



EO for Africa Symposium 2024

23 - 26 September 2024

ESA | ESRIN, Frascati (IT)



**GMES
AND AFRICA**

Union
Africaine



**SAHARA
AND SAHEL
OBSERVATORY**

Land degradation monitoring for efficient support to sustainable land restoration and management in Africa

The experience & contribution of GMES & Africa

GMES & Africa North-Africa Consortium

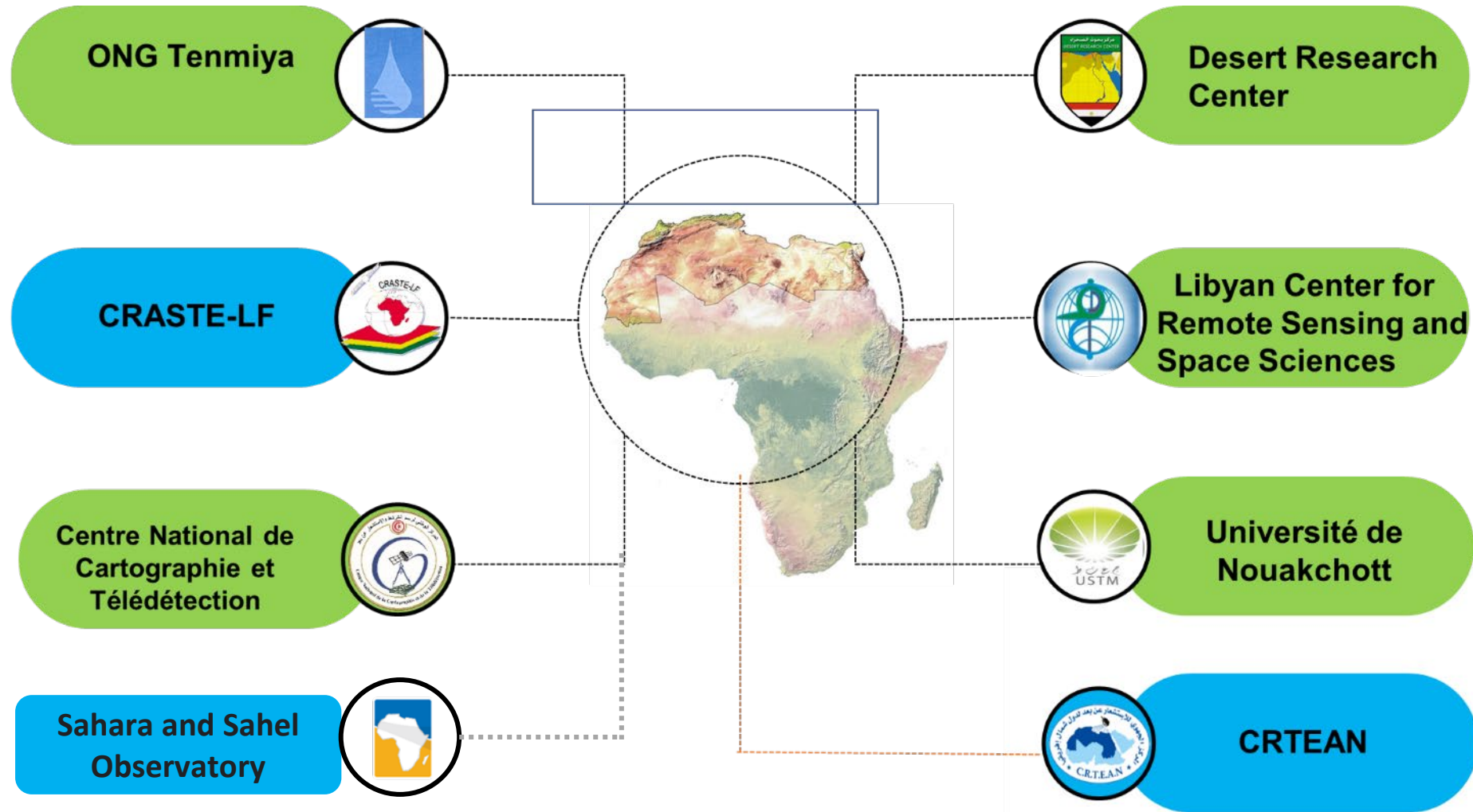
Evence Zoungrana, Mustapha Mustapha, Amjed Amjed Hadj Taieb, Nabil Ben Khatra

September 25, 2024

Sahara and Sahel Observatory



GMES North Africa: 1 Consortium & 1 regional project



A common project → Earth Observation for Sustainable Management of Water and Natural Resources in North Africa

Since GMES Phase-1



Seasonal agriculture monitoring



Water abstraction assessment



Land degradation monitoring

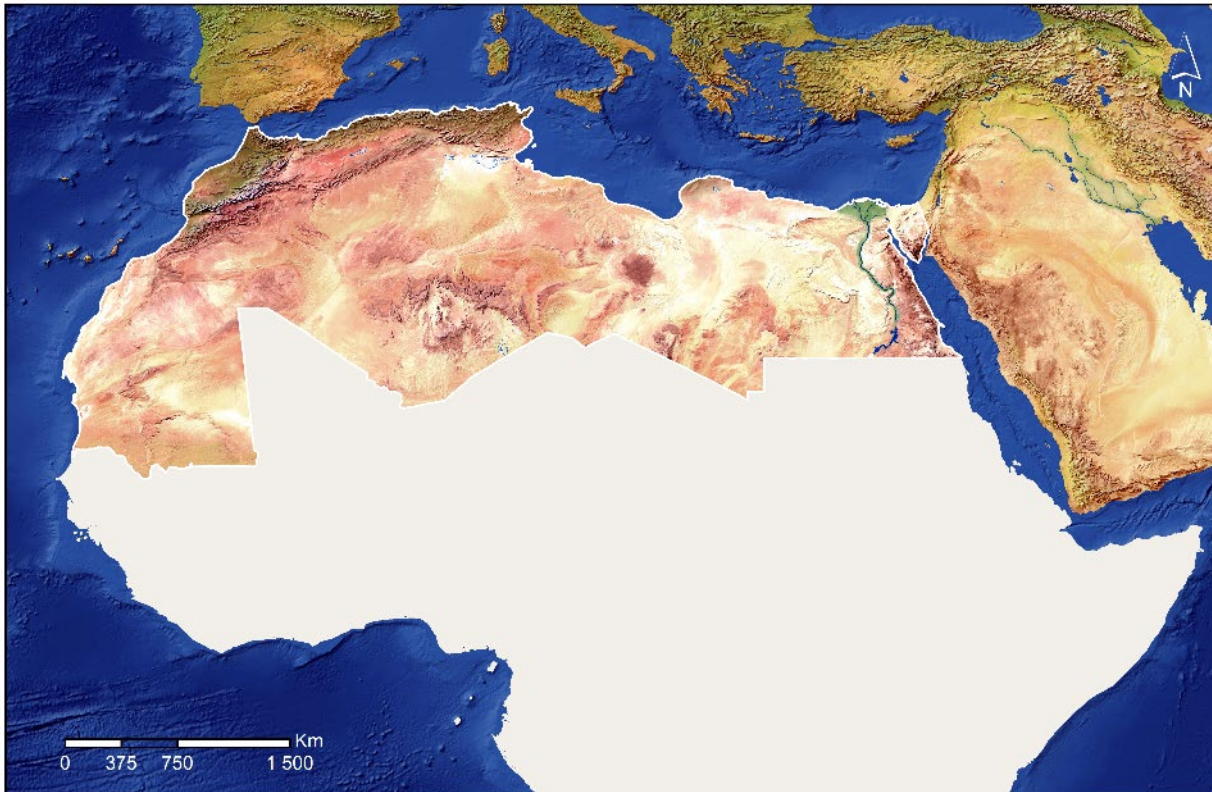
Consolidation - Better operationalization - Appropriation & Uptake

Why monitor **Land Degradation (LD)** in the North African region ?



Monitoring resources in North Africa: a need!

GMES North Africa zone of action: 6 million SKM



- Land degradation
- Desertification
- Food security
- Water scarcity
- Drought spells



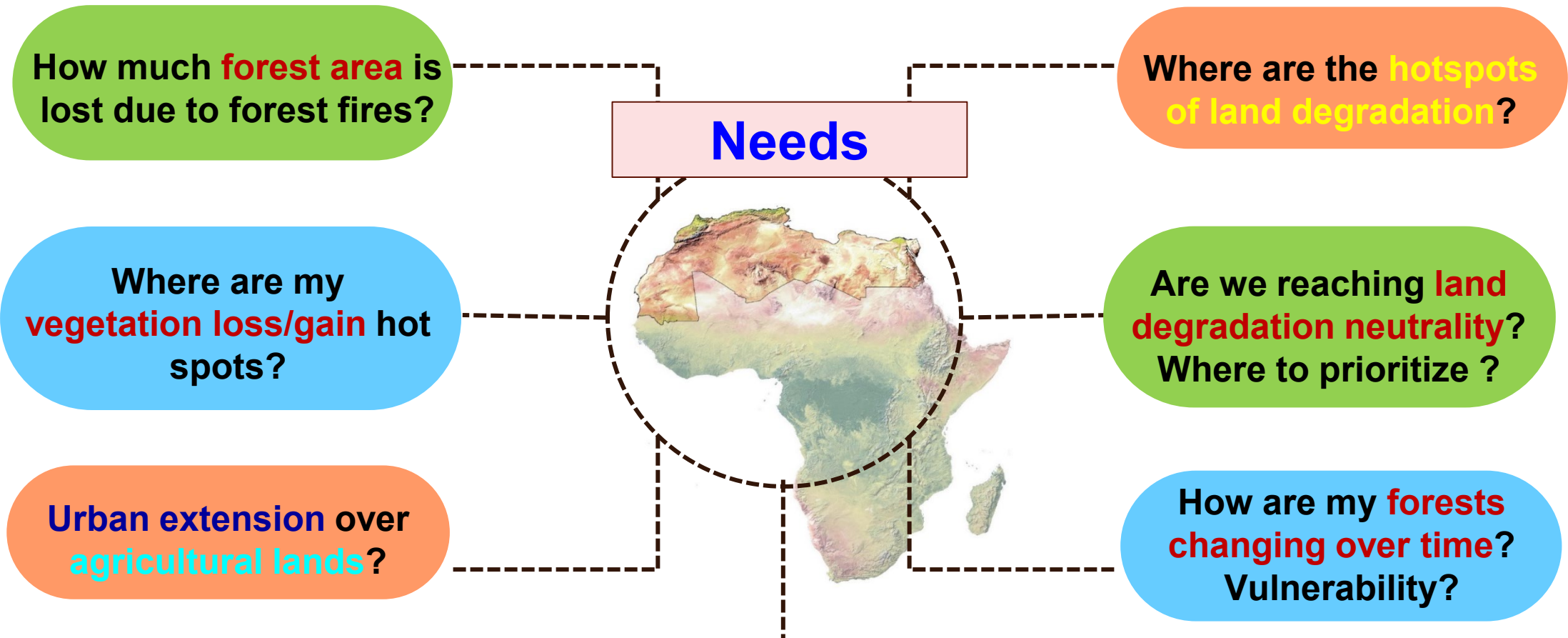
Challenges for populations relying on **natural resources**

End-users need:

→ Operational **geo-services** valorizing the range of EO data **Land Degradation** monitoring.



End-user information needs for land degradation monitoring



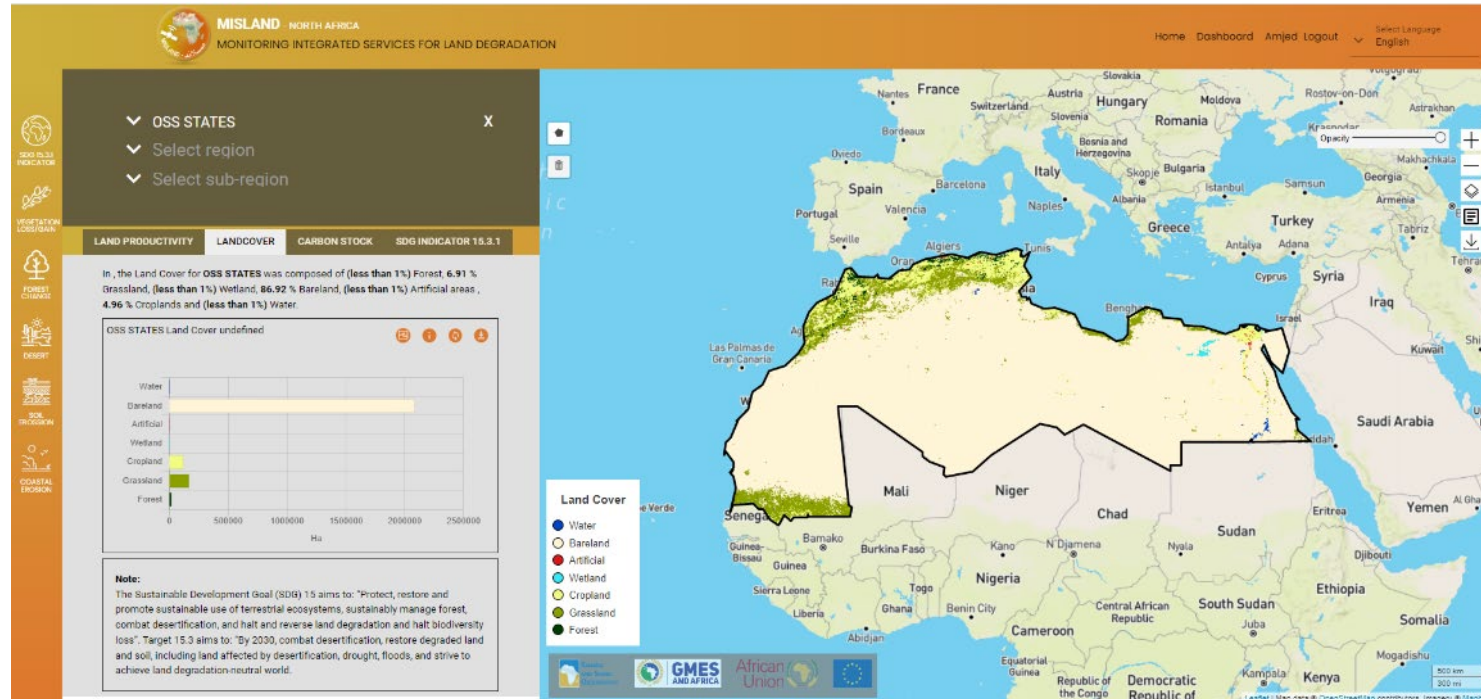
...generally without adequate and timely response?!



What is MISLAND?



- **Decision support system:** provide regularly updated **information on land degradation hotspots**. **Platform** to access operational **geo-services** and **QGIS Open source plugin** (for advanced users);
- Built on **international standards related to SDG 15.3.1**. Analyzes large amounts of data, with sophisticated analytical models, and user-friendly interfaces;
- Intended primarily for **policymakers, environmental agencies, LDN monitoring and reporting groups**, etc.



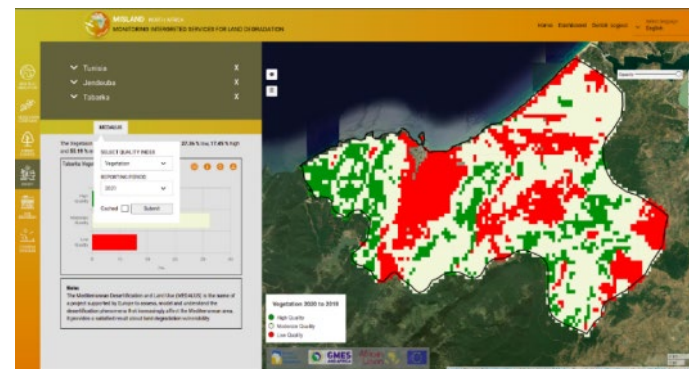
<http://misland.oss-online.org>

09 indicators 20 years covered

Key advantages :

- Kit of indicators relying on international standards (**UNCCD**, etc.).
- Strong processing chains, optimized for timely response.

SDG Indicator 15.3.1 and LDN reporting on the fly



Land Degradation monitoring indicators



Past experiences of the partners

End-users needs assessment

North-Africa specific context



1. Indicator on SDG 15.3.1 and LDN (UNCCD);
2. Vegetation loss/growth indicator;
3. Forest cover change;
4. Forest fires;
5. Risk of forest fires
6. Assessment of forest carbon emissions
7. Vulnerability to desertification (MEDALUS)
8. Assessment of water and wind erosion
9. Coastal erosion estimates

Integration of high-resolution data



Deployment of MISLAND on the **BDAP** cloud platform

- Technical and scientific support;
- Scripts optimization ;
- JEODPP API for MISLAND computations ;
- Support in capacity building.

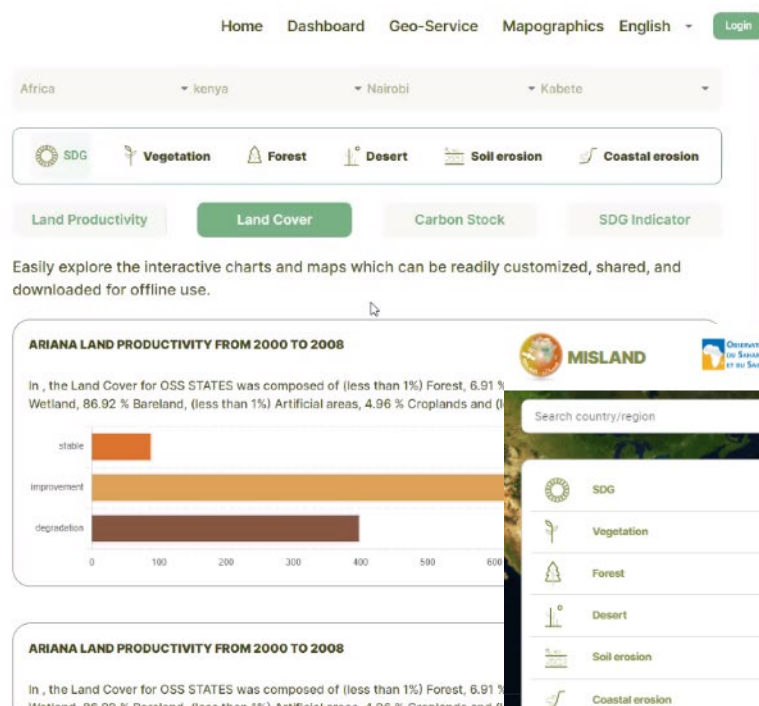
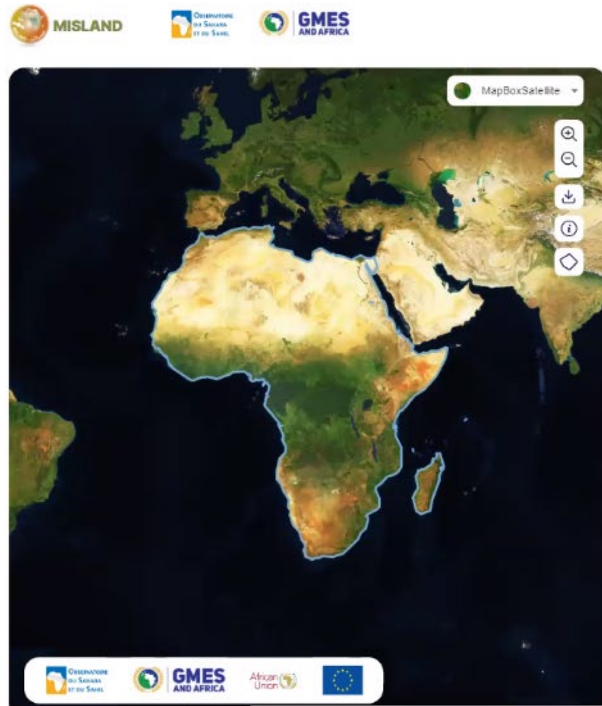
MISLAND Africa - Concept

Federative and unique entry point or a « **One continental Service** » providing spatiotemporal services for:

- Various dashboards for different audiences;
- Disseminate infos on LD from different landscapes from various models/approaches;



MISLAND-Africa: continental prototype



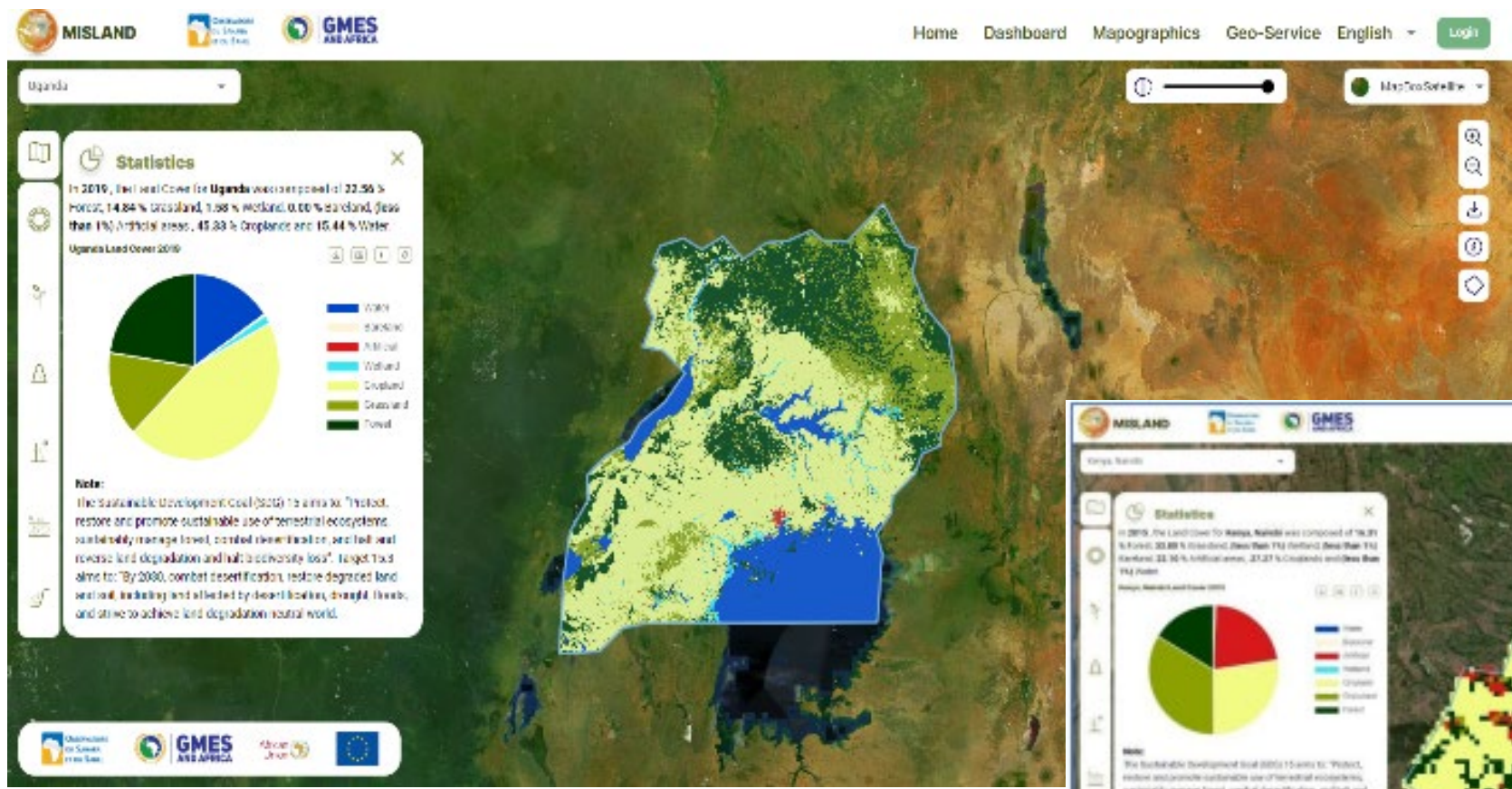
09 indicators
20 years covered



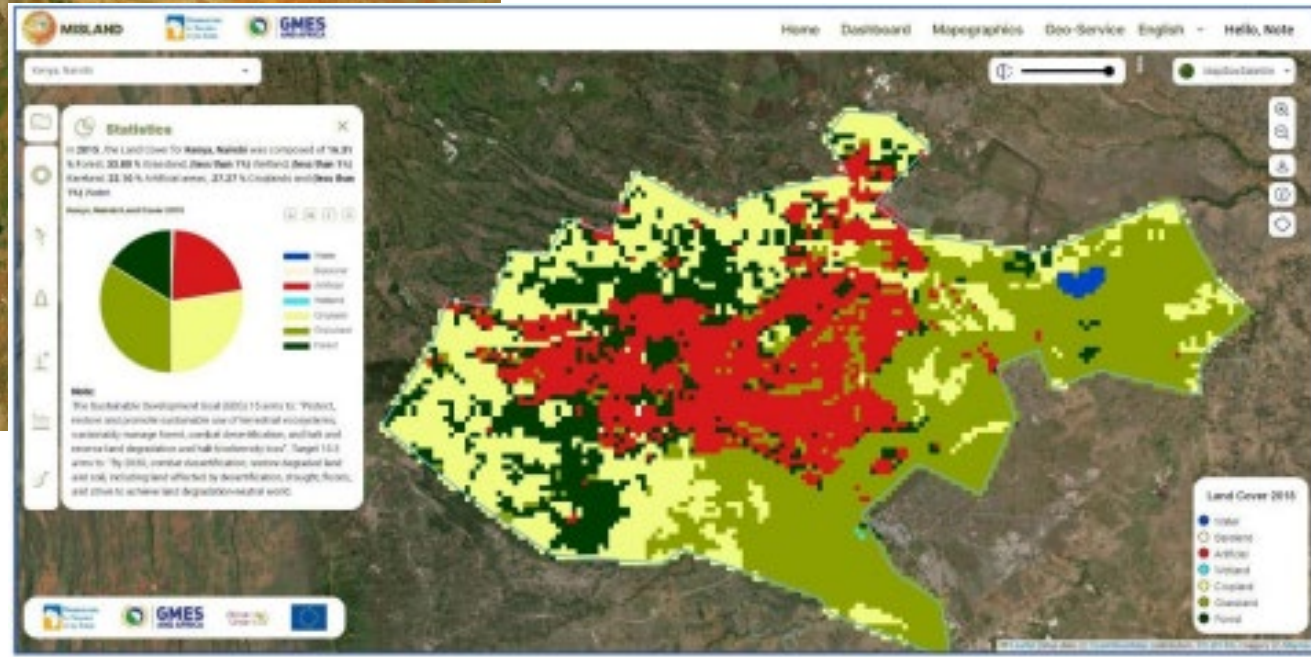
High spatial resolution



MISLAND-Africa : multi-scale services & products

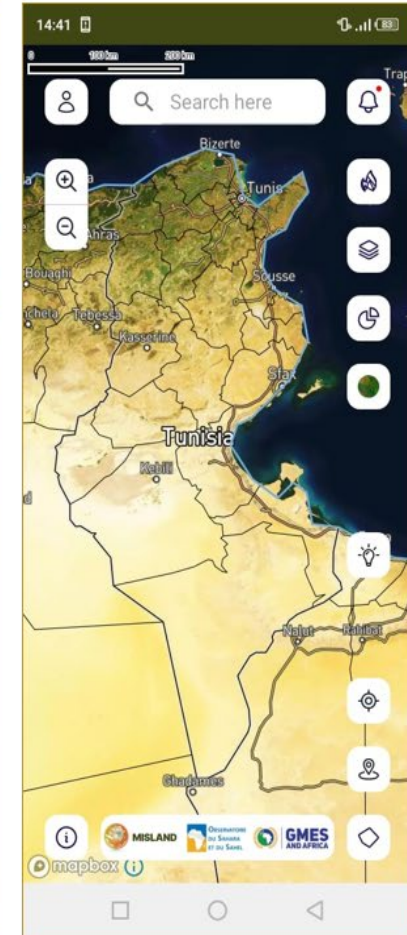
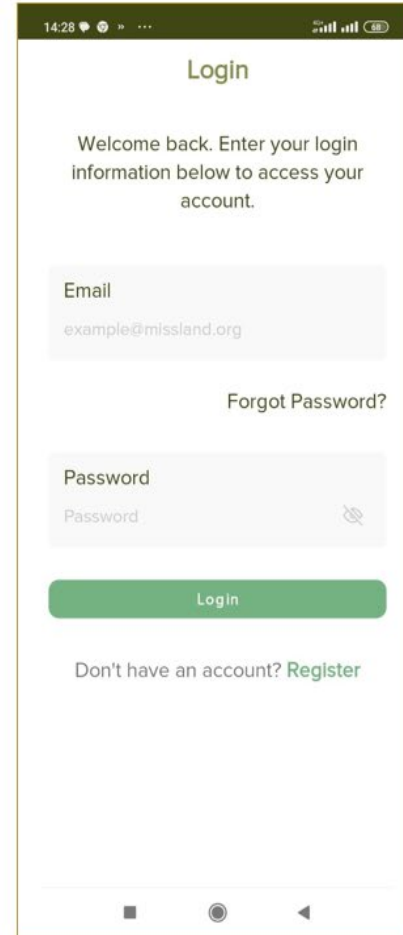
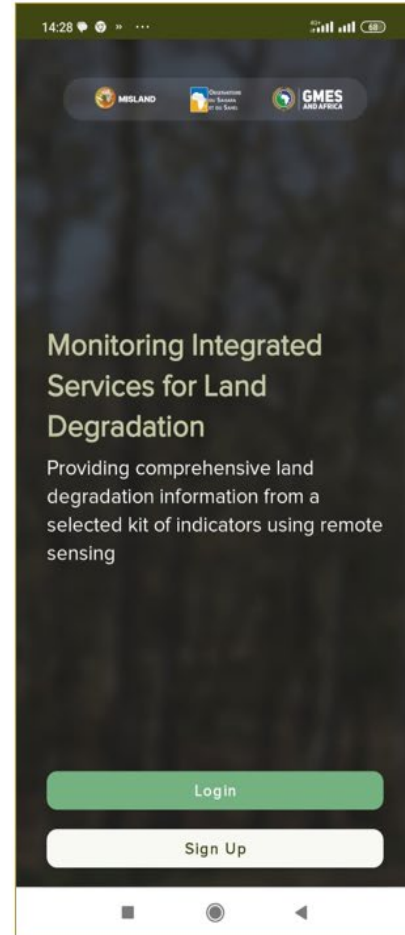


- Scales:**
- Continental
 - Regional
 - National
 - Local

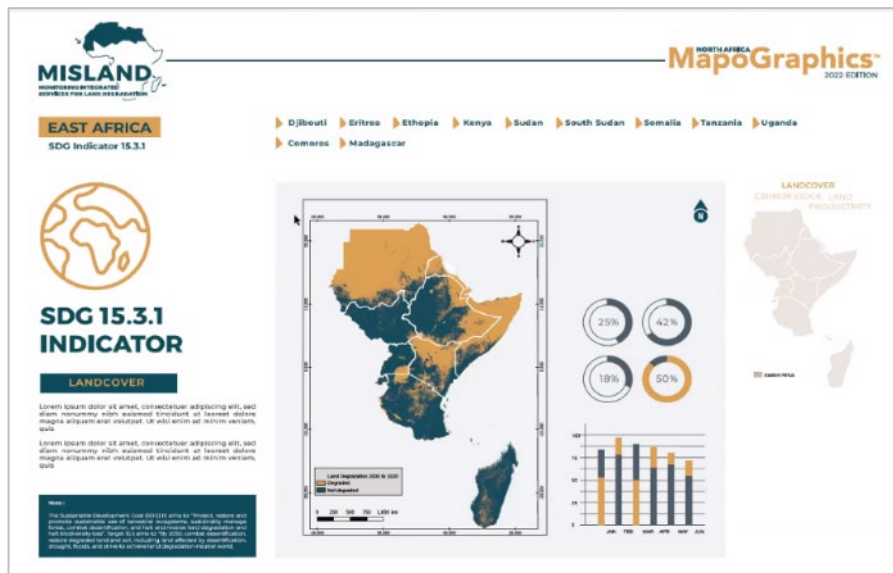
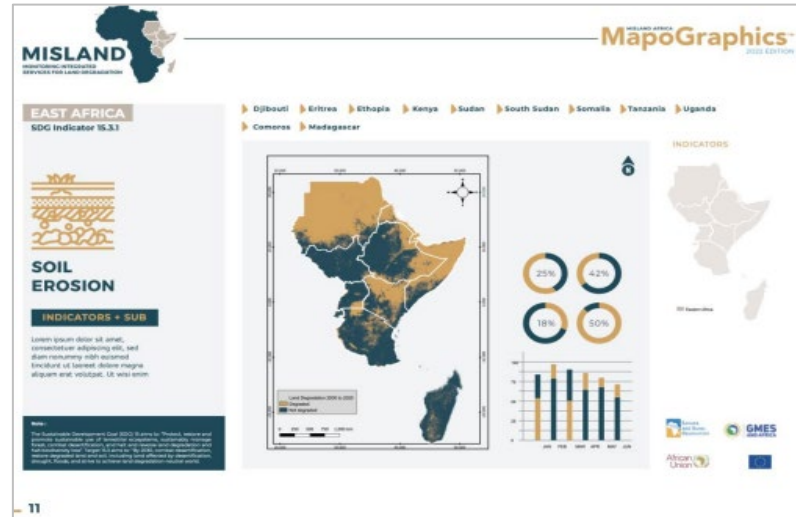
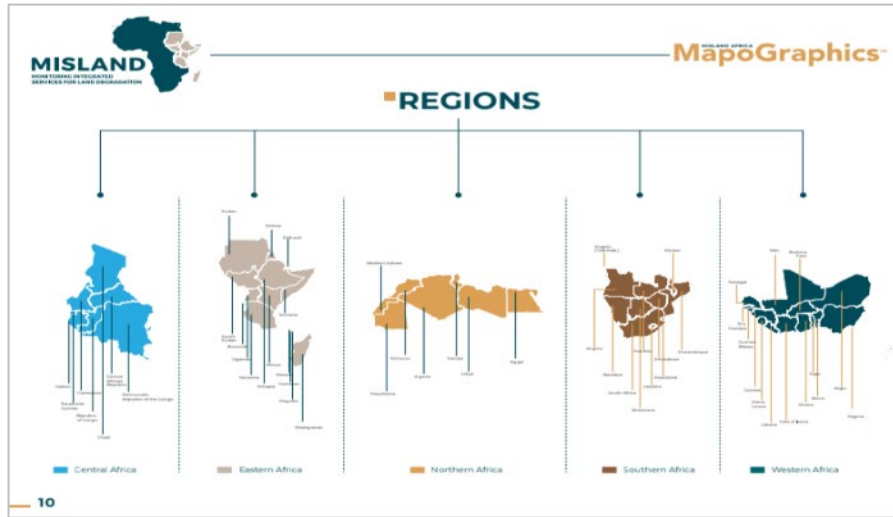


Integrated service

- Intuitive and user-friendly;
- Tailored to **varied users** (decision makers, technical staff, etc.).



MISLAND-Africa: Mapographics



- Interactive maps
- Statistics
- Graphics
- Intuitive illustrations



Characterizing land degradation in Africa : thematic products



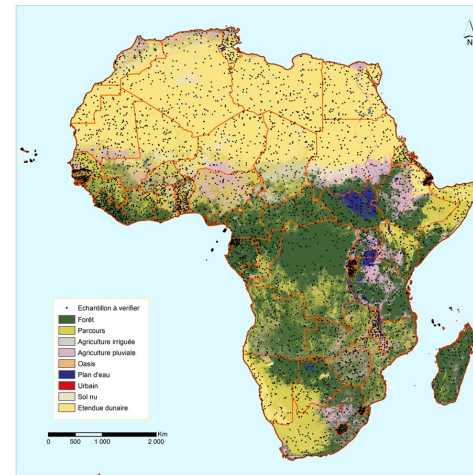
Land cover maps of Africa (2000, 2015, and 2021)



Land cover changes
2000-2021

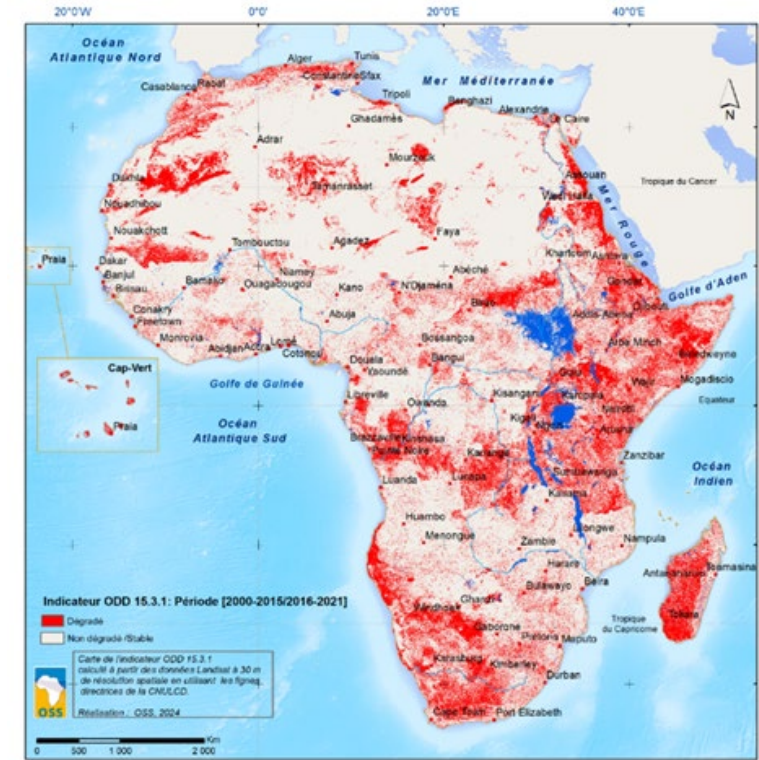
Land productivity
2000-2021

Soil organic
carbon 2000 -2021



5500
samples

Kit of Indicators LDN monitoring & reporting in Africa



SDG 15.3.1 Indic. "Proportion of degraded land in Africa"

OSS - RCMRD cross-fertilization

MoU - Feb 2023;

Collaborative framework mapping and monitoring LD



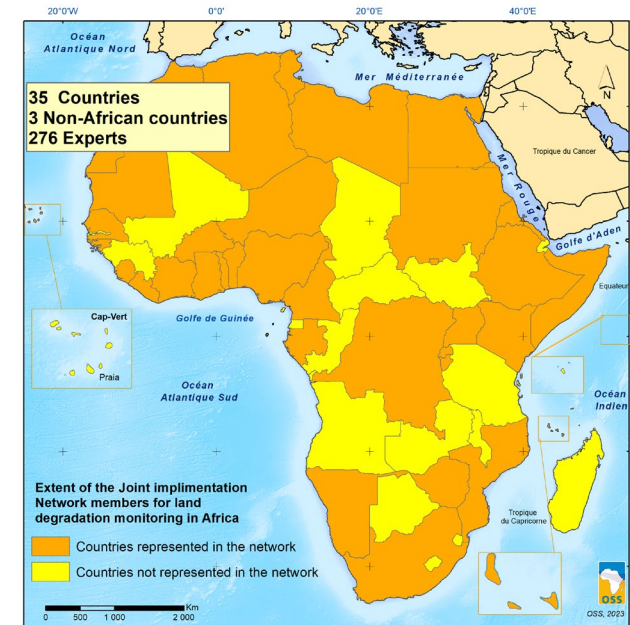
Joint Implementation Network

for **land degradation monitoring** service in Africa

- **276** Experts registered
- **35** African countries
- **3** Non-African
- **69** Women

1st exch. meeting – June 22, 2023
2nd exch. meeting – before Dec 2024

Registration: <http://projet.oss-online.org/GMES-Africa/jin>



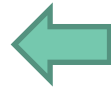


- **Last prototype of MISLAND-Africa** foreseen for **October 2024**;
▶ Will be shared for testing and feedback collection ;
- **Second exchange meeting** of the JIN planned for **November 2024**
→ Much more **feedback** from experts all over **Africa**, including **IOC members**;
- **Official** launch of MILAND-Africa planned for – **December 2024** (along with a continuation of improvements).



● **Institutionnalisation: customization by country** → **December 2024;**

- ▶ **Egypt**
- ▶ **Libya**
- ▶ **Mauritania**
- ▶ **Tunisia**



Integrating:

- National specific indicators;
- Indicators from the UNCCD PRAIS: **Indicators from the Proportion of land under sustainable land management + Socio-economic impacts** (poverty reduction, agri. productivity, food security, community resilience).

● **A series of training workshops starting in November.**

● **Promotional Videos (teasers) & Communication material**



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GMES and Africa Support
Programme

Thank you for your attention



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