



Digital Earth
AFRICA

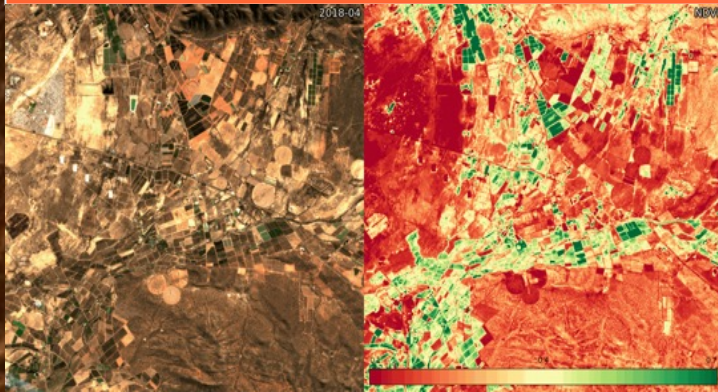
**Unlocking the promise of tomorrow
from the patterns of the past**

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Capacity Development Lead
Digital Earth Africa
kenneth.mubea@digitalearthafrika.org

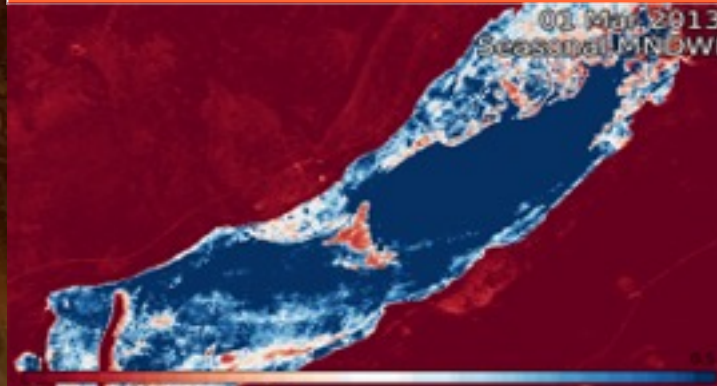
Our Vision

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.

Agriculture and food security



Water resources and flood risks



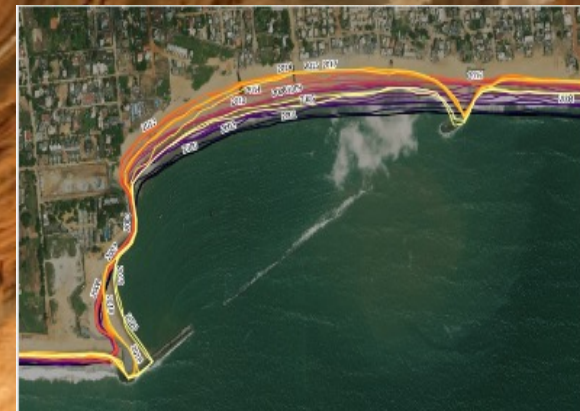
Land degradation



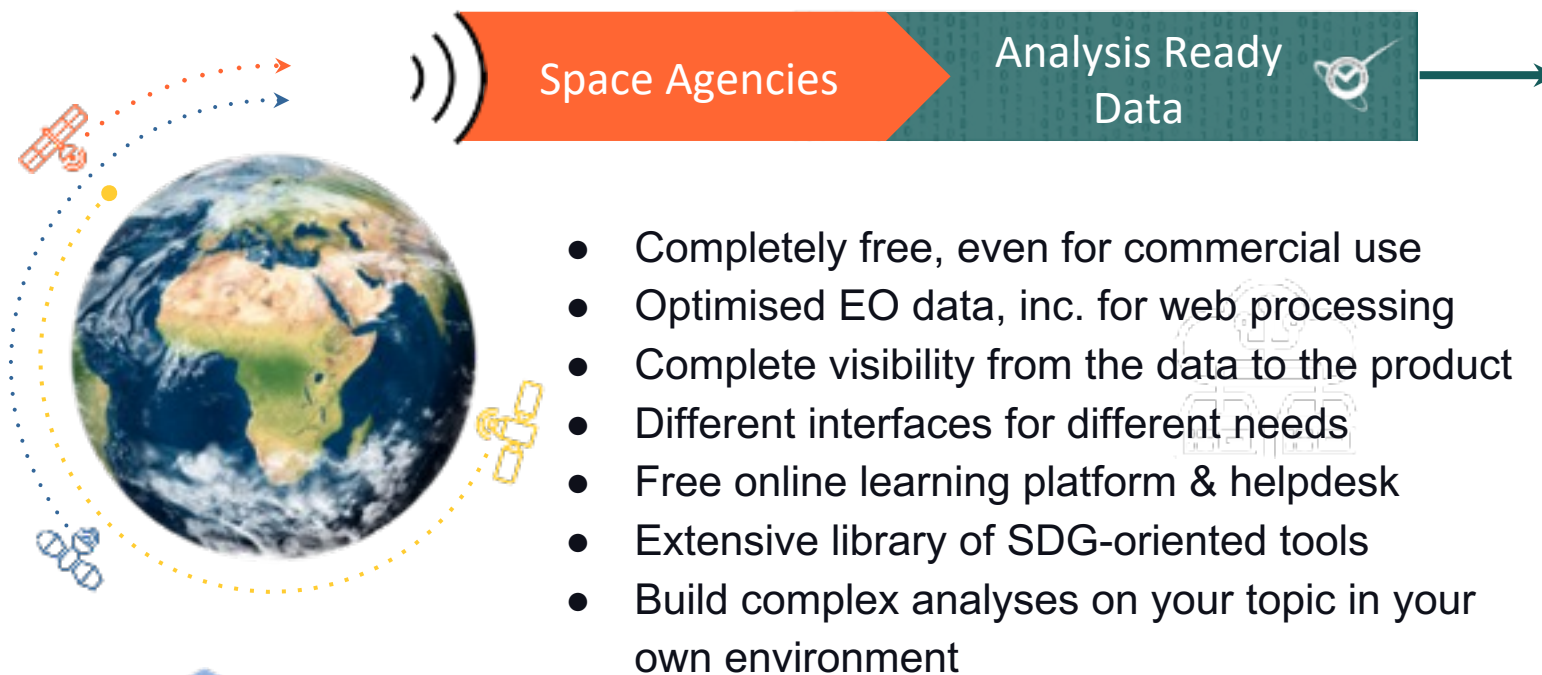
Urbanisation



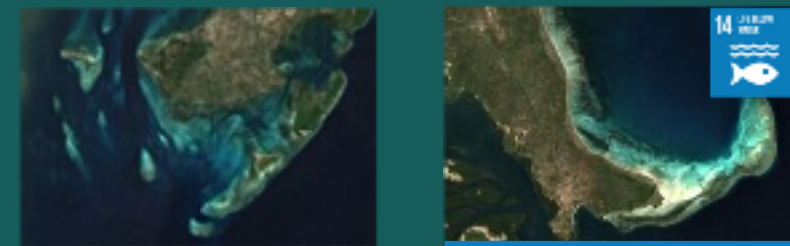
Coastal erosion



Satellite data available through Digital Earth Africa



Find out more technical detail in [Digital Earth Africa Docs](#)



Studying the Tanzanian Coastline with GeoMAD, 2019, RGB



Monitoring crops in Egypt 2001-2020, Landsat, RGB



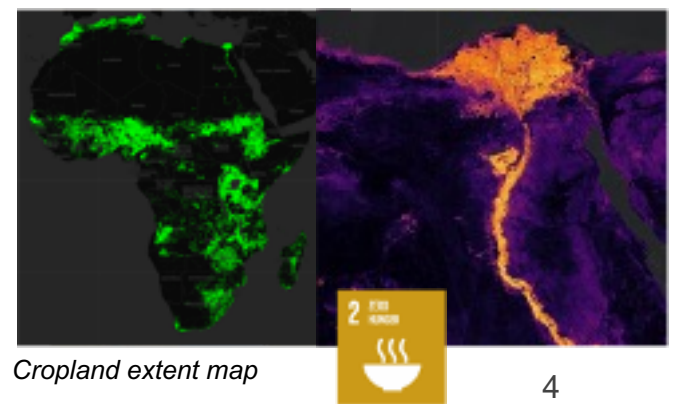
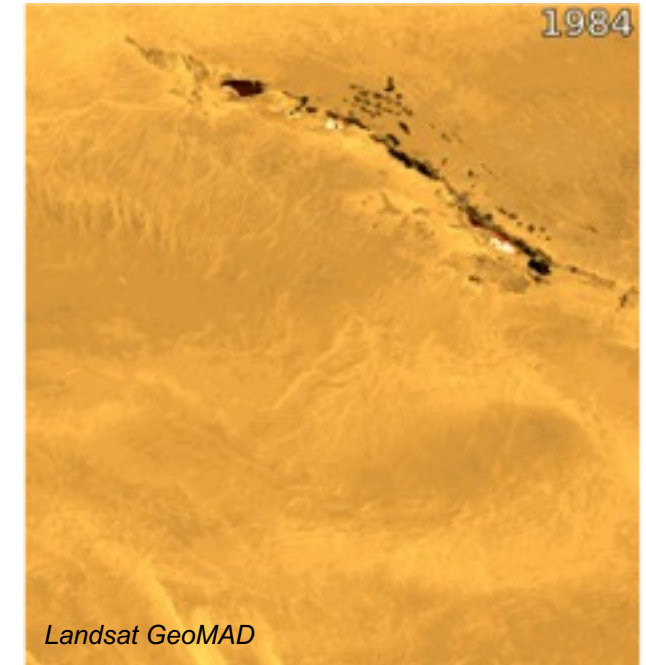
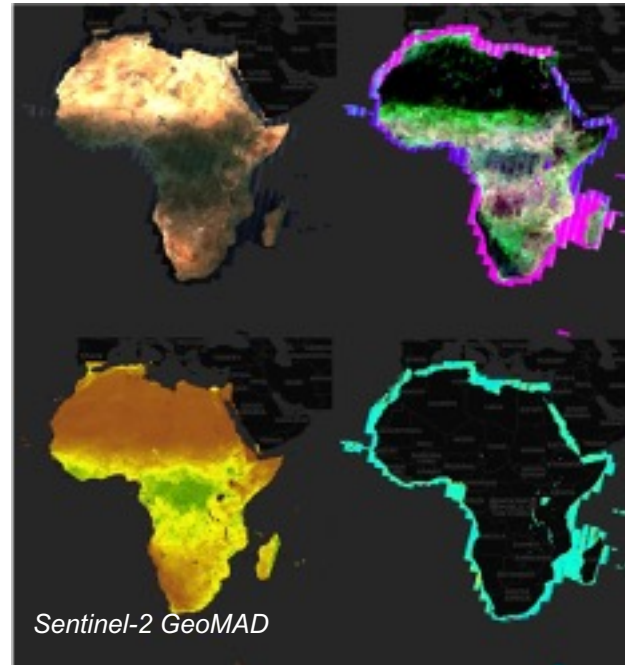
Monitoring Mount Nyiragongo, 2018 Sentinel-2 RGB and 2021 Sentinel-1



Measuring water extent on rangelands in Etosha National Park, Namibia 1992-2021, Landsat, False Colour

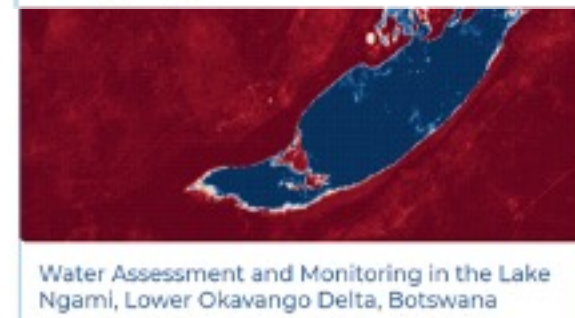
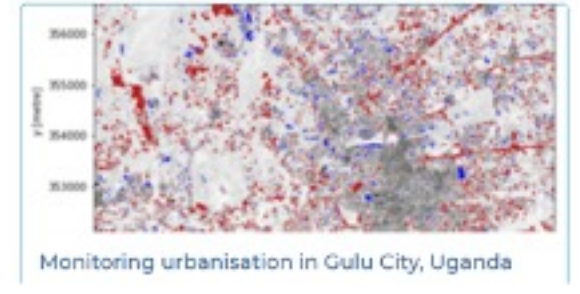
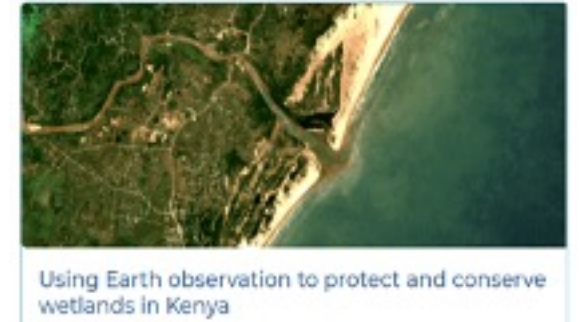
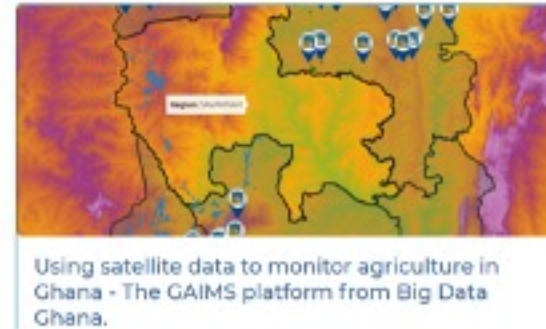
DE Africa Services and Tools

- 3.1PB data in Cape Town
- Multiple continental scale operational services
- Extensive library of SDG-oriented tools
- Product co-design with Africa partners

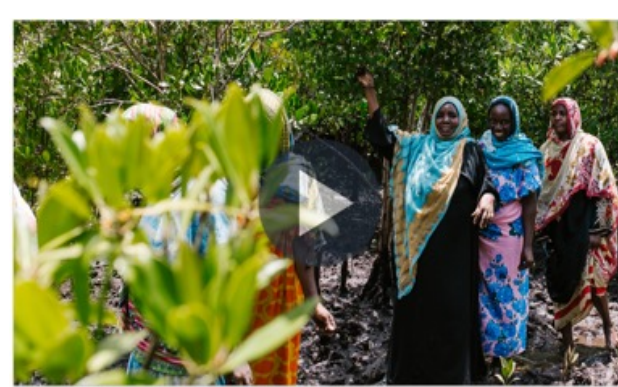


Making an impact use cases

- 14 published use case studies (Kenya, Ghana, Tanzania, Botswana, Uganda), across government, industry, academic
- 7 use case studies in development (Senegal, Benin, Burkina Faso, Niger, Botswana, Kenya, Nigeria)
- 2 industry projects supported



Coastlines in Africa

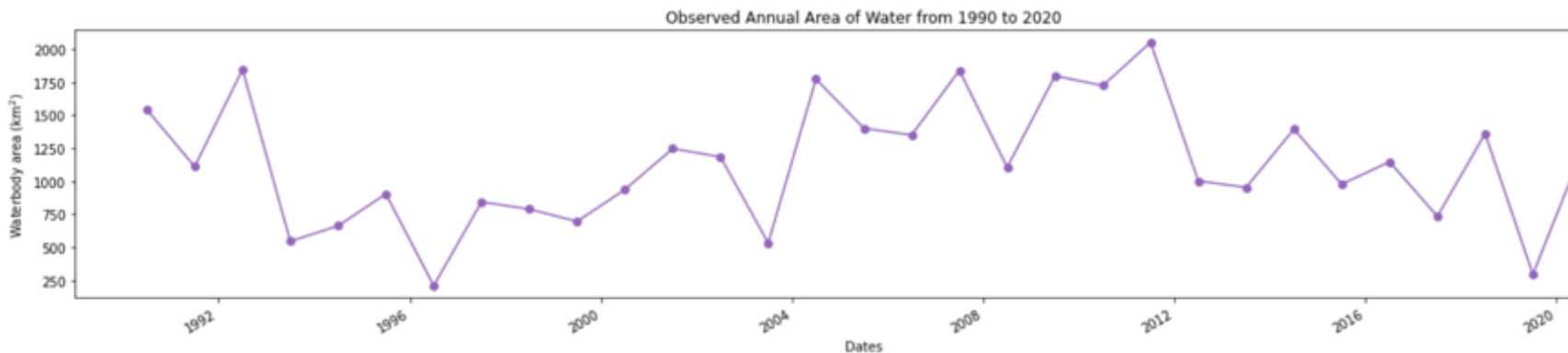
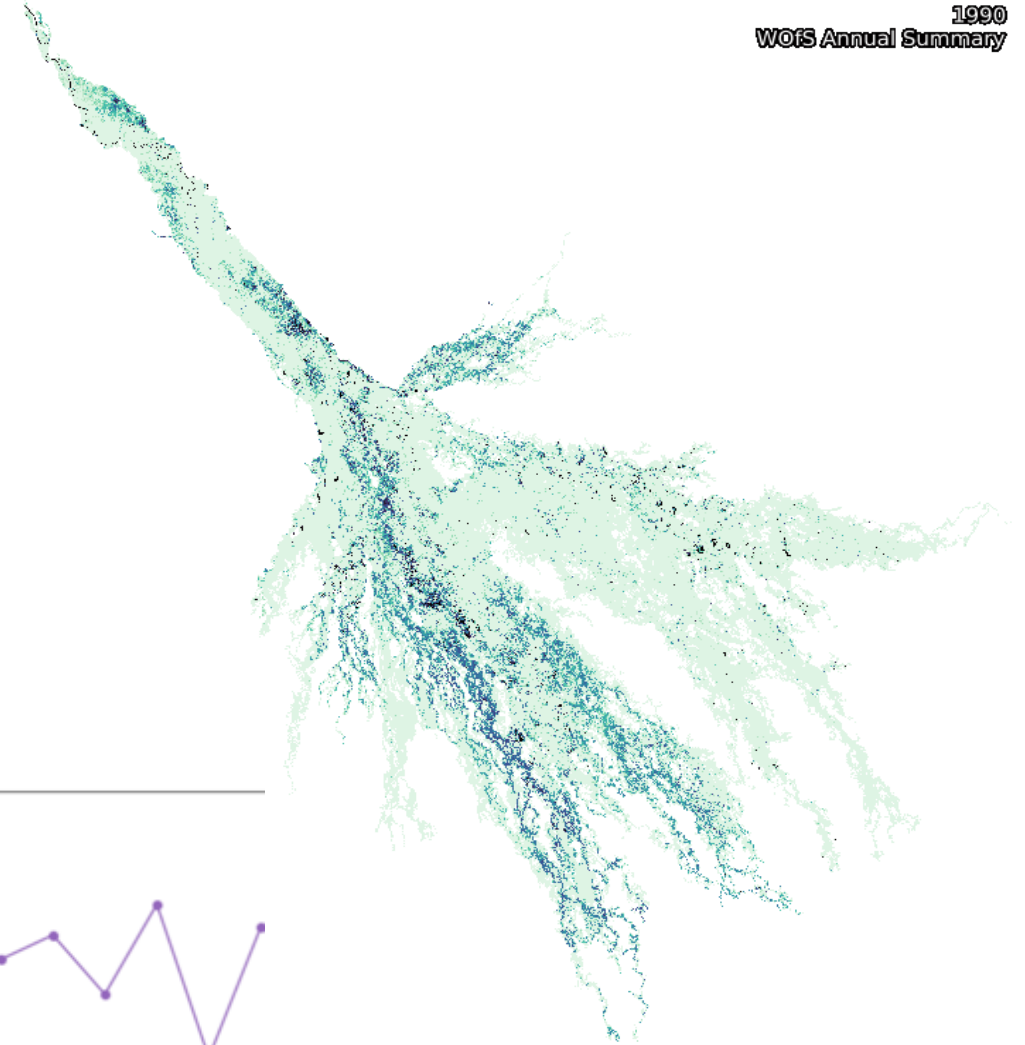


Mangroves in Zanzibar

Digital Earth Africa

Analysing Effects of Drought on Inundation Extent and Vegetation Cover Dynamics in the Okavango Delta

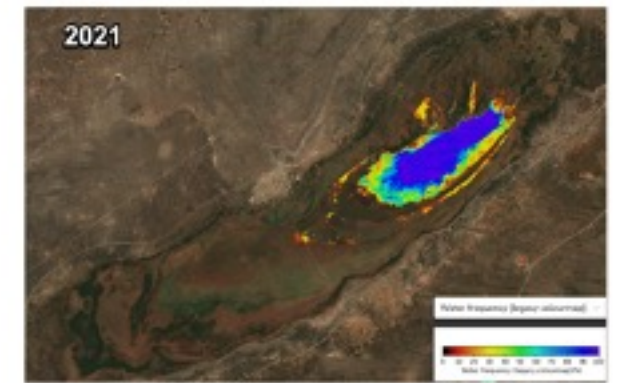
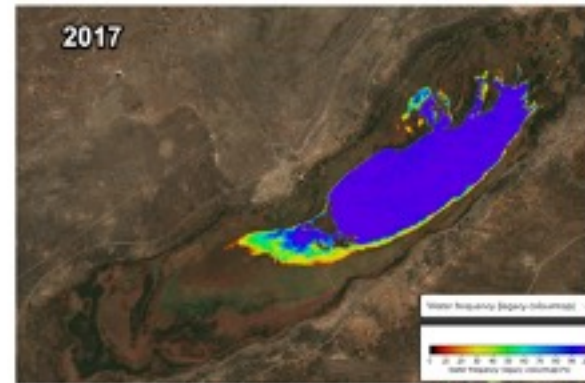
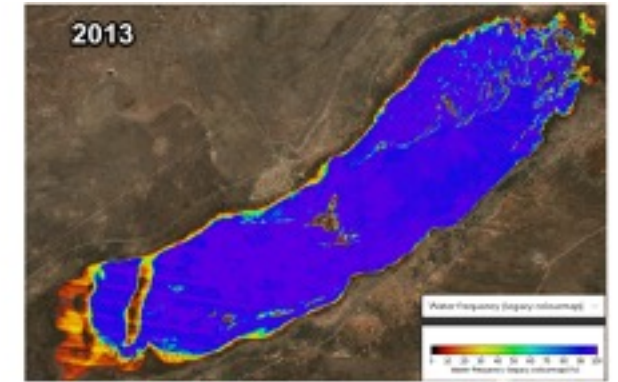
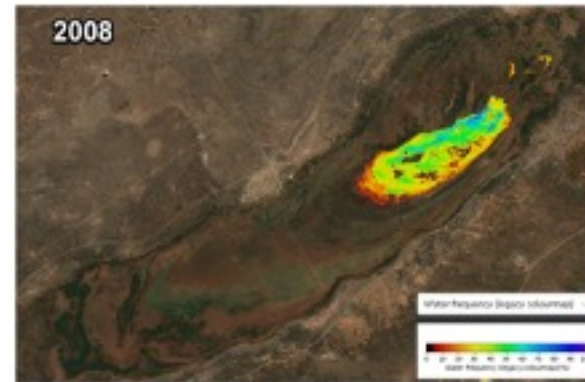
- Okavango Delta has experienced low water levels due to climate change.
- Digital Earth Africa (DE Africa) provided the Water Observation from Space (WOfS) to evaluate water variability the Okavango from the year 1990 to 2021.
- Drought observed in the Cubango-Okavango River Basin region started earlier than 2019 spanning over a period of 5years; with 2018 as the year when the wetland system reached a minimum threshold for a tipping point triggered by the 2019 drought.
- Need for an integrated water shed plan.



Water Assessment and Monitoring in the Lake Ngami, Lower Okavango Delta



- Lake Ngami is located at the western part of the lower Okavango Delta and an indicator for environmental change and climate variability in the Okavango Basin.
- Digital Earth Africa (DE Africa) provided the Water Observation from Space (WOfS) to evaluate water variability in Lake Ngami, Botswana from the year 2017 to 2021.
- The results for Lake Ngami indicate the need for an integrated watershed plan that encompasses the Okavango Delta.



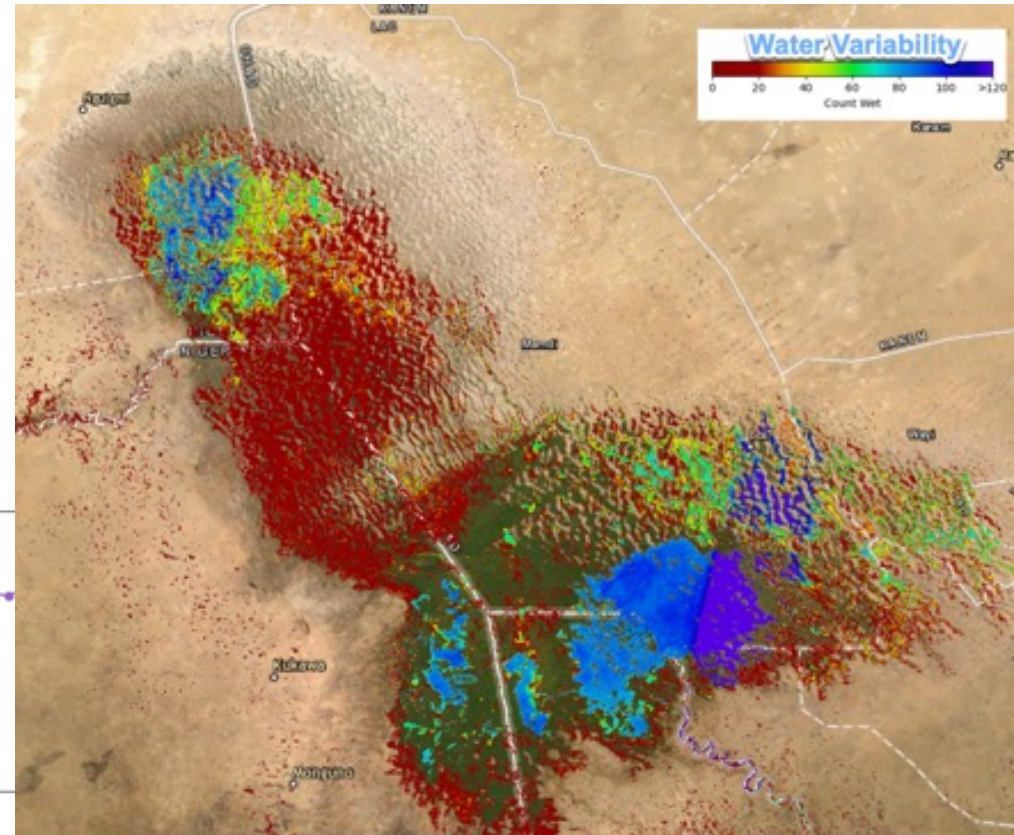
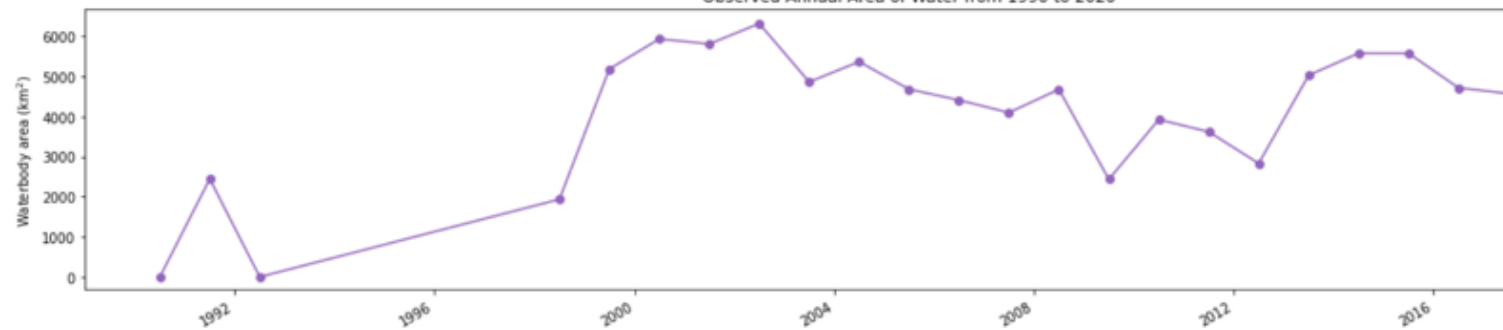
Digital Earth Africa helps assess the changes in water levels in Lake Chad



- Lake Chad has experienced low water levels due to climate change.
- AGRHYMET is using Digital Earth Africa (DE Africa) to provides insights into Lake using the Water Observation from Space (WOfS) to evaluate water variability the from the year 1990 to 2021.
- Need for an integrated water shed plan. Niger, Cameroon, Chad and Nigeria .



Observed Annual Area of Water from 1990 to 2020

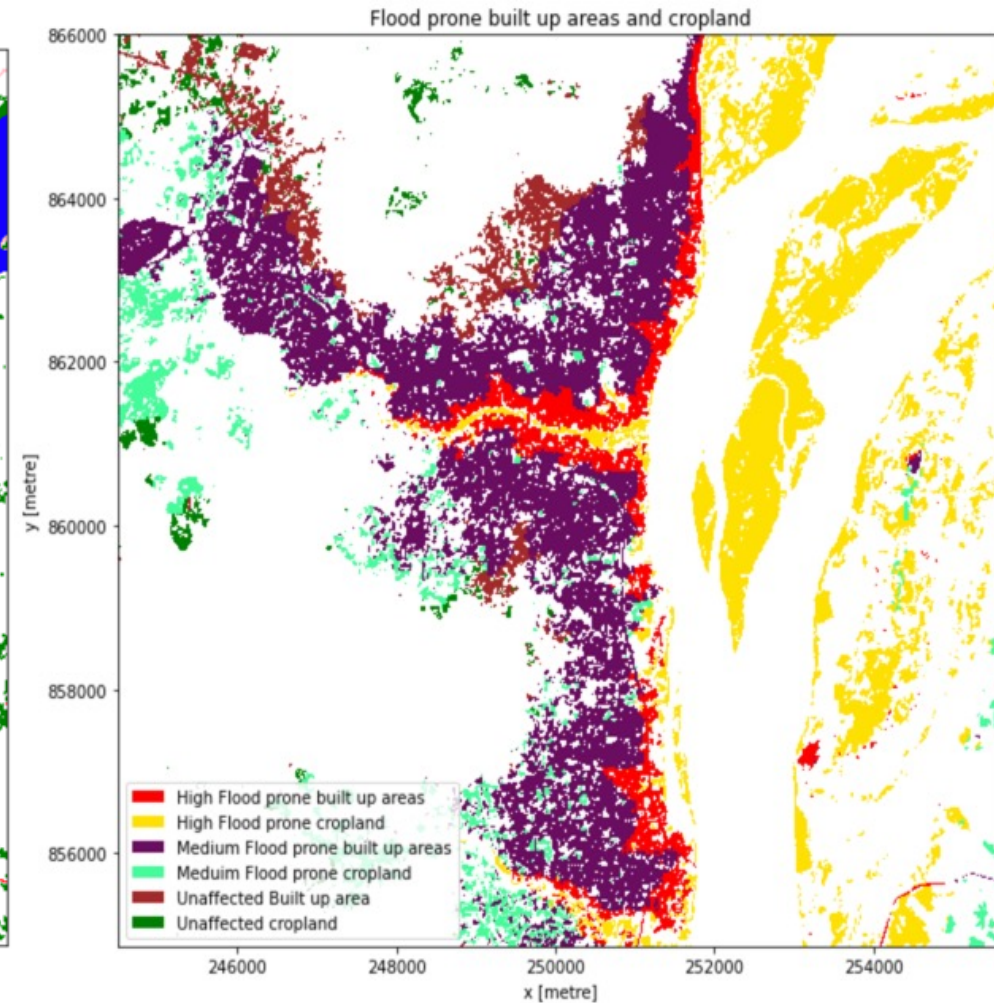
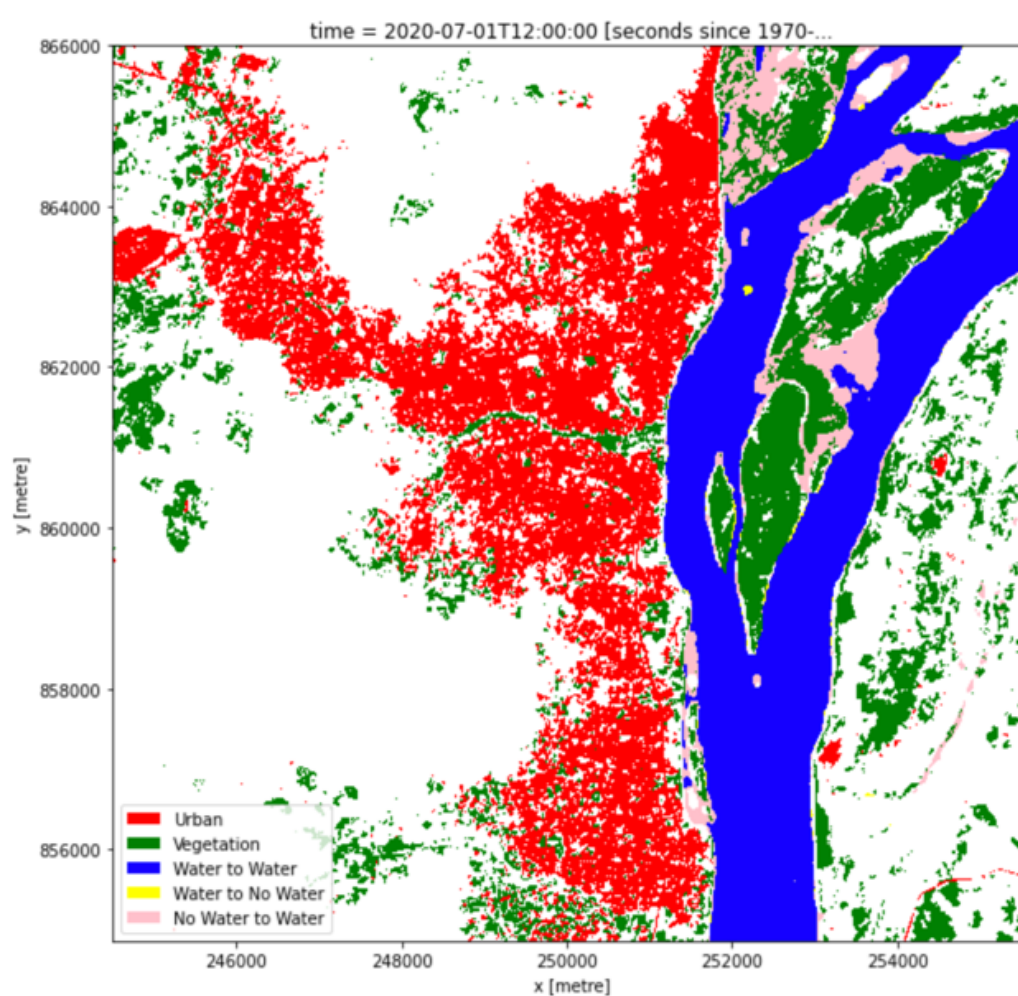


Flood assessment using Sentinel 1, 2. Lokoja, Nigeria



- AFRIGIST in Nigeria, using Digital Earth Africa (DE Africa) to provides insights into flooding in Lokoja,

lat = 7.78
lon = 6.73



Monitoring water quality – Lake Guiers, Senegal

- Sentinel 2, normalised difference chlorophyll index (NDCI)

$$NDCI = \frac{\text{Red edge 1} - \text{Red}}{\text{Red edge 1} + \text{Red}}$$

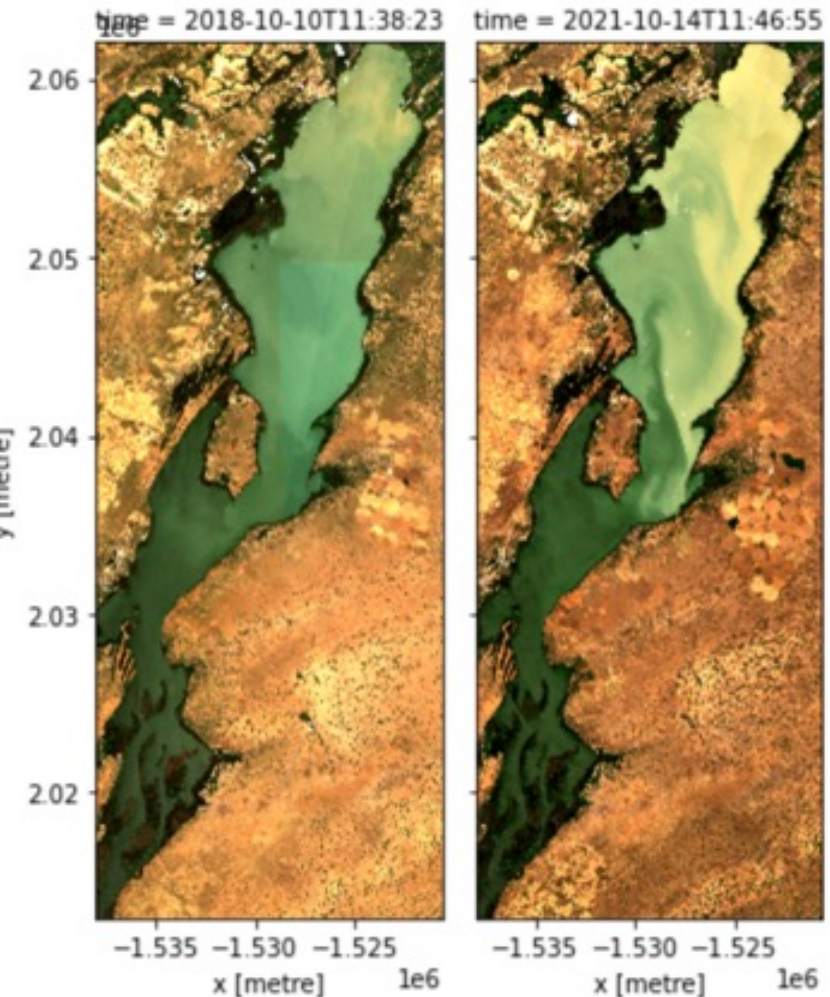
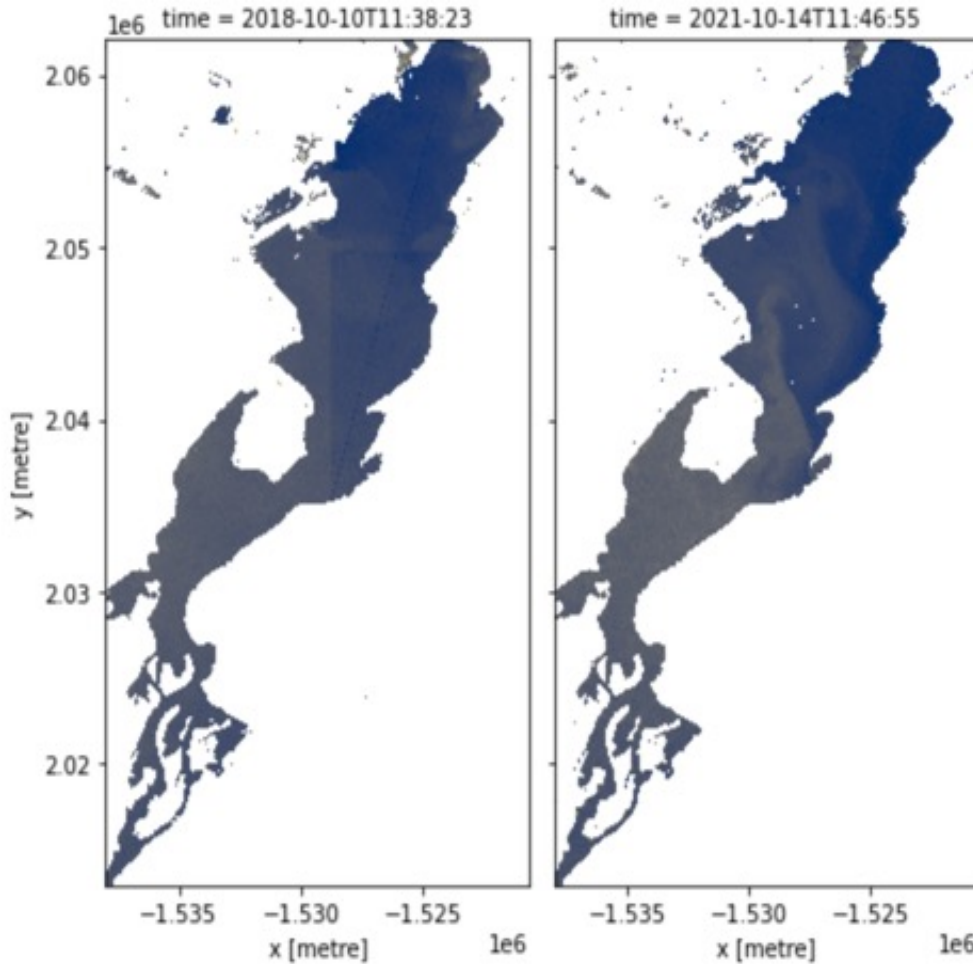


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AFRICA

#lake Guiers
lat = 16.18
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lat_buffer = 0.2
lon_buffer = 0.09



Digital Earth Africa



2 ZERO HUNGER



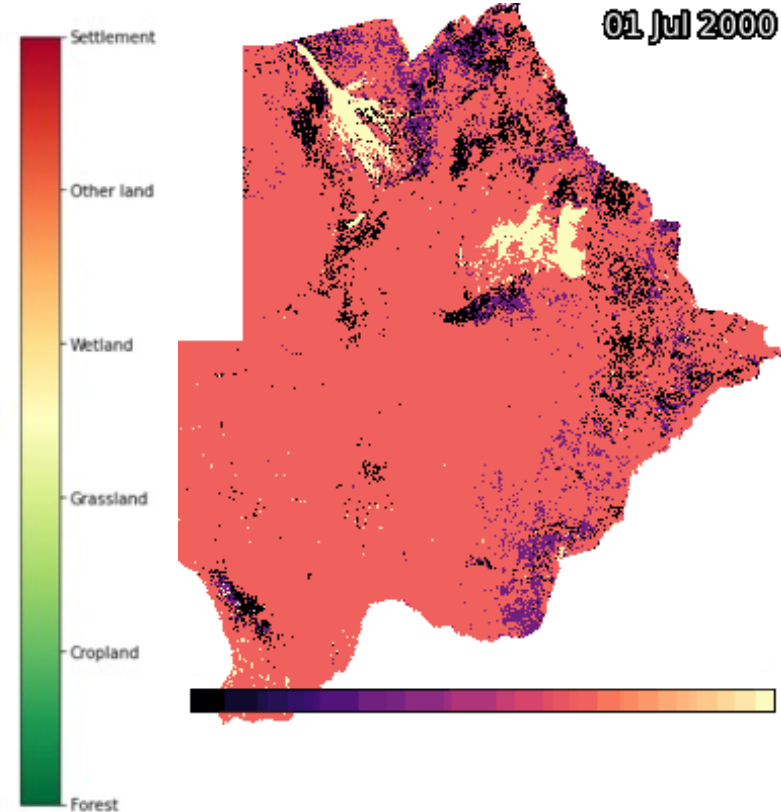
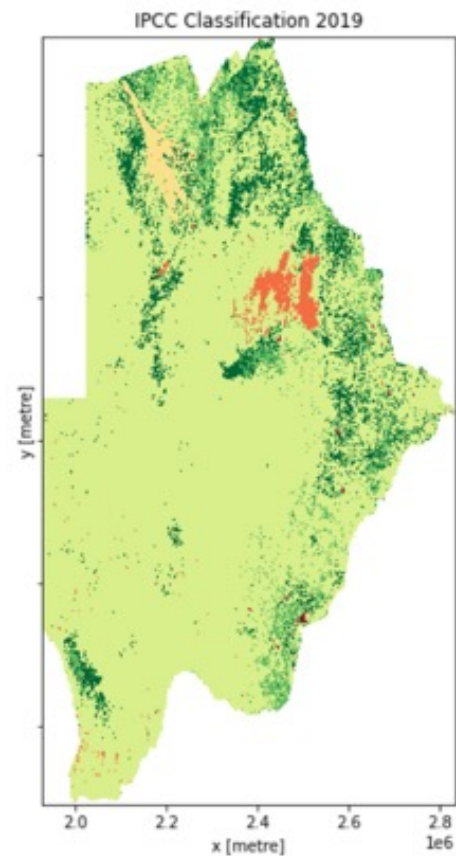
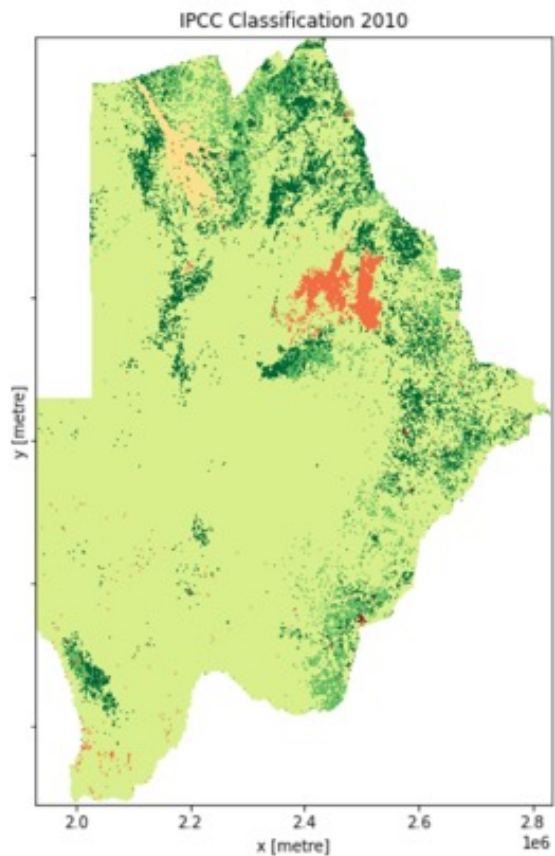
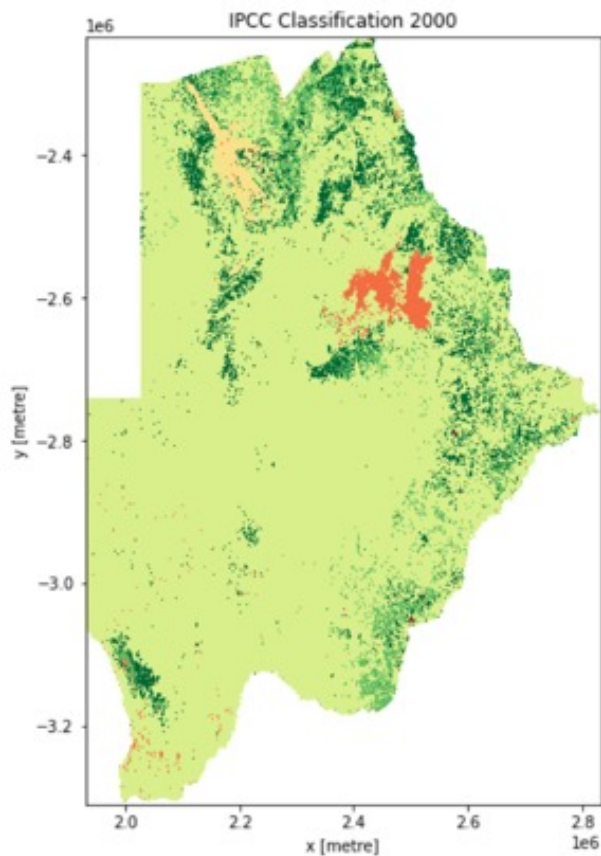
11 SUSTAINABLE CITIES AND COMMUNITIES



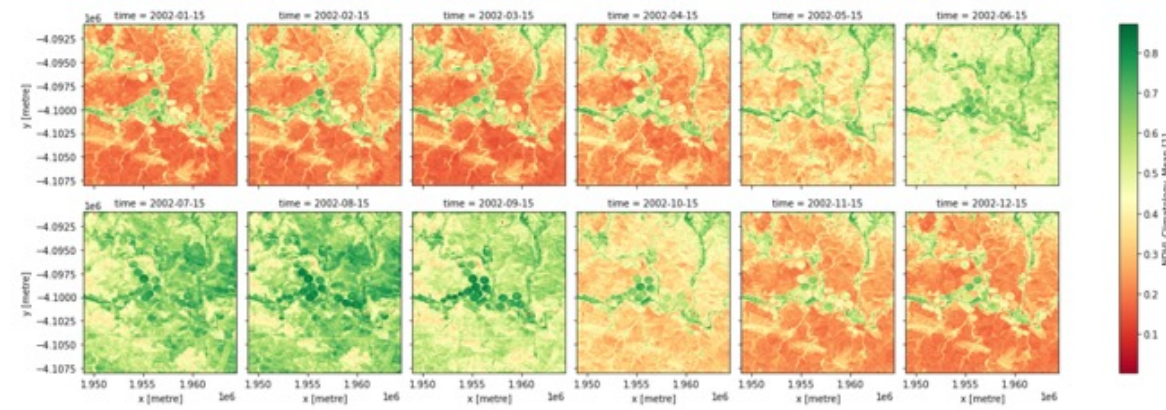
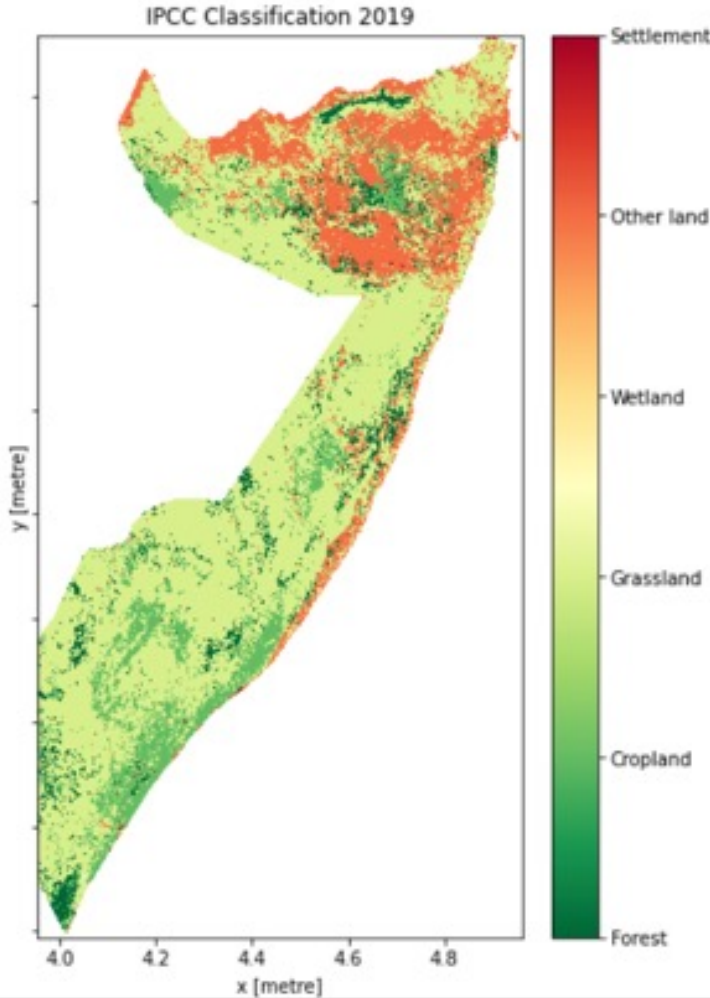
13 CLIMATE ACTION



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SDGs

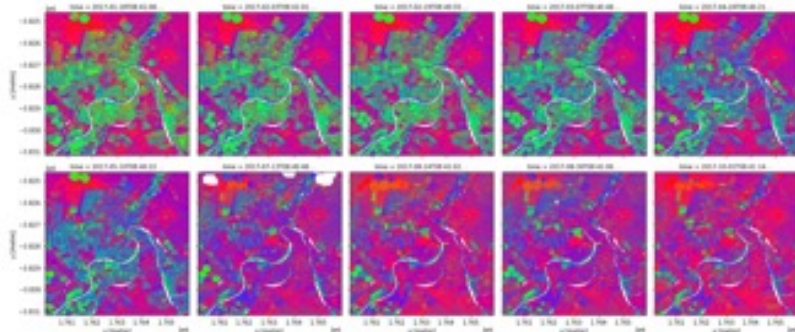


Indicator 15.1.1 Forest area as a proportion of total land area

- Land Cover Classification Datasets
- Global Mangrove Watch
- Fractional Cover
- Monitoring Mangrove Extents

Indicator 15.3.1 Proportion of land that is degraded over total land area

- Land Cover Classification Datasets
- Fractional Cover
- NDVI Climatology
- Monitoring change through time using satellite imagery filmstrip plots
- Monitoring coastal erosion along Africa's coastline
- Vegetation Change Detection
- Monthly vegetation condition anomalies
- Surface Mining Screening
- Scalable Supervised Machine Learning on the Open Data Cube ReadME



Monitoring coastal erosion along Africa's coastline



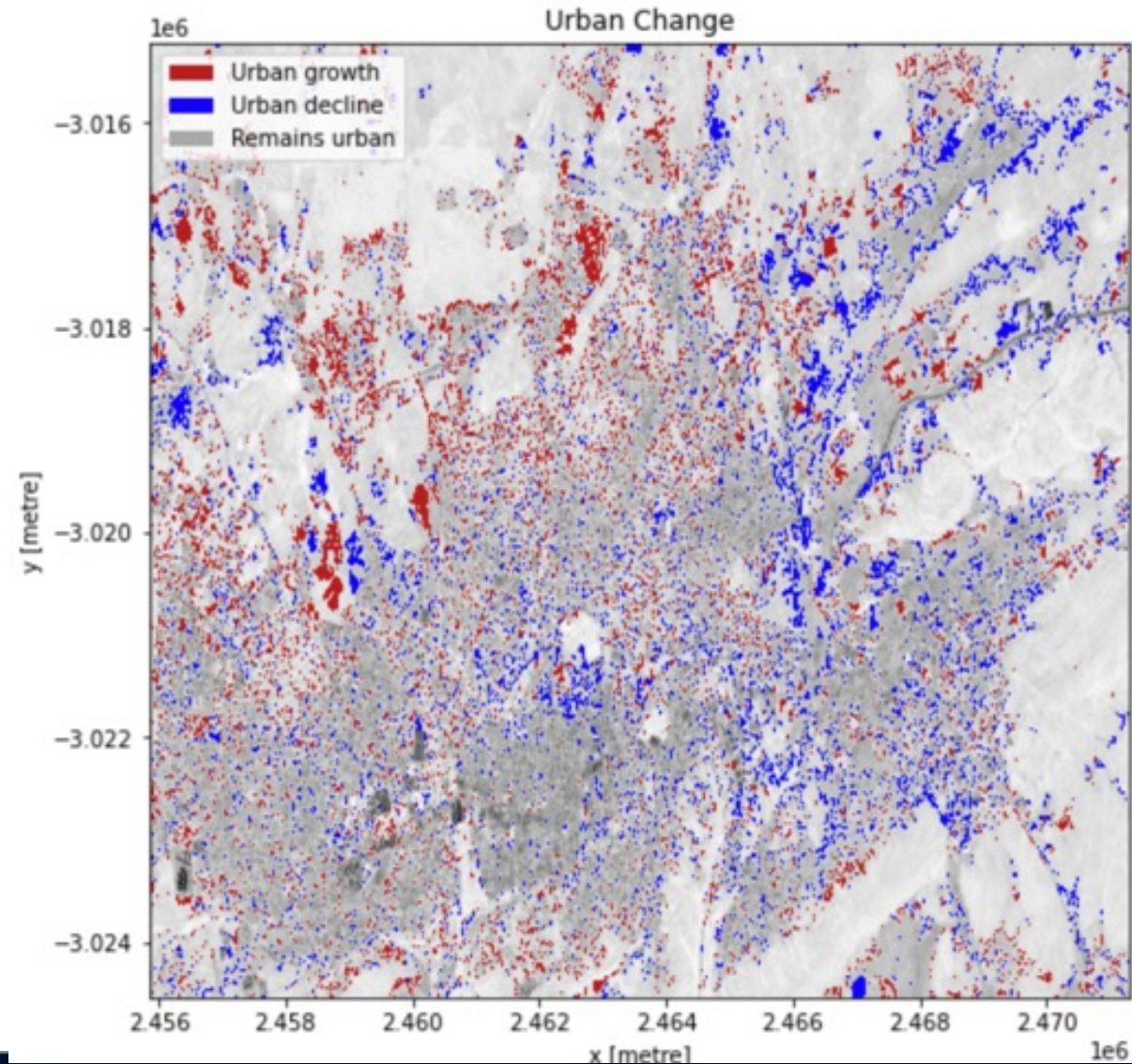
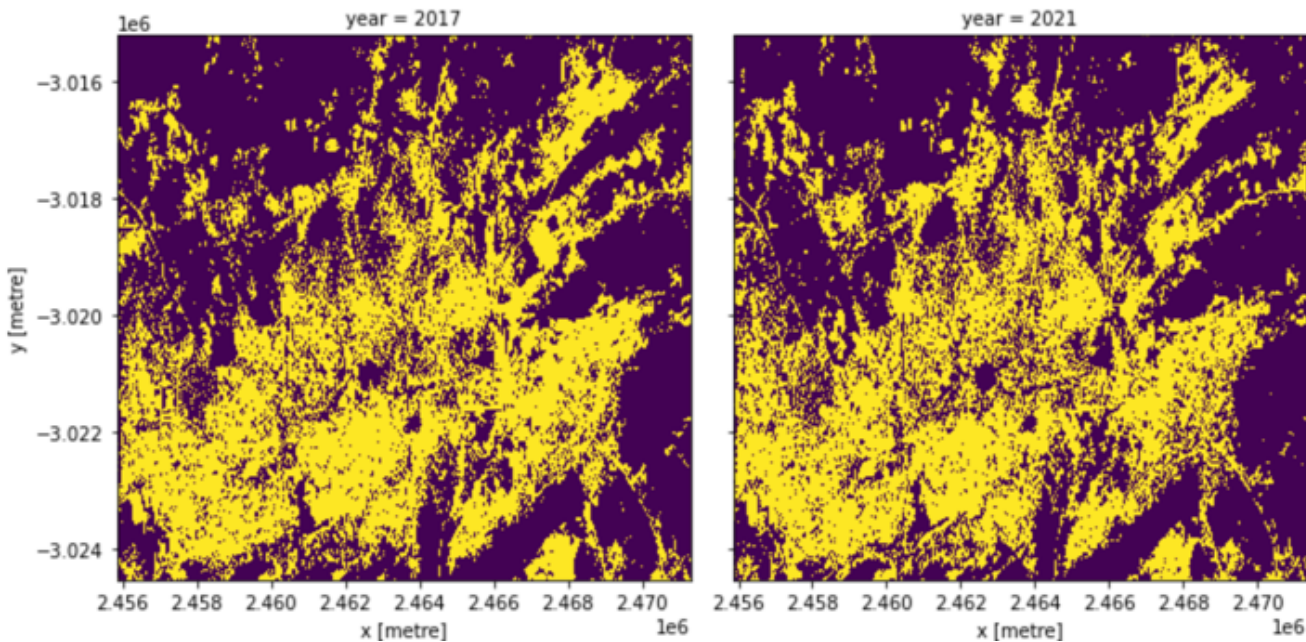
- DE Africa coastline tool was created to extract with precision the shoreline.
- Validation done with implementing partners in Africa: West Africa, East Africa. Important for policy makers.



Urbanisation in Molepolole, Botswana

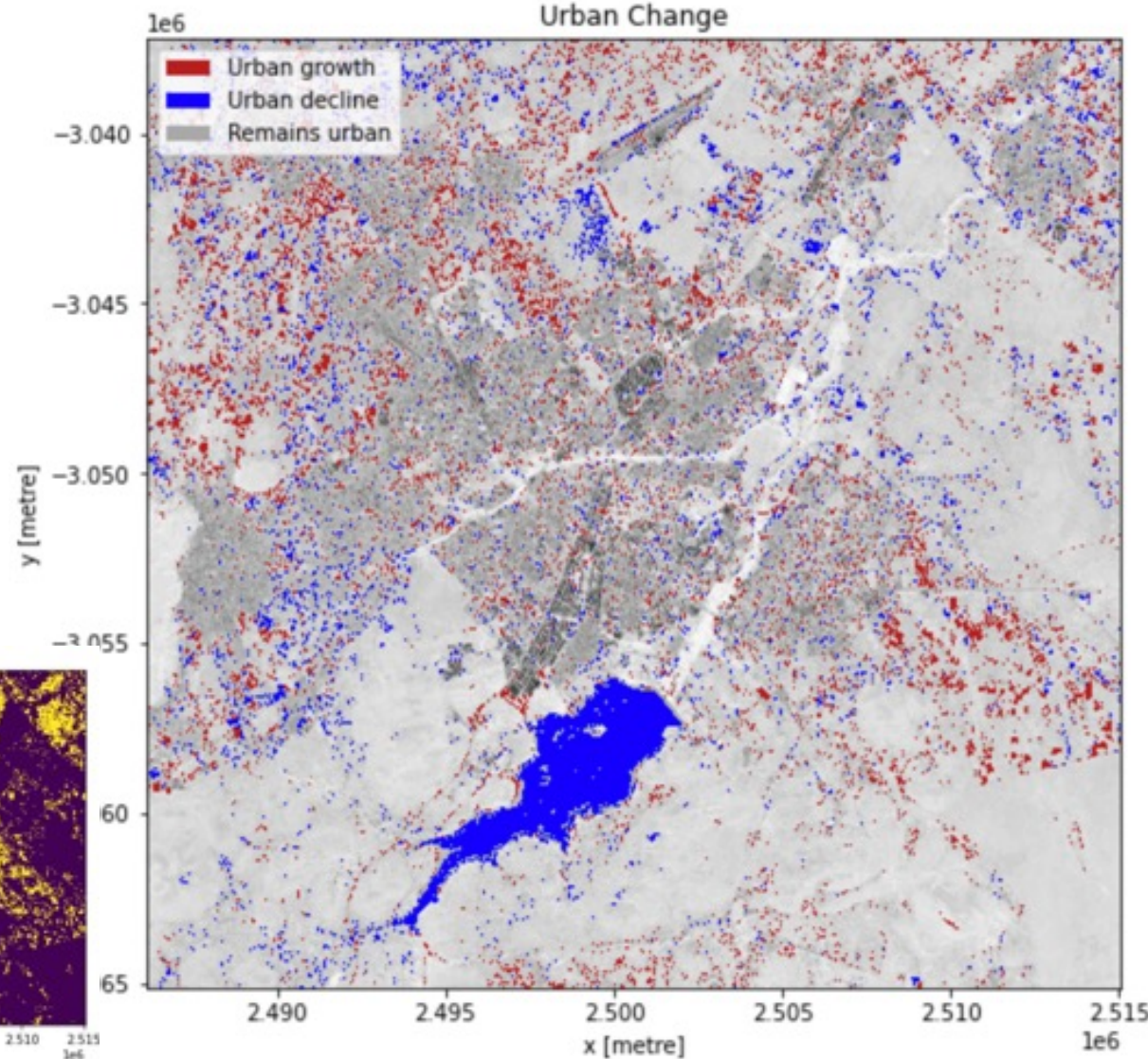
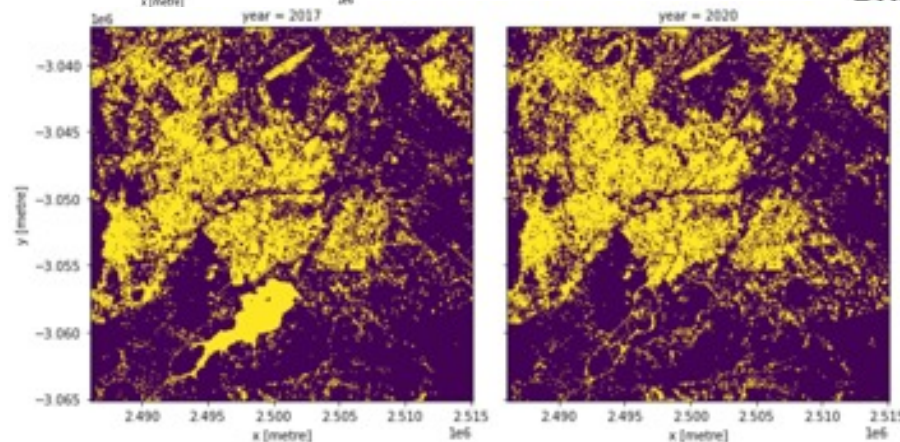
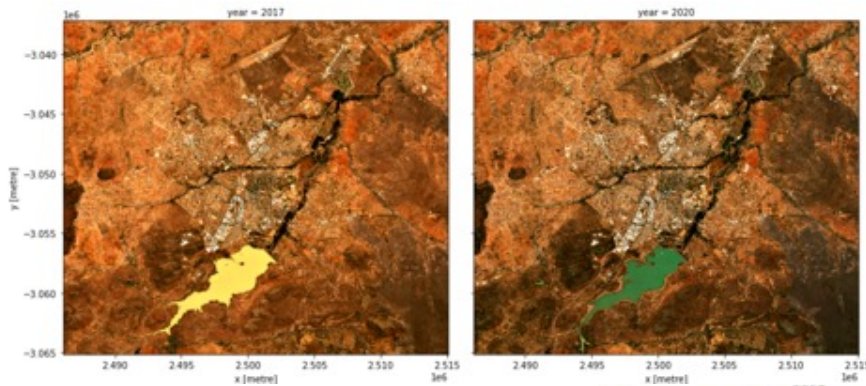


- Urbanisation in Molepolole, Botswana from 2017 to 2021, city has grown 58.971 km² to 59.894 km²
- The methodology is useful for policy makers



Urbanisation in Gaborone, Botswana

- Urbanisation in Gaborone, Botswana from 2017 to 2021, city has grown 254.682 km² to 263.874 km²
- The methodology is useful for policy makers



Amazon Web Service, Digital Earth Africa, State University of Zanzibar



Digital Earth Africa is helping Zanzibar fight the effects of climate change and protect the island's precious mangrove habitat.



The story is also part of a new documentary series, Climate Next <https://www.aboutamazon.com/news/aws/climate-next-how-data-and-community-can-save-zanzibars-mangroves>

Digital Earth Africa and the Zanzibar researchers using the service to help fight the effects of climate change

[Link: https://youtu.be/FVmcEaemfmA](https://youtu.be/FVmcEaemfmA)

How can I learn more about DE Africa?



- Website <https://www.digitalearthafrika.org>
- The opportunity to subscribe to the DE Africa community to receive quarterly newsletters and invitations to attend events <https://helpdesk.digitalearthafrika.org> and user guide <https://docs.digitalearthafrika.org/>
- DE Africa online learning <https://learn.digitalearthafrika.org>
- How to sign up to the DE Africa weekly Live Learning Sessions: every Wednesday at 11am, GMT zero) - ask questions and connect:
<https://zoom.us/j/5890793425>
- Email address info@digitalearthafrika.org

Thank you Merci obrigada

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Asante. E şeun. Murakoze.

Ameseignalaw. Weebale.



Jërëjër. Kea leboga. meda wo ase