



# Updated WebGIS integrated in the Global Geo-informatics Options by Contexts (GeOCC) Tool

Final Workshop “Sustainable Land Management to Achieve Land Degradation Neutrality: Options-by-Context Approach and Tools”

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Tunis, Tunisia

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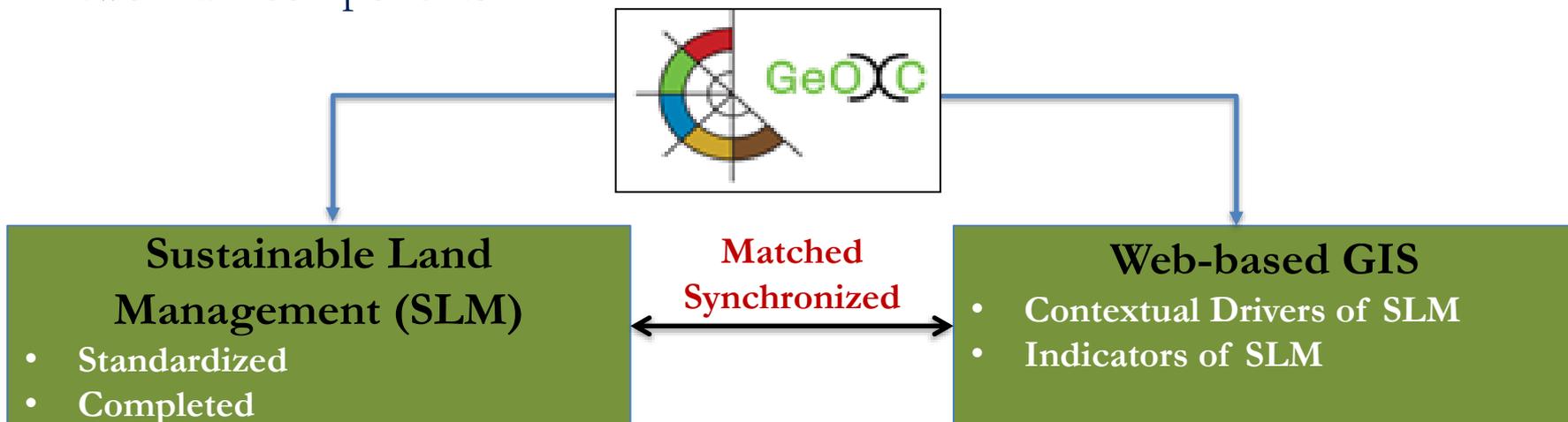
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[Enrico Bonaiuti \(ICARDA\)](#)

[Claudio Zucca \(ICARDA\)](#)



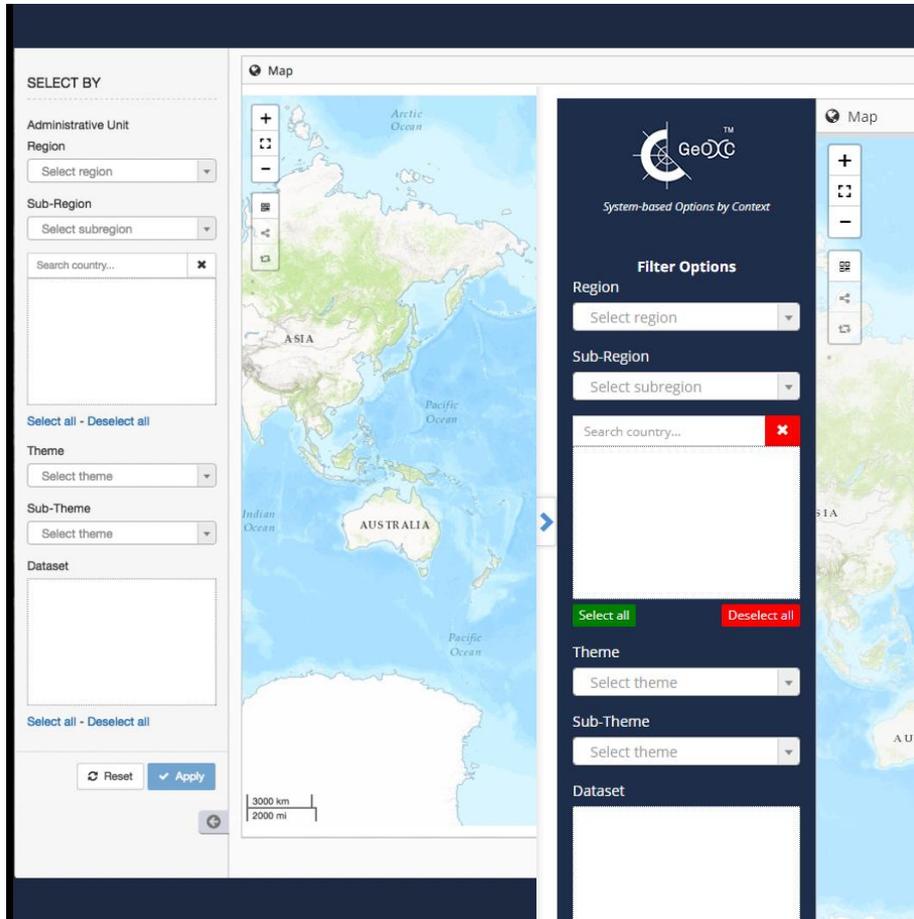
- Global Geo-informatics Option by Context (GeOC) tool, a system-based analysis of options by context for better investment in sustainable agriculture development, has two main components:



- GeOC components are currently under enhancement process in order to provide more robust and stable tool for better contextualised analysis of SLM options
- In this context, the WebGIS component has been enhanced since the first workshop (14-17 March 2017). The major outcomes from these enhancements are the following:

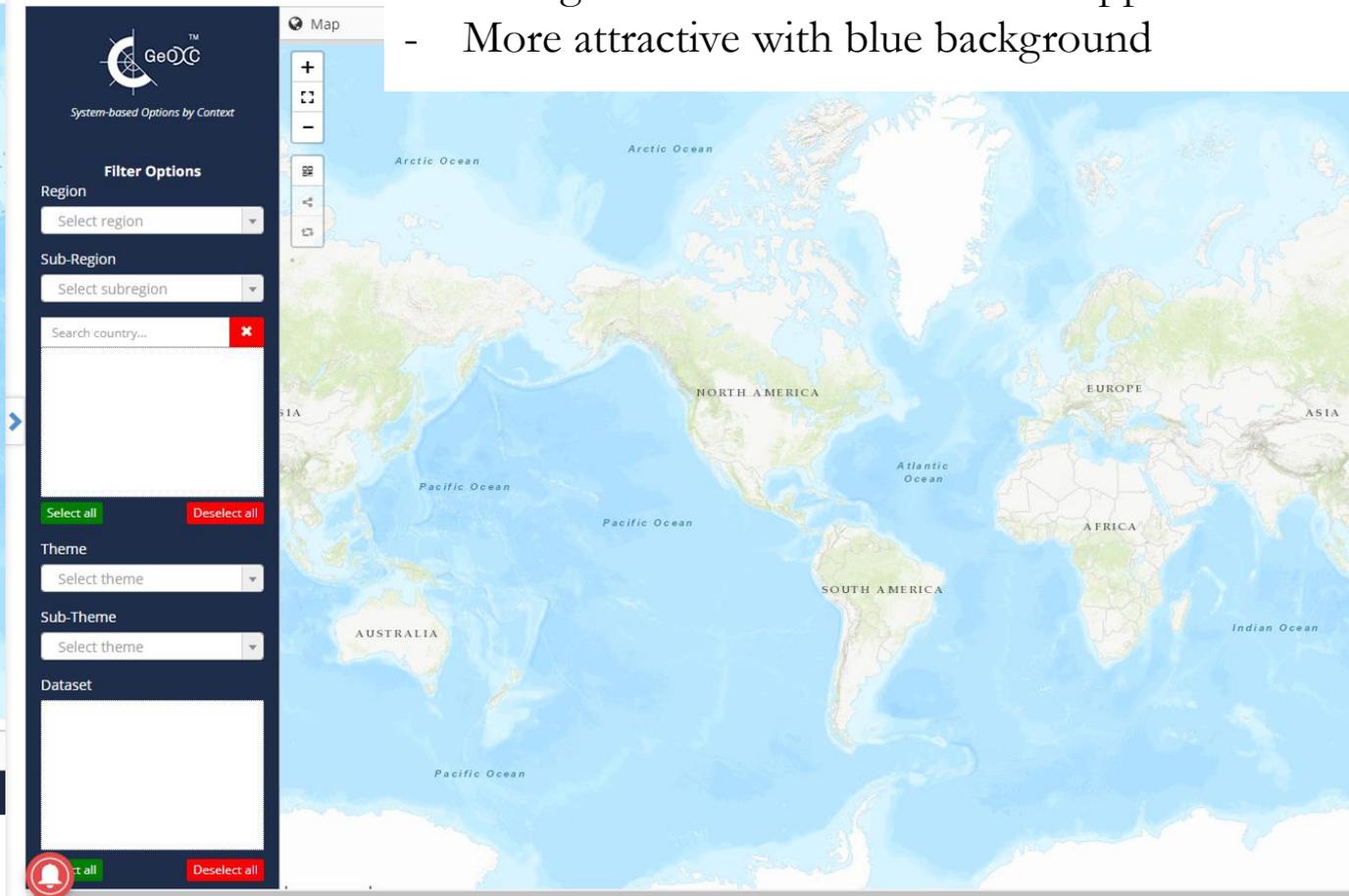
# 1. Updates in the system appearance

## Old interface of GeoC WebGIS

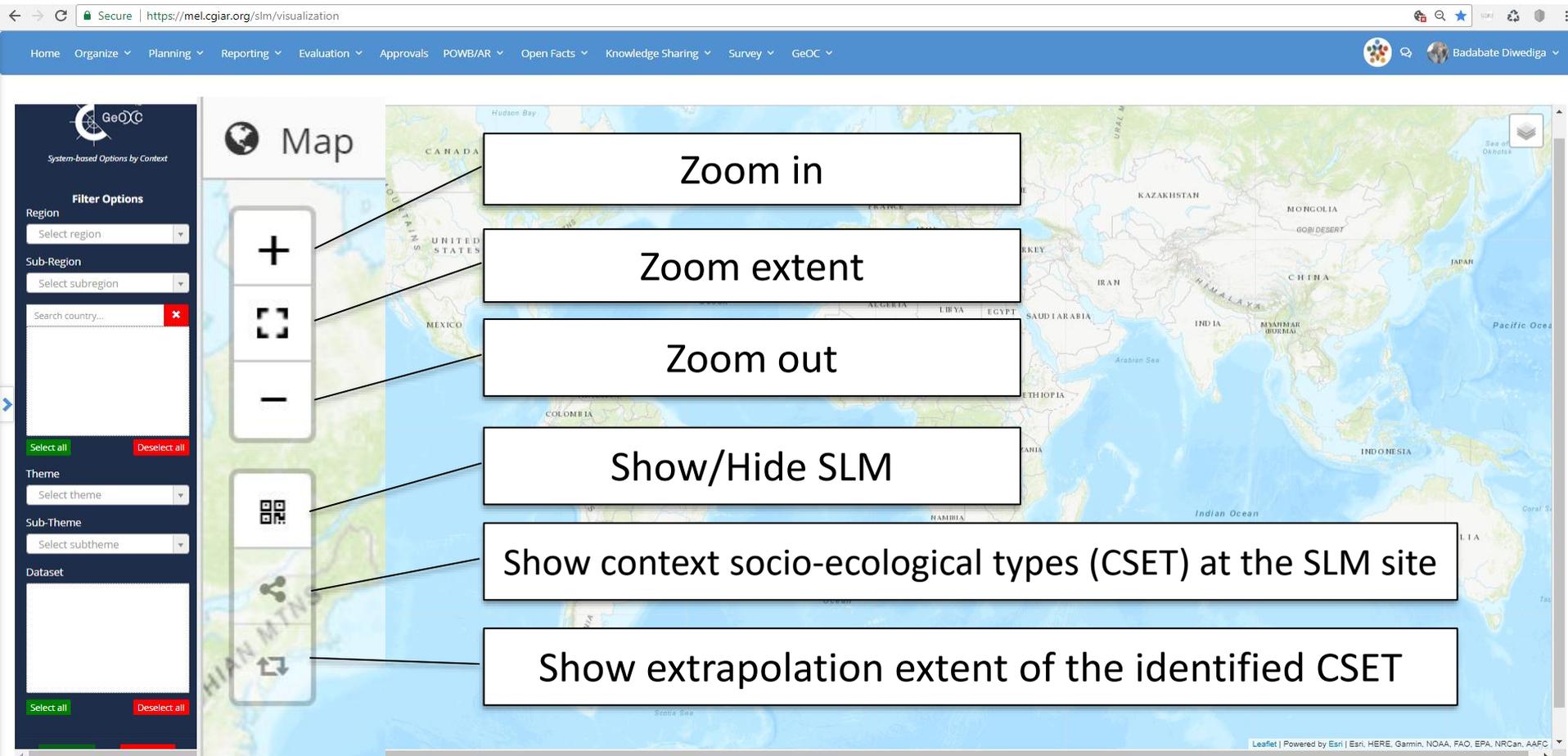


## New interface of GeoC WebGIS

- Addition of GeOC logo
- Text and guidance modifications
- Changes in features and function appearance
- More attractive with blue background



## 2. Map tools and functions



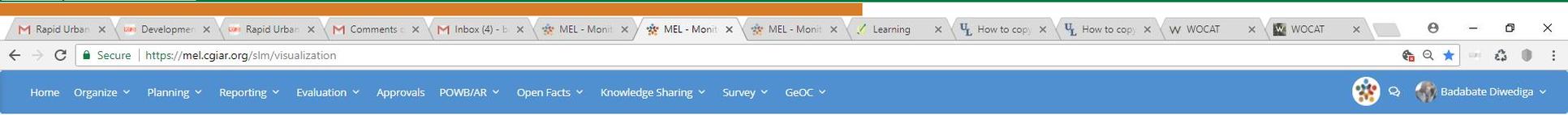
The screenshot displays the GeOXC web application interface. On the left is a dark sidebar with filter options for Region, Sub-Region, Theme, Sub-Theme, and Dataset. The main area shows a world map with several callout boxes pointing to specific map controls:

- Zoom in**: Points to the plus sign (+) button.
- Zoom extent**: Points to the square with a dashed border and four arrows icon.
- Zoom out**: Points to the minus sign (-) button.
- Show/Hide SLM**: Points to the 2x2 grid icon.
- Show context socio-ecological types (CSET) at the SLM site**: Points to the share icon.
- Show extrapolation extent of the identified CSET**: Points to the square with a dashed border and four arrows icon.

The top navigation bar includes menu items like Home, Organize, Planning, Reporting, Evaluation, Approvals, POWB/AR, Open Facts, Knowledge Sharing, Survey, and GeOC. The user profile 'Badabate Diwediga' is visible in the top right.



# 2. Map tools and functions



**Filter Options**

Region: Africa

Sub-Region: Northern Africa

Search country...

Algeria  
 Egypt  
 Libya  
 Morocco  
 Sudan  
 Tunisia

Theme: Context/Driver's Database

Sub-Theme: National economic devel...

Dataset:  GDP-CAP,  GDP-CAP-GRW,  AGRI-POVERTY

Apply Reset

Map

A tool for better investment decisions in agriculture and rural development

See Selected raster layers

See Legends of selected rasters

Draw a polygon

Draw a square/rectangle

Select a point

Show filter

Clear layer mask

Download raster data





# Defining an area of interest: based on administrative units

Region

Sub-region

Country

Province or  
Governorate

District (if any)



System-based Options by Context

Filter Options

Region

Select region

- Africa
- Americas
- Asia
- Europe
- Oceania

Select all

Deselect all



System-based Options by Context

Filter Options

Region

Africa

Sub-Region

Select subregion

- Eastern Africa
- Middle Africa
- Northern Africa
- Southern Africa
- Western Africa

Select all

Deselect all



System-based Options by Context

Filter Options

Region

Africa

Sub-Region

Northern Africa

Search country...

- Algeria
- Egypt
- Libya
- Morocco
- Sudan
- Tunisia
- Western Sahara

Select all

Deselect all



System-based Options by Context

Filter Options

Region

Africa

Sub-Region

Northern Africa

Search country...

- Tunisia
  - Ariana
  - Béja
  - Ben Arous (Tunis Sud)
  - Bizerte
  - Gabès
  - Gafsa

Select all

Deselect all



System-based Options by Context

Filter Options

Region

Africa

Sub-Region

Northern Africa

Search country...

- Tunisia
  - Ariana
    - Raoued
    - Sebket Ariana
    - Sidi Thabet
    - Soukra
    - Ariana Médina

Select all

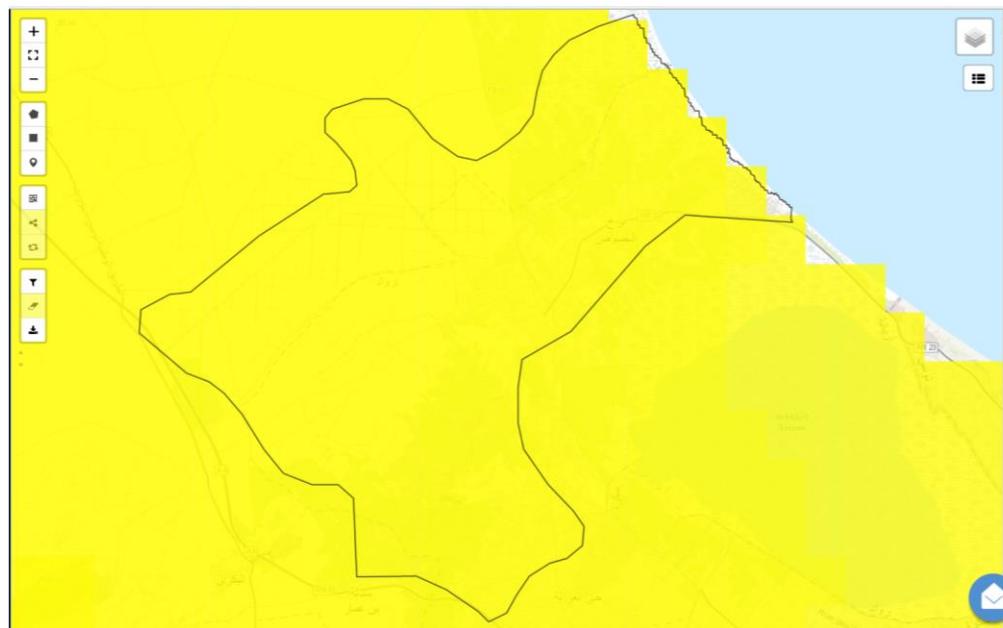
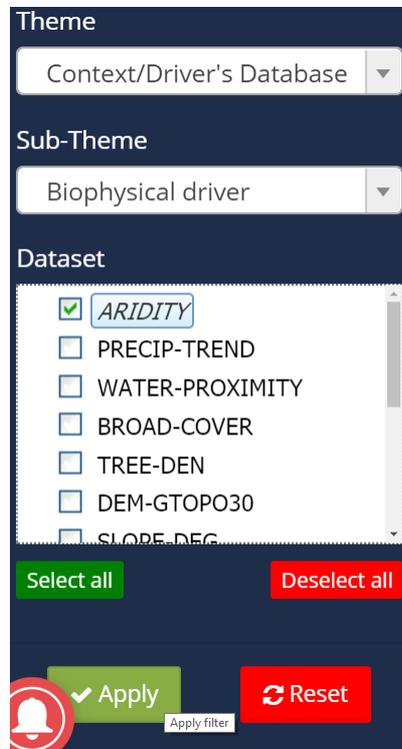
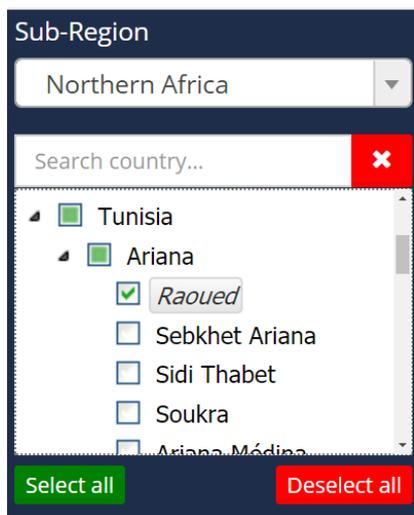
Deselect all



*Step 1: Select area of interest*

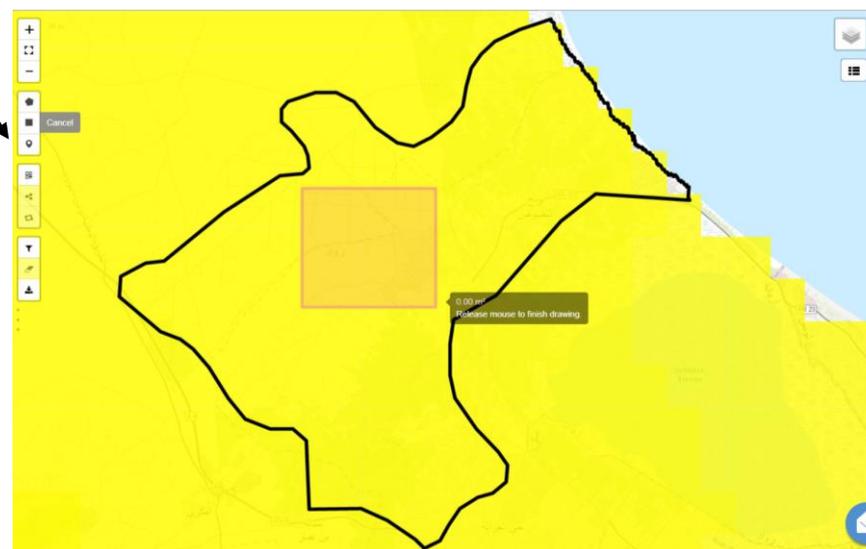
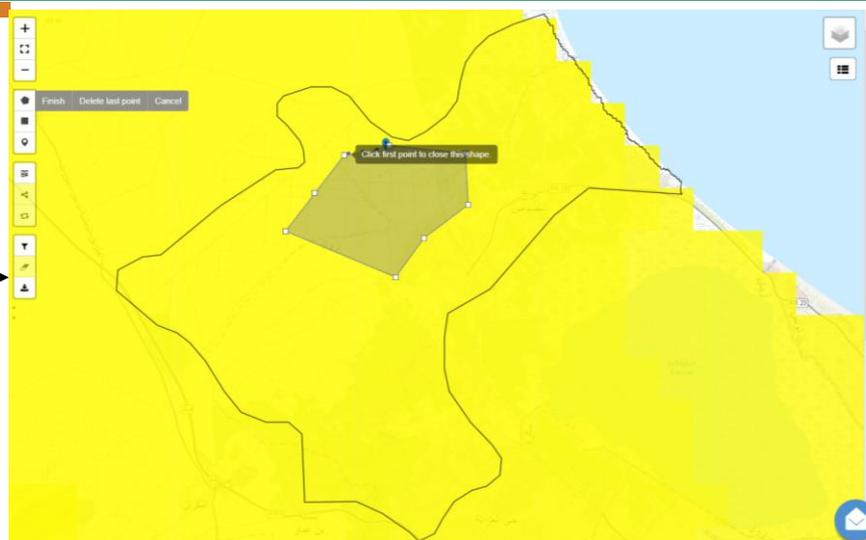
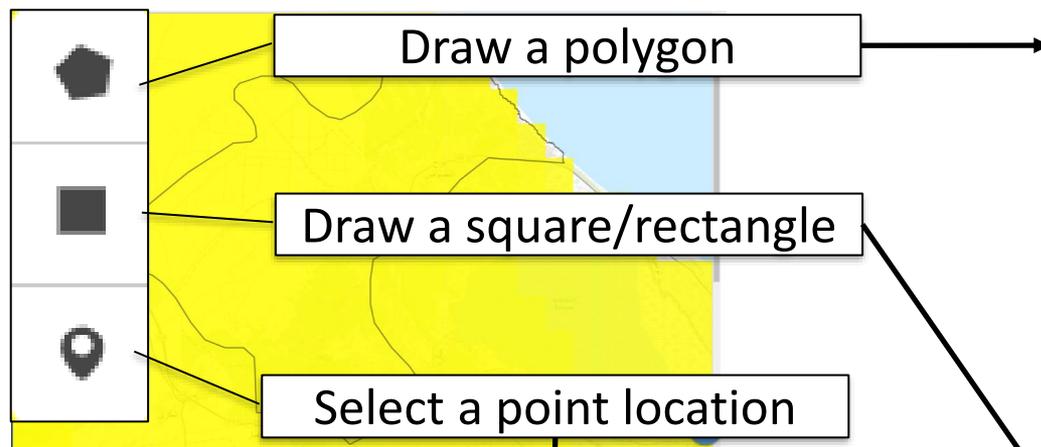
*Step 2: Select raster variable of interest*

*Step 3: Apply filter and zoom in to the area of interest*



*Step 4: Use the filtering buttons for defining area of interest (see next slide)*

Step 4: Use the filtering buttons for defining area of interest





# Filtering the variables the main category «Context/Drivers»

Theme

Select theme

Context/Driver's Database

Outcome-Impact Database

Sub-Themes

Variables

Sub-Theme

Select subtheme

Biophysical driver

Physical and institutional accessibility to land resources

Demographic dynamics and pressure

Socio-ecological contextual similarity

14

Sub-Theme

Biophysical driver

Sub-Theme

Biophysical driver

Dataset

- SQC1-NUTAVA
- SQC2-NUTRCAP
- SQC3-ROOTCOD
- SQC4-OXYGEN
- SQC5-SALT
- SQC6-TOXICITY
- SQC7-WORKCAP

Select all

Deselect all

Sub-Theme

Physical and institutional...

Biophysical driver

Physical and institutional accessibility to land resources

Demographic dynamics and pressure

Socio-ecological contextual similarity

04

Sub-Theme

Physical and institutional...

Dataset

- DIST-ROAD
- DIST-TOWN
- PROTECT-AREA
- TENURE-SEC

Select all

Deselect all

Sub-Theme

Demographic dynamics ...

Biophysical driver

Physical and institutional accessibility to land resources

Demographic dynamics and pressure

Socio-ecological contextual similarity

03

Sub-Theme

Demographic dynamics ...

Dataset

- POP-DEN2015
- POP-DEN-RURAL
- POP-CHANGE

Select all

Deselect all

Sub-Theme

Select subtheme

accessibility to land resources

Demographic dynamics and pressure

Socio-ecological contextual similarity

National economic development

03

Sub-Theme

Socio-ecological contex...

Dataset

- CSET-LE
- GLS-ASSELEN
- LSA-VACLAVIK

Select all

Deselect all

Sub-Theme

Select subtheme

accessibility to land resources

Demographic dynamics and pressure

Socio-ecological contextual similarity

National economic development

04

Sub-Theme

National economic devel...

Dataset

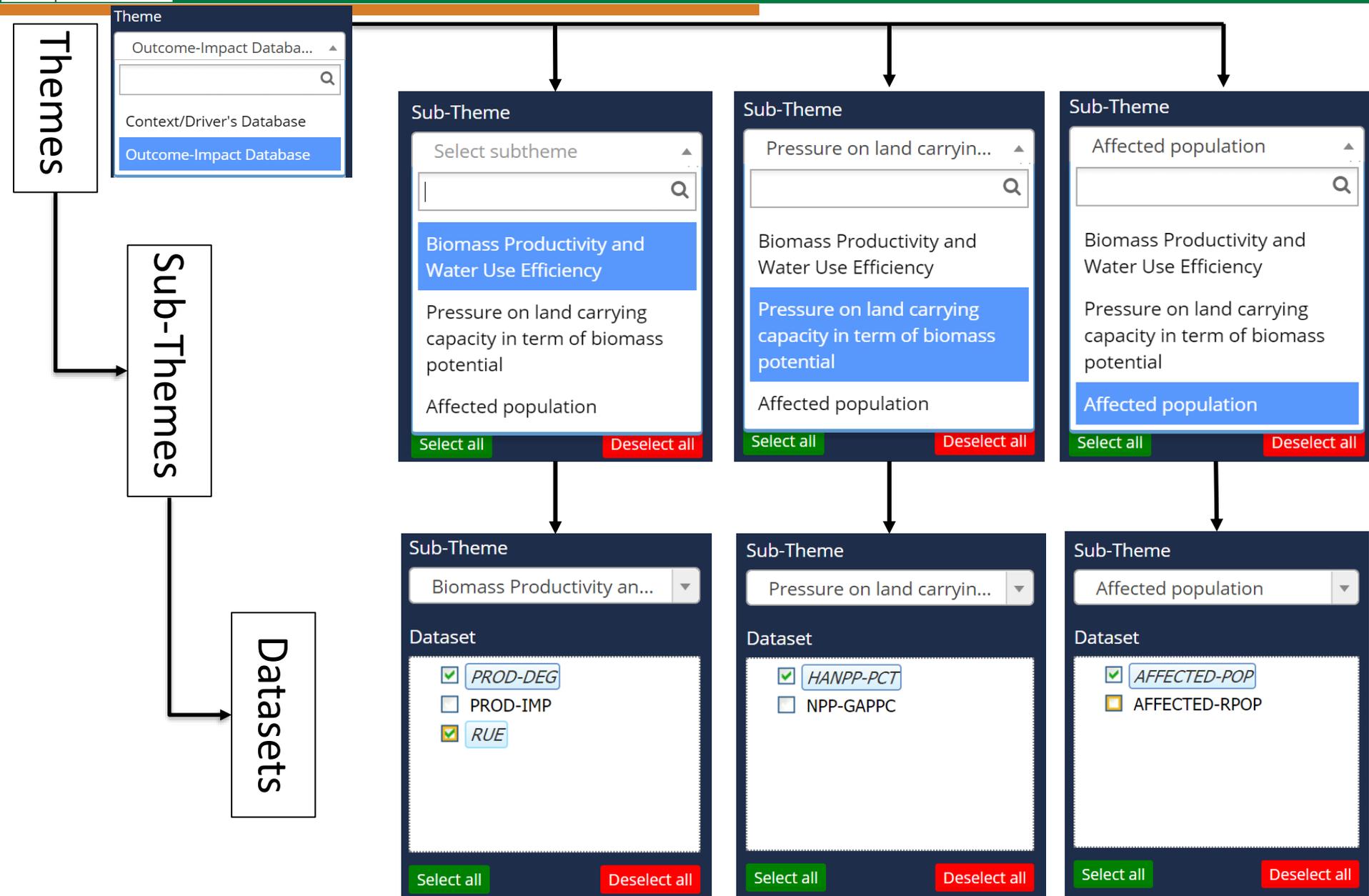
- GDPCAP
- GDPCAP-GRW
- AGRI-POVERTY
- FOOD-SEC

Select all

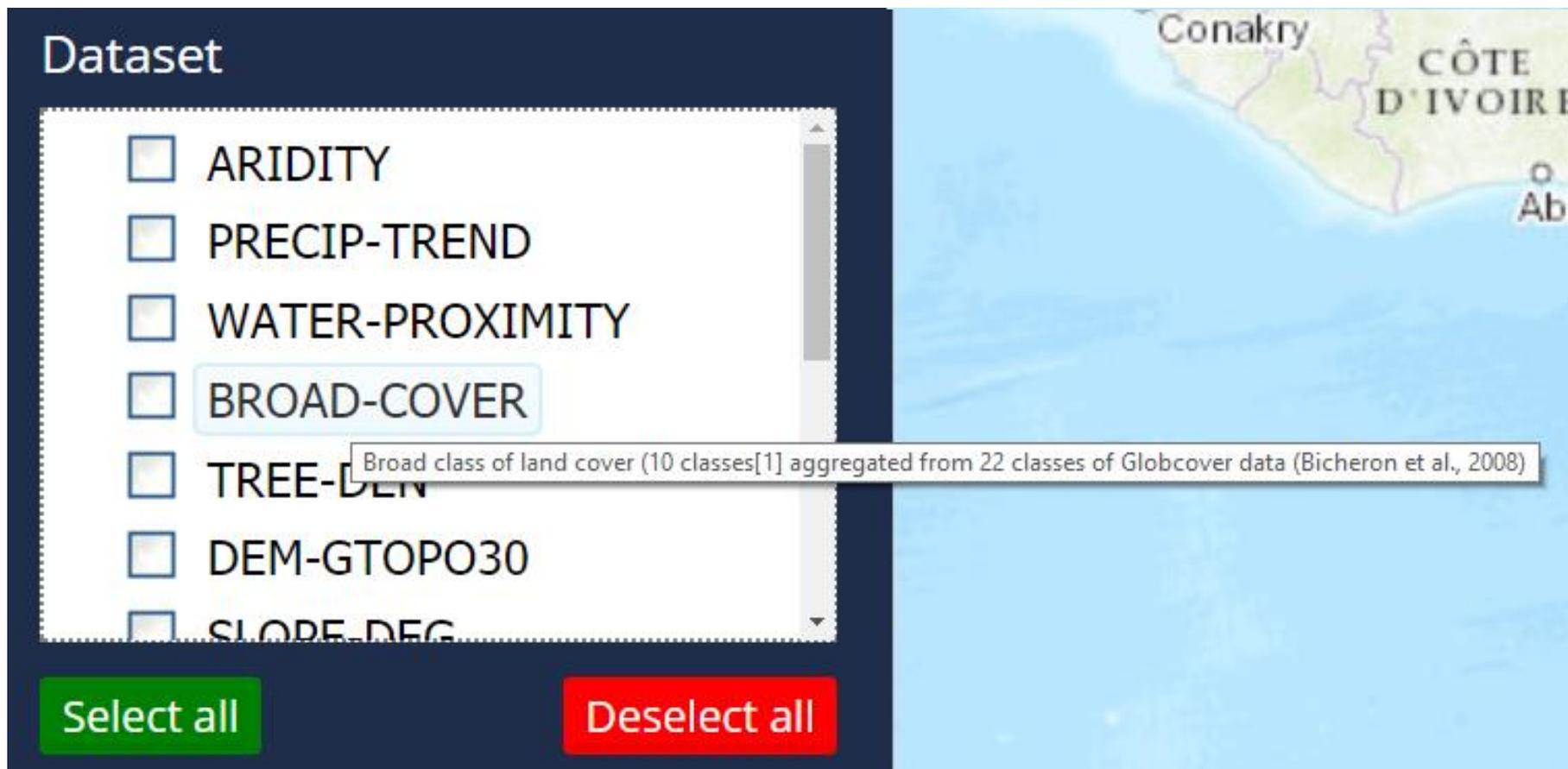
Deselect all



# Filtering the variables of the main category « Outcome-Impact »



The short definition of variable in the WebGIS can be viewed by hovering the mouse on the variable name in the dataset list.

A screenshot of a WebGIS interface. On the left, a dark blue panel titled "Dataset" contains a list of variables with checkboxes. The "BROAD-COVER" variable is highlighted with a light blue border. A tooltip box is positioned over the "BROAD-COVER" variable, displaying the text: "Broad class of land cover (10 classes[1] aggregated from 22 classes of Globcover data (Bicheron et al., 2008)". Below the list are two buttons: a green "Select all" button and a red "Deselect all" button. On the right, a map shows a portion of Côte d'Ivoire, with labels for "Conakry" and "Abi".

Dataset

- ARIDITY
- PRECIP-TREND
- WATER-PROXIMITY
- BROAD-COVER
- TREE-DEN
- DEM-GTOPO30
- SLOPE-DEG

Broad class of land cover (10 classes[1] aggregated from 22 classes of Globcover data (Bicheron et al., 2008))

Select all

Deselect all

Well synchronised and matched WebGIS from “GeOC visualisation” and the “SLM web form”

Administrative units at Region, Sub-region, Country, Province & District levels

WebGIS of GeOC visualisation

WebGIS in SLM web form

System-based Options by Context

**Filter Options**

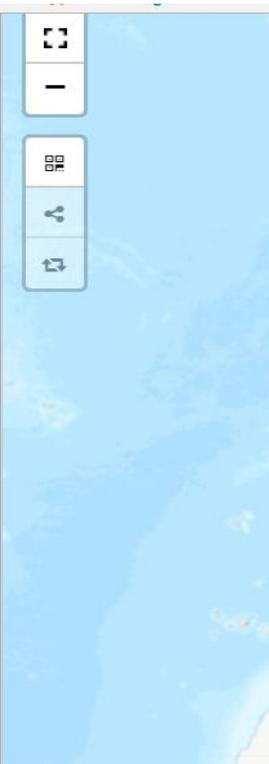
Region  
Africa

Sub-Region  
Northern Africa

Search country... ✕

- Sidi Bou Zid
- Zaghouan
  - Bir Mchergua
  - Fahs
  - Nadhour
  - Saouaf

Select all Deselect all



Fields with **RED ASTERISK \*** are mandatory

4.1 Regions/locations where the SLM technology has been applied

Web GIS 📍 Upload File 📄 URL 🔗

4.1.1 Region \* Africa ✕ ▼

4.1.2 Sub-Region \* Northern Africa ✕ ▼

4.1.3 Country \* WOCAT Tunisia ✕ ▼

4.1.4 Province WOCAT Zaghouan ✕ ▼

4.1.5 District WOCAT Please Select. ▲

4.1.6 Total area where the SLM technology was applied WOCAT Bir Mchergua

4.1.7 Area / Site ID WOCAT Fahs

Nadhour

Saouaf

Zaghouan

Zriba

4.2 Socio-ecological context / environment

IS dat

## - Proxies of land degradation/improvement in the areas with implemented SLMs

Column for SLM names with hyperlink to their metadata

Columns for indicators of SLM performance in the areas of interest

SLMs in the area of interest	Biomass productivity decline (PROD-DEG)	Biomass productivity improvement (PROD-IMP)	Rain use efficiency (RUE)	Human appropriation of NPP (HANPP-PCT)	Gap between actual and potential NPP	Affected population (AFFECTED-POP)	Affected rural population (AFFECTED-RPOP)
<a href="#">Area enclosure</a>							
<a href="#">Hill lake</a>							
<a href="#">Meskats</a>							
<a href="#">Manual terrace</a>							
...							



## - Indicators of On-site impacts of the SLM options

Column for SLM names with hyperlink to their metadata

Indicators of On-site impacts of SLM Options in the areas of interest

	Impact types						
SLMs in the area of interest	Socio-economic (Production)	Socio-economic (Water availability & quality)	Socio-economic (Income & costs)	Socio-cultural	Ecological (Water cycle & runoff)	Ecological (Soil & biodiversity)	Ecological (Climate & disaster risk reduction)
<a href="#">Area enclosure</a>							
<a href="#">Artesian well</a>							
<a href="#">Fixation of sand dunes</a>							
<a href="#">Cisterns</a>							
<a href="#">Desert wells</a>							

## - Indicators of Off-site impacts of the SLM options

Column for SLM names with hyperlink to their metadata

Indicators of Off-site impacts of SLM Options in the areas of interest

	Impact types						
SLMs in the area of interest	Water availability, quality and stable stream flow	Reduced downstream flooding	Reduced downstream siltation	Buffering/ filtering capacity (by soil, vegetation, wetlands)	Reduced wind transported sediments	Reduced damages on neighbour field and infrastructure	Reduced greenhouse gasses emissions
<a href="#">Area enclosure</a>							
<a href="#">Artesian well</a>							
<a href="#">Fixation of sand dunes</a>							
<a href="#">Cisterns</a>							
<a href="#">Desert wells</a>							

# Global Geo-informatics Options by Contexts



*A tool for better  
investment decisions  
in agriculture and  
rural development*



***Thank You!***