

# Space-based Data and Disaster Management in Africa

Juan Carlos Villagran de Leon  
Radu Botez  
UN-SPIDER Programme

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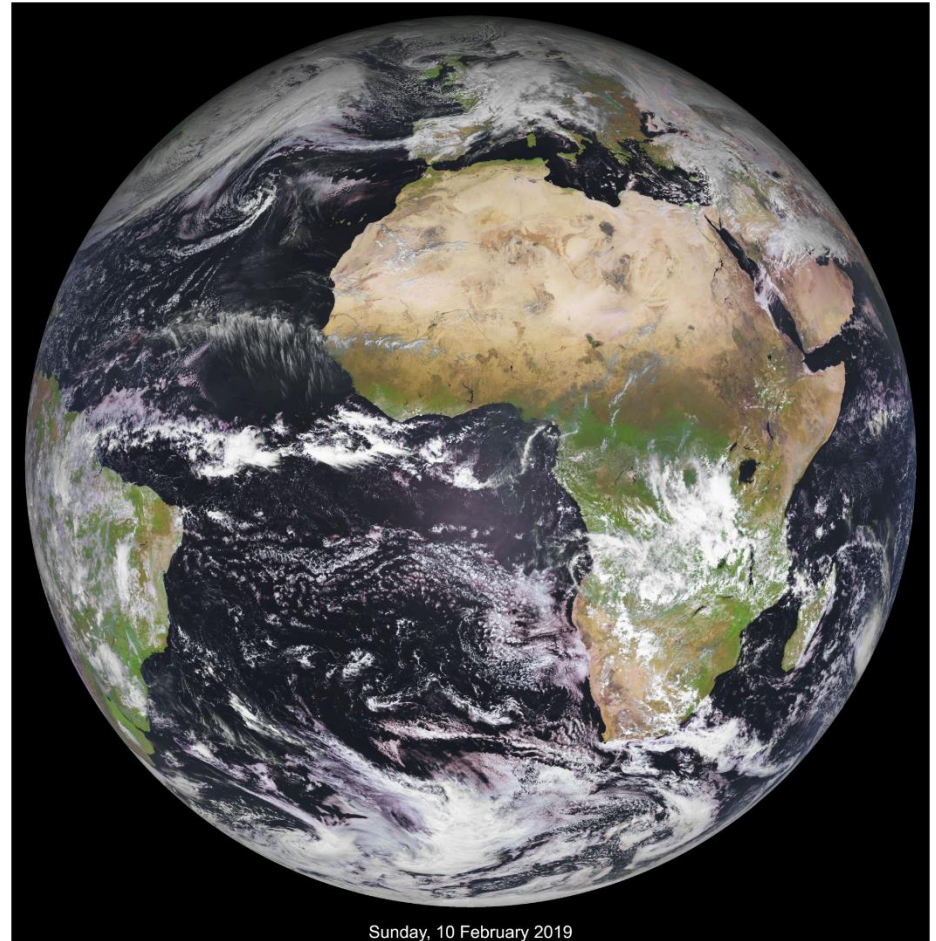
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# Space-based data for Disaster Management

When addressing space-based data for disaster management, there are several issues to consider:

- Data sources and their availability;
- Uses:
  - Disaster risk reduction (prevention, preparedness, early warning)
  - Response and Recovery
- Policies;
- Operational constraints.



Sunday, 10 February 2019



## Data sources and their availability

- Global data:
  - Generated and provided by some space agencies, the UN system, and other international organizations, with a global focus that covers Africa
- Regional data for Africa:
  - Generated and provided by institutions covering Africa exclusively
- National data:
  - Generated by national institutions, NGOs, academia, etc
- Local data:
  - Crowd-sourced data



## Examples of Global Data sources

- Access to data from an increasing range of satellites:
  - Landsat
  - Terra/Aqua, used among others for drought monitoring with data from the MODIS instrument onboard;
  - Sentinel-1 SAR data, used among others for flood mapping;
  - Sentinel-2 optical imagery, used among others for burned area mapping following wildfires;
  - Sentinel-5 for forest and wild fires.
- Repositories to download raw data to be processed by the user (e.g. Copernicus Open Access Hub)

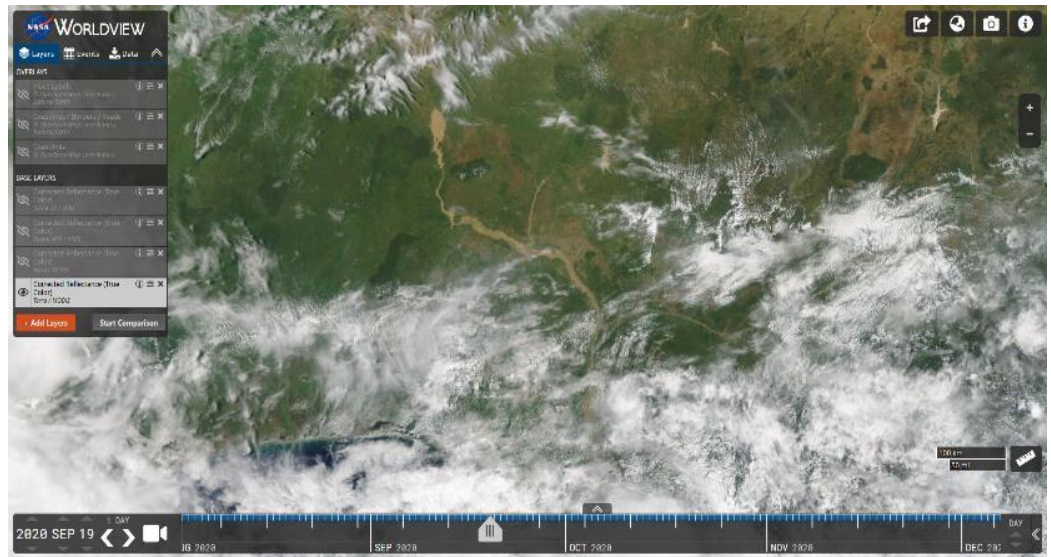


Copernicus Open Access Hub  
(<https://scihub.copernicus.eu/>)



## Examples of Global Data sources

- Increasing number of online platforms for easy visualization and processing without downloading data (e.g. EOSDIS Worldview (NASA), Sentinel Hub EO Browser, Google Earth Engine)

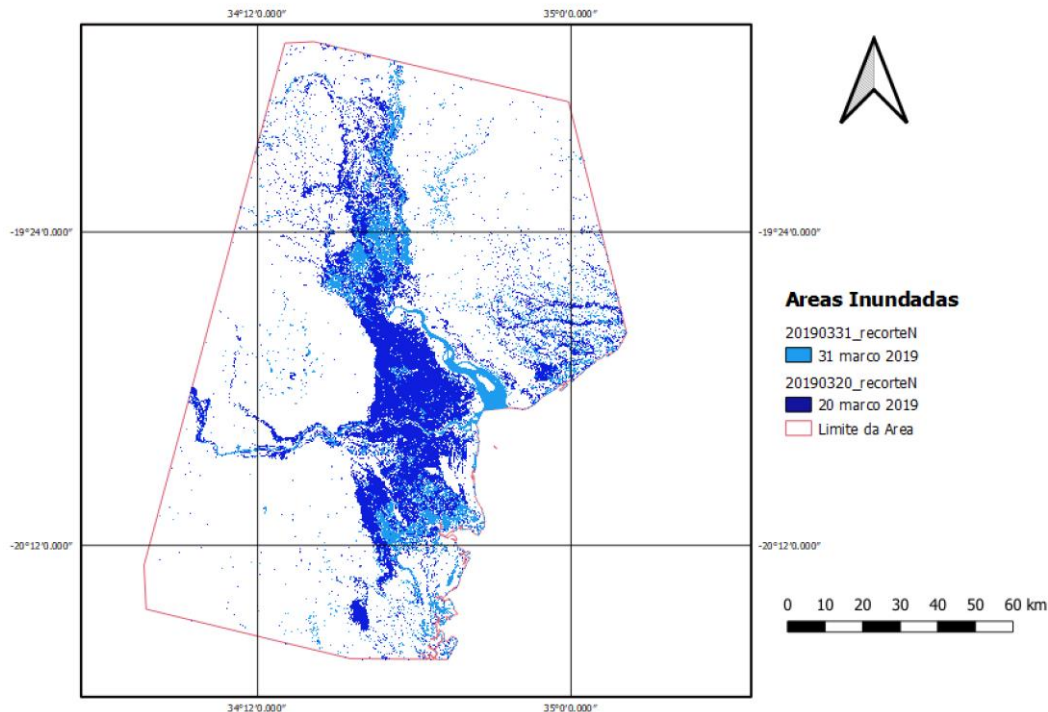


EOSDIS Worldview (NASA)  
(<https://worldview.earthdata.nasa.gov/>)



## Examples of Global Data sources

Geographical extent of floods in Mozambique for 2 separate days in 2019 extracted from two Sentinel 1 satellite images



| Data          | Affected Area (ha) |
|---------------|--------------------|
| 20 March 2019 | 311.898            |
| 31 March 2019 | 101.259            |
| Comparison    | 210.639            |

Day



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# Northern Kenya

Julian  
Day

1

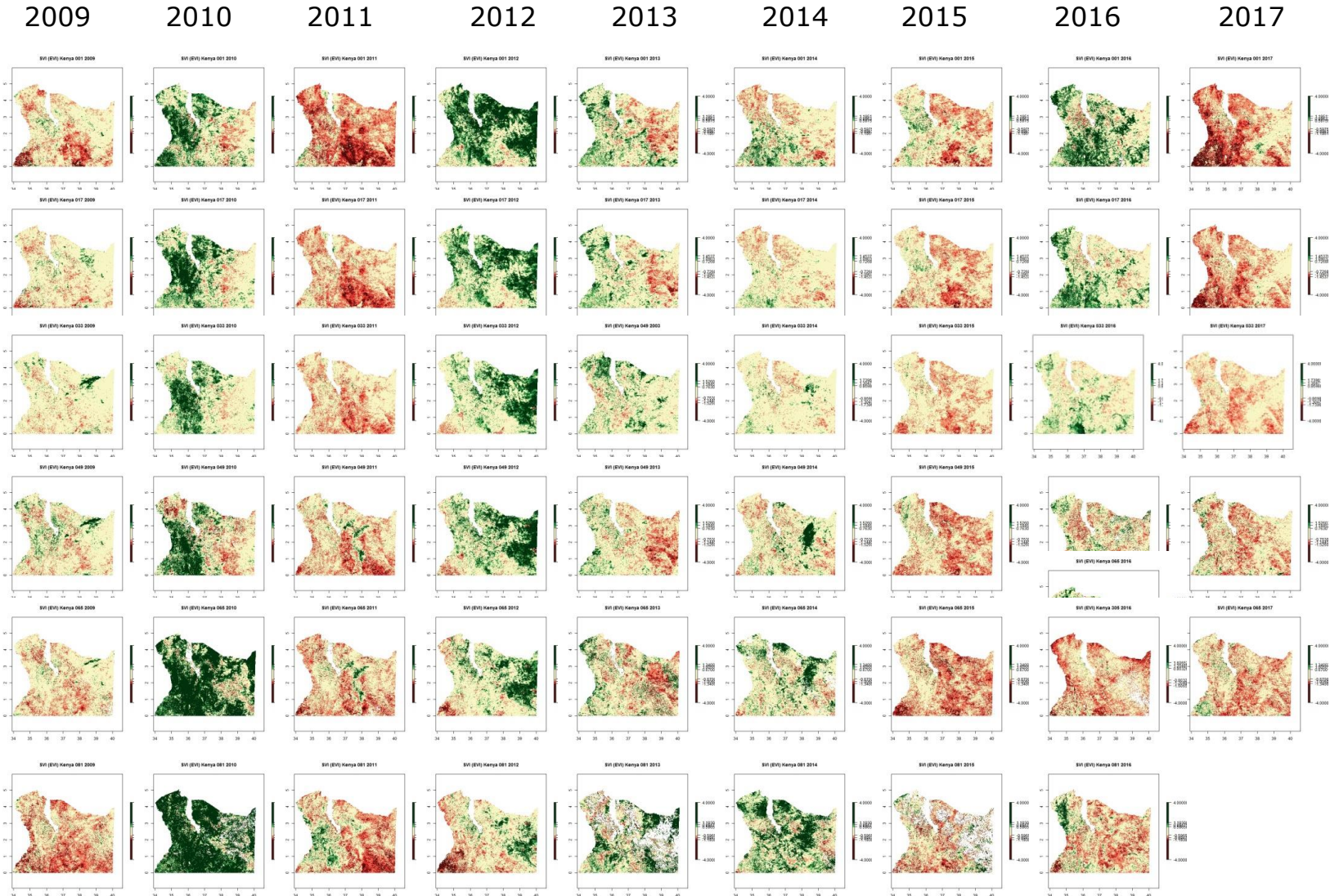
17

33

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81

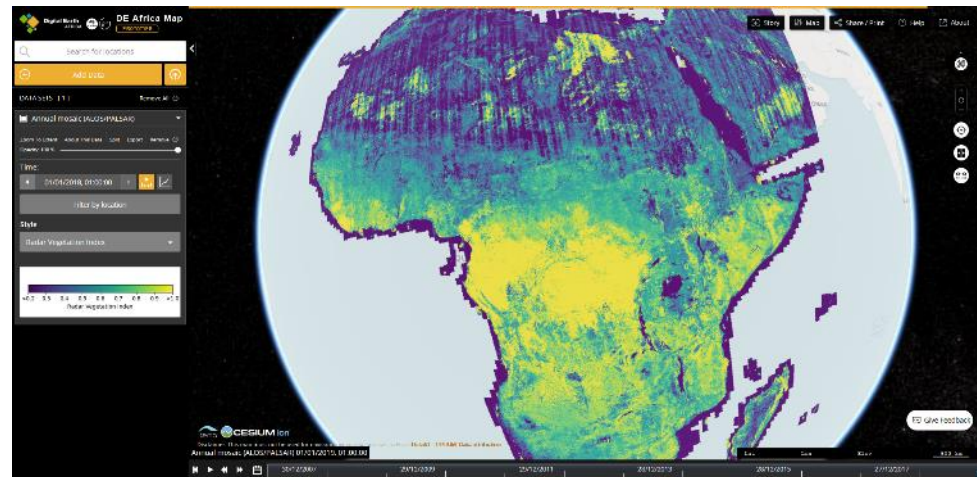




## Examples of African Data sources

Projects with a continental focus develop easy-to-access web-based products that aim to take into consideration regional aspects  
These products are freely accessible and can support disaster risk management decision-making

- **Digital Earth Africa (DEA)**
  - Comprehensive system with online map-based access to the DEA Map, web services, cloud processing focussing on Africa
  - Development of continental-wide data products (e.g. Water Observations from Space (WOfS)).



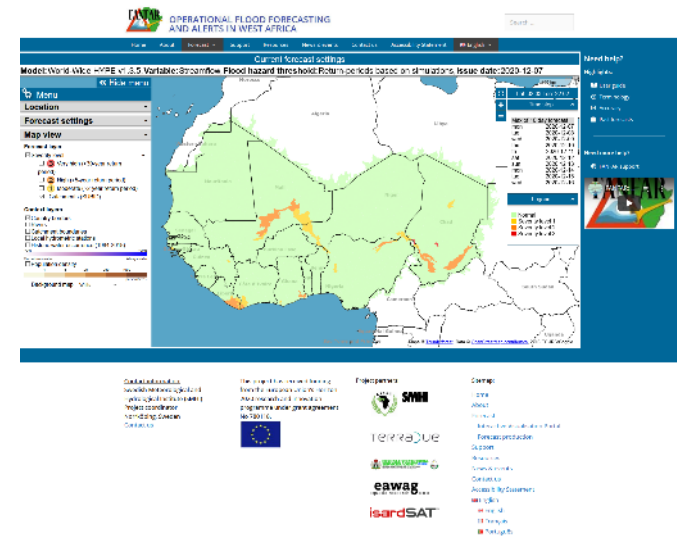
Digital Earth Africa (<https://maps.digitalearth.africa/>)





# Examples of African Data sources

- **FANFAR project** on operational flood forecasting and alerts in West Africa
  - Hydrological models adapted to the region (e.g. Niger-HYPE model for the Niger River basin)
  - Interactive visualisation portal



FANFAR interactive visualisation portal  
(<https://fanfar.eu/ivp/>)



# Policies addressing disaster management

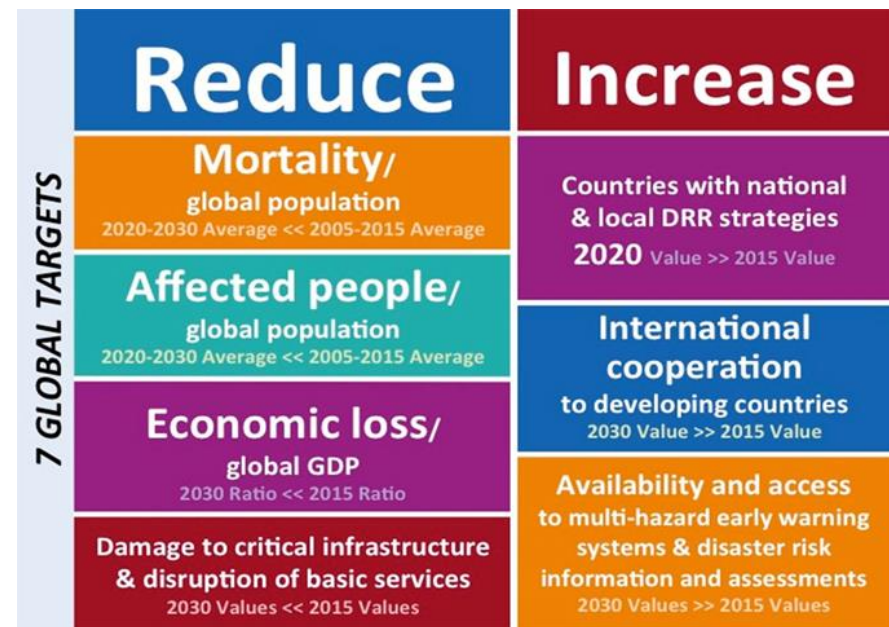
187 countries of the world, including most African countries, agreed to implement the **Sendai Framework for Disaster Risk Reduction 2015-2030**, committing themselves to achieve 7 targets, and to report on their efforts through the monitoring and reporting of data on specific indicators.

An **Open-Ended International Working Group of Experts** was set up to develop the indicators and procedures to generate data on such indicators.

UNDRR set up the **Sendai Monitor** as the official reporting tool to be used by countries to report on progress.



## SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION 2015-2030





## Operational constraints

At the level of countries, national legislation on disaster management rarely addresses the need to set up and operate data and information systems.

In many countries there are no *National Spatial Data Infrastructures* to facilitate the sharing of geospatial data, and no institutional policies to share institutional data.

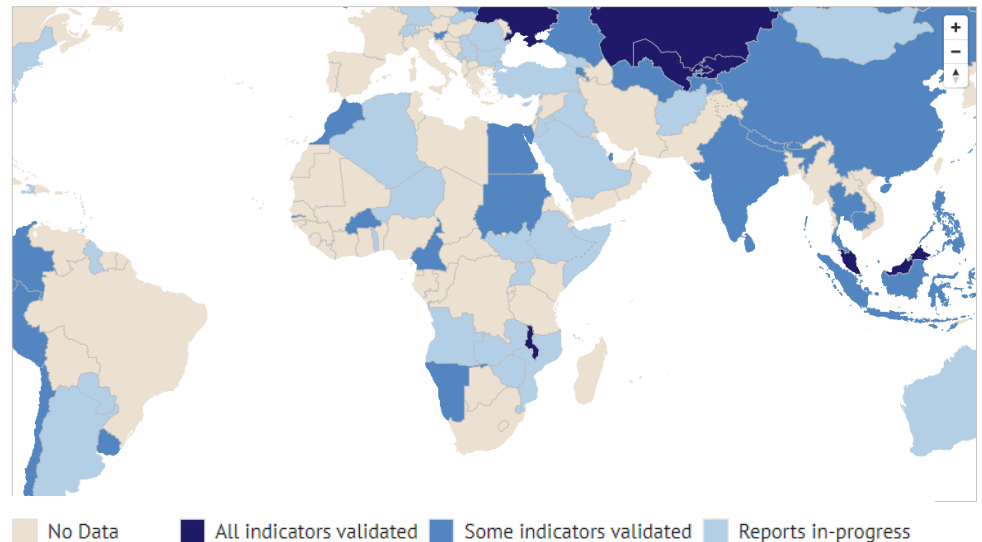
This is making it difficult for countries to report on progress regarding the Sendai Framework

### Sendai Monitor - 2019

GLOBAL TARGETS

Reporting year: 2019

TARGET REPORTING: MAP



<https://sendaimonitor.undrr.org/>



## Key recommendations

- **Open data and data sharing policies** are essential for an efficient use of space-based information for disaster management and emergency response
- The establishment of **inter-institutional teams** tasked with the generation of actionable information could be a strategy to facilitate the sharing of data
- There is a need to **strengthen skills of staff** on the generation and use of space-based information
- There is a need for an **Integrated Geospatial Information Framework** (IGIF) to develop, integrate, strengthen and maximize geospatial information management and related resources. The IGIF should address:
  - Governance (governance and institutions, policy, financial)
  - Technology (data, innovation, standards)
  - People (partnerships, capacity and education, communication and engagement)

# THANK YOU

Juan Carlos Villagran de Leon  
[juan-carlos.villagran@un.org](mailto:juan-carlos.villagran@un.org)

Radu Botez  
[radu.botez@un.org](mailto:radu.botez@un.org)



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