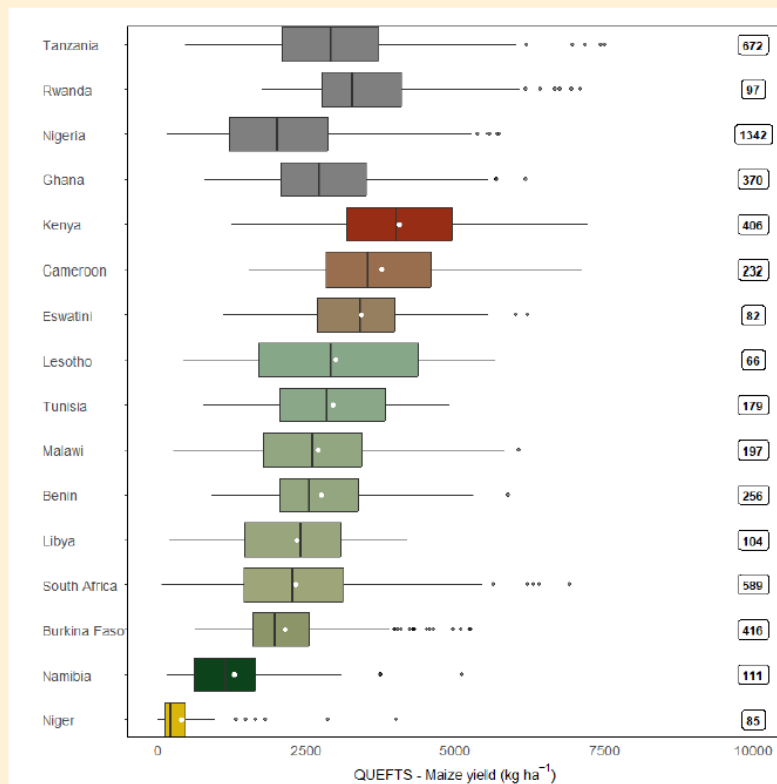


SOIL ORGANIC CARBON

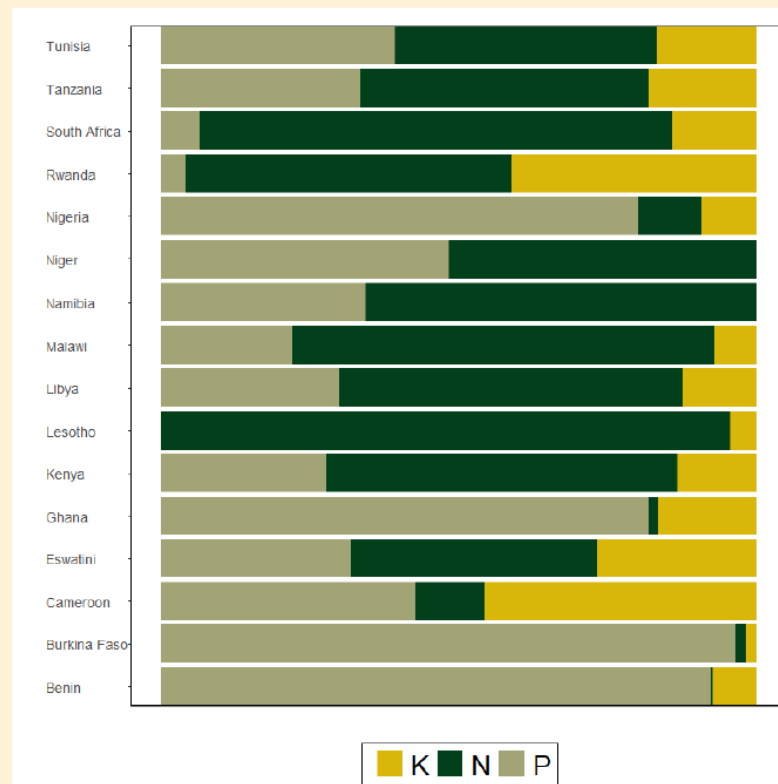


MACRONUTRIENTS: INTERPRETATION WITH QUEFTS (MAIZE)

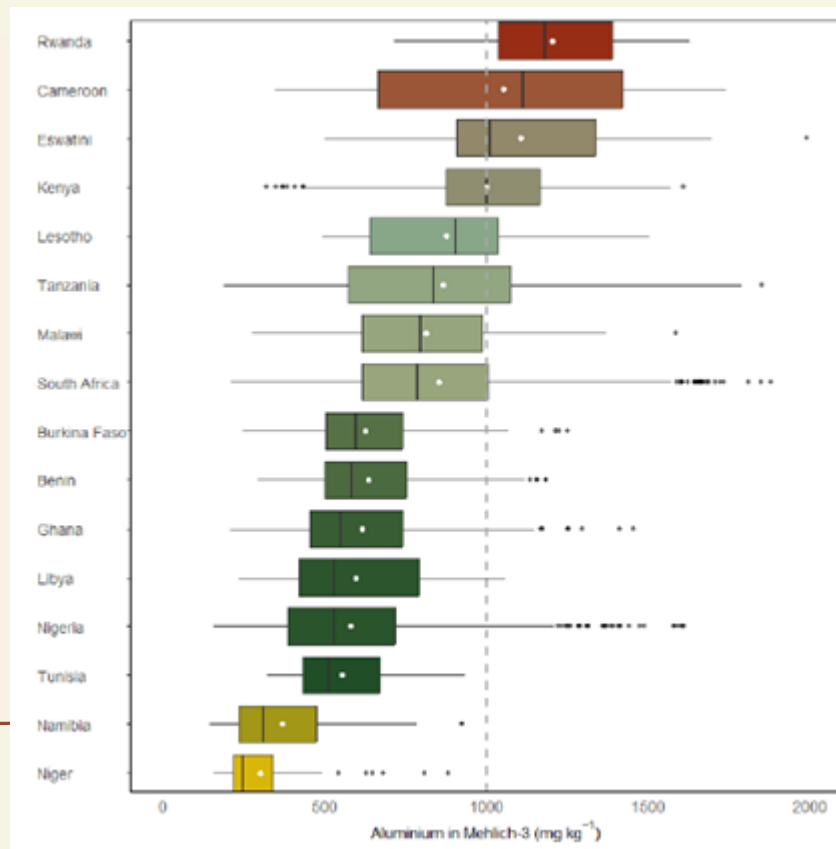
YIELD



MOST LIMITING NUTRIENT

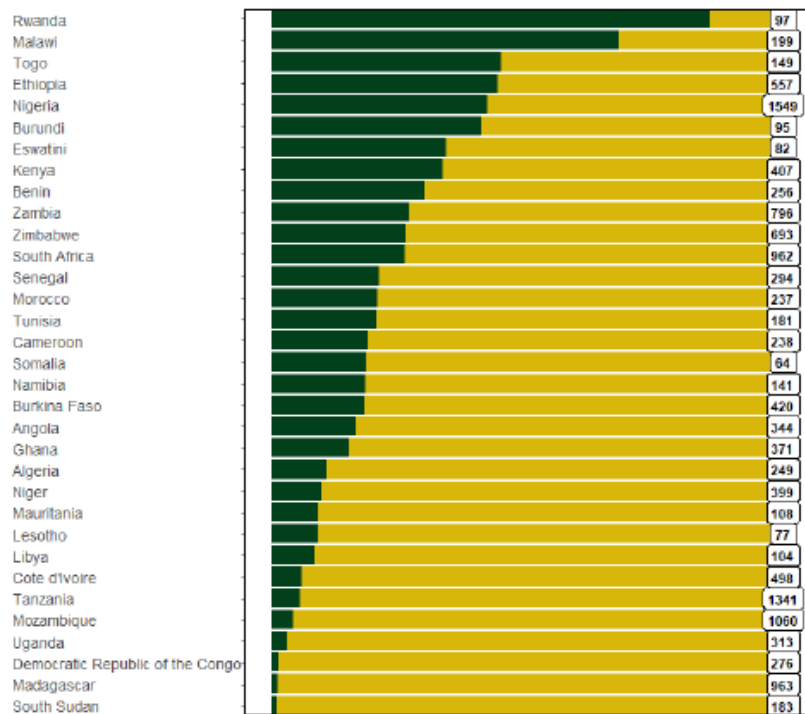


AGRICULTURAL CONSTRAINTS



INPUTS

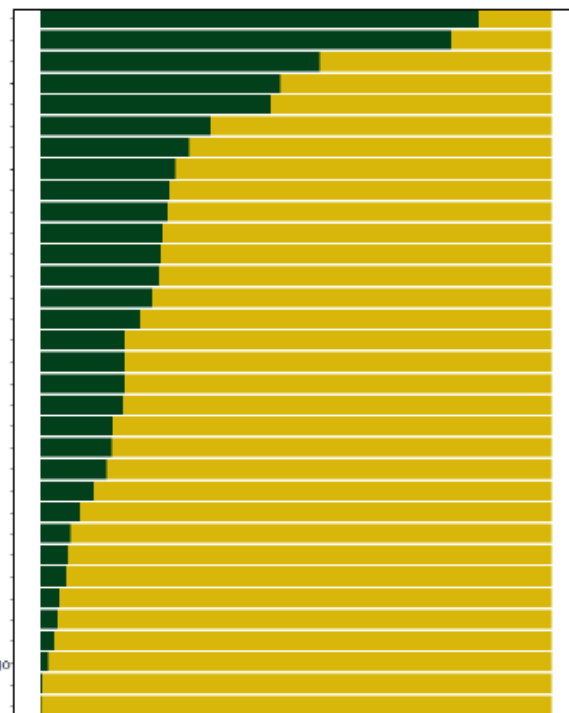
Inorganic fertilizers



No Yes

Animal Manure

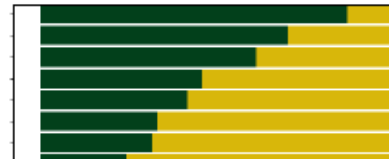
Rwanda
Niger
Burundi
Togo
Senegal
Nigeria
Malawi
Kenya
Burkina Faso
Somalia
Angola
Morocco
Tunisia
Eswatini
South Sudan
Mauritania
Uganda
Zimbabwe
Ethiopia
Lesotho
Tanzania
Cameroon
Libya
Madagascar
Zambia
Cote d'Ivoire
Algeria
South Africa
Namibia
Benin
Democratic Republic of the Congo
Mozambique
Ghana



No Yes

Green Manure

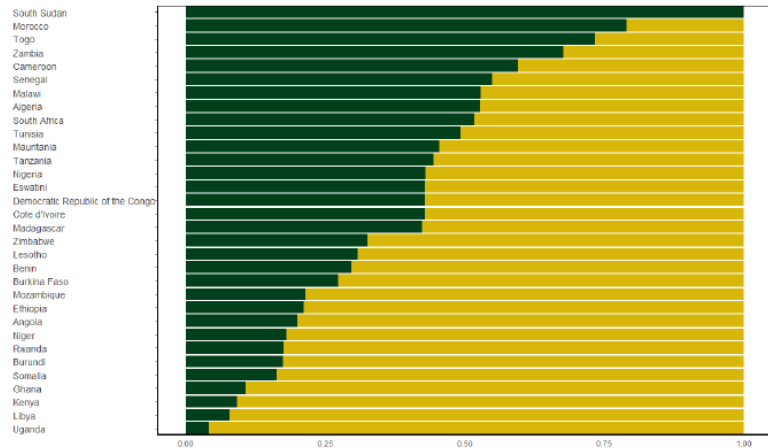
Burundi
Rwanda
Angola
Malawi
Togo
South Sudan
Uganda



EROSION

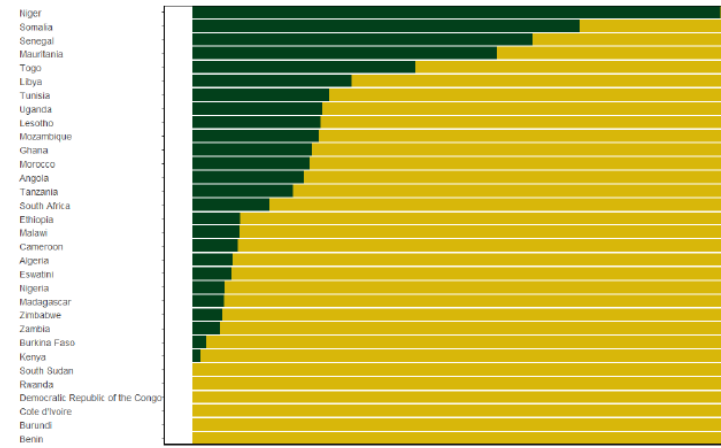
If erosion is present → what is the dominant type of erosion

Signs of gully erosion when erosion is present (%)



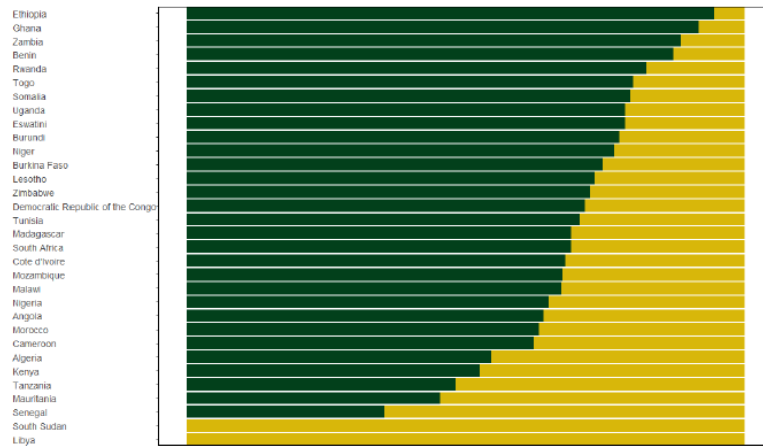
■ No ■ Yes

Signs of wind erosion when erosion is present (%)



■ No ■ Yes

Signs of rill erosion when erosion is present (%)



Policy relevance

- In order to scale agro-ecology **soil conditions need to be taken into account**
- **A soil information system is instrumental** for informed decision making
- Soils4Africa SIS is a continental SIS **for continental and regional** analysis and policy development
- For (sub-)national analysis, policy advice and local advisory, **more detailed SISs need to be developed**
- **S4A methodologies can be used** for this purpose
- Follow-up project: **Africa Union Soil Observatory**

