

# NASRDA - CSSTE consortium

## Multi-scale Flood Monitoring and Assessment Services for West Africa (MiFMASS)



### An Overview

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Dr. Ganiy I. Agbaje



Nigeria



Cote d'Ivoire



Burkina Faso



UG Ghana



CSRI Ghana



INE Benin



CU-SIGETA  
Burkina Faso



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## CSSTE CONSORTIUM – PARTNERS



INE-NWI – National Water Institute, **Benin** – Prof. Sintondji



UG – University of Ghana, Department of Earth Sciences, **Ghana** – Prof. Sandow M. Yidana



VBA – Volta Basin Authority, **Burkina Faso** – Robert Dessouassi



CSIR-WRI – Council for Scientific and Industrial Research-Water Research Institute, **Ghana** – Dr Emmanuel Obuobie



ISESTEL - Institut Supérieur d'Etudes Spatiales et Télécommunications, **Burkina Faso** – Dr Patric Sanou

CU-SIGETA



CURAT - Centre Universitaire de Recherche et d'Application en Télédétection, **Cote d'Ivoire** – Prof Marc Youan Ta



Centre for Space Science and Technology Education in English, **Nigeria** – Dr Ganiy Agbaje  
**(Consortium Lead and Regional Implementation Centre (RIC))**

Introduction to API Development and Usage  
for Data dissemination



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# Geographical coverage



Africa



COTE-D'IVOIRE

February 23-25, 2021



University of Ghana  
Ghana



CSIR-WRI  
GHANA



INE  
BENIN



Consortium Leader

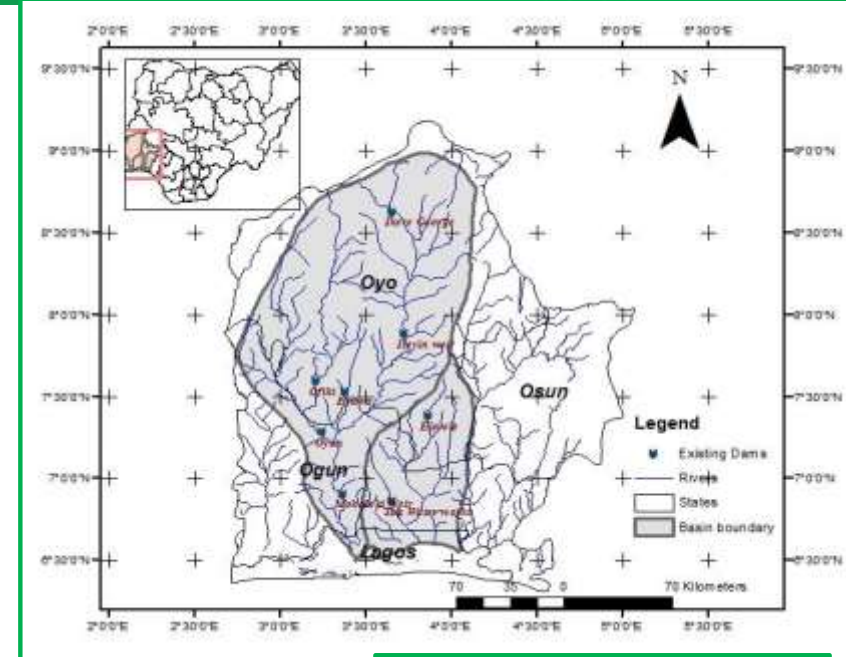
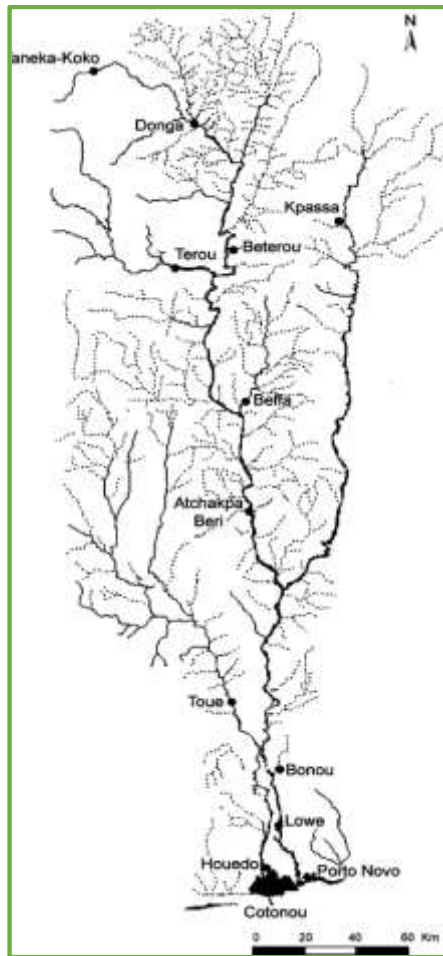
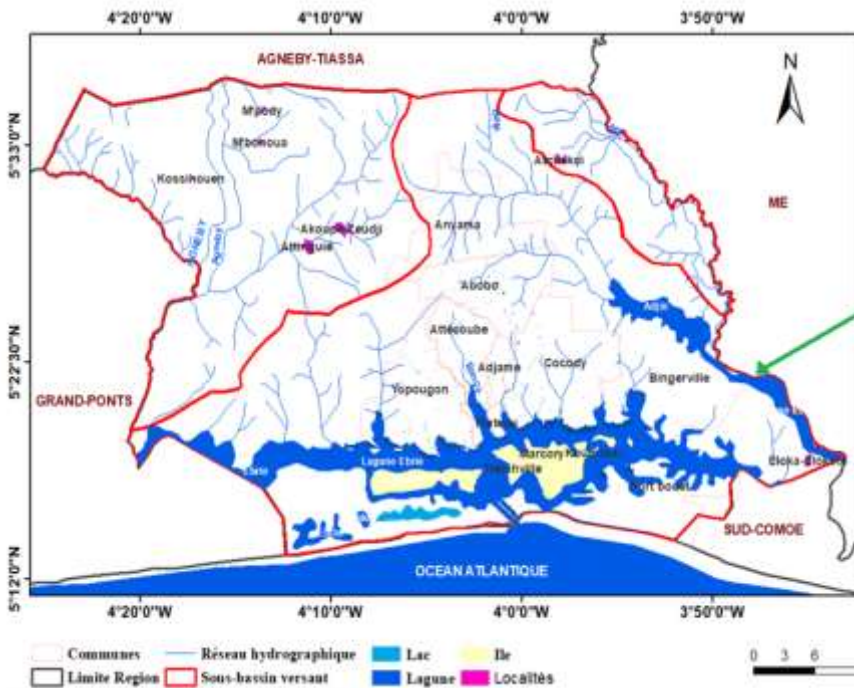




# Study Locations



Nigeria: **Dgun-Oshun Basin**



Cote d'Ivoire: District of Abidjan

Ghana: **Black Volta**  
 Burkina Faso: **Volta Basin** (Bobo – Dioulasso)

Benin: **Dueme Basin**



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# Outline



- **MiFMASS conceptual framework**
- **Products & Services**
- **Products & Services: facts & figures**
- **Challenges & solutions**





- **Targeted Users**

- Target Groups

- ✓ National, Regional and International Disaster Management Organizations (DMOs)
    - ✓ National Meteorological, Hydrological, and Mapping Agencies
    - ✓ Tertiary Educational Institutions

- Direct/Final Beneficiaries

- ✓ Vulnerable Population, Farmers, Policy/Decision Makers, etc.





- ✓ Develop a regularly updated regional scale flood event database of the Study Area for the five countries
- ✓ Establish a Flood Forecasting and Assessment system
- ✓ Establish an image acquisition, processing and analysis system to map flood extent during, or immediately after, flood events from EO data
- ✓ Develop a damage assessment module that will assist DMOs evaluate the degree

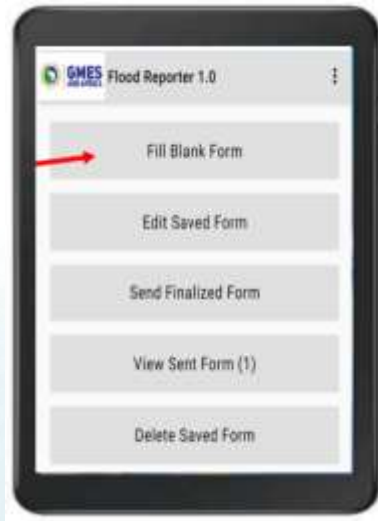






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# Products and Services

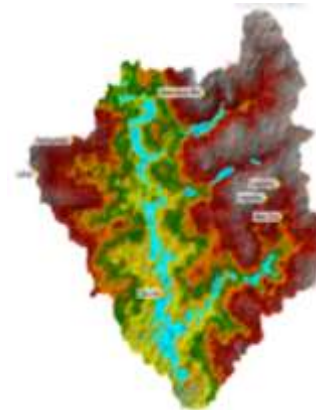


**Flood Reporter App**



**Geospatial database**

[gmes-mifmass.net/index.php/geodatabase/](http://gmes-mifmass.net/index.php/geodatabase/)



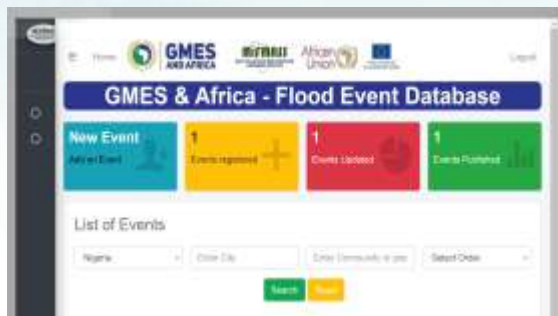
**Flood forecasting/ Early warning (SMS)**

- 383 participants from
- ~40 Organizations
- 8 Training workshops
- 6 MSc. degrees



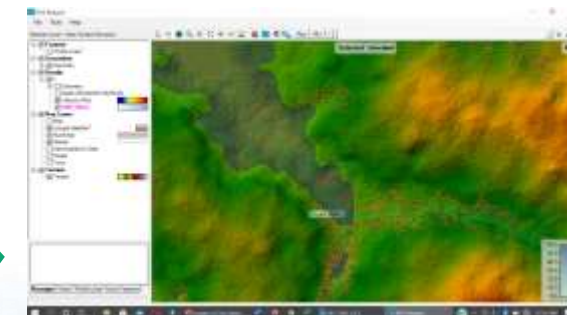
**Capacity development**

<https://elearn.arcsstee.org.ng/>



**Flood event database**

<http://gmes-mifmass.net/>



**Flood damage assesment & management**



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# Products and Services: facts & figures



	Flood Event Database	Geospatial Database	Flood Reporter Mobile App	Flood Forecasting/ Early warning system	Damage Assessment	Capacity development
<b>What were the needs that were expressed?</b>	No flood historical records in West Africa	There were no repository/ clearing house of geospatial data on flood in West Africa	Lack of infrastructures for reporting flood events uniformly	Inadequate infrastructure for early warning systems for flood events	Needs for uniform methodology for flood damage assesment	Inadequate skills for assessing and monitoring flood Utilization of EO data and s/w
<b>Who were the users (Number of policy makers, end-users, thematic networks members, projects and programs?)</b>	~55 Decision makers, 20 DMOs, 35 Thematic network members 8 projects & programs	20 DMOs, Academic and Research and the public	20 DMOs, Consortium, Partners	20 DMOs, Consortium, Partners, The general public	i. 20 DMOs, ii. Policy makers iii. NGOs,	DMOs Postgraduate (MSc.) students The general public



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## Products and Services: facts & figures *(cont'd)*



	Flood Event Database	Geospatial Database	Flood Reporter Mobile App	Flood Forecasting/ Early warning system	Damage Assessment	Capacity development
<b>What is the specific information and product produced by the consortium in order to address the need of the users?</b>	Flood Event Database,	58 different thematic layers (Flood plain datasets, DEMs, Flood extent maps, etc.)	Flood reporter mobile application with online back-end	Flood forecasting models, SMS, e-mail early warning, Radio and TV Jingles, outreaches etc.	i. Damage Assessment Module report ii. Cost Assessment iii. Damage extent map iv. Flood risk map	~E-learning
<b>What is the feedback from the users?</b>	Users are impressed and ready to adopt	Satisfactory	Excited & ready to adopt	Impressed to add EO data for forecasting	An assesment of post flood damages	Increased skills & capability





## Challenges

- Inadequate historical data for product development e.g. Flood events, Rainfall, Discharge, etc.
- Nonuniformity of data collection instruments for assessment.
- Inadequate in-situ monitoring stations in the water ways for real-time data needed in forecasting
  - Most water ways are not monitored.
- COVID-19 Pandemic

## Way Forward

- ▶ Extensive in-situ data acquisition campaigns.
  - ▶ Facilitation, M&E
- ▶ Harmonization of instruments. Development of *flood reporter* app.
- ▶ Deployment of monitoring stations in strategic water-ways for future studies
  - ▶ Upgrading of forecast models (Introduction of ML)
  - ▶ Automation of the forecast process
- ▶ Deployment of e-learning management system



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## Summary



The project was aimed “to enhance the efficiency of flood monitoring, assessment and management in West Africa by providing Earth Observation (EO) based services on real time basis to disaster management organizations and boosting their human capacity to adapt to these services”.



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**Outlook**



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**Phase 2**

**Consolidation, validation & operationalization of services**





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