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Enhancing Sustainable Fisheries Management in the Gulf of Guinea with GMES & Africa's Potential Fishing Zone Products

BACKGROUND:

The Gulf of Guinea's fisheries face growing threats from overfishing and illegal activities, prompting six West African nations to establish the FCWC in 2007 to enable coordinated marine resource management. Expanding on the success from the MESA project, the GMES & Africa project enhanced the Potential Fishing Zone (PFZ) service, which uses Earth Observation data to guide sustainable fishing practices by identifying fish-rich areas, helping FCWC members reduce overexploitation and enhance regional cooperation against illegal fishing.





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END-USER'S PROFILE:

The **Fisheries Committee for the West Central Gulf of Guinea (FCWC)** is a regional organization established to promote cooperation and sustainable management of fisheries resources among member countries in the West Central Gulf of Guinea region (<https://fcwc-fish.org/>). FCWC fosters collaboration among its member countries, which include Ghana, Côte d'Ivoire, Liberia, Sierra Leone, and Guinea, to address common challenges and opportunities in fisheries management. FCWC also facilitates the development of regional policies and strategies aimed at promoting sustainable fisheries practices, combating illegal fishing activities, and enhancing food security and livelihoods for coastal communities.

END-USER'S NEEDS:

FCWC expressed their need for maps of potential fishing areas to enhance **Monitoring, Control, and Surveillance (MCS)** of fishing activities in their mandated regions. These maps of potential fishing zones serve as valuable tools for identifying and prioritizing areas for MCS efforts, optimizing resources, and improving the effectiveness of fisheries management strategies. The consortium has engaged the Fisheries Committee for the West Central Gulf of Guinea (FCWC), in various stakeholder activities since 2014 by providing FCWC with actionable spatial information.

INFORMATION PROVIDED:

The **potential fishing zone** service utilizes daily **Mercator Ocean physics** and **biogeochemical global ocean analysis and forecast** products as inputs for a Generalized Additive Model (GAM) in the development of the service. Alternatively, the **Ocean Productivity available to Fish (OPFish)** developed by the Joint Research Center (JRC), available on the eStation (<https://estation.jrc.ec.europa.eu/eStation3>), utilizes daily ocean color data from MODIS Aqua missions to produce the OPFish product. The outputs are generated daily in JPEG and Geotiff formats, ensuring easy visualization and compatibility with various GIS software. PFZ maps are disseminated via email and a mobile application ([GMES UG on the App Store](#)) for easy access by the FCWC and other stakeholders.

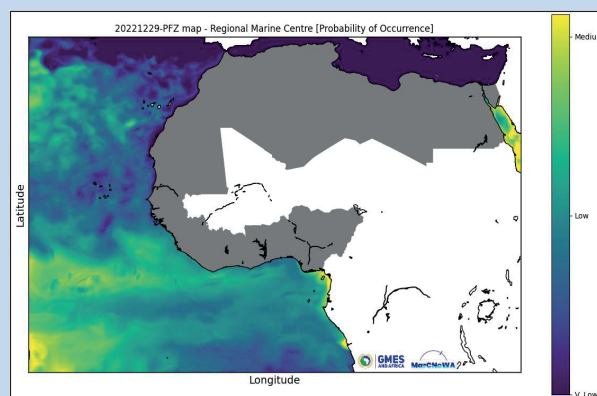


Figure 1: Potential fishing zone map (PFZ), University of Ghana

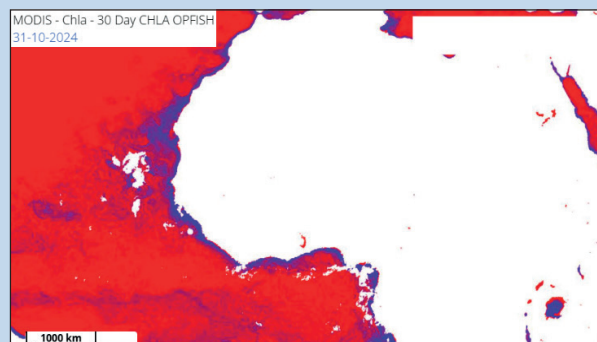


Figure 2: Ocean Productivity available to Fish (PFish), JRC eStation





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USAGE:

The University of Ghana has provided training to FCWC staff on interpreting and utilizing the Potential Fishing Zone (PFZ) product through in-person sessions at FCWC offices and regional stakeholder workshops. Staff are now equipped to access the PFZ product, select areas of interest, and integrate the data into their fisheries management workflows to identify potential fishing zones and plan sustainable fishing activities. In addition, the consortium ensures FCWC has access to updated oceanographic data via tools such as eStation online and myOcean. This information enables timely decision-making to address changing environmental conditions. The service's broader geographic coverage also supports regional collaboration, allowing member countries to share datasets, exchange knowledge, and harmonize approaches to fisheries management in the West Central Gulf of Guinea region.



Figure 3: Engagement of FCWC staff at the University of Ghana

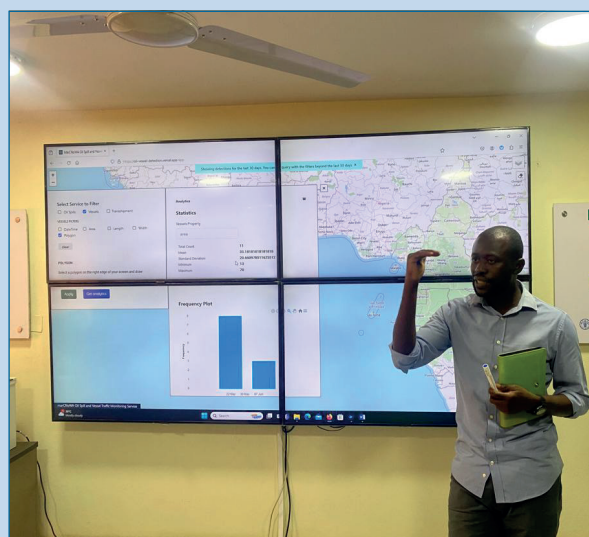


Figure 4: Training of FCWC-RMCSC staff at Tema, Ghana

IMPACT:

FCWC leverages maps of potential fishing zones (PFZ) and oceanographic data to support the implementation and enforcement of closed seasons (biological rest), critical for protecting fish stocks during their life cycles. For example, the PFZ service has been instrumental in reinforcing closed seasons in Ghana and Côte d'Ivoire, ensuring compliance with policies aimed at sustainable fisheries management. Additionally, the service supports FCWC's forward-planning efforts, such as the planned introduction of closed seasons in Benin in 2024. In August 2024, fisher folks in James Town, an indigenous Ga fishing town in the city of Accra, experienced bumper catch after the one month ban on artisanal and inshore fleet fishing was lifted as compared to previous years. The fishing close season, which prevented the fishers from fishing in Ghana's waters for a month, was introduced by the ministry and the Fisheries Commission as a measure to replenish the country's fishery stock which data



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suggest has been dwindling. By providing accurate, real-time information on oceanographic conditions and fish aggregation zones, the PFZ service enables FCWC to prepare effectively for policy implementation and enforcement.

OUTREACH AND SUSTAINABILITY:

The consortium employed a multilayered approach to raise awareness about our services and stimulate demand from stakeholders. One of our primary strategies involves extensive publication and visibility efforts through social networks. By leveraging various online platforms, including websites, social media channels, and newsletters, the consortium is able to disseminate information about their mapping services, highlighting their relevance and benefits to beneficiaries. Additionally, we actively engage in national workshops and meetings, where we present our findings, share best practices, and solicit feedback from key stakeholders. These events serve as invaluable forums for networking, knowledge exchange, and building partnerships with government agencies, NGOs, and community leaders. Through these outreach and communication activities, we aim to not only increase awareness about our services but also foster a deeper understanding of the pressing issues facing the fisheries sector, ultimately generating greater demand for our solutions.

FCWC
Fisheries Committee for
the West Central Gulf of Guinea

**JOINT FISHERIES CLOSED
SEASON 2024**

SECTOR	FCWC MEMBER STATE	JULY				AUGUST				SEPTEMBER			
		1	8	15	30	1	8	9	31	1	8	15	30
ARTISANAL & INSHORE	Benin					CLOSED				OPEN SEASON			
	Côte d'Ivoire*					CLOSED				OPEN SEASON			
	Ghana**					CLOSED				OPEN SEASON			
	KEY DATES	1	8	15	30	1	8	9	31	1	8	15	30
SEMI- INDUSTRIAL & INDUSTRIAL TRAWL	Benin					OPEN SEASON							
	Côte d'Ivoire*					CLOSED SEASON				OPEN			
	Ghana**					CLOSED SEASON				SEASON			

* - also implementing bans for fishing activity on lagoons and lakes
** - groups semi-industrial with inshore fleet