



**AGENCE GABONAISE D'ÉTUDES ET
D'OBSERVATIONS SPATIALES**

AU - CENTRE OF EXCELLENCE

Cairo, 27 January 2023

www.ageos.ga

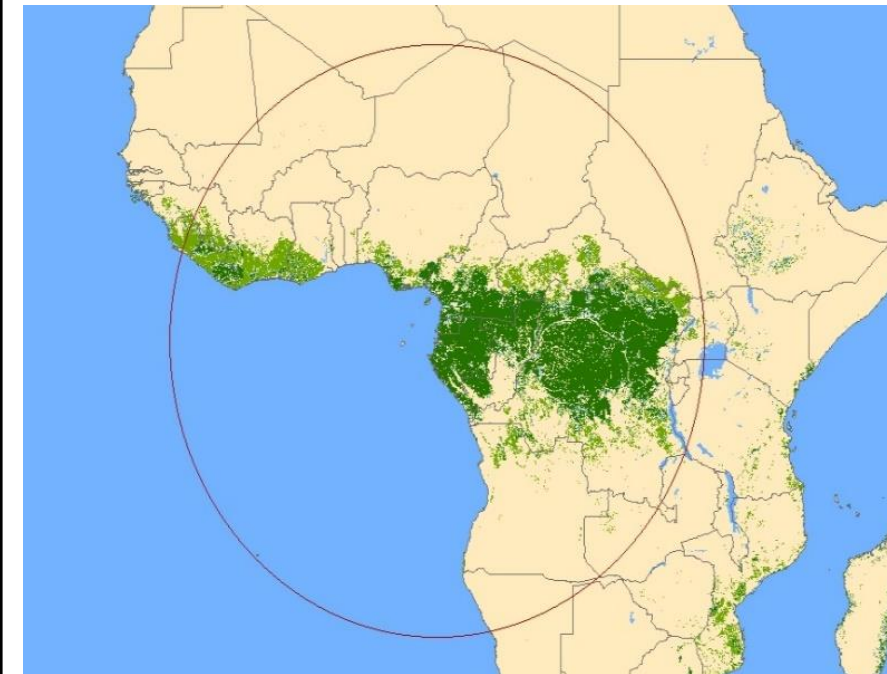
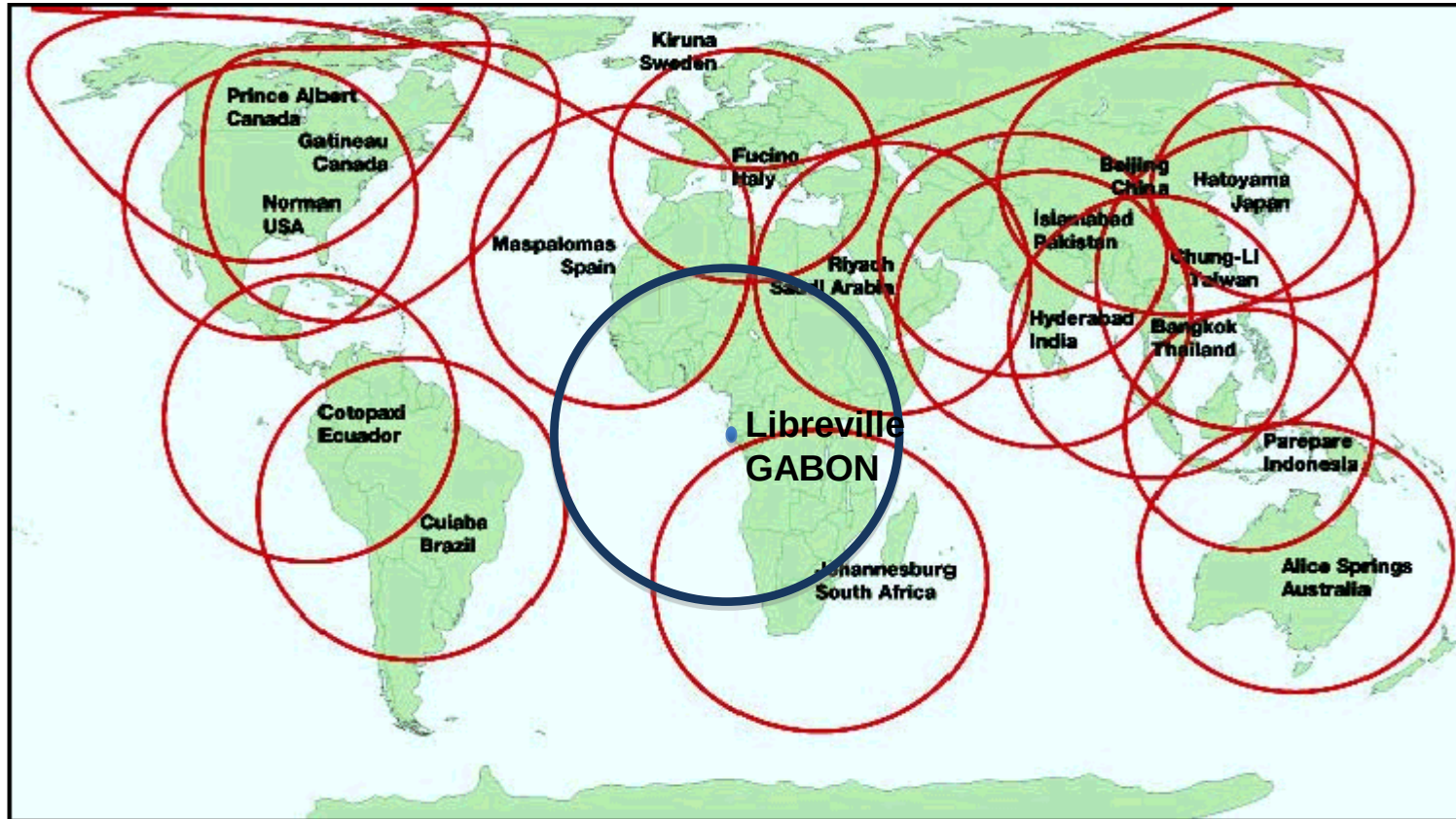


Context

International and national commitments on the consideration of forests in the context of GHG reduction

- Creation of 13 national parks dedicated to the preservation of the environment was announced on 4 September 2002, during the Earth Summit in Johannesburg;
- Bali Conference in 2008: First commitment of Southern countries on efforts to contain global warming (REDD);
- In 2010, Gabon banned the export of logs;
- Availability of satellite images: an essential element to measure the evolution of forest cover;
- Lack of capacity and means in many Southern countries and difficulties specific to the tropical field of application of Earth Observation techniques.

Earth observation Ground Stations Map



Reception plot about 2 800 km

- ❖ 24 countries covered, the entire Gulf of Guinea;
- ❖ All the forest areas of Central Africa and more than 80% of Western Africa forest areas.

Context

Establishing a pole of excellence in remote sensing for sustainable land management and natural resources in Central Africa

- Implement a technological platform: direct satellite receiving station that allows to program, acquire and archive optical and radar data.
- Setup a technical building, training and operational service for monitoring forests and the environment. The Center include technical capacities in image processing and GIS.

Missions

- **Main mission:**

« Involve in the implementation of the Government's policy on the acquisition, analysis and availability of data from space observation of the national land for the sustainable management of the environment, natural resources, land use, research and innovation »

- **Specifics missions:**

- Develop a national strategy for space observation activities;
- Establish a space infrastructure;
- Ensure the monitoring and evaluation of the implementation of public policies (roads, housing, energy, natural resources, fishery, etc.);
- Provide data related to climate change;
- Promote training, research and development activities.

Infrastructures



Bande X Antenna

- Optical and radar sensors;
- Satellites : Landsat, AQUA, Terra.



Weather Antenna

- Optical sensor;
- Satellites : NOAA; METOP-FY-3D, S-NPP, JPSS-1, AQUA, Terra.



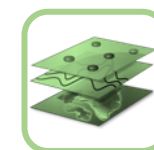
Spacecraft tracking Antenna

- Upward link;
- Downlink.



GMES & AFRICA Antenna

- EUMETSAT Environmental Data Dissemination System (Sentinel, SPOT/PROBAV, SEVIRI/MSG).

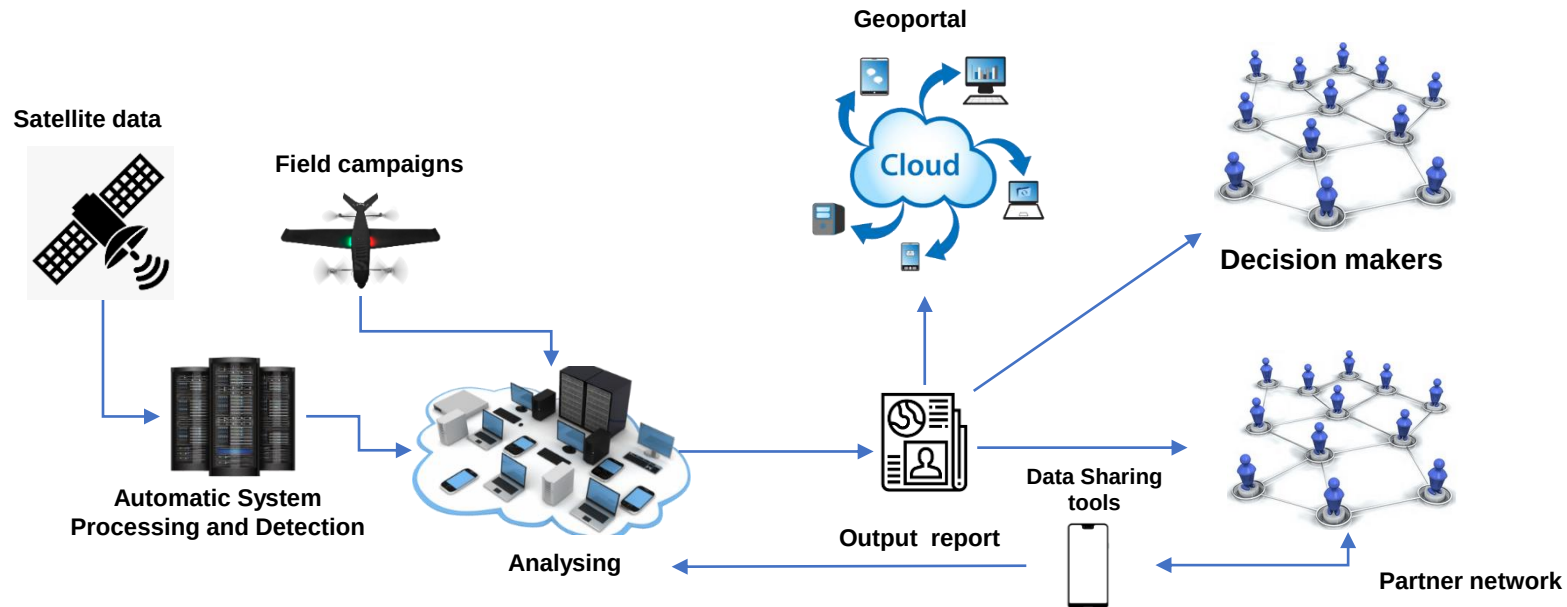


Forestry Service

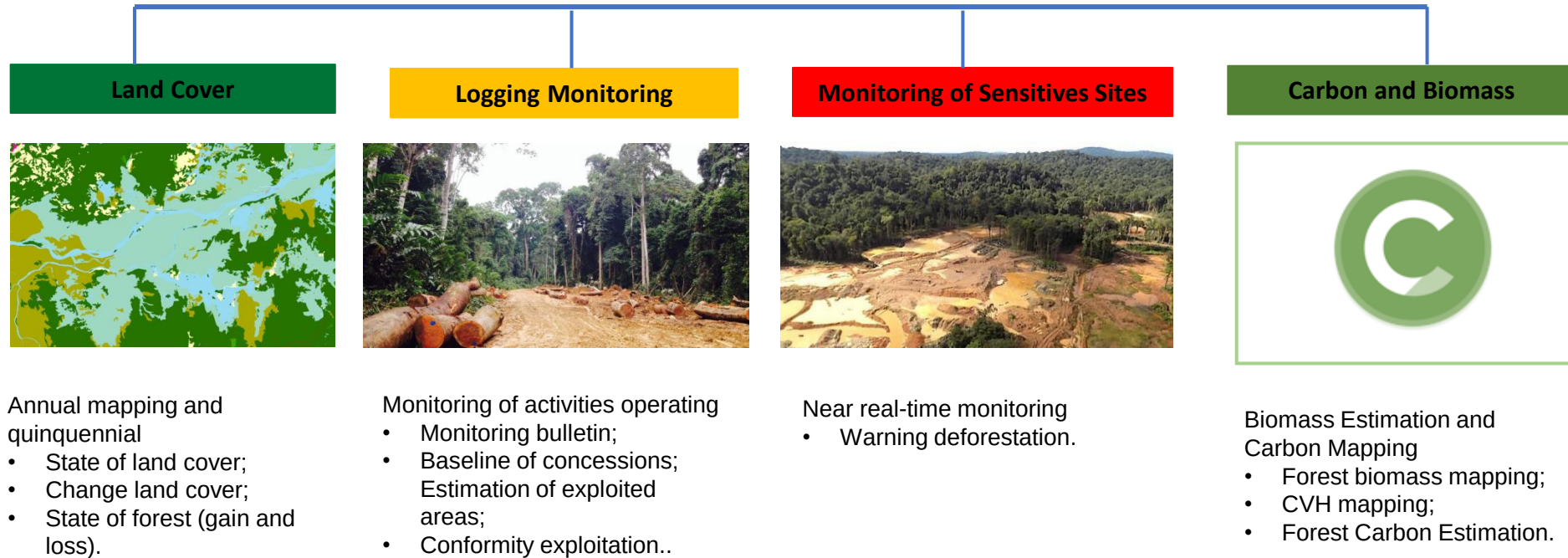


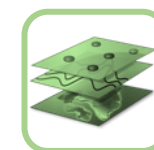
National Forest and Natural Resources Monitoring System

- ✓ Monitor the evolution of the national forest cover and land cover ;
- ✓ Detect forest cover disturbances ;
- ✓ Analyze the legal framework for the disturbances observed ;
- ✓ Inform the actors in charge of forest control and police;
- ✓ Analyze and characterize the activities impacting the forest cover.



ACTIVITIES, PRODUCTS AND SERVICES





PRIORITY THEMATIC SERVICE



FIELDS OF INTERVENTION



URBAN

1

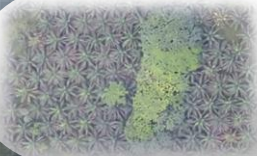
- Urban dynamics
- Urban data base

7

WATER RESOURCES



- Monitoring of natural resources



AGRICUTURE

2

- Strategic orientation for agro-industrials

6

INFRASTRUCTURES



- State of roads monitoring



RISKS

3

- Flood risks
- Risk monitoring

5

MINING



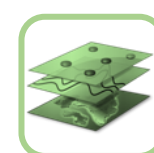
- Prevention of pollution linked to the activity



CLIMAT CHANGE

4

- Evolution of precipitations and temperatures



MARITIME SERVICE



TECHNICAL CAPACITIES
FOR FISHERY
MONITORING IN THE GULF
OF GUINEA



Fishing zone monitoring

Activity that consists of detecting and tracking vessels in fishing areas and restricted areas, such as Marine Protected Areas and Marine Parks, using satellite data

Space infrastructures used: Radar and optical satellites

Sentinel-1



- Time series study (Database)
- Free and available images

Spot 6&7



- Complementary to Radar Images
- High resolution data 1.5m
- Revisit time 1 day

Cosmo Skymed (SAR)



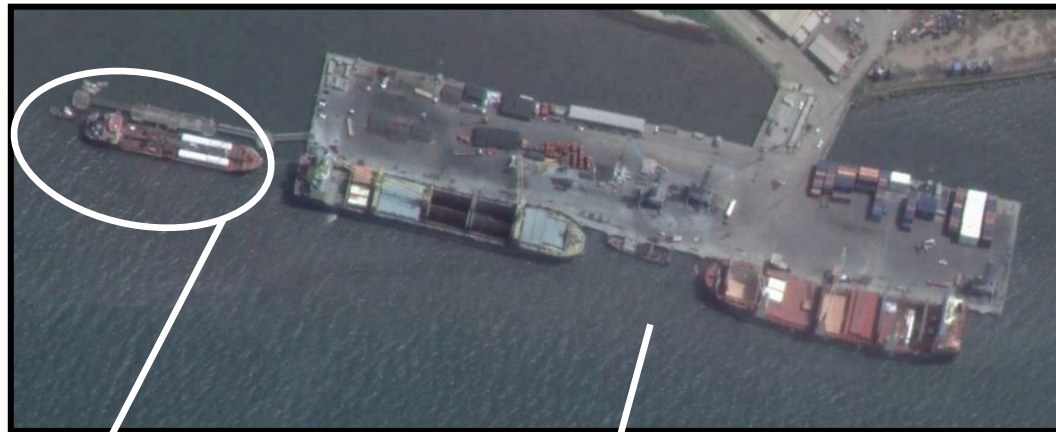
Avantages:

- _ Acquisition in all weather conditions
- _ Best revisit time (1 pass in the morning (between 04:53 and 07:32) and 1 pass in the evening (between 16:51 and 19:30))
- _ It covers areas ranging from 100 to 40,000 km².
- _ The resolution varies from 100 to 1 m on the ground



Satellite Data used

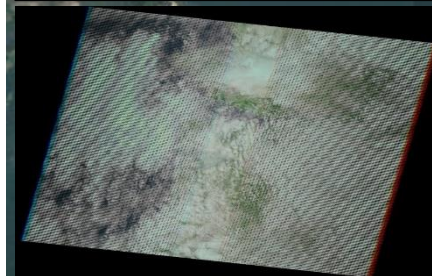
OPTICAL Image



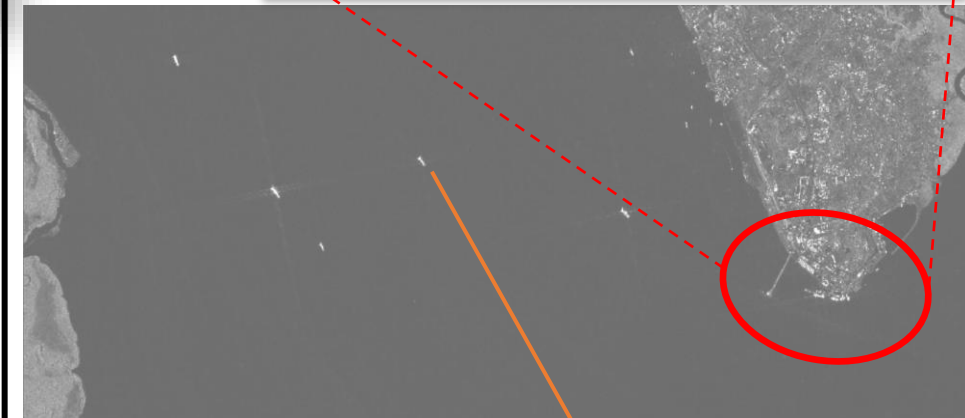
Chimical Terminal

Container Terminal

Cloudy image



RADAR IMAGE



IMO: 9144500

MMSI: 477610000

Call Sign: VRVQ6

Flag: Hong Kong [HK]

AIS Type: Cargo

Gross Tonnage: 26062

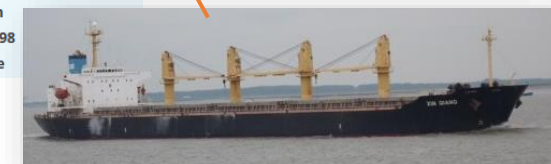
Deadweight: 45732 t

Length Overall x Breadth Extreme:

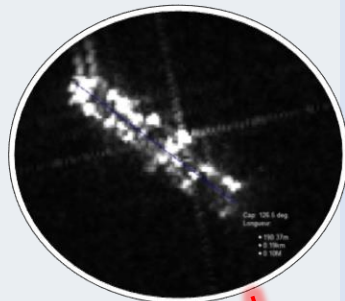
186m x 30.4m

Year Built: 1998

Status: Active



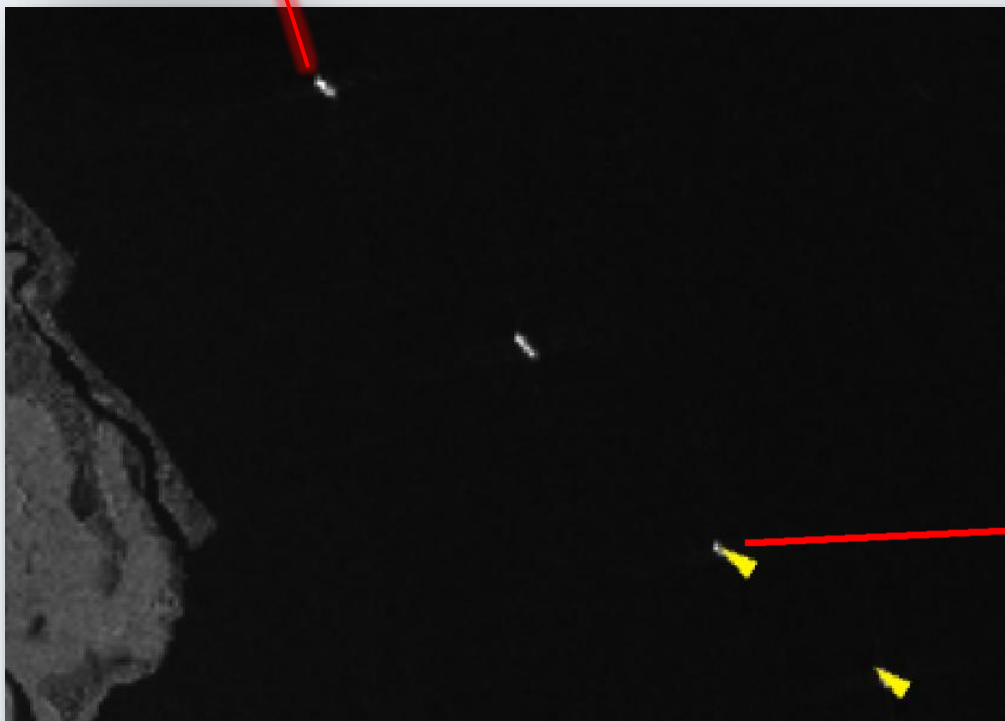
Joint use of image and AIS/VMS data



AIS désactivé:
Détection possible
Caractérisation possible
Identification impossible

Navire type Cargo
Size 190m
Cap 310 degrees

The coupling of Radar Image and AIS data allows to refine the analysis



AIS activated:
Identification possible

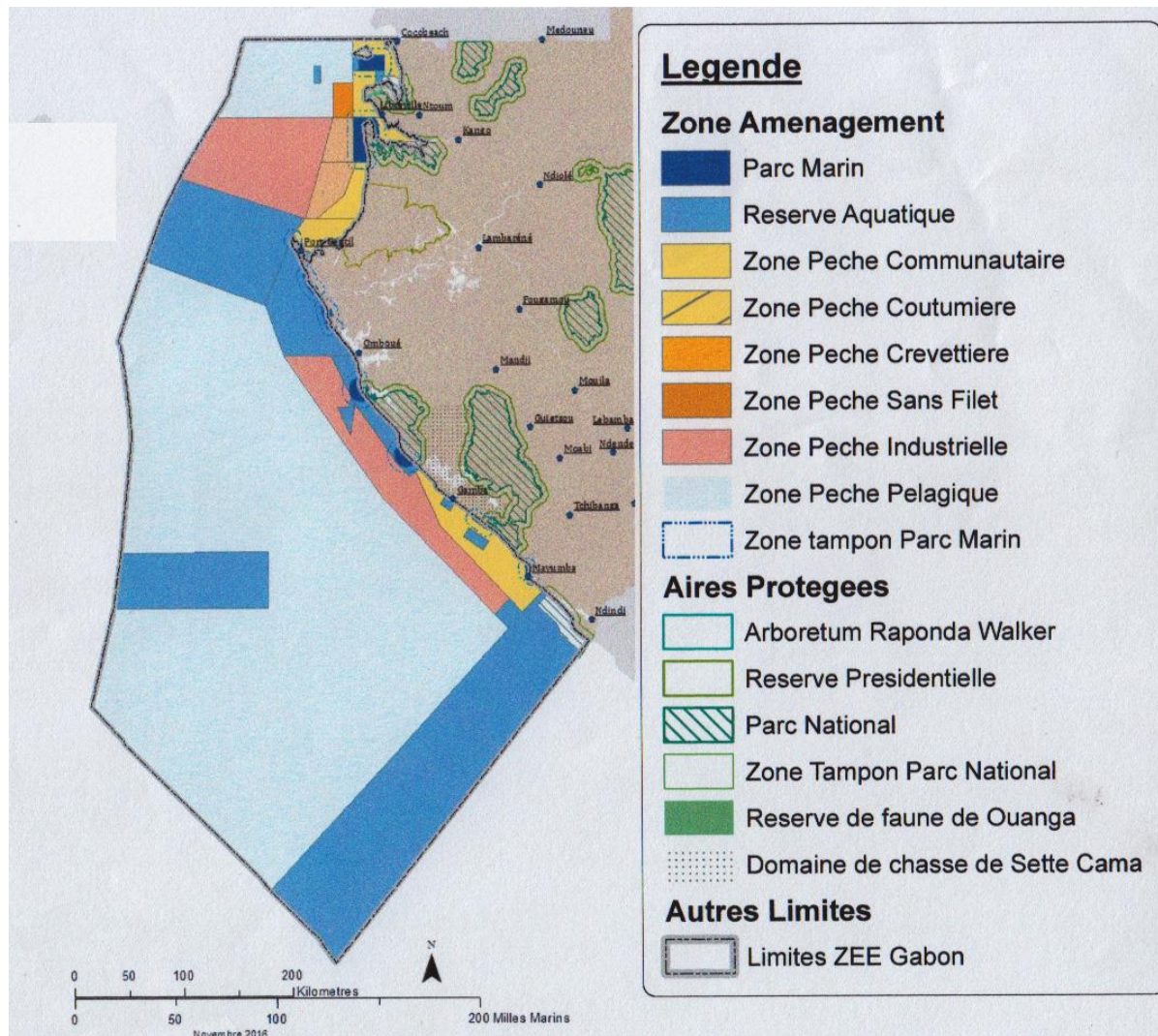
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186m x 30.4m
Year Built: 1998
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Challenges and difficulties in monitoring fishing areas and preserving Marine Protected Areas

1



- 9 Parks Marins
- 11 Reserves Aquatiques

Spectrum of Threats

Industrial fishing

Artisanal fishing

oil industry

smuggler

Migration

Organised crime

Monitoring Scenario: High Seas Fishery Monitoring

2



Tuna Fishing Area Off Mayumba

Détection of 4 vessels in action of fishing

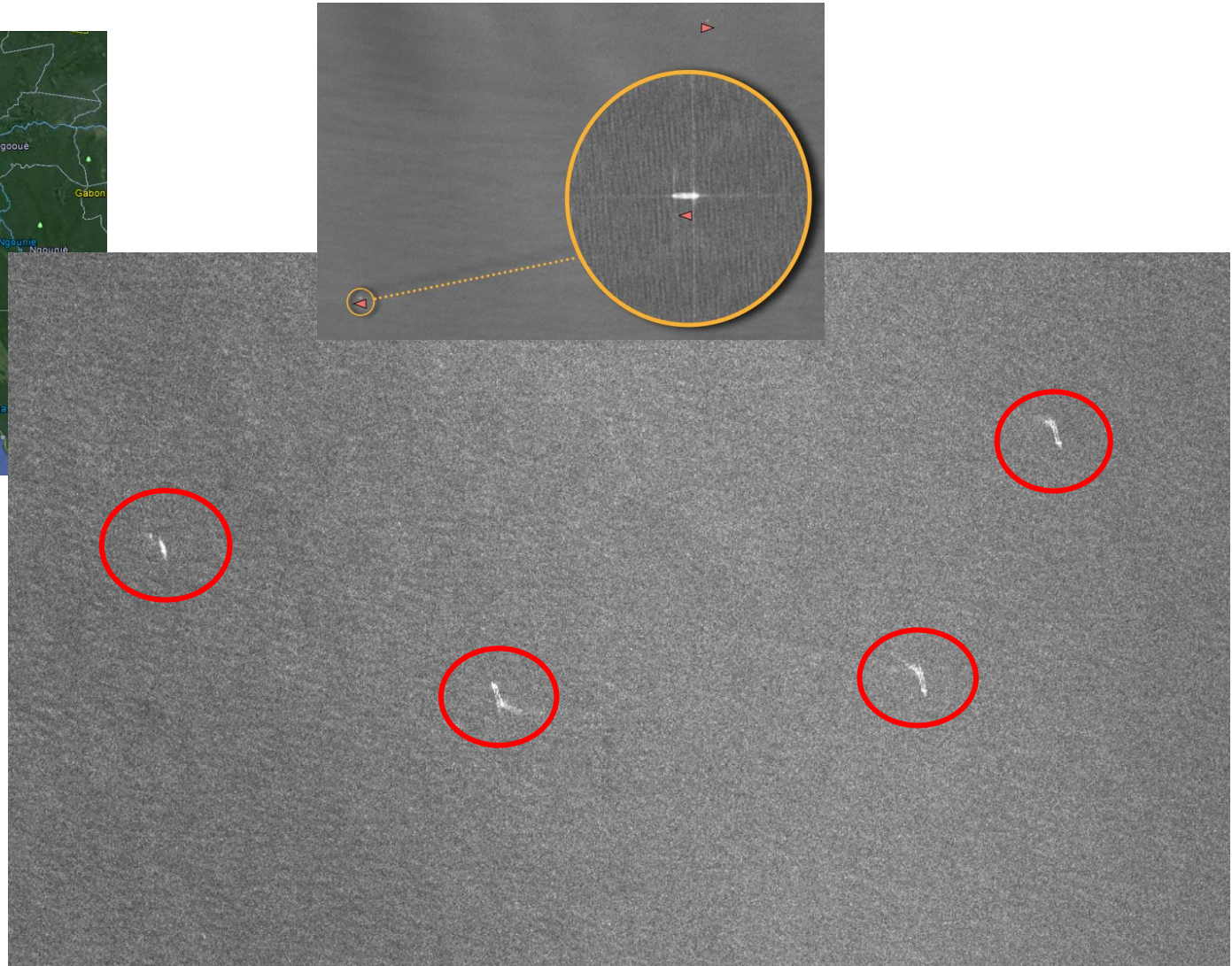
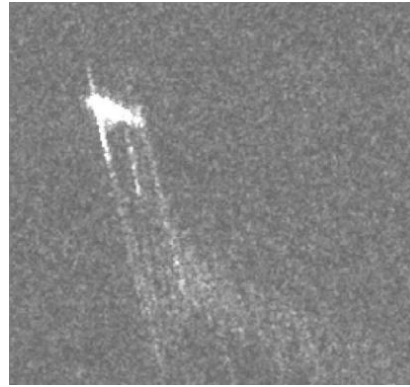
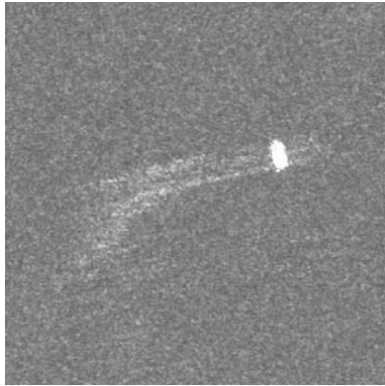


Image Radar 5m (07/07/20xx): Détection et identification de 4 navires en action de pêche

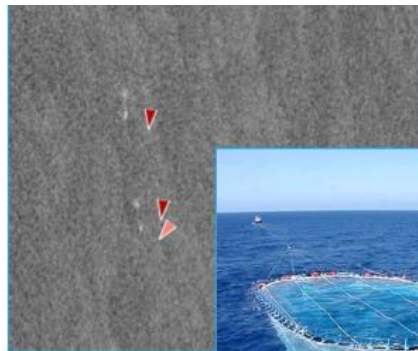
Monitoring Scenario: High Seas Fishery Monitoring

3



Closer observation shows that they are indeed fishing (lifting the nets from the port side)

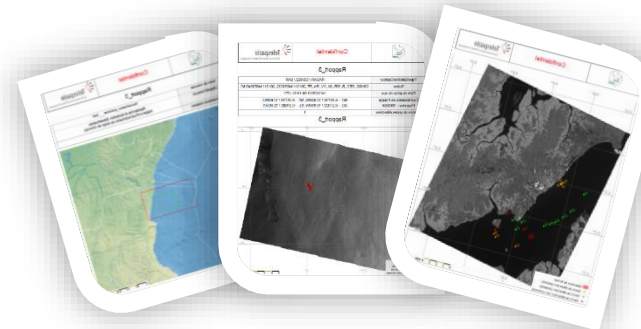
Fishing with a net



© EFCA



y approaching the DGPA, the 4 vessels identified are indeed authorised to fish during the period indicated.



License of Fishing

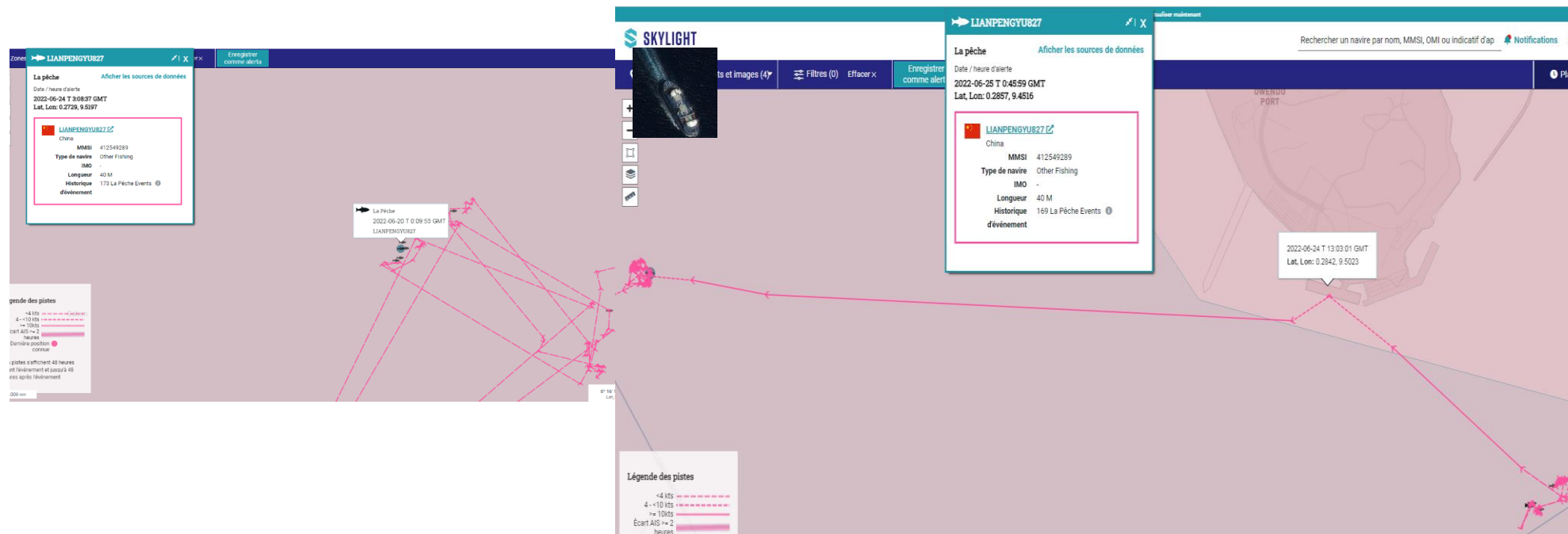
NOM

- 1 VIA EUROS
- 2 AVEL VOR
- 3 GUERIDEN
- 4 VIA AVENIR
- 5 KURTZIO
- 6 PLAYA DE NOJA
- 7 CAP BOJADOR
- 8 STERENN
- 9 ZUBEROA
- 10 MONTE MAIOR
- 11 VIA MISTRAL
- 12 GUEOTEC
- 13 PLAYA DE BAKIO
- 14 GEVRED
- 15 ALBONIGA
- 16 ALBACORA QUINCE
- 17 PLAYA DE RIS
- 18 ALBACAN
- 19 EGALUZE
- 20 MAR DE SERGIO

Monitoring the movements of a fishing vessel in the Gabonese EEZ during a defined period With real-time monitoring platform

4

Monitoring of a fishing vessel by AIS in the port area of Owendo in Gabon from 20/06/22 to 25/06/22



Position	Date	Coordonnées (Lat,Long)	Heure(GMT)	MMSI	ZONE
P1	19/06/2022	(0.2714; 9,5173)	00h13	412549289	Zone portuaire d'Owendo
P2	20/06/2022	(0.2713; 9.5172)	00h09	412549289	Zone portuaire d'Owendo
P3	21/06/2022	(0.2713; 9.5172)	01h20	412549289	Zone portuaire d'Owendo
P4	22/06/2022	(0.2700; 9.5167)	21h38	412549289	Zone portuaire d'Owendo
P5	23/06/2022	(0.2842; 9.5023)	17h18	412549289	Zone portuaire d'Owendo
P6	24/06/2022	(0.2842; 9.5023)	13h03	412549289	Port d'Owendo
P7	24/06/2022	(0.2858; 9.4516)	23h45	412549289	Zone portuaire d'Owendo
P8	25/06/2022	(0.2857,9.4516)	00h45	412549291	Zone portuaire d'Owendo

• Vessel movement history

Fishing Centre of Excellence

The Gabonese Agency for Space Studies and Observation has been designated to host the Fisheries Centre of Excellence.

This Centre will enable better governance of fisheries and marine resources in the countries of the sub-region, while promoting a better blue economy.



Competence Centre

- Administrative services,
- Technical services (reception, processing , archiving and distribution);
- Research & Training.

Access to data

- GEOportal: www.ageos.ga
- Without administrative constraints;
- Simplified request by geoportal / e-mail;
- Download or copy to disk;
- Multiplying partnerships to ensure access to data.

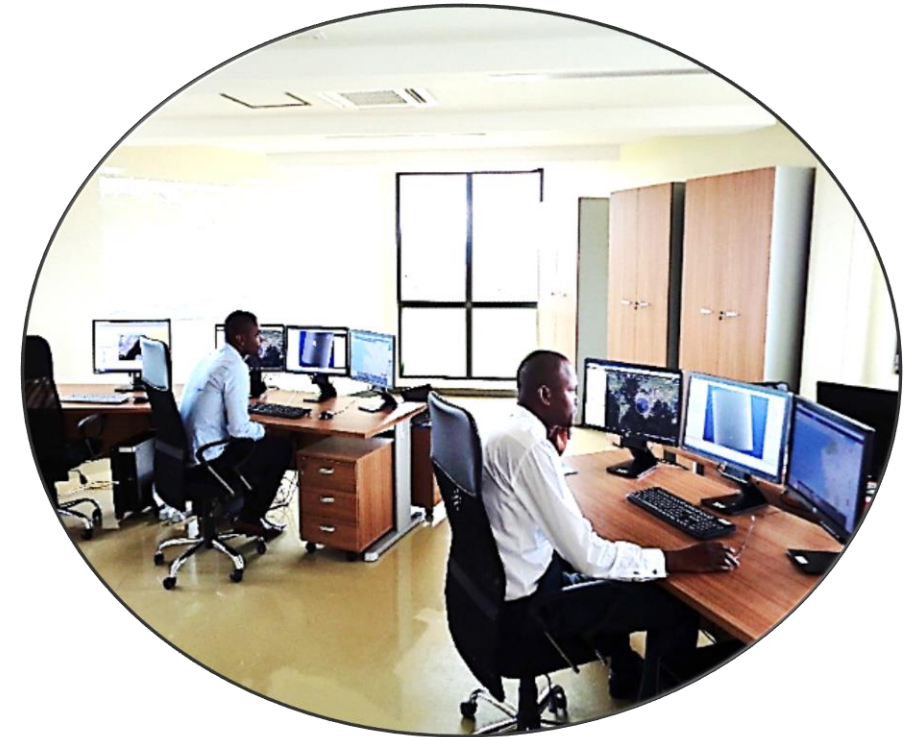
Organization of the Fishing Centre of Excellence

OPERATIONAL SERVICES :

Surveillance and Security

- Ocean governance and blue economy management, including fisheries surveillance;
- Environmental monitoring;
- safety at sea;
- Data organisation and management;
- Provision of decision support tools;
- Mapping and monographs;
- Technical reports;
- Scientific advice, etc.

These services will be provided by AGEOS and Directorate-General for Aquatic Fisheries (DGPA)



**THANK YOU FOR
YOUR ATTENTION**