



Enhancing Adaptation and Resilience against Coastal Multi-hazards along the West African Coasts (EARWAC)

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The Sixth Axis



- Background
 - Project phases
 - User consultation and assessment
 - EARWAC dashboard
 - Project outcomes and impact
 - Challenges
 - Future outlook
-

Sea Level Rise

Climate projections show that the sea level could increase by up to 1 meter and potentially inundate 18,000 km² of the West African coastline by 2100.¹

Coastal Flooding

Annually, flooding events affects at least half a million people in West Africa. By 2050, the recurrent annual damages from coastal flooding in West Africa is expected to reach \$11 billion.^{2,3,4}

Coastal Erosion

Abidjan, Conakry, Freetown, Monrovia, Accra, and Cotonou are some of the region coastal erosion hotspots.

Pollutant Flow

Less than 10% of coastal urban centers in West Africa have access to Sewerage services. The increasing offshore oil production and consequent oil spillage adds to these risks.

¹World Bank. 2018. West Africa Coastal Areas Management Program.

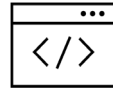
²USAID. 2014d. Climate change and water resources in West Africa: Coastal biophysical and institutional analysis.

³WB. 2017a. Coastal Natural Capital and the Economics in the Coastal Zone.

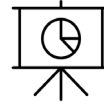
⁴Fagotto. 2016. West Africa is being swallowed by the sea.



Expert and
Community
Consultation



Dashboard
Design &
Prototype



Dashboard
Development
&
Data
Integration



Launch and
Community
Awareness



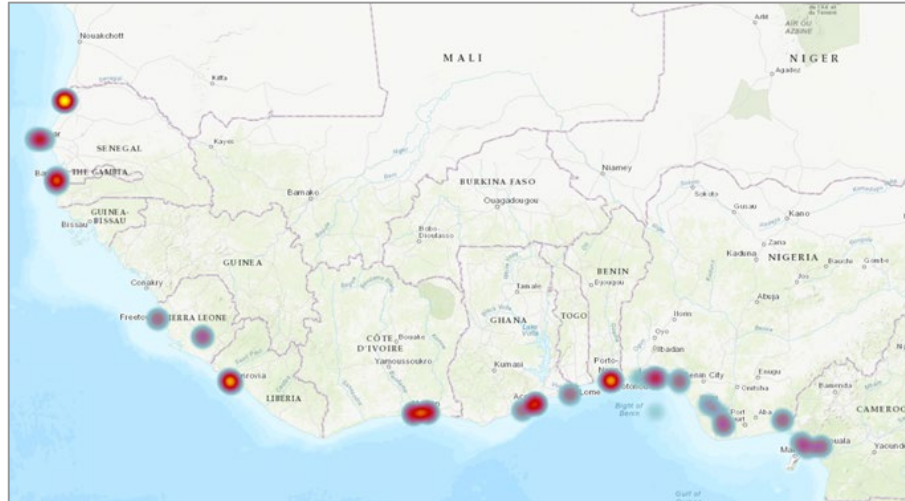
Community Consultation

667 participants across 24 districts in 10 West African countries



Expert Consultation

26 subject matter experts from the academia and regulatory bodies



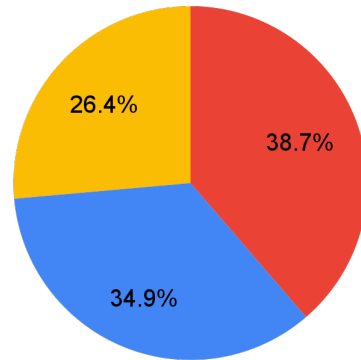
Community survey heatmap

Rationale

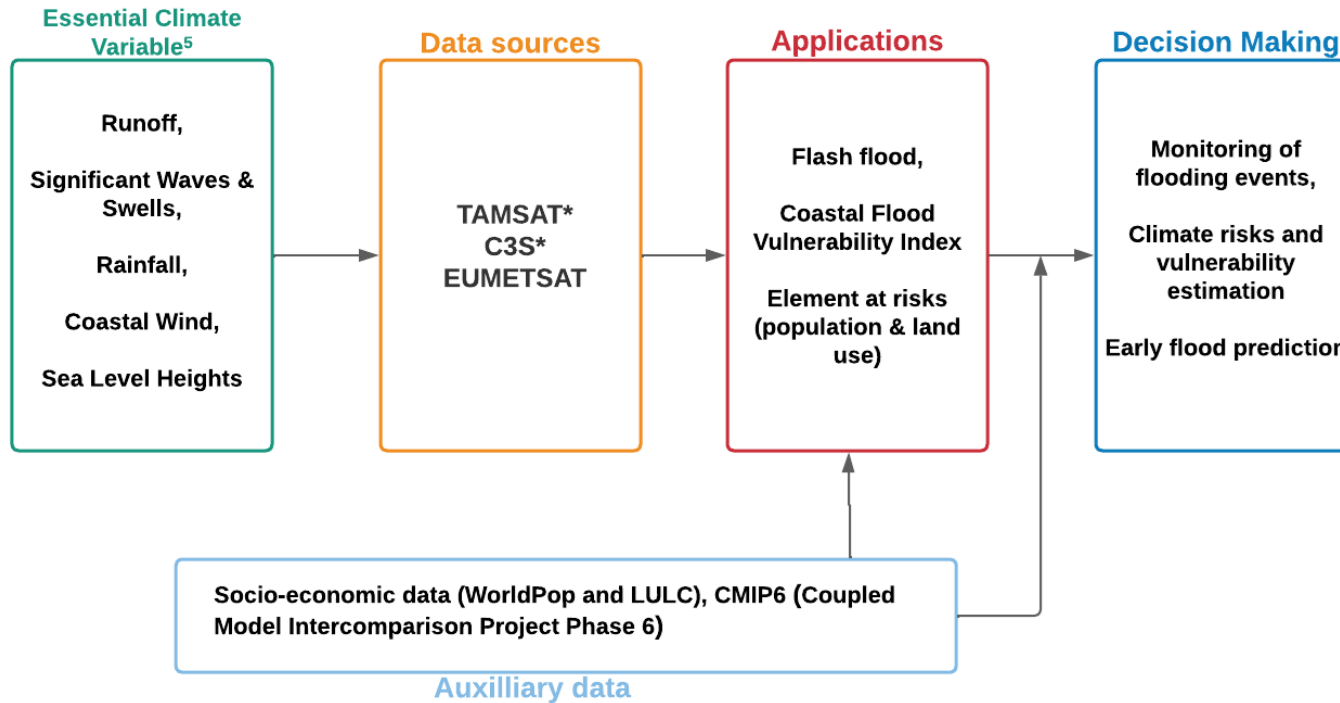
- No existing coastal multi-hazard dashboard in West Africa
- Existing initiatives lack stakeholders input

Outcome

- 80% of subject matter experts agreed that coastal flooding is endemic in the region
- 38.7% of community members surveyed highlighted coastal flooding as the most critical coastal hazard in the West African region,
- Marine pollution (34.9%) and coastal erosion (26.4%) are the next most critical hazards
- 239 participants out of 667 surveyed participants have actually experienced losses and damages from these coastal hazards



● Coastal flooding ● Marine pollution ● Coastal erosion



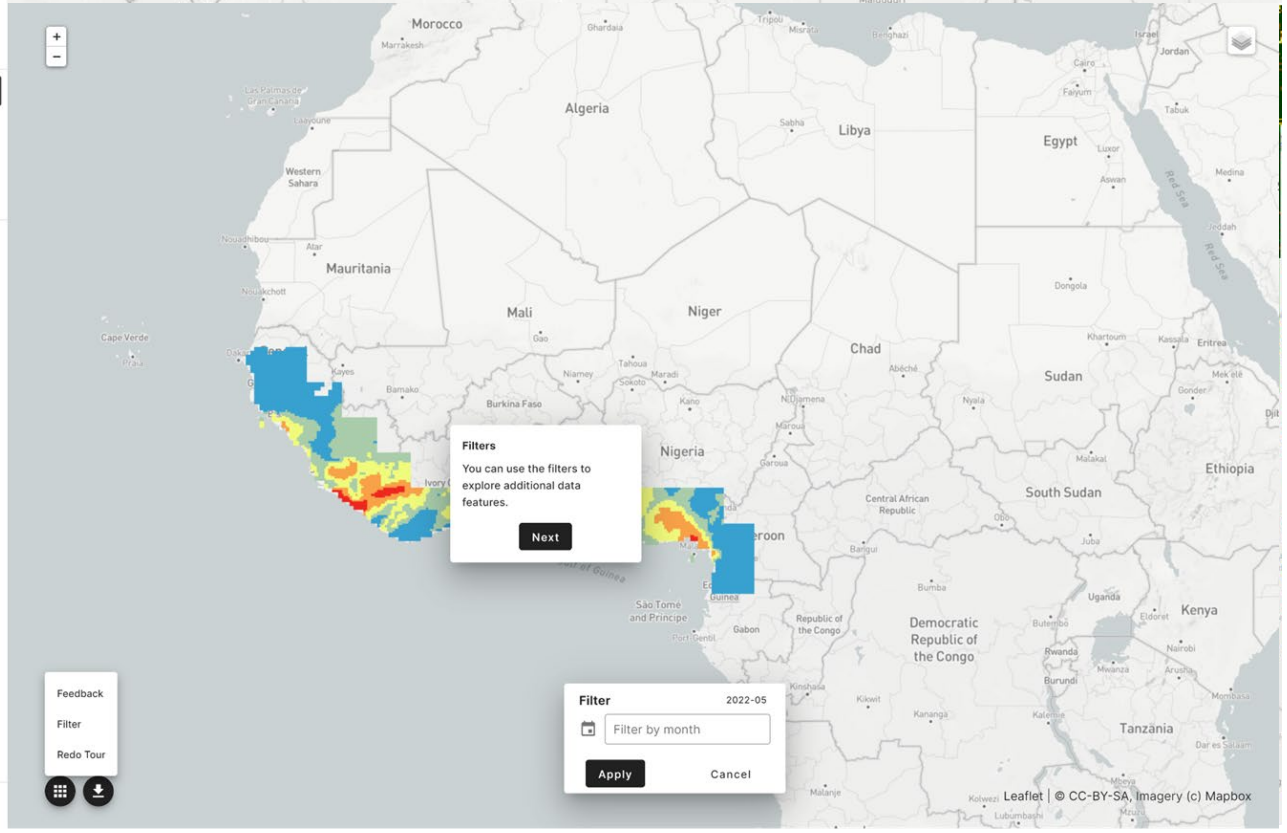
⁵ <https://public.wmo.int/en/programmes/global-climate-observing-system/essential-climate-variables>

*TAMSAT: Tropical Applications of Meteorology using SATellite data and ground-based observations

*C3S: Copernicus Climate Change Service



- Coastal Flood Vulnerability Index
- Flash Flood
- Flash Flood Forecast
- Land Cover
-
-
-
-
- The Sixth Axis
- Switch mode



- Coastal Flood Vulnerability Index (CFVI) (2020 - 2022)
- Seasonal flash floods (from 2022 till 2023)
- Historical flash flood (2015 to 2022)
- Engagement with the science and policy community at COP26, Glasgow
- Media coverage – Premium Times (Nigeria), China Global Television Network, Future Earth, ESA, Adewunmi et al. (2022)⁶, Use Case (WMO & CEOS/CGMS)

Challenges



User consultation and field research constrained by 2020 global pandemic



Open access to in-situ Hydro-meteorological data



Open Geospatial data infrastructure



Access to digestible climate hazard information for the public



Community of African EO-AI researchers



One stop-shop for predictive modelling of West African coastal multi-hazards including coastal erosion, sea-level rise, and marine pollution.



Geo-analytical support system for regional and national scale coastal risks management strategy



Collaboration with Small and Medium Scale Enterprises (SMEs) for co-developing anticipatory actions strategies



On-demand downloadable hazard vulnerability maps at different timeline including inland hydrometeorological hazards



Extended funding and in kind partnerships with national and regional institutions

Thank you for listening



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