



Digital Earth
AFRICA

DE Africa Quarterly Progress Report

April - June 2023

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About Digital Earth Africa

Our vision

DE Africa will provide a routine, reliable and operational service, using Earth observations to deliver decision-ready products enabling policy makers, scientists, the private sector and civil society to address social, environmental and economic changes on the continent and develop an ecosystem for innovation across sectors.

Our mission

DE Africa will process openly accessible and freely available data to produce decision-ready products. Working closely with the AfriGEO community, DE Africa will be responsive to the information needs, challenges and priorities of the African continent. DE Africa will leverage and build on existing capacity to enable the use of Earth observations to address key challenges across the continent.

About this report

This Quarterly Progress Report provides a snapshot of DE Africa Phase II progress made between January and March 2023, as aligned with DE Africa's 2023 Annual Work Plan.



Open and Free Data

- Interoperability
- Privacy and Integrity



Operational Service

- Continental-scale
- Sustainable
- Domain expertise



Accountability and transparency

- Responsive to African priorities
- Agile, nimble and actions oriented



Diversity and inclusion

- Multi-sector perspectives
- Span data communities
- Foster collaboration

The governance of DE Africa is guided by several key principles

Program Goals



Livelihood strengthening

EO data will support more informed decision making at government, sectoral and other levels, contributing to direct and indirect benefits for individuals and communities.



Economic development and job creation

Through access to data for commercial products and services development, DE Africa will support new business development and employment opportunities.



Digital transformation is advanced

Through industry uptake and innovations, DE Africa will help to fuel the ongoing evolution of the digital economy in Africa.



Development activities are more effective

Support enhanced understanding of development challenges and solutions, and in so doing, strengthen collective impact and ability to assess progress towards national priorities, African Union's Agenda 2063 and the UN SDGs

2023 Annual Plan - Strategic Priorities

The Governing Board approved the following Strategic Priorities for the year:

- **Embed in Africa:** The DE Africa team and Implementing Partners will embed DE Africa products and services to support regional activities across Africa. The DE Africa team shall create a roadmap for country engagements that will ensure consistent support for countries.
- **Ensure our sustainability:** We shall strengthen the roles of the Technical Advisory Committee and Governing Board to ensure sustainable governance in the future. We maintain our commitment to delivering on the strategic goals of our funding partners.
- **Empower Climate Action:** We aim to empower climate action by developing in-country knowledge and skills. We will ensure decision-ready products are well placed to enable policymakers, scientists, the private sector and civil society to better address issues of climate adaptation, mitigation and reporting.
- **Enhance Community Engagement:** We need to understand our users, and their needs and provide excellent support that increases use of the platform. We must continue to capture the impact our users have and increase the visibility of the champions of the platform.

2023 Outcomes and Activities

Sustainment

1. Strong and effective ***governance and program operations***
2. Efficient and effective pan-African ***program delivery***
3. Supportive stakeholders and enabling ***partnerships***
4. Sustainable business model developed, and ***future funding*** secured
5. World leading ***technical capability***, responsive to African priorities

Uptake and impact

1. African ***government/ country level*** engagement and support
2. DE Africa services customised to meet diverse in-country ***user needs***
3. Effective ***capacity building*** targeting diverse cross-sector user groups
4. Rapid continental wide growth in DE Africa services ***uptake and usage***
5. Diverse, cross-sector ***use cases and impact studies***, demonstrating *DE Africa's social, environmental and economic value*

April - June 2023 Highlights

Governance

- Governing Board 7 was hosted with key input on the Strategic Risk Management Plan
- Phase II independent End Of Program Evaluation is now complete, with key outcomes to address for Phase III.

Sustainment

- DFAT confirmed Phase III funding.
- The Australian High Commission to Mauritius have approved project funding: EO Capacity Madagascar.
- AWS and Esri confirm continued support for Phase III.

Diversity and Inclusion

- Received proposal for Industrial Training Program from the State University of Zanzibar.
- Provided technical support to YouthMappers projects, with positive outcomes.

Platform Management

- The DE Africa platform hosting continues, with key upgrades and updates, ensuring the platform continues to provide users the latest technology.

Science

- The Climate Action Toolkit, key outcome for the program, continues development, with final quality checks on new services, including the soon to be released Rolling Geomedian.

Capacity Development and User Engagement

- The team continued running awareness sessions, presenting at international conferences, and engaging with our users across the continent.

Communications Impact

- DE Africa's online presence showed consistent growth with increased followers and engagement on Twitter, LinkedIn, and YouTube.

Partnerships

- Our Implementing Partners continue their workplans, With RCMRD delivering training courses in Kenya, Tanzania and Uganda, and CSE coordinating and event that was conducted in English and French simultaneously.

Governance

On 6th June, the Governing Board held its seventh meeting. Discussions included a Strategic Session proposal, which will see the governing board convene to discuss the forward strategic priorities for Phase III of the program. The updated Risk Management Plan was provided to the Governing Board members for their review during this session.

The TAC sub-committee met again during May to continue work on the TAC Terms of Reference (ToR) update. The ToR have been finalised and will be submitted to the wider TAC members for endorsement at the next meeting.

DE Africa's End of Phase II Independent Evaluation was completed in May. The review assessed DE Africa's performance against the outcomes in the theory of change (ToC) and monitoring, evaluation, and learning (MEL) Framework; provided support for decision-making for the future, maximised the effectiveness and efficiency of program implementation; and provided accountability for results achieved by DE Africa during Phase II. The full report will be finalised and made available during 2023.



Sustainment

This quarter was filled with more successful progress towards the continued sustainment of DE Africa.

The Australian Department of Foreign Affairs and Trade approved additional funding for Phase III of the program, complimenting the Phase III funding already secured from the Helmsley Charitable Trust. The additional funding will focus on Capacity Development on the African Continent, as well as the further development of the Climate Action Toolkit, which will support African led climate adaption, mitigation and reporting initiatives.

There was also additional funding secured through the Australian High Commission to Mauritius, through their Direct Aid Program, to support an Earth Observation Capacity project in Madagascar. This project will see DE Africa hosting Capacity Development workshops for the Madagascar Ministry of Mines and Natural Resources, the Ministry of Agriculture, and at the University of Antananarivo. This project will kick off in August, and aim to enhance data literacy, resource management, and agricultural practices in the country, with a special focus on the inclusion and empowerment of women and youth.

DE Africa was also proud to secure the commitment of continued in-kind support for Phase III from some of our key partners, Amazon Web Services and Esri.



The initial engagement with the Madagascar Ministry of Mines in March that preceded the invitation for a Direct Aid Program funding proposal.





Diversity and inclusion

In April, we commenced planning of a DE Africa sponsored Industrial Training Program with the State University of Zanzibar. The program will enable 25 students to practice and apply mapping skills over time and equip students to transition from academic learning to application of these skills in their early career.

In May, the YouthMappers team at Makerere University in Kampala, led by Michael Jurua, completed a Use Case project using the DE Africa platform focused on preserving Uganda's forests. The findings included the identification of unregulated deforestation (using the DE Africa platform) which was then 'validated' through field work. This outcome reinforces the critical support that Earth observation data plays in identifying and responding to environmental issues. The University now includes DE Africa platform training in its geoinformatics curriculum.

Three blogs published in May and June were dedicated to winners of the YouthMappers Technical Challenge. The blogs were a great opportunity to showcase winning projects and gain an insight into the inspiring University students behind the projects who aim to use the findings for conservation planning and decision making and wastewater management in their regions.



Youthmappers at Jordan University College, led by Joseph Walwa



Above: Malawi University of Science and Technology (MUST), in Thyolo, Malawi, Joshua Kacheyo

Left: The Budongo Conservation Field Station project team in Masindi district for the data validation exercise led by Michael Jurua (Youthmappers at Makerere University in Kampala, Uganda).

Platform and Data

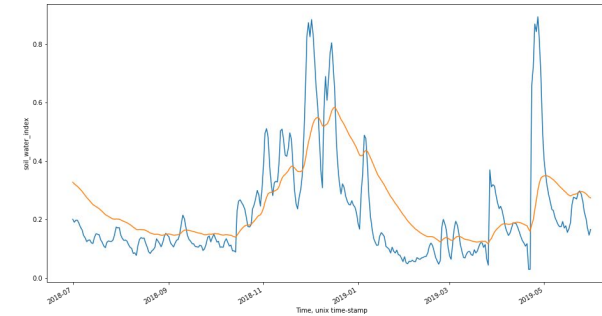
This quarter, regular platform maintenance and upgrades have occurred as planned. In addition, the team has supported development of the new continental Rolling Monthly GeoMAD service, which is due for release Jul-Aug.

Work is underway to establish three operational data pipelines:

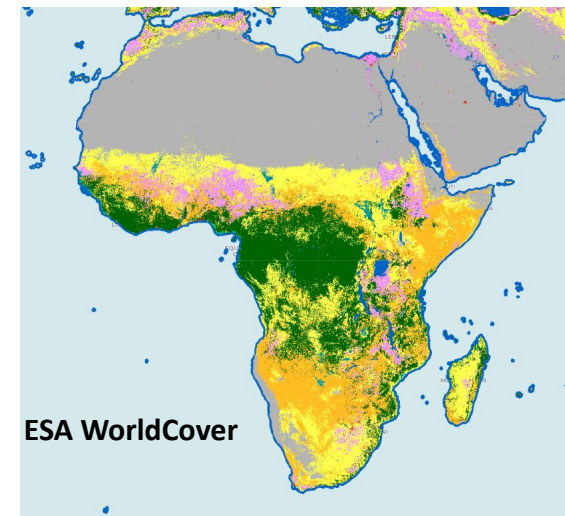
- ALOS PALSAR 2 from JAXA
- USGS Landsat Aquatic Reflectance

Other datasets from [external sources now available on the platform](#) in 2023 include:

- Settlement and population data including: ESA WorldCover 2021; Open Streetmap (roads, buildings, landmarks); DLR World Settlement Footprint; Ciesin and Meta high population density and population evolution
- iSDA soil data - soil property predictions at 30m resolution for the entire African continent
- Global Mangrove Watch v4 + alerts



Surface soil moisture and rootzone soil moisture GRAFS data.



Science

This quarter, the DE Africa science team continued their work on the Climate Action Toolkit. The toolkit includes a range of platform tools that will support African led climate adaption, mitigation and reporting initiatives. Quality Checks were completed on the 2022 Annual and Semi Annual geomedian, and the rolling geomedian test run. With the quality confirmed, the rolling geomedian from January 2019 to May 2023 has been put into production, with an official release coming soon.

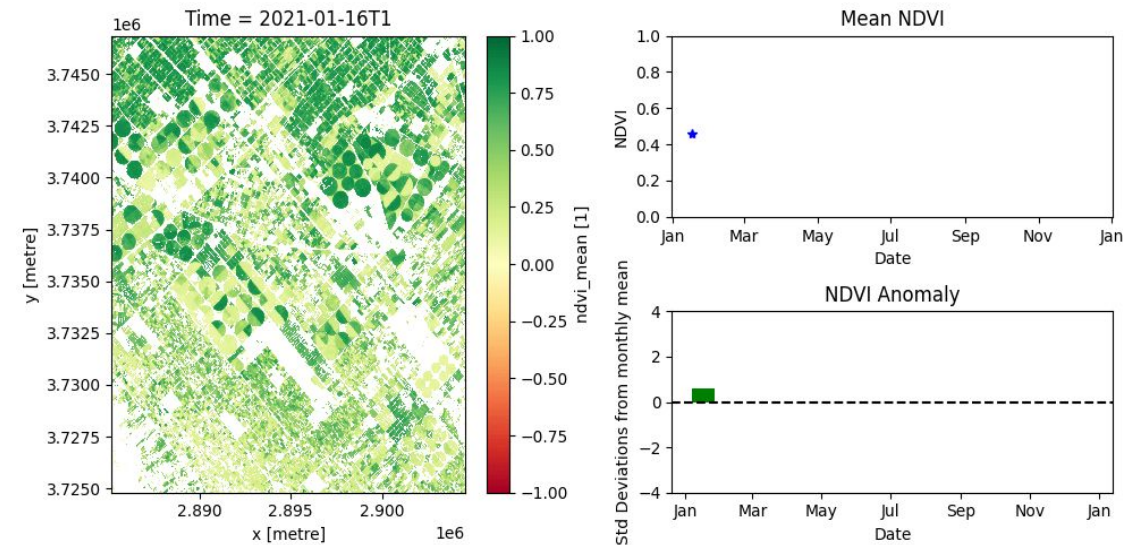
Several new notebooks have been released including

- New notebook released for the [Spyndex python package](#) which provides access to standardized, ready to use, curated list of spectral indices.
- Two notebooks released to visualize time series animations of NDVI mean, NDVI anomalies, and rainfall
- Several notebooks released thanks to our Project with FAO and FrontierSI (more details in Aligned Programs)

There has also been a number of international science engagements:

- OECD and resilient cities
- Brazilian datacube, science partnership
- Webinars and workshops:
 - Picterra - integration of AI for mining applications
 - FAO - crop type mapping and field boundary delineation
 - GEO Blue Planet coastline geomorphology working group workshop
- OECD and resilient cities
- Paper (wetlands) submitted for presentation at the ISPRS conference in Cairo
- Paper submitted on WoFS to the journal Frontiers for peer review

Digital Earth Africa – April - June 2023



Mean NDVI and NDVI anomaly in Egypt during 2021

Capacity Development

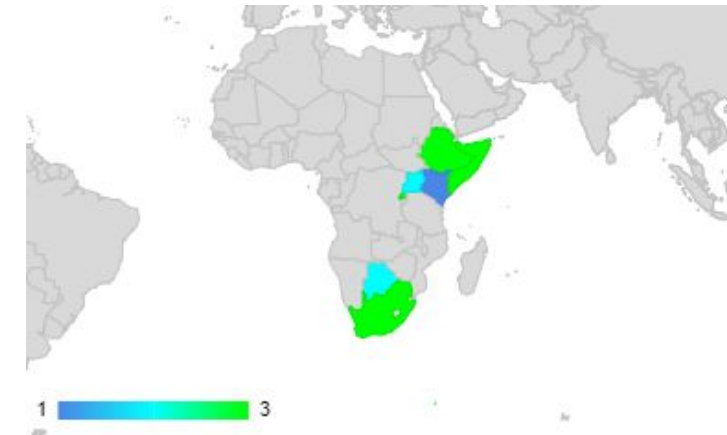
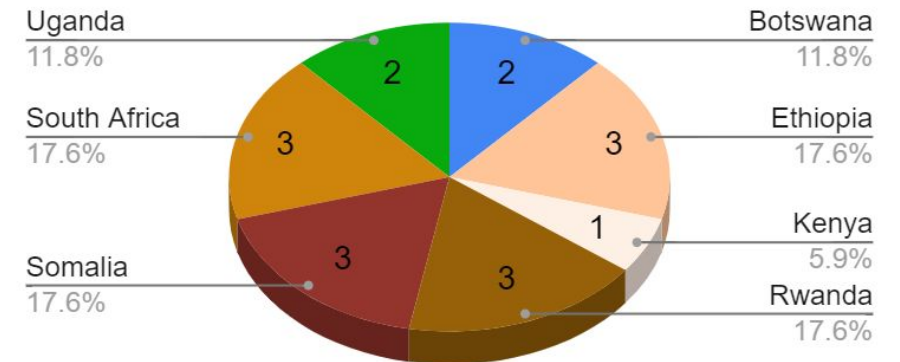
DE Africa held more than 9 face to face capacity development and user engagement workshops this quarter, including

- Six workshops for Information for Agriculture, Food and Water Security (IAFWS) project policy dialogue workshops were held in Botswana, Ethiopia, Kenya, South Africa, Rwanda, Uganda, detailed later in the report.
- Small Area Estimation training with UNSD in Addis Ababa
- Ministry of Agriculture, Rwanda, organised through the Department of Digital Technology, on how EO innovations can be used to monitor Agriculture.
- Final GPSDD Somalia NSO training, detailed later in this report

Additional virtual events included:

- DE Africa presented at an awareness session for Code for Africa, who are exploring databases that will address climate action, monitoring natural resources and Sustainable Development Goals.

DE Africa Workshops Complete - 2023



Face-to-face DE Africa Capacity Building and Engagement Workshops held in 2023

Growing user community

DE Africa's user community continued to grow during Q2 2023. Online course registrations showed a promising 13% increase, with 1,530 total course registrations. Additionally, the Sandbox platform saw a 5% rise in registrations, with 4,068 users now accessing the platform. DE Africa can now boast over 15,000 unique map users and increase of 12%.

DE Africa's Live Sessions, hosted virtually every week, have continued with a total of 12 sessions this quarter. There was a total 236 participants over three months with 27% of attendees identifying as female.

DE Africa's Learning Platform expanded its offerings this quarter, with five new online courses made available:

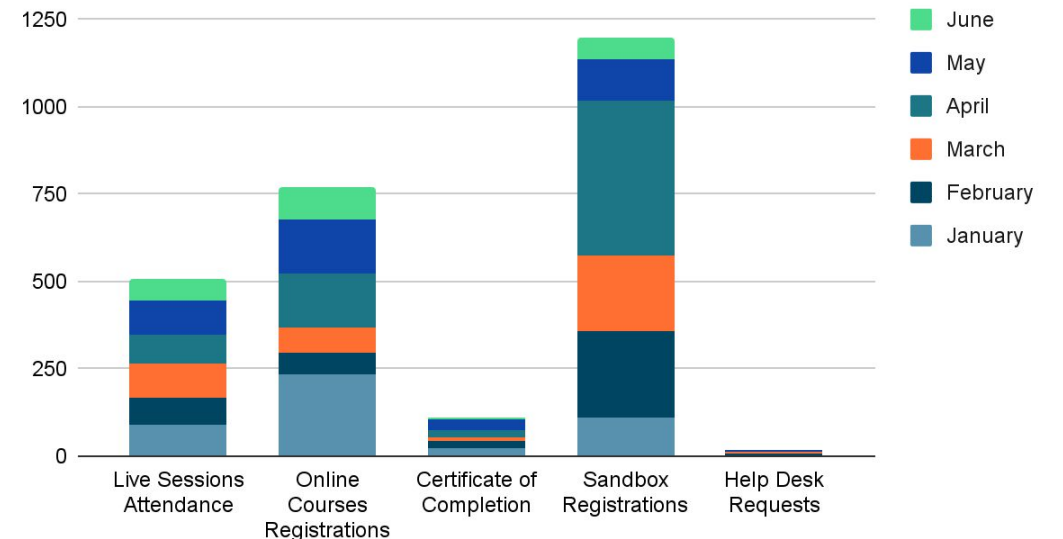
- Agriculture (French),
- Urbanisation (English & French),
- Land Degradation (English & French).

These were completed in partnership with AFRIGIST our Implementing Partner in Nigeria.

All time User Community



Monthly User Engagement



Latest use case studies and user stories

During the quarter, the team compiled some of the user stories from those who have used the platform to support their research and studies. Here is a list of some them below:

- [Michael Jurua's Quest to Preserve Uganda's Forests](#)
- [Building a more sustainable and resilient future through youth empowerment](#)
- [Celebrating African Champions in Geospatial Informatics: Joseph Mangu's Inspiring Journey](#)

DE Africa is working with Somali National Bureau of Statistics to develop two Use Cases:

- monitoring Somalia's coastline to inform forward strategy on mitigating coastal erosion,
- addressing vegetation change identified through the platform in the northwest of Buule Xaji from 2017 to 2021.



Above: Preserving Uganda's Forests, one of the project participants conducting a ground truthing assessment.



Left: YouthMappers Technical Challenge Winners from the Malawi University of Science and Technology.

Projects with Implementing Partners

- **RCMRD** ran a five-day workshop on the use of the DE Africa Coastlines service for erosion mapping and monitoring. Stakeholders from Kenya and Tanzania (9 females and 15 males) said the training has given them the tools and skills to provide advice to decision makers for planning and conservation of coastal areas.
- **RCMRD** conducted a training program using the DE Africa Wetlands products and services for stakeholders in Uganda from government, academia and the private sector (11 females and 7 males). The training equipped participants with practical skills and knowledge for managing wetlands in their regions.
- **CSE** have, on behalf of Digital Earth Africa, hosted an international conference in collaboration with GMES and Africa Academia Network (GAAN). The conference was held online and was titled “Exploring the potential of the platform for sharing geospatial products and services developed by the Digital Earth Africa program”. The conference occurred in English and French simultaneously, with the moderator translating to allow all participants to engage.
- **CSE** have also completed a draft report, “Validation of Products Developed Using the Digital Earth Africa Sandbox For Monitoring Water Dynamics”, which is currently being reviewed before publication.



Students of the Makerere University's College of Engineering, Design, Art and Technology, during their five day introduction to DE Africa



Projects with Aligned Programs

Face to face dissemination workshops for the Information for Agriculture, Food and Water Security (IAFWS) project, funded by the Australian Centre for International Agricultural Research (ACIAR), continued this quarter with workshops held in Uganda, Kenya, Ethiopia, Botswana, South Africa and Rwanda. These workshops were delivered in partnership with the **Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)**, **The Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA)**.

More information about this project can be found here: [Information for Agriculture, Food and Water Security \(IAFWS\) | Digital Earth Africa](#)

DE Africa partnered with **Global Partnership for Sustainable Development Data (GPSDD)**, with support from the Islamic Development Bank Institute (IsDB Institute) and the Somali National Bureau of Statistics to host dignitaries to engage and educate on using Earth Observation capabilities to monitor SDG indicators in Somalia. Through this engagement, DE Africa will be working with the Somali National Bureau of Statistics to develop two Use Cases; monitoring Somalia's coastline to inform forward strategy on mitigating coastal erosion and addressing vegetation change identified through the platform in the northwest of Buule Xaji from 2017 to 2021.

During the quarter, the **Food and Agriculture Organisation (FAO)** partnered with DE Africa and FrontierSI on prototyping land cover and crop type mapping workflows for Rwanda and Mozambique was completed, along with a series of 9 notebooks and several training events.



IAFWS workshop attendees in Botswana

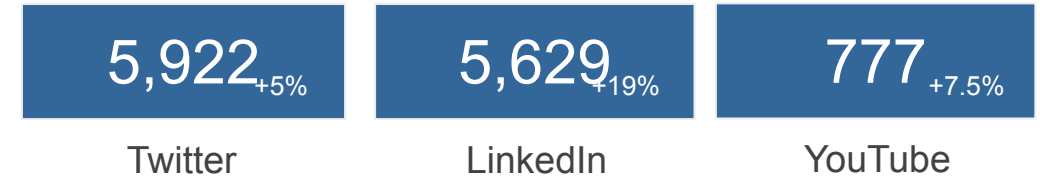
Communications Impact

This quarter, the top five visitor locations has changed dramatically, with Kenya, Nigeria, Uganda and Ghana featuring. This may be due to the in-country engagements held in these regions since the beginning of 2023. This trend over the quarter highlights the increased awareness of DE Africa on the continent.

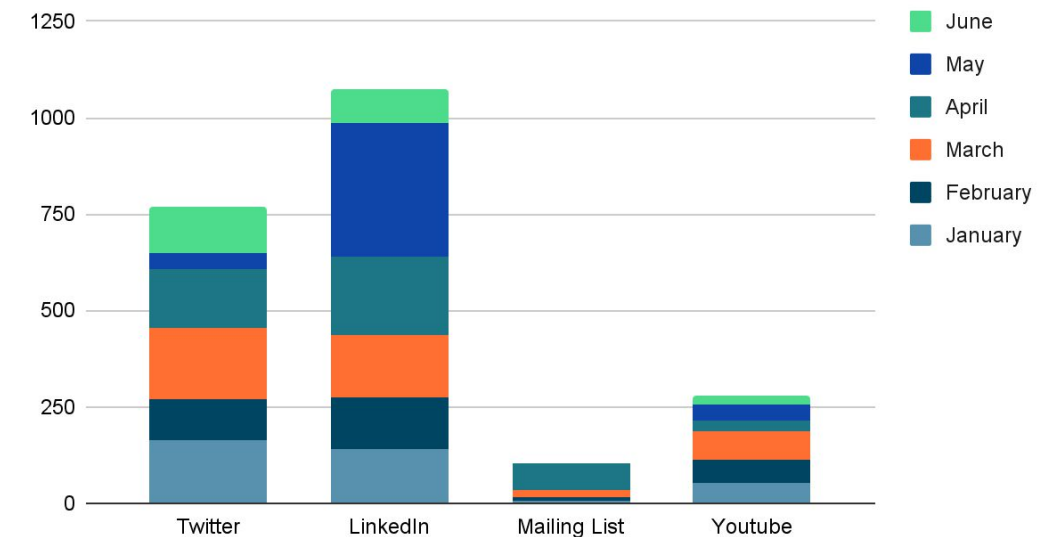
Social media followers have increased across the board, with a substantial increase to LinkedIn this quarter. Again, this correlates with the number of events and engagement that DE Africa participated in.

DE Africa was also fortunate to be featured in the media:

- [DE Africa Secures Additional Three Years Funding to Provide EO Data for Growth in Africa - Space in Africa \(africanews.space\)](#)
- [Perfect Storm: Durban floods, climate change and coastal resilience \(theoutlier.co.za\)](#)



New Followers on Communications Platforms



Top 5 Visitor locations (% users)
Kenya – 12,36%, Nigeria – 10,53%, Uganda – 6,82%
United States – 5,05%, Ghana – 4,84%

Events and Engagements



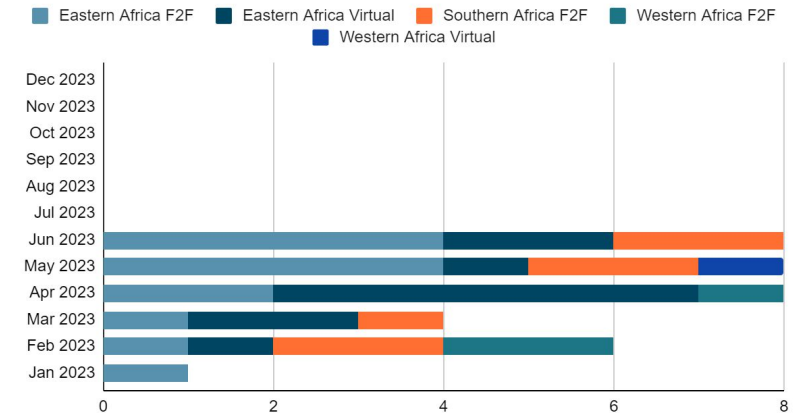
The DE Africa team attended more than 8 face-to-face events this quarter, including:

- Newspace Conference in Abidjan, Côte d’Ivoire
- Group on Earth Observation Symposium and Open Data & Open Knowledge Workshop, Switzerland
- ASARECA Ministerial Conference in Kampala, Uganda
- DE Africa presented at the MeasureDev conference (World Bank) in Washington DC, USA
- Workshop on “Space Innovation Ecosystem Development in Rwanda
- International and Country Dialogue on Climate-Smart Range Management, Maseru, Lesotho
- Locate 2023, Adelaide, Australia
- Open Street Map Eastern Africa - open data talk, Kenya

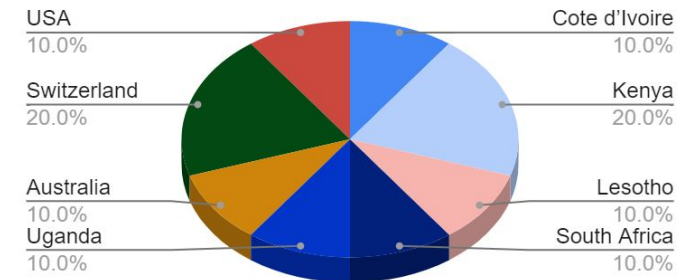
Virtual

- Hosted by Mercy Corp Twitter space, DE Africa presented on how GIS enables precise mapping, data analysis and informed decision making for a sustainable future.
- Akili Ventures, carbon sequestration project in Zambia, Ivory Coast and Guinea.
- Engagement with Code for Africa, Malawi Youth mappers
- Land cover mapping for Rwanda
- Africa Wildlife Foundation
- Engagement with UNODC on regulated mining workshop
- WEMS on One SDI, inc Remote Sensing Technology Centre of Japan, Esri, and other UN agencies.

User Engagement Activities in Geographic Areas



DE Africa Conferences Attended - 2023



Africa-Australia engagement



DE Africa conducted an in-person Science Team workshop at Geoscience Australia, bringing together the global DE Africa Science Team from the US, Ghana, South Africa, Sri Lanka, and Australia. The workshop facilitated improved collaboration with DE Australia, strengthening ties and knowledge sharing between the two entities.

In April, Dr Ken Mubea met with the Australian Ambassador to Ethiopia, H.E. Ms. Julia Niblett, discussing how the platform can be used to support improved food security in Africa.

In June, the Australian High Commission to Mauritius approved a new Capacity Development project: EoCapacity Madagascar. This project will be in-person training on using the DE Africa platform to benefit various ministries in the country and also engage the University of Antananarivo to provide

These engagements during the quarter exemplify DE Africa's commitment to fostering meaningful collaborations and partnerships with Australia to enhance geospatial capabilities, promote sustainable development, and advance the knowledge exchange between the continents.



Acknowledgements





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- Website: <https://www.digitalearthafrica.org>
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- Learning Platform: <https://learn.digitalearthafrica.org>
- User guide: <https://docs.digitalearthafrica.org>

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