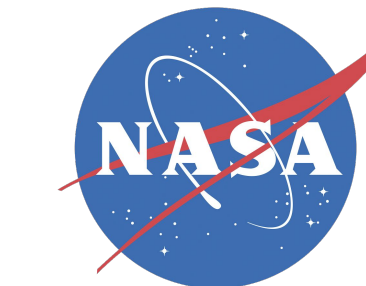




# A Novel Flash Flood Forecasting System for West Africa



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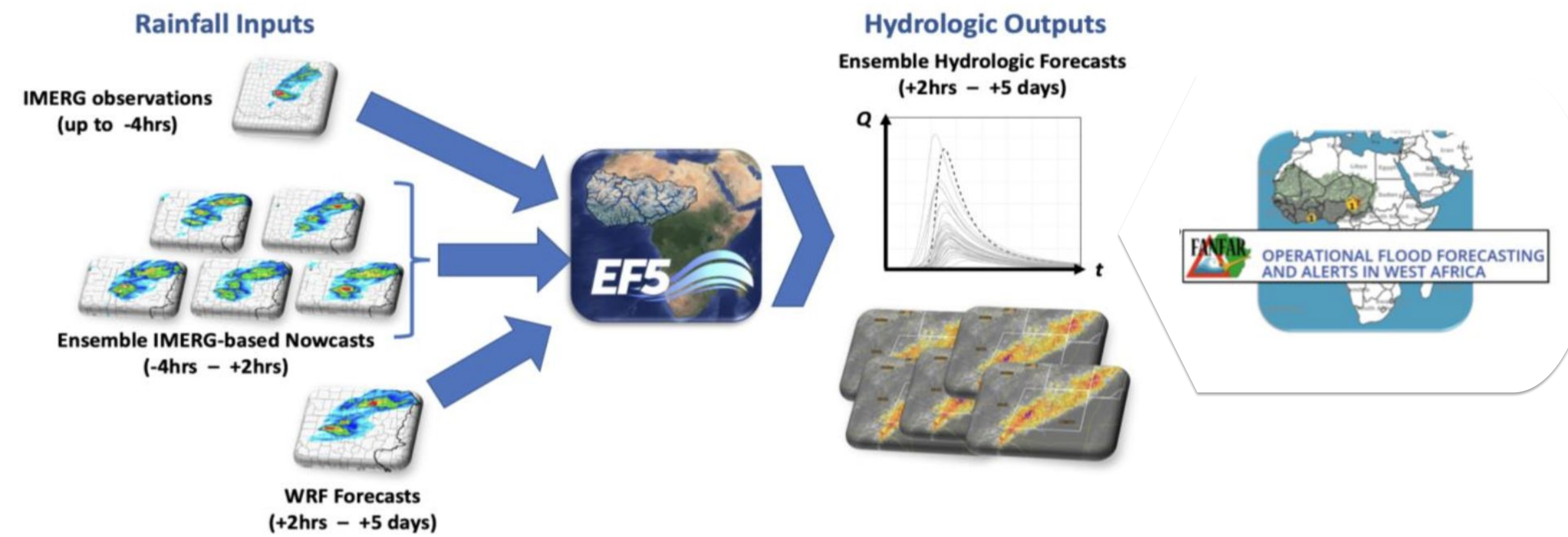


SERVIR WEST AFRICA

A flash flood forecasting system has been developed to advance the institutional capacity of West African countries to mitigate flash flood risk. The system will run operationally at AGRHYMET and will distribute flash flood warnings through the FANFAR system to support decision making of relevant stakeholders (e.g. national hydro/meteorological agencies, emergency responders) in 17 countries in West Africa.

## Partners & Collaborators

- ICRISAT
- AGRHYMET
- Ghana Meteorological Agency
- Ghana Hydrological Services Dept.
- KNUST University
- Rutgers University
- University of Iowa
- Florida Tech
- George Mason University
- NOAA National Severe Storm Laboratory
- SERVIR Science Coordination Office



## Outcomes & Impacts:

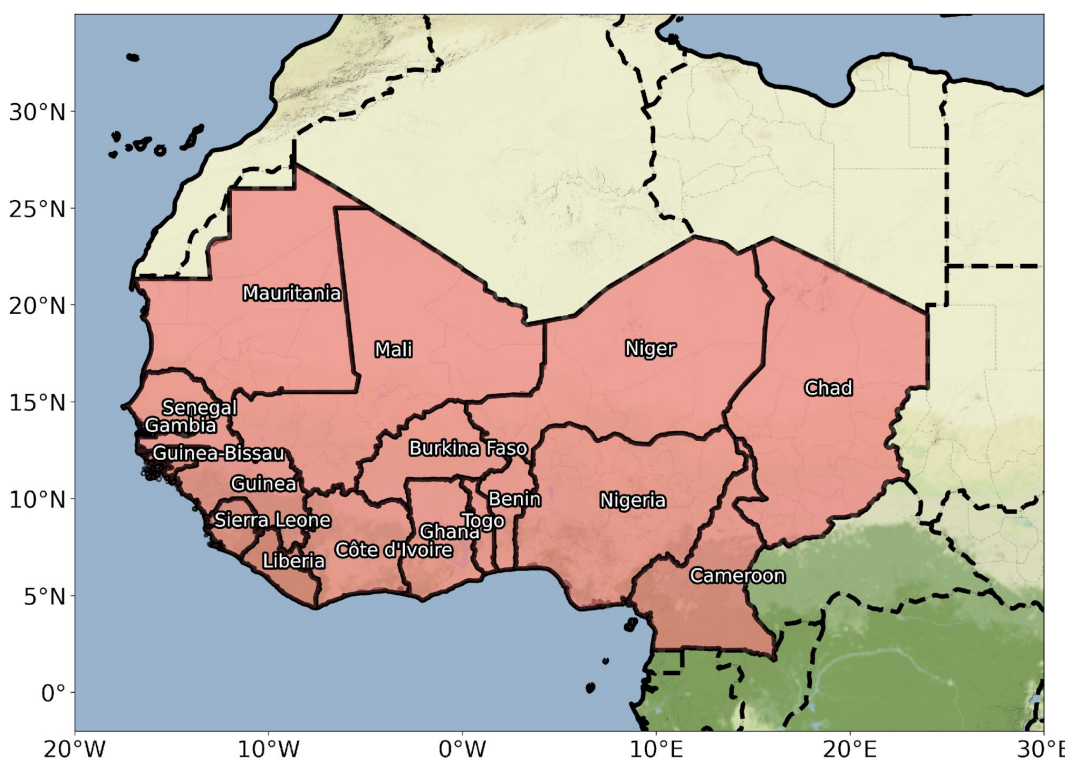
- A prototype of the WA-wide system has been completed.
- A higher resolution, national scale model has been developed for Ghana.
- The system was presented to WA hub partners and stakeholders from Ghana hydrological and meteorological office.
- Emergency managers will use this system to better prepare and respond to flash floods.

Overview of the flash flood forecasting system for West Africa. Satellite-based observations, weather forecasting and machine-learning based precipitation is used to predict spatial and temporal dynamics of flash flood in West Africa region. Model outputs will be integrated with FANFAR system and will be disseminated to relevant stakeholders.

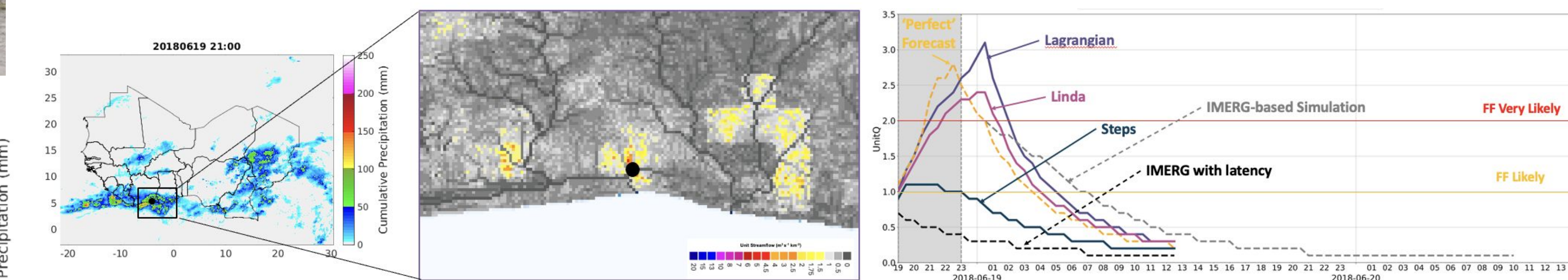
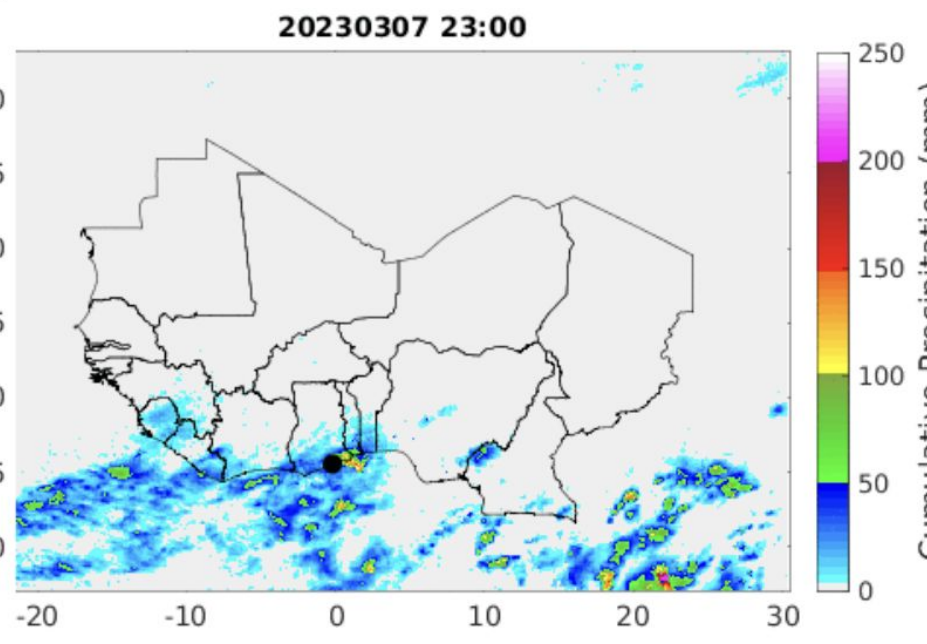
## Next Steps:

1. The prototype system will be installed at the hub's selected infrastructure.
2. Integration of the forecasting system with FANFAR.
3. Capacity building for training on EF5 configuration and forecasting system use.

Presenter: Efthymios Nikolopoulos



	FROM 05 JULY TO 04 SEP. IN 2023	OVERALL IN 2023
People Killed	70	836
People Injured	43	303
People Displaced	12K	173K
People Affected	190K	692K
Houses Destroyed/Damaged	16K	57K
Destroyed crops	3K	4K



Example outputs of the hydrologic predictions for a flash flood event in West Africa. Spatial map of max unit streamflow (middle figure) demonstrates areas with where flash flood threat is high. Temporal dynamics of predicted flood hydrograph (right) is shown for different precipitation nowcasting algorithms.

Floods in West Africa claimed 836 lives in 2023 alone. Impacts during the March 2023 flash flood in Accra and corresponding satellite precipitation observations are shown.



Demo Output