



# Digital Earth Africa

Quarterly Program Update: March – May 2020



*DE Africa Technical Advisory Committee Meeting, Pretoria, South Africa, 3-5<sup>th</sup> March 2020*

# About Digital Earth Africa

## Our vision

Digital Earth Africa (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.

## Program goals

The long-term goal for DE Africa Phase II is to improve the lives of Africans through access to tailored information for decision making. This encompasses<sup>1</sup>:

- Livelihood strengthening – Earth observation (EO) data will support more informed decision making at government, sectoral and other levels, contributing to direct and indirect benefits for individuals and communities.
- Development effectiveness – DE Africa will support enhanced understanding of development challenges and solutions, and in so doing, strengthen collective impact and ability to assess progress towards national priorities, Agenda2063 and the SDGs.
- Digital transformation – through industry uptake and innovations, DE Africa will help fuel ongoing evolution of the digital economy in Africa.
- 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.

## Report purpose

This Quarterly Report provides a snap-shop of DE Africa Phase II progress made between March and May 2020, as aligned with DE Africa's Investment goals.

<sup>1</sup> These align with the 5 Outcome areas identified by the Governing Board, as per the [Governance Framework Document](#)



# Progress summary

## Technical highlights



*Sentinel-2 imagery of Betsiboka Estuary Madagascar*

The DE Africa platform now has operational analysis ready EO data over Africa, using free and open images captured by the European Sentinel-2 satellites. This is the first ever continuously updated satellite data for Africa at the continental scale. Satellite images captured by Sentinel-2 are particularly important for Africa because they offer ten-metre resolution and are captured every five days, so land and water can be analysed in unprecedented detail.

Access to this comes at an important time where EO is playing a key role in building systems to support the response and recovery of critical challenges such as the COVID-19 crisis, locust invasions and severe flooding. The ability to monitor changes that relate to people and the environment due to the impacts of these crises provides valuable insights to make informed decisions on the right actions to take and for future planning.

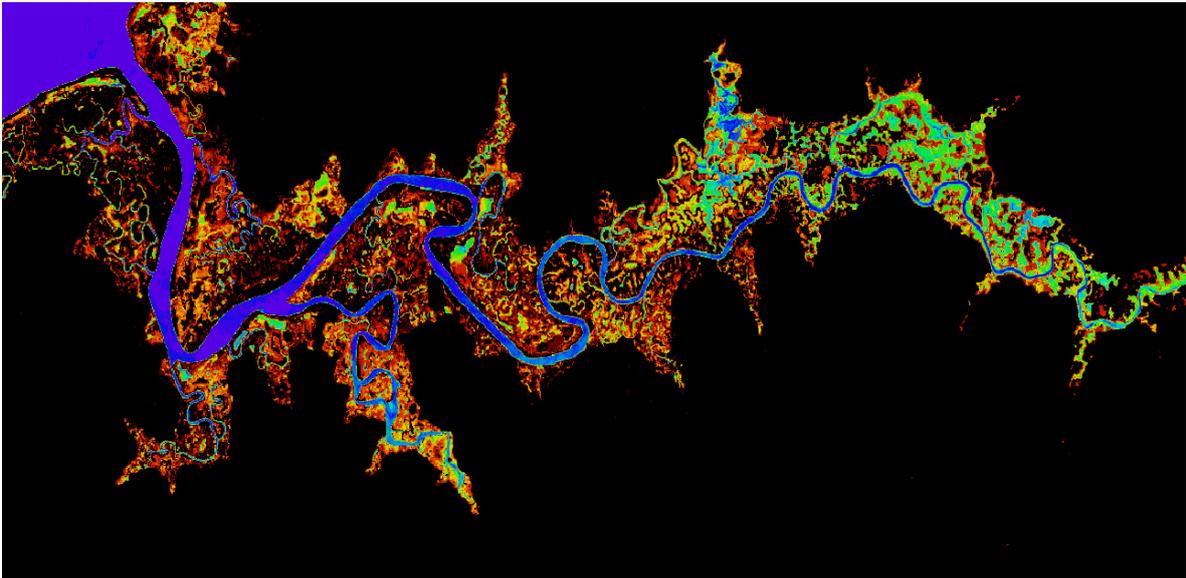
This data is available through the [DE Africa platform, web services and applications](#), ensuring data is accessible to everyone, from those with no technical expertise, to highly qualified systems developers.

DE Africa's [Technical Road Map](#) has been endorsed by the Technical Advisory Committee (TAC) and is now being used to guide the development of DE Africa's infrastructure and services. Technical work is now focussing on operationalising the water product and development of a food crop product.

Food security has been identified by the TAC as a priority for year two of the program. A task team has now been established to support user engagement and uptake of a crop land map (or 'mask') product for addressing food security issues. The task team includes participants from Tunisia, Kenya, Uganda, and Nigeria and the Group on Earth Observations Global Agricultural Monitoring (GEOGLAM).

	May - July	Aug - Oct	Nov - Jan	Acquisition to availability (nominal time)
<b>Input datasets</b>				
Landsat Collection 2		Operational		3 days
Sentinel-2	Operational			3 days
Sentinel-1	Development		Operational	3 days
<b>DE Africa platform</b>				
	All platform components are active and continuously improved.			
<b>Services</b>				
Water Observations from Space (WOfS)	Beta	Provisional	Operational	4 days
Crop Land Map	Development		Provisional	

Water Observation from Space (WOfS) allows anyone to understand the presence, location and recurrence of water across Africa and is basic data to quantify water. It is essential that DE Africa products be as accurate as possible, and to ensure this we have developed a [Data Validation Strategy](#) which outlines our approach for validating our services, including assessing bias or errors. The [Data Validation Strategy](#) has also been endorsed by the TAC. To put the strategy into action, we have formed a data validation task team with our key Africa-based partner institutions, which is now actively working on validation of the water product (WOfS).



Water Observations from Space (WOfS)

## Governance implementation

The [DE Africa Governance Framework](#) is soon to be fully operational, with diverse geographic and gender representation at all levels.

Following recent agreement from leaders in Rwanda and Tanzania, we have a quorum to form the DE Africa **Governing Board**, and anticipate the inaugural meeting will be held in August. The inaugural Board will include seven members (five of whom are female) with representation up to ministerial level.

The 4th **Technical Advisory Committee** meeting was held in Pretoria, South Africa, 3-5<sup>th</sup> March, hosted by the South Africa National Space Agency. 18 TAC members were present, including representatives from across Africa (e.g., Tunisia, Senegal, Sierra Leone, Ghana, Niger, Kenya, Tanzania, South Africa, and Madagascar) and a range of government, academia, private sector and international donor organisations. This meeting was a significant milestone for the program and key achievements included endorsement of the capacity development strategy, technical roadmap, communications strategy and data validation strategy. In addition, a key decision of the meeting was to address food security as a priority theme for year two of the program.



The DE Africa **Stakeholder Community Group** continues to grow and now has 614 subscribers (+68 since January 2020).

DE Africa has committed to the development of a [Gender Equality, Diversity and Social Inclusion \(GEDSI\) Strategy](#) to ensure a strong program focus on gender, diversity and inclusion so benefits flowing from DE Africa can be harnessed by women, people with disabilities and marginalised groups.

## Program establishment in Africa

In-Africa recruitment is now successfully underway and our Ghana based Technical Manager, [Edward Boamah](#), started in March.

Negotiations with the United Nations Economic Commission Africa (UNECA) to become the hosting institution for the program office are ongoing. These delays remain a key program risk. To accelerate the establishment of the program and to provide a mechanism that allows for recruitment of staff and distribution of funds to partner institutions, a transitional trust fund mechanism is being established with the Group on Earth Observations (GEO).

The Digital Earth Africa Investment Design, which identifies intermediate and end of program outcomes, has been approved by the Australian Government, Department of Foreign Affairs and Trade (DFAT). The Investment Design is supported by a Monitoring, Learning and Evaluation framework which is now being implemented to track and report progress against key program outcomes. A [summary of investment design and reporting framework](#) is available.

## Strengthening partnerships

The number of DE Africa partners actively supporting establishment and implementation continues to grow. Memorandums of Understanding (MOUs) are in negotiation with five new strategic partner organisations in Africa: the South African National Space Agency (SANSA); Centre de Suivi Ecologique (CSE), Senegal; African Regional Institute for Geospatial Information Science and Technology (AFRIGIST, Nigeria); Observatory Sahara Sahel (OSS); and the Rwanda Space Agency.

An MOU between DE Africa and the International Water Management Institute (IWMI) is being developed following the three-year grant. This is focusing on water accounting, flood and drought hazard mapping and early warning systems, both regionally and in the Helmsley priority countries (Burkina Faso, Ethiopia, Ghana and Zambia).

These new partnerships add to the international and technical partnerships that we already have, such as with the Group on Earth Observations (GEO) that provides a global mandate, with Amazon Web Services who are hosting 2 Petabytes of DE Africa data in their Public Data Store, with ESRI who have developed and maintain the Africa Geoportal, and more recently with the US-Aid and NASA funded SERVIR program which is providing vital technical tools to support validation work (more detail elsewhere in this report).

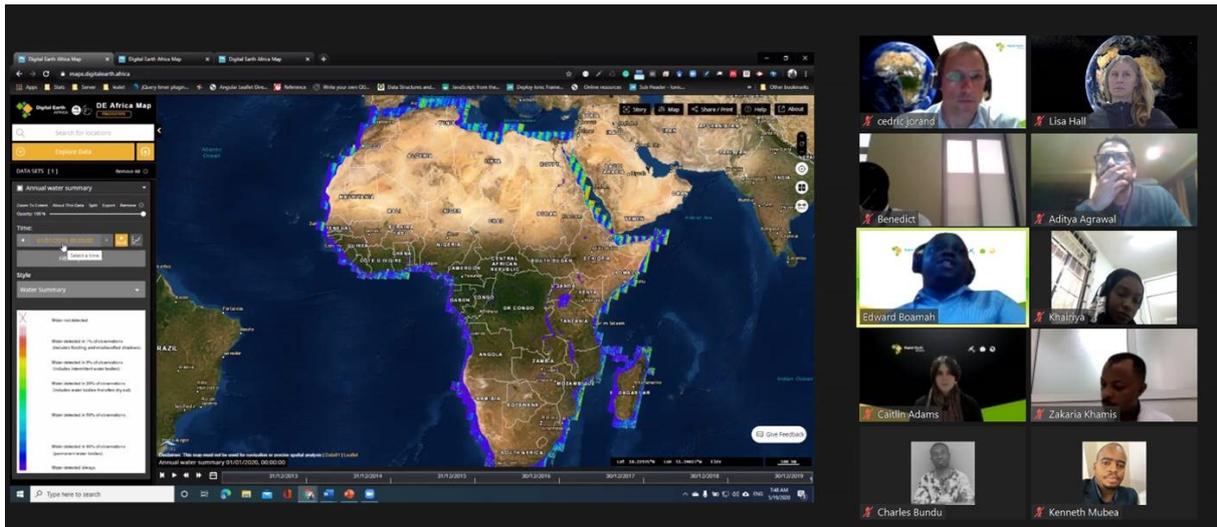
## Growing capacity and uptake in Africa

As the technical platform matures, our emphasis to increase the number of users, and use-cases, in Africa.

DE Africa's [Capacity Development Strategy](#) has been endorsed by the TAC. This outlines the principles, tools and methodologies for capacity development, using an impact-oriented and demand-driven approach.

A training and transition program is underway to move users from the Africa Regional Data Cube (ARDC) currently supporting five countries to DE Africa's continental-wide infrastructure. Successful workshops to on-board advanced users to the DE Africa platform have now been held for Tanzania and Ghana, with Senegal and Sierra Leone to follow ([News article](#)). In addition, planning is underway to bringing on new users in Kenya.

The ARDC-DE Africa user training forms the start of the capacity development program, providing training to advanced users as well as establishing a focus group for continued feedback on product and service development. The training material that has been developed in both English and French will be made public for all to access and will form the first tranche of the capacity development work.



*DE Africa ARDC virtual transition workshop with Tanzania*

A portfolio of case studies documenting how DE Africa is being used for decision making in Africa is now in development. The first case focused on [preserving mangroves in Zanzibar](#) was recently published for World Environment Day.

## Continued outreach and engagement

DE Africa's [Communications Strategy](#) has been endorsed by the TAC, providing the framework and overarching direction for all communication activities and stakeholder engagement activities.

DE Africa continues to be regularly profiled across a range of mediums and audiences. Edward Boamah represented DE Africa in the NASA Space Apps COVID-19 Challenge on 30-31st May, a global, virtual hackathon using EO data to address COVID-19 issues. DE Africa will also present at the virtual GEO Symposium covering Resource Mobilization (Adam Lewis) and the technology behind DE Africa and DE Australia (Fang Yuan).

Since January 2020, DE Africa has been featured in seven [online articles](#), has 314 new twitter followers (total 1148) and has had 9092 unique website views.

DE Africa also has activated a [LinkedIn page](#) to build stakeholder support and drive thought leadership.

## Implications of the COVID-19 global pandemic

This quarter saw the COVID-19 global pandemic cause unprecedented disruptions to local and global economies and society. UNECA report that over 300,000 Africans could lose their lives due to coronavirus. Economic growth is expected to slow down from 3.2 percent to 1.8 percent, pushing close to 27 million people into extreme poverty, hindering efforts to achieve the continental development blueprint, Agenda 2063 as well as the global development blueprint and Agenda 2030. [See the full report.](#)

The evolving situation presents challenges for the investment. However, given the technology driven nature, it is anticipated that DE Africa can continue to deliver the outcomes identified for Phase II and

is also well placed to provide relevant and timely assistance to Africa in its recovery from this crisis. For example:

- Nearly two-thirds of African countries are net importers of basic food and feared shortages will severely impact food availability and food security. DE Africa's immediate focus on food security will provide free and open data to support decision making around agricultural development issues.
- African GDP may be reduced by half and a decline in commodity prices could lead to fiscal pressures for countries with stronger economies such as South Africa, Nigeria, Algeria, Egypt and Angola. DE Africa's free and open products and services can stimulate the digital economy, providing new opportunities for business development and economic growth.

Our approach is to stay connected and stand ready.

- Following initial calls with stakeholders in Africa, and the continuing development of technical capabilities and skills in Africa, the overall stance of DE Africa is to participate in relevant forums and to stand ready to provide support when it is identified that the capability can provide valuable information. Key messages from South African, Kenyan and Ghanaian representatives include:
  - Information from DE Africa will be valuable as soon as it is available. We must not assume that our data is not relevant simply because it is not traditional health data. For example, questions like proximity to clean water arise when policies of hand-washing are promoted.
  - To identify the opportunities to provide support, we must be connected with the discussions that are occurring, even as an observer.
  - African governments are seeking to respond with a dearth of information. Even general information is likely to be very important.