AfriGEO COVID 19 Working Group

What is AfriGEO

AfriGEO is an initiative of the African community in GEO aimed at providing a coordination framework and platform for Africa's participation in GEO.

In addition it is a:

- Pan African initiative to raise awareness and develop capacity on EO for governments, research organizations and the commercial sector;
- Framework for strengthening partnerships and collaborations within Africa;
- Gateway into Africa for international partners; and
- Support mechanism for the implementation of GEO objectives and programmes in Africa.

AfriGEO COVID 19 Working Group

The AfriGEO COVID 19 working group was formed for countries in the region to share their different experiences in response using EO data, to identify data gaps and needs and formulate ways to share data and tools with each other.

The main objectives of the AfriGEO COVID 19 Working Group are:

- *Sharing National/ Institutional COVID 19 monitoring, response and post COVID 19 recovery experiences and learning;*
- *Show case uses of EO in COVID 19 monitoring and post COVID 19 recovery;*
- *Identify EO data needs, gaps and challenges experienced to support national and regional COVID 19 monitoring and post COVID 19 recovery;*
- *Provide access to critical data for COVID 19 and post COVID 19 recovery;*
- *Networking and Collaboration; and*
- *Communication.*

Working Group Members

The working group includes:

- 9 Member Countries:
  Botswana, Ghana, Kenya, Malawi, Namibia, Nigeria, Senegal, South Africa, and Zimbabwe.
- 2 Participating Organizations:

  RCMRD, UN- HABITAT;
- Private Sector:
  GeoTErra Image, AfriTerra, and Universities.
- Outside region:
  United States of America, China, and Netherlands.

EO Data for COVID 19

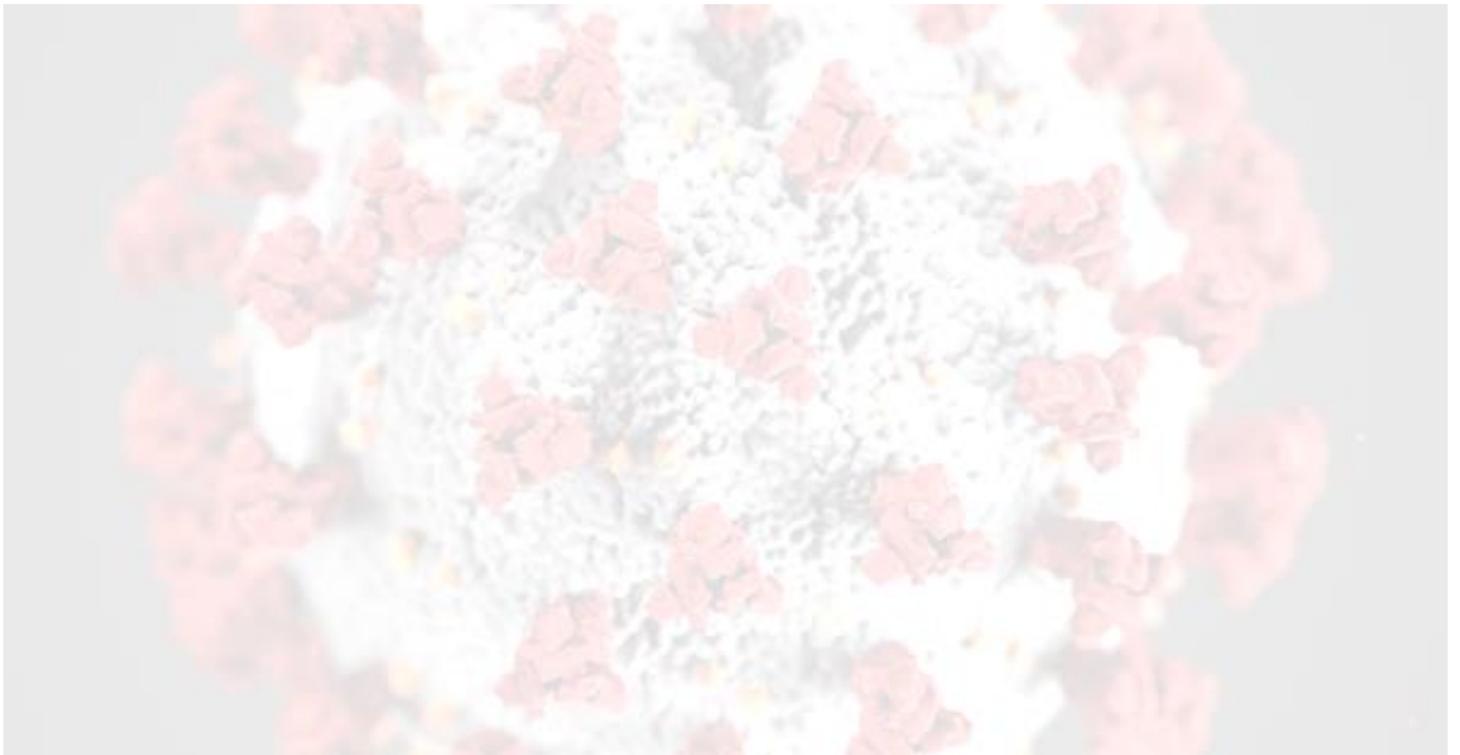Critical EO Data Identified for COVID 19 response and monitoring include:

- Location of COVID 19 cases;
- Location of Health Facilities esp. Testing, Quarantine, Isolation and Treatment Centres;
- Data on Population Densities and Demographics;
- Human Settlement Layer;
- Human Mobility data and Gridded cell phone data;
- Land Cover data;
- Crop yield estimates to give an effect of COVID 19 on food security;
- Socio Economic Data.

Critical Data for Hotspot Analysis

- High Resolution Imagery;
- Contact Tracing;
- Prediction of Spread based on mobility;
- Citizen Science;
- Location based services information;
- Community based GIS.

National/ Participating Organization/ Private Sector Interventions	Access	Intervention Description
Ghana	https://www.xtellix.com/	University of Energy and Natural Resources, EORIC, through Dr. Mark Boateng has been able to develop a cloud computing platform that has enhanced performance by up to 1,000x faster!*. The platform is able to optimize up to 1,000,000,000+ parameters.
Namibia	https://gisserver.nsa.org.na/portal/apps/opsdashboard/index.html#/e8d79f18bd424670b7db99d56866573f	They have a dashboard developed through the Namibia Statistics Authority to support government with the monitoring process.
Nigeria	https://geoson.org/covid19-gis-dashboard/ https://nigeria-coronavirus-response-data-hub-nbs-nigeria.hub.arcgis.com/	• GEOSON has developed a dashboard accessible via desktop and mobile to monitor the COVID 19 cases (Confirmed, Recovered, Active and Death) throughout Nigeria. • COVID 19 hub developed through multiple partners: National Bureau of Statistics, Federal Ministry of Health, Nigeria Centre for Disease Control among others to host repository for multiple COVID 19 spatial responses.
Senegal	https://arcg.is/HO040	CSE has develop an app using Esri platform for monitoring case evolution and identify areas at risk. The Heath department has a similar platform which is updated daily. CSE is now focusing to develop helpful products for recovery phase.
South Africa	http://products.sansa.org.za/mapApp/index.html https://sarva.saeon.ac.za/infographics/ https://nrf-saeon.maps.arcgis.com/apps/webappviewer/index.html?id=47c325acfe6a49679fab8e7cd51afc5c	• They have an inventory of available open and commercial data within South Africa that can be accessed through the SANSA portal. • They have also provided to Government information on location based services including proximity to food stores, health infrastructure etc. during lockdown. • They have also been able to overlay the human settlement layer which indicates the vulnerable communities, informal settlement population density, access to health infrastructure, identification of open space, monitoring of projects. • They have also been able to monitor air quality as an effect of COVID 19. • They have been using cell data to monitor traffic and have provided access to COVID 19 information through a Decision Support tool. • SAEON has been producing data on population Vulnerabilities, it's important to link these with Earth Observation for other response.
RCMRD	http://covid19.rcmrd.org	• RCMRD has developed a monitoring platform for the Government status (Lock Down, Curfew, State of Emergency etc.) for all their member states. • They also have a monitoring system for the cases within the member states that is anchored on the Africa Geoportal. • They have done detailed monitoring for the county of Nairobi where they have put in additional data on hospital access and available facilities and done modelling to show potential spread of disease in the near future. • They have also integrated the case data with population densities and human traffic to give an indication of the vulnerabilities. • They are continuously supporting the Ministry of Agriculture- Kenya to understand the risk post to Food Security as a result of COVID 19.
UN Habitat	https://storymaps.arcgis.com/stories/150e9db59f8b4a9489e86b3523c17ba3	Has been working on an assessment of COVID 19 risk in cities and urban areas. They have been able to identify through this assessment the risk areas based on population densities. They have also looked at slum mapping (Kenya as first pilot) using inputs from population densities, built up area densities, settlement morphology and crowdsourcing to determine the vulnerability of these people to COVID 19 amongst other public health challenges.

GeoTerra Image	Commercial Data.	They have the following data for a number of countries in Africa and have the capacity to rapidly generate these data for other countries on demand: • building density data that shows all the densely populated zones and the low population zones; • population density data that includes estimates of day time and night time population distribution; • density of commercial centres; • Integrated population density data with boundaries of settlement areas to show population density in different zones. • They have additional country data for SA which includes: surface Water; Building based Land Use; New Developments; Population Demographics; Building Footprints; Neighbourhood Lifestyle index. • They have also been able to do studies on the social economic impact of population growth in specific locations over time. • Specifically for COVID 19, they have been able to develop some risk models at ward level in SA.

Regional resources for Data shared

Resource	Access	Description
1. Africa Geoportal	https://www.africageoportal.com/pages/covid-19-response	Official COVID 19 Dashboards developed through Esri Platforms
2. Digital Globe open data for disaster response (30cm) for cities globally:	https://blog.maxar.com/open-data-program/2020/open-data-response-to-the-covid-19-pandemic?utm_source=twitter&utm_medium=organic	HR images (30cm) released by Maxar in Support of COVID 19 for the following Cities: *Addis Ababa, Abidjan, Dakar, Lagos, Kano, Ibadan, Ouagadougou, Accra, Luanda, Kinshasa, Nairobi and part of northern Ghana.*
3. GEOSS Portal	https://www.geoportal.org/?f:dataSource=dab	GEOSS portal is an online map-based user interface which allows users to discover and access Earth observation data and resources from different providers from all over the world. Search is narrowed by filtering passed on the subject.
4. European Commission; GHS-BUILT, GHS POP	https://ghsl.jrc.ec.europa.eu/download.php?ds=pop	Provides Global Human Settlement Layer (GHSL) datasets that are available for open and free download. Derived from Landsat-Census estimates.Resolution 1sq Km grid.
5. World Population	https://www.worldpop.org/	Develops peer reviewed research and methods for construction of high resolution geospatial data on population distribution, demographics and dynamic with focus on low and middle income countries
6. Facebook Connectivity Lab and Center for International Earth Science Information Network - CIESIN - Columbia University. 2016. High Resolution Settlement Layer (HRSL). Source imagery for HRSL © 2016	https://www.ciesin.columbia.edu/data/hrsl/#data Figure 1: Current data availability and coverage for Africa	HR Settlement Layer developed through Facebook and Digital Globe. The data includes the population surfaces, metadata, and data quality layers. The population data surfaces are stored as GeoTIFF files for use in remote sensing or geographic information system (GIS) software.
7. African Union Support for COVID 19	https://africacdc.org/covid-19/	Africa CDC dashboard on COVID 19 cases.
8. WHO Public Health Sector Database	https://www.who.int/malaria/areas/surveillance/public-sector-health-facilities-ss-africa/en/	This master list of health facilities was developed from a variety of government and non-government sources from 50 countries in sub-Saharan Africa. It uses multiple geocoding methods to provide a comprehensive spatial inventory of 98 745 public health facilities.
9. UNFPA Vulnerable Populations to COVID 19	https://covid.pdp.unfpa.org/	Dashboard utilizes latest census data from 94 countries, population estimates by world pop projections for 2020, health sector readiness data based on their capacities and real-time COVID 19 cases to determine the vulnerable populations.