



ESA EO and EO for AFRICA

EO for Africa Symposium 2024

23 - 26 September 2024

ESA | ESRIN, Frascati (IT)

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→ THE EUROPEAN SPACE AGENCY

Welcome to ESRIN – ESA's Centre for Earth Observation



Activities on ESRIN site:

- **Earth Observation**
 - *Mission Management*
 - *Cal/Val Activities*
 - *Science Hub*
 - *Phi-lab*
 - *Disaster Charter Coordination Centre*
- **Space transportation**
- **NEO Coord. Centre**
- **ESA Security Office**
- **Corporate IT**
- **Comms, Archives**
- **Contracts, Personnel**
- **Site Management**

Ca. 995 personnel on site
50.000 visitors per year



Relative size according to personnel 2

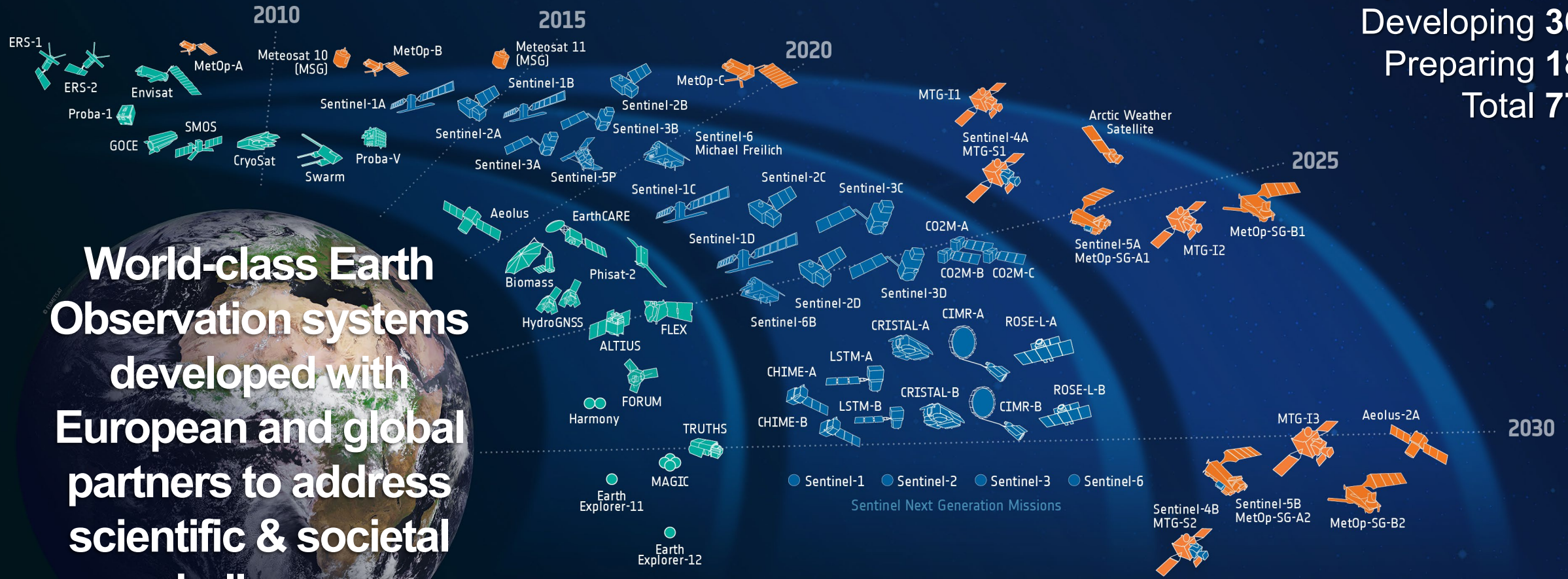


ESA's Earth Observation Missions



Satellites

Heritage 08
Operational 15
Developing 36
Preparing 18
Total 77



World-class Earth Observation systems developed with European and global partners to address scientific & societal challenges

Science Copernicus Meteorology

The Copernicus Sentinel Missions



PROGRAMME OF THE
EUROPEAN UNION



**Copernicus is the largest producer of EO data in the world
with a Full, Free & Open Data Policy***

All global
landmass is
observed every
5 days at 10m
resolution

**20 TB of Daily Data
Production by Sentinels**

(august 2024)

**> 700 PB of Sentinel
Products Disseminated for
Services to Society**

> 200.000
Registered Users
since Jan 2023

Supporting 6
operational services



Land



Atmosphere



Ocean



Climate



Disaster



Security

* ESA Sentinel Data Policy (Sep 2013) and
EU Delegated Act on Copernicus Data and Information Policy (Dec 2013)



EO Data Supports Actions for Major Societal Challenges



UN SDG for 2030



Paris Agreement on Climate Change



The EU Green Deal



Global Gateway and Next Stage for African-European Partnership



Intensified Cooperation with Directorate General International Partnerships (DG-INTPA), financing Africa-EU Space Partnership Programme



Strong Africa-Europe EO Partnership & Ecosystem



Long-standing
AUC partnership



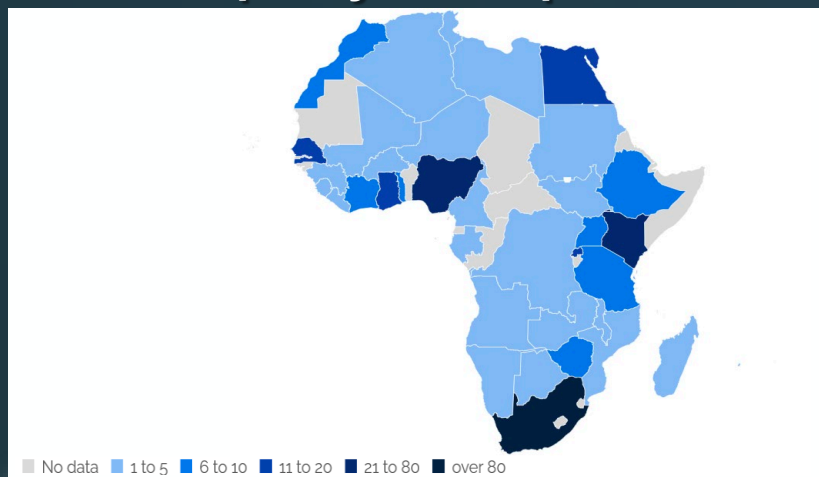
Facilitation of Copernicus data access



Supporting cloud
computing uptake



Strong support across data access
to capacity development



Continuous community interaction



GDA active in 30 African countries



Climate Adaptation & Finance

**67 countries
66 projects
103 products**

GDA
Global Development Assistance

Partnerships

Partnerships Expansion





The graphic features a central map of Africa in white and light blue, surrounded by several satellite icons in white and light blue. The background is a dark blue with a grid of small white dots. The text 'EO for Africa Symposium 2024' is written in a large, bold, white font. Below the title, the dates and location are listed: '23-26 September 2024 | ESA-ESRIN | Frascati (Rome), Italy'. At the bottom, there is a row of seven circular icons representing different themes: a lightning bolt, a building, a hand holding a satellite, a landscape with trees, two people with a plus sign, a globe with a flame, and a factory.

EO for Africa Symposium 2024

23–26 September 2024 | ESA-ESRIN | Frascati (Rome), Italy

1. Showcase the latest **R&D EO Science and Applications** in Africa
2. Facilitate **international EO collaborations** across Africa and Europe;
3. Capturing **user driven priorities** for joint EO R&D and capacity development;
4. Accelerate the **integration of downstream services in operational solutions**



ESA EO AFRICA Initiative in a Nutshell



A network of over 4000 professionals working and collaborating with more than 100 entities in Africa



Fostering Partnership



Facilitating R&D



Leveraging Digital Tools



Reinforcing Capacity



Enhancing Data Accessibility

EO AFRICA is a strategic cooperation with the AUC for building an African-European R&D partnership, to facilitate the adoption of EO & related space technology in Africa, with direct involvement of Research Institutes, Universities, Space Agencies, Regional & National entities.



1) Capacity Development

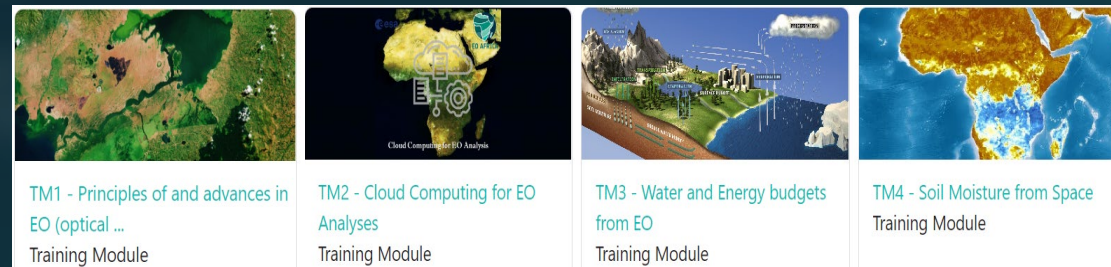
- Face-to-face trainings
- Online trainings
- Webinars
- MOOC and downloadable training modules

2) R&D Investments with African partners

- Continental Demonstrator projects
- Pioneering new research (Explorers projects)
- Mainstreaming EO solutions (National Incubator projects)
- Tandem R&D projects



2) Supporting data access and exploitation with cutting-edge solutions



4) Hosting Africa Research Fellows (ARFs) at ESA / ESRIN

Capacity Development: The R&D Facility



**EO AFRICA
Community**
3000+ people



**51
Countries**



10 F2F events
(200+ participants)
and 10 foreseen



8 Training Modules
downloaded 162x and 2
more foreseen



20 Online courses
& 2 MOOCs
(800+ participants)



50 North-South Collab.
Projects on EO for Food
& Water Security



3 Hackatons with
GMES&Africa (95 participants)
15 Webinars (8500+views)



3 Research Calls (100+
applications) + 1 planned; 1 call
for African-led Training material



Dedicated cloud-based
EO data analysis
environment

R&D Facility active from 2021 to 2027

UNIVERSITY
OF TWENTE.



serco



TECHNISCHE
UNIVERSITÄT
WIEN



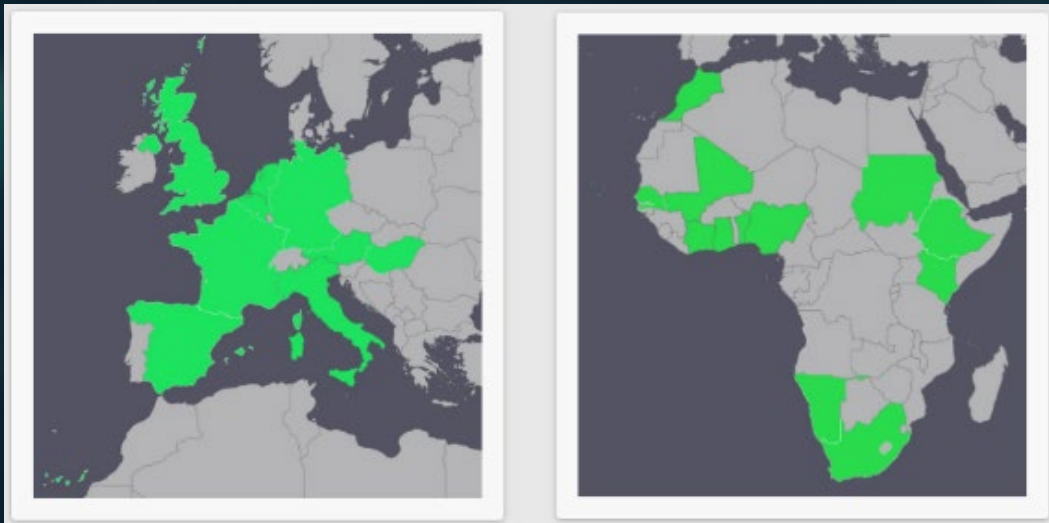
Tandem Research Projects



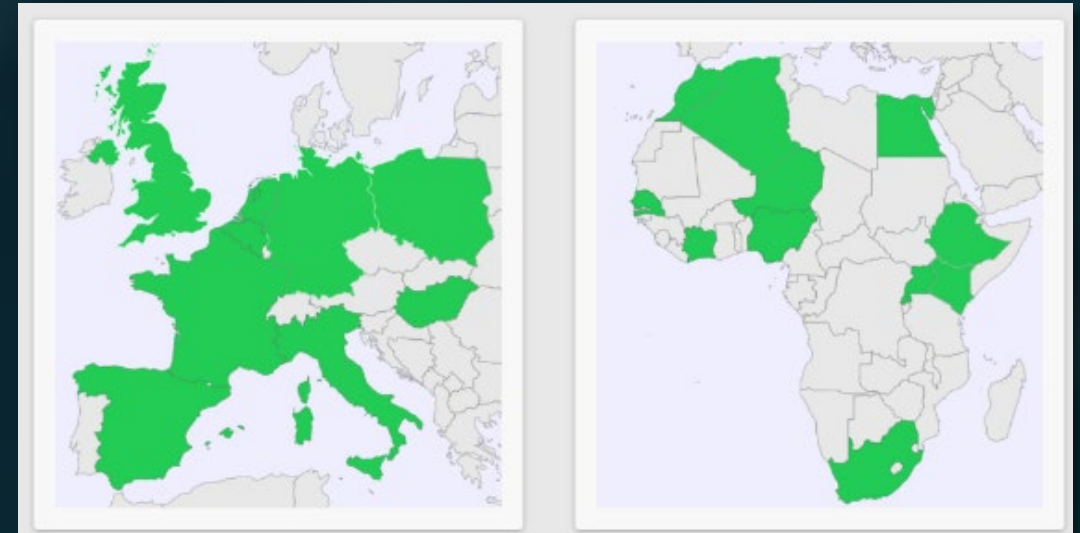
Strengthen African–European collaborative efforts to develop innovative, open-source EO algorithms and applications adapted to African solutions to African challenges in Water and Food Security

12-month projects of African & European research tandems

- Technical and financial support for the projects
- 2 research calls released and completed between 2022 and 2024
- 1 research call just closed for 2024-25
- 1 research call planned for 2025-26



1st round – 2022/2023 13 projects funded



2nd round – 2023/2024 17 projects funded



National Incubator Projects (4) and Explorers Projects (6) in 13 Countries



AFRI-SMART: EO-Africa multi-scale smart agricultural water management [Morocco]

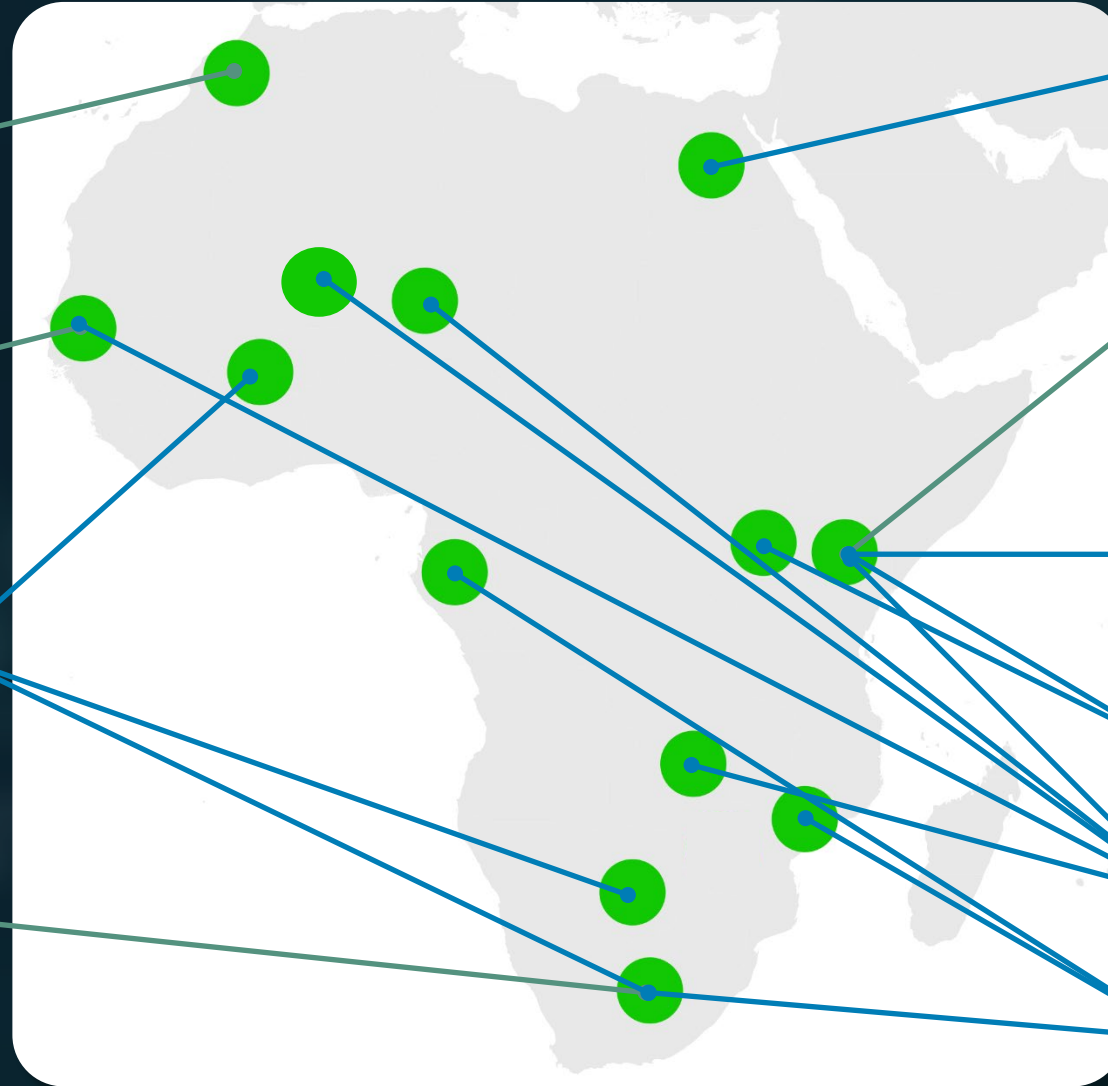
WASCIA -Water Stress and Climate Indices for Africa [Senegal]

EO-MAJI: EO system to Manage Africa's food systems by Joint-knowledge of crop production and Irrigation digitization [Botswana] [Burkina Faso] [South Africa]

ANIN: Africa National Incubators [South Africa]

National Incubators

Explorers



WRM –Water Resources Management [Egypt]

ADM-Kenya: integrated use of multisource remote sensing data for national-scale Agricultural Drought Monitoring in Kenya [Kenya]

HyRELIEF: Enhancing ECOSTRESS drought monitoring with hyperspectral narrowbands [Kenya]

AFRI 4 Cast [Kenya] [Uganda]

ARIES –ECOPRIMO [Niger] [Kenya] [Zambia] [Mali] [Senegal]

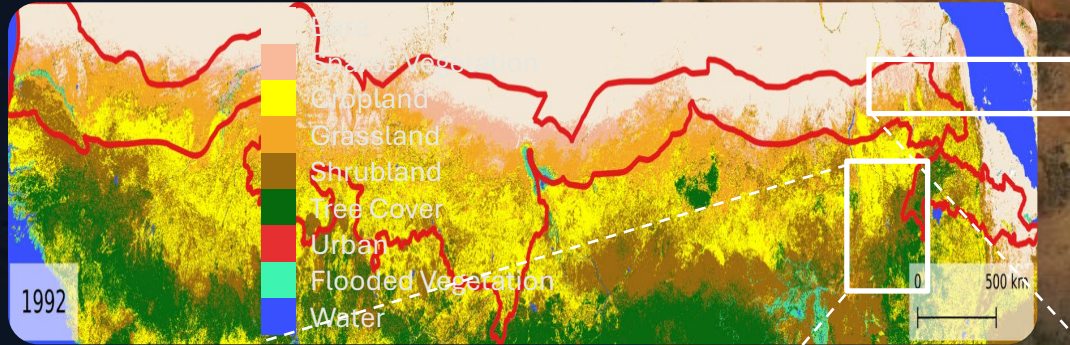
PRISMA 4 AFRICA [Gabon] [South Africa] [Mozambique]



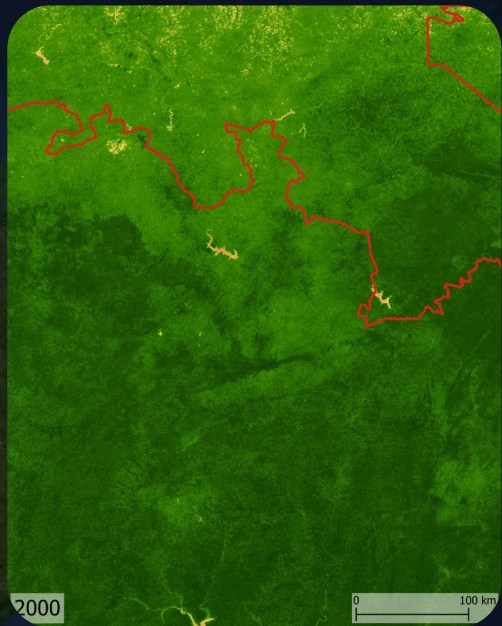
Continental Demonstrator: The Great Green Wall Initiative



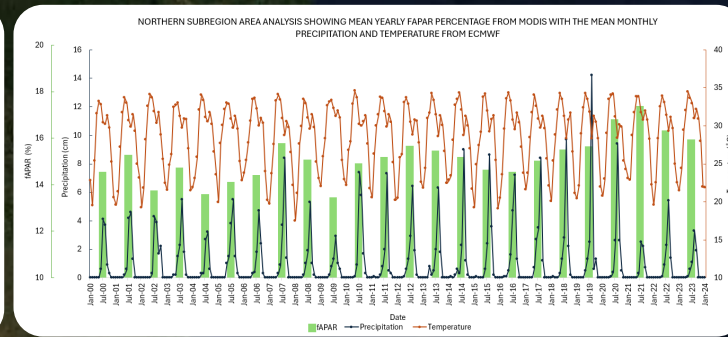
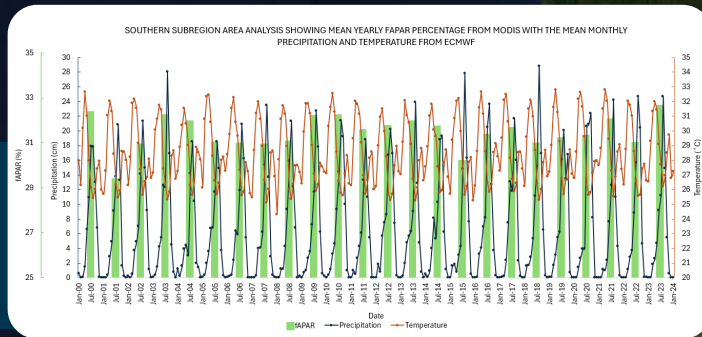
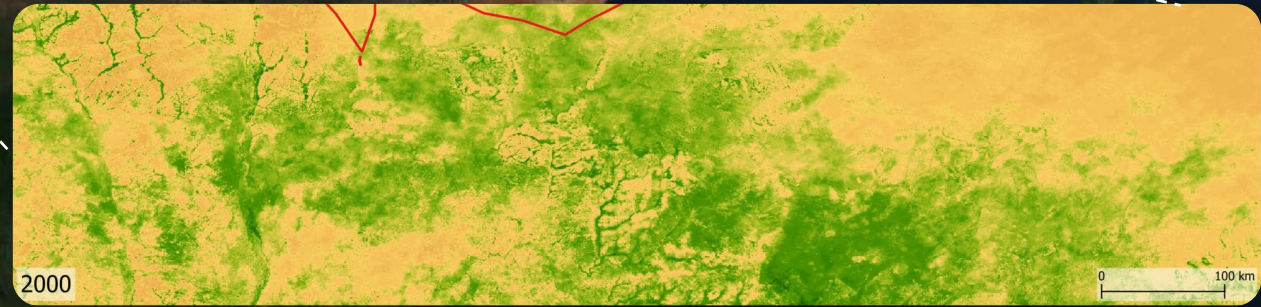
Started in 2007, the 8000-kilometre-long Great Green Wall is an African-led initiative, spanning 11 countries, to combat land degradation, desertification and drought.



Investigating correlation across CCI Landcover data, fAPAR, ERA5 precipitation & LST, showing in some regions vegetation is advancing into arid areas, in others it is retreating



Detected recession (left) and advancement (right) from pre-GGW to now



EO FAST TRACK APPS – EXPRO+



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Discover. Build. Exchange.



Unleash the power of Copernicus earth observation data courtesy of ESA, with free usage for African users.

dunia.esa.int/

No credit card required!

Get started

GeoVille

Dunia shall contribute to the improvement of data accessibility and exploitation, facilitating the development and operations of applications over Africa by giving access to Copernicus Sentinels data for Africa in formats and protocols adapted to low bandwidth and fast data exploitation.

It is an all-in-one, easy to use processing and dissemination platform, that even works on mobile.

African Research Fellows Call for 2024-2025



2022-23

Wassim M. BABA



Water dynamics
Moroccan lakes

Gladys MOSOMTAI



Contribution of
Cattle to Rift
Valley Fever
virus (Kenya)

African Research Fellowships - Call 2024/25

In collaboration with AUC, ESA offers 1-year fellowships to **four African Researchers** to work at the ESA-ESRIN premises in Frascati (Rome, Italy) in collaboration with ESA's scientists.

2023-24

Abdelhakim AMAZIRH **B. ASENSO BARNIEH**



Cereal yield
forecasting
in Morocco



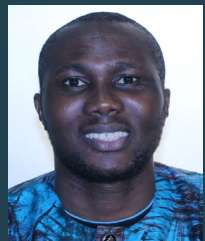
Human Activity
Impacts on
Water Quality
in Ghana

Candidates shall propose a 1-year R&D proposal contributing to **Water resources management** or **Food security issues** supported by the exploitation of **Earth Observation satellite data**.

Deadline for submissions: **30 October 2024**.

Start of Activities: **June 2025**.

Odunayo D. ADENIYI **Gebeyehu A. ZELEKE**



Agricultural
soil Moisture
in Nigeria



Improved Yield
Estimation for
Irrigated Wheat
(Ethiopia)

<https://eo4society.esa.int/2024/08/26/african-research-fellowships-call-2024>



African Partners and Stakeholders



NDMA (National Drought Management Authority)

ILRI (International Livestock Research Institute)

CGIAR (Consultative Group for International Agricultural Research)

RCMRD (Regional Centre for Mapping with Resources Development)

ACTION AGAINST HUNGER

AGRHYMET (Agriculture Research and Training Centre for the SADC Region)

AfriGEO

AKTC (Zambian-German Centre for Agricultural Knowledge and Technology)

UNIVERSITY OF ZAMBIA

UNIVERSITY OF ZIMBABWE

UNIVERSITY OF BURUNDI

MMEWR (Department of Water Affairs)

CSIR (Council for Scientific and Industrial Research)

AGEOS (Agence Gabonaise d'Études et d'Observations Spatiales)

INIR (Instituto Nacional de Irrigação)

NARSS (National Agricultural Remote Sensing Society)

MINISTRY OF LANDS, AGRICULTURE, FISHERIES, WATER AND RURAL DEVELOPMENT

O.S.A.P. (Oman South for Agriculture Project)

water & sanitation (Department: Water and Sanitation, REPUBLIC OF SOUTH AFRICA)

agriculture, land reform & rural development (Department: Agriculture, Land Reform and Rural Development, REPUBLIC OF SOUTH AFRICA)

SANSA (South African National Space Agency)

ARC • LNR (Agriculture, Research and Consumer Services)

CCARDESA (Centre for Coordination of Agricultural Research and Development for Southern Africa)

KINGDOM OF MOROCCO

MINISTRY OF EQUIPMENT, TRANSPORT, LOGISTICS AND WATER

ORMVAD (Office Régional de Mise en Valeur Agricole des Doukkala)

ORMVAH (Office Régional de Mise en Valeur Agricole du Haouz, Marrakech)

جامعة شعيب الدكالي (Université Chouaïb Doukkali)

Inst. Agronomique et Vétérinaire Hassan II (Institut National de l'Agriculture et de la Pêche Maritime)

ADAG (Agence de Développement Agricole du Goudal)

icipi (International Centre for Pastoralism and Livestock)

DGPPE (Direction de la Gestion et de la Planification des Ressources en Eau)

UNIVERSITY OF NAIROBI

MAKERERE UNIVERSITY

KSA (Kenya Space Agency)

AFR (Africa Food and Resources)

ESIP (Environmental Surveys International)

Ministry of Agriculture & Livestock Development (REPUBLIC OF KENYA)

Environmental Surveys (INFORMATION, PLANNING AND POLICY SYSTEMS)

Alliance

Biodiversity International

CIAT (International Center for Tropical Agriculture)



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