

# IDEAMAP (IDeAMapSudan) SUDAN

INTEGRATED DEPRIVATION AREA MAPPING SYSTEM FOR DISPLACEMENT DURABLE SOLUTIONS AND SOCIOECONOMIC RECONSTRUCTION IN KHARTOUM, SUDAN

## Public Lectures

FEBRUARY 2023



وزارة التنمية الاجتماعية  
MINISTRY OF SOCIAL DEVELOPMENT



African Population and  
Health Research Center



**nuffic**  
meet the world



# Poverty Mapping at the Scale of African Cities

Presenter: Dr. Monika Kuffer

**FEBRUARY 2023**

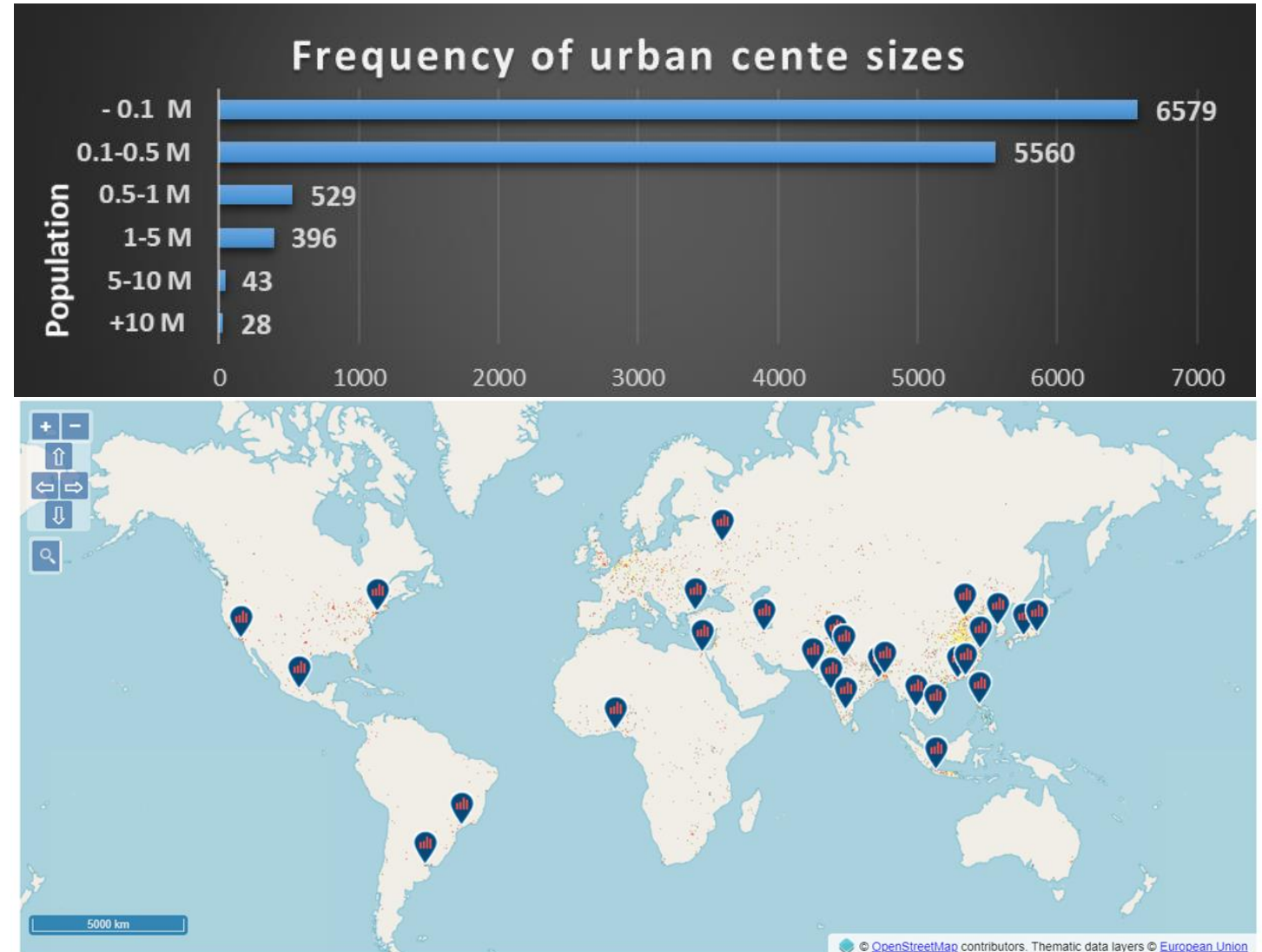
A satellite view of Earth from space, showing a large portion of the globe at night. The Earth's surface is covered with a dense network of orange and yellow lights, representing urban areas. The lights are concentrated in the central and lower portions of the frame, with some lighter patches indicating less densely populated areas. The top of the frame shows the dark, curved horizon of the Earth. In the upper left corner, a portion of a satellite or space station is visible, featuring a large, rectangular solar panel array with a grid-like structure. Another similar panel is visible in the lower left corner, angled towards the bottom left. The overall scene is a high-contrast image of the Earth's surface from a high-altitude perspective.

## COLLABORATION IN A GLOBAL COMMUNITY

*By 2050 the UN projected that a 68% of the  
world population will live in urban areas*

# Mega Urbanizations vs Secondary Cities

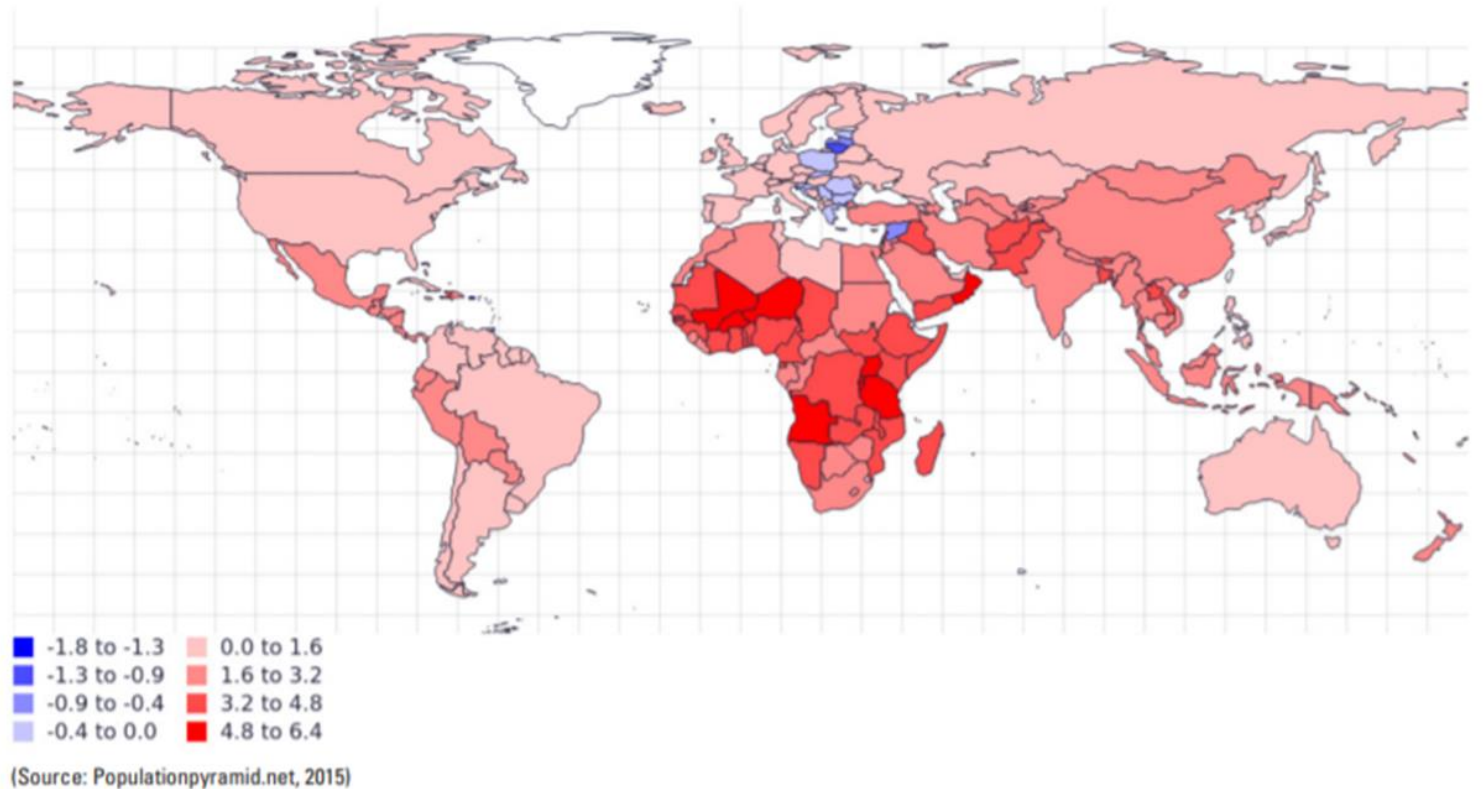
- ❑ Most EO researches (~90%) focus on the few mega cities (N~30)
- ❑ Urban centre database (JCR) defines + 13,000 urban centres
- ❑ Large knowledge gaps on urbanizations in secondary cities





# Urbanization in Secondary Cities

- ❑ “Secondary cities and towns are the epi-centres of urban growth in SSA” (UN-Habitat)
- ❑ High level of inequalities
- ❑ Limited knowledge on urban dynamics
- ❑ Increasing role of geo-spatial data for statistical organizations

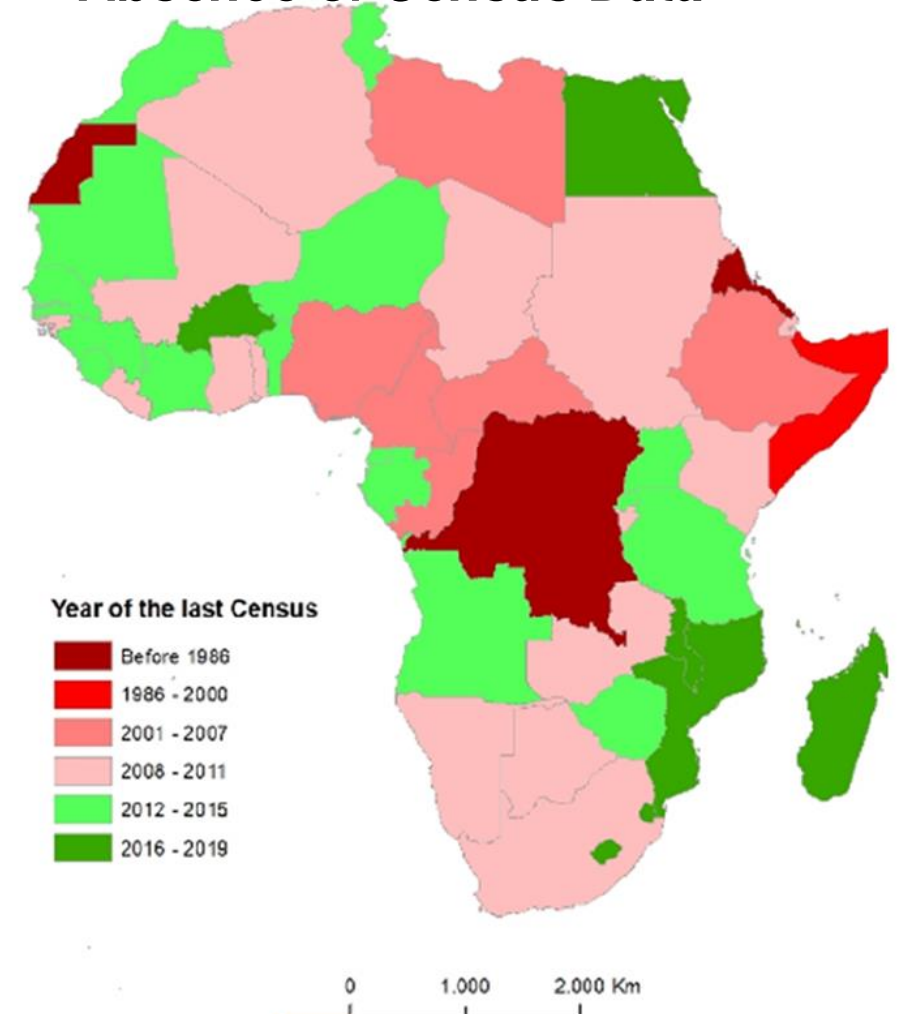


# Data Gaps in the Global South

## *Omission in EO-based Data*



## *Absence of Census Data*





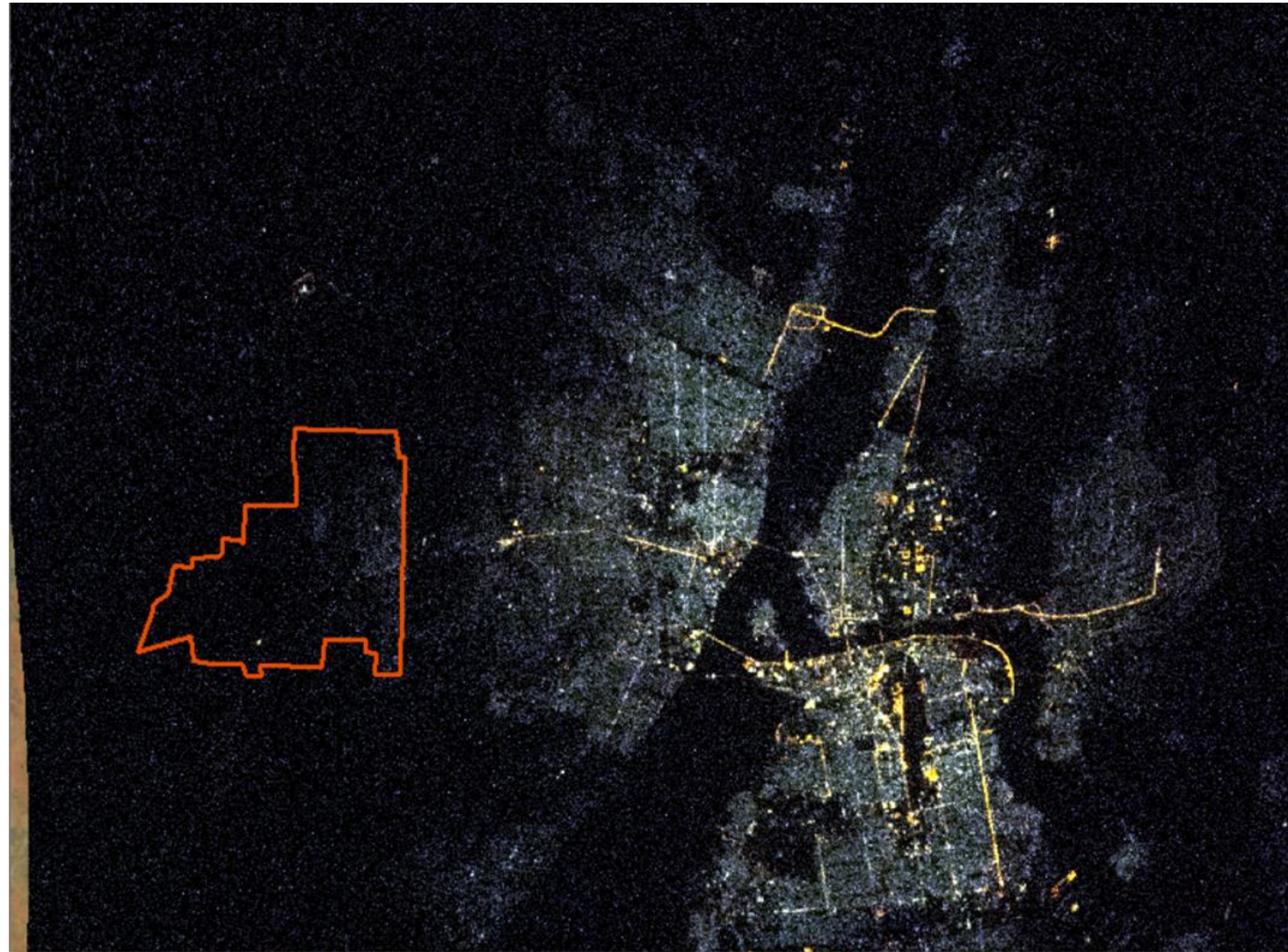
# Missing Infrastructure / Services



Khartoum 1985 - 2015



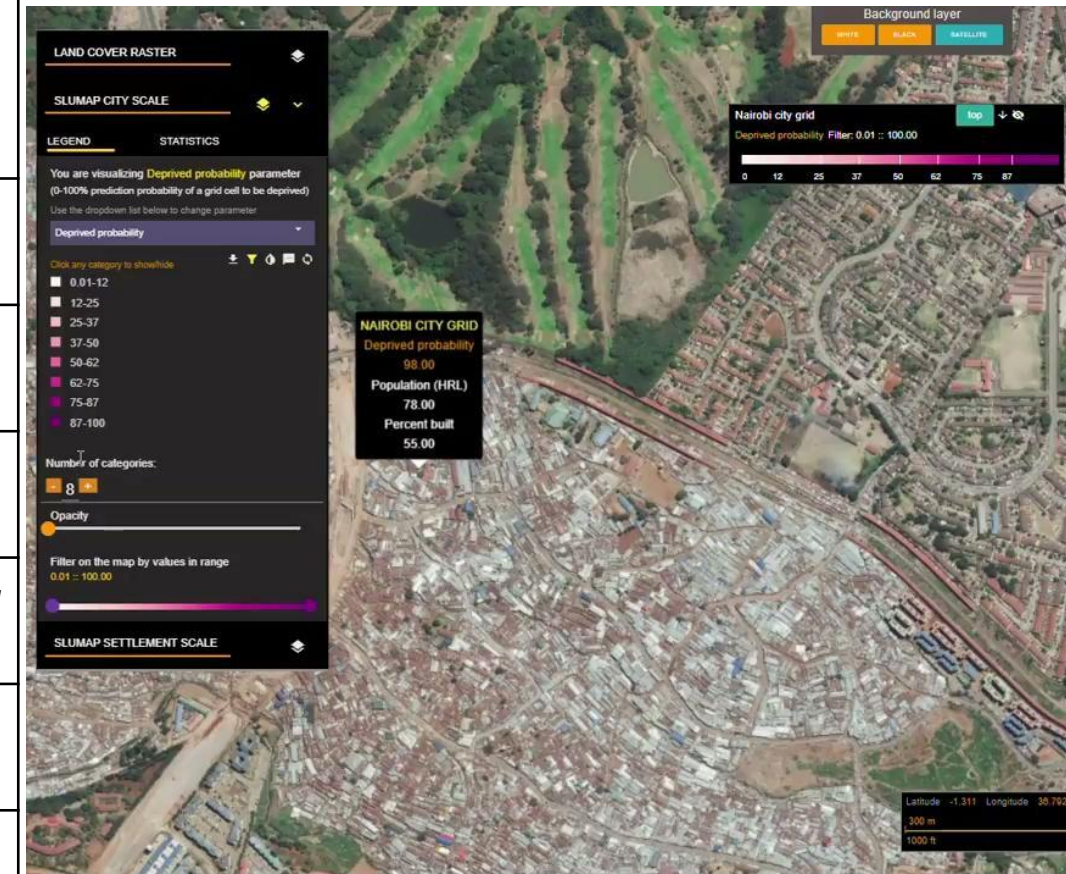
source: WSF-Evolution





# Data Gaps in the Global South

Criteria defining slums, informal settlements and inadequate housing (Source: UN-Habitat, 2020) (x* presently measured)				EO potential deprivation
	Slums	Informal Settlements	Inadequate Housing	Captured via EO
access to water and sanitation	X*	X*	X	<i>Unplanned urbanization</i>
sufficient living area, overcrowding	X*		X	<i>Built-up Density</i>
structural quality, durability and location	X*	X*	X	<i>Locational and roofing material</i>
security of tenure	X*	X*	X	<i>Unplanned urbanization</i>
affordability			X*	<i>(Requires local data)</i>
accessibility			X	<i>Geospatial data</i>
cultural adequacy			X	<i>(Require local data)</i>





## IDeAMapSudan - The Objective

The Project focuses on building the capacity to co-create and use spatial data on deprived areas to develop a geospatial database for deprivation mapping **'IDeaMapSudan'** to support the understanding of displacement and urban poverty challenges and opportunities associated with socio-economic reconstruction and reform in Sudan leading to more sustainable urban development strategies.

### - Beneficiaries المستفيدون



وزارة التخطيط العمراني  
ولاية الخرطوم



وزارة النقل

وزارة التنمية الاجتماعية  
MINISTRY OF SOCIAL DEVELOPMENT



وزارة التنمية  
الاجتماعية

### - Implementing Organizations

### الجهات المنفذة



منظمة التنمية العمرانية  
السودانية SUDTRC



African Population and  
Health Research Center

المركز الأفريقي لأبحاث  
السكان والصحة - كينيا



جامعة بروكسل  
بلجيكا



جامعة توينتي - هولندا  
Faculty of Geo-Information  
Science and Earth  
Observation



Stakeholders mapping, Gap and need analysis was conducted to guide project implementation. Participants are selected from 3 ministries to get the ToT and develop IdemapSudan.



The kick-off workshop introduced IdealMapSudan project to stakeholders and interested parties, to communicate the value that earth observation data can bring to many aspects of urban planning, development and monitoring. The workshop provided an opportunity to meet, share and discuss the overall priorities of IdealMapSudan.

January 2021

Preparations, Gap analysis, and Team formation  
Sep. 2020 – Feb. 2021

التحضير للتدريب و تحليل الوضع الحالي و تقييم الحوجة

Sep. 2020

Gap analysis & Selection of ToT

Kick-off workshop

Technical training of ToT and design of IdealmapSudan System

March 2021 – May. 2022

تدريب المدربين و انشاء نظام IDEAMapSudan



March - December 2021

Local Training

Deprivation modelling (Mini Project)

Aug. 2021



The team worked on a mini-pilot project to apply their knowledge. A workshop was held for Experts consultation

MINI PROJECT OBJECTIVE: Develop a first model of multiple deprivations for Jebel-Aulia

Community mapping training - Kenya

Sept. 2021



Community-based data collection training in Kenya

TP2

Project Timeline

Sep. 2020 - March 2023

TP4

City-to-City (C2C) Dialogue

Dec. 2022 – Mar. 2023

تبادل التجربة و نقل المعرفة مع الدول المجاورة

Data System and access to data and knowledge



City-to-City (C2C) resilience-building knowledge exchange. Objective is to foster the implementation, sustainability, and regional cross-ventilation of IDEAMapSudan. Including dissemination and stimulation of using the developed IDEAMapSudan framework to neighboring countries.

Jan 2022

City dialogue symposium

Dissemination

Up to March 2023

Reporting, Dissemination and development of best practise guide



Training IdemapSudan users

July 2022

Transfer knowledge from ToT participants to users from ministries, NGOs, local authorities and community representatives



TP3

Working with IDEAMapSudan

June - Nov. 2022

التدريب على نظام IDEAMapSudan

Local transfer of knowledge

Co-design IdemapSudan

May 2022

IDEAMAP SUDAN



Design and local testing of Idemapsudan system

Deprivation modelling, City level

Feb. 2022 - Ongoing



Geo-Spatial Modelling

OBJECTIVE: Develop a first model of multiple deprivations for Khartoum



## Deprivation Framework and Indicators



- Ideamap Frame work
- Experts consultation workshop

Understanding of what defines deprivation  
Users need assessment in the experts consultation



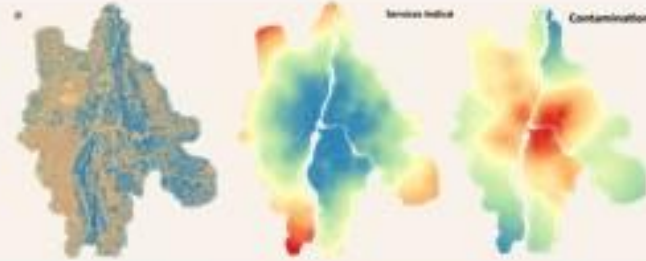
## Data Collection



- Existing data collection challenges and gaps
- Open data sources (OSM, EO,...)
- Filling data gaps by combining digital innovations with local knowledge

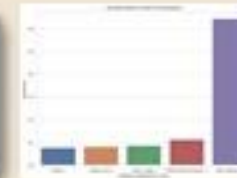


## Developing of Indicators Maps



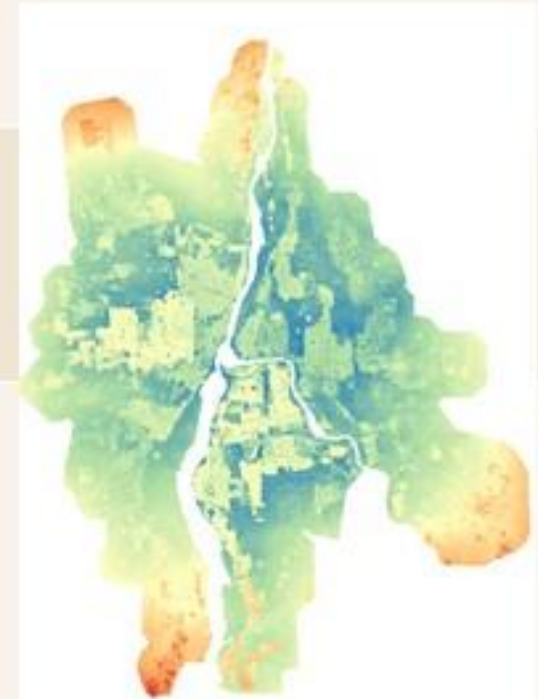
- Indicators maps Analysis

## Weighting of indicators



- Statistical analysis and Experts feedback

## Model Development/ Combined Deprivation Map



تطوير نموذج تخريط الحرمان بولاية الخرطوم

## Khartoum Deprivation Modelling The Approach

# Developing a Geonode

Under construction



**IDEAMAP SUDAN** Data Maps Apps About

## Welcome

Search for Data.

**GeoNode** Search

[Advanced Search](#)

**6 Layers**

Click to search for geospatial data published by other users, organizations and public sources. Download data in standard

**No Maps**

Data is available for browsing, aggregating and styling to generate maps which can be saved, downloaded, shared publicly or restricted

**IDEAMAP SUDAN** Data Maps Apps About Search

## Explore Layers

Selection

No list items selected. Use the selection fields to add.

Filters Clear

TEXT

Search

KEYWORDS

TYPE

Raster Layer 6

CATEGORIES

RESPONSIBLE

GROUPS

GROUP CATEGORIES

DATE

REGIONS

### 6 Layers found

**Khrt\_Indust\_Pollution**

No abstract provided

Fatima Ahmed 6 Sep 2022 12 0 0

**Khrt\_Surfcce\_Temperature\_100m**

No abstract provided

Musab 6 Sep 2022 12 0 0

**Khrt\_AirPollution\_NO2\_100m**

No abstract provided



# ToTs organizing training

Open Access Training Materials: <https://www.idea-maps.net/workshops/>

## 3 Training Sets

- GIS Expert Training
- Non-GIS Expert Training
- Community Groups Training

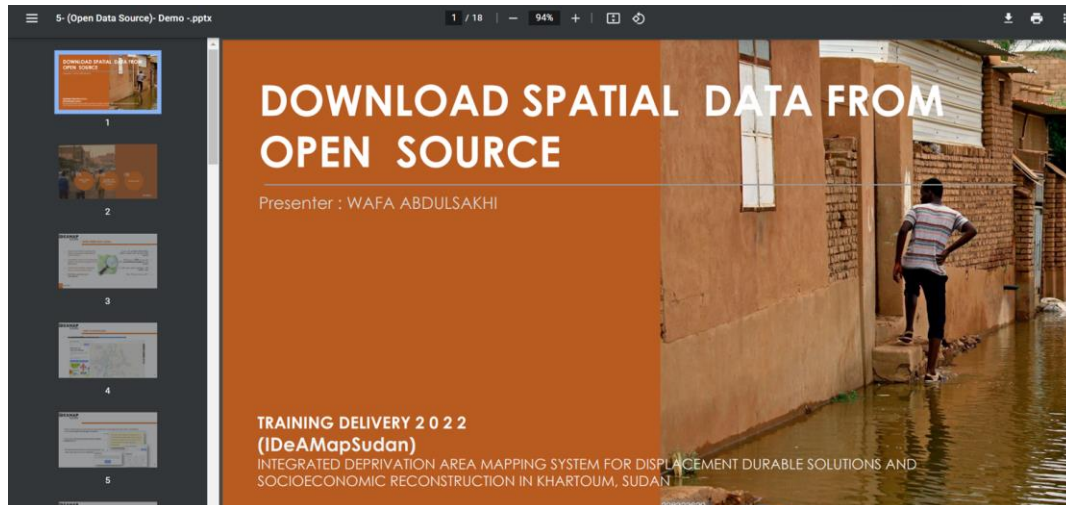
### GIS and Earth Observation - Information sources and analysis to support decision-making

- Day 1 - Introduction to Spatial Data and QGIS
- Day 2 - Spatial Data Collection & Analysis
- Day 3 - Earth Observation
- Day 4 - Modern Geospatial Methods

### Day 1 - Introduction to Spatial data and QGIS

#### Facilitator guide day 1

- 1) Welcome and Introduction to IdeaMapSudan
- 2) Introduction to GIS modelling
- 3) Using secondary data
- 4) Introduction to OGC Web Services
- 5) Downloading open-source data
- 6) Data quality and validation
- 7) Using primary data
- 8) Exercise - Introduction to QGIS







*Thanks ..  
IDeAMapSudan Team ..*

