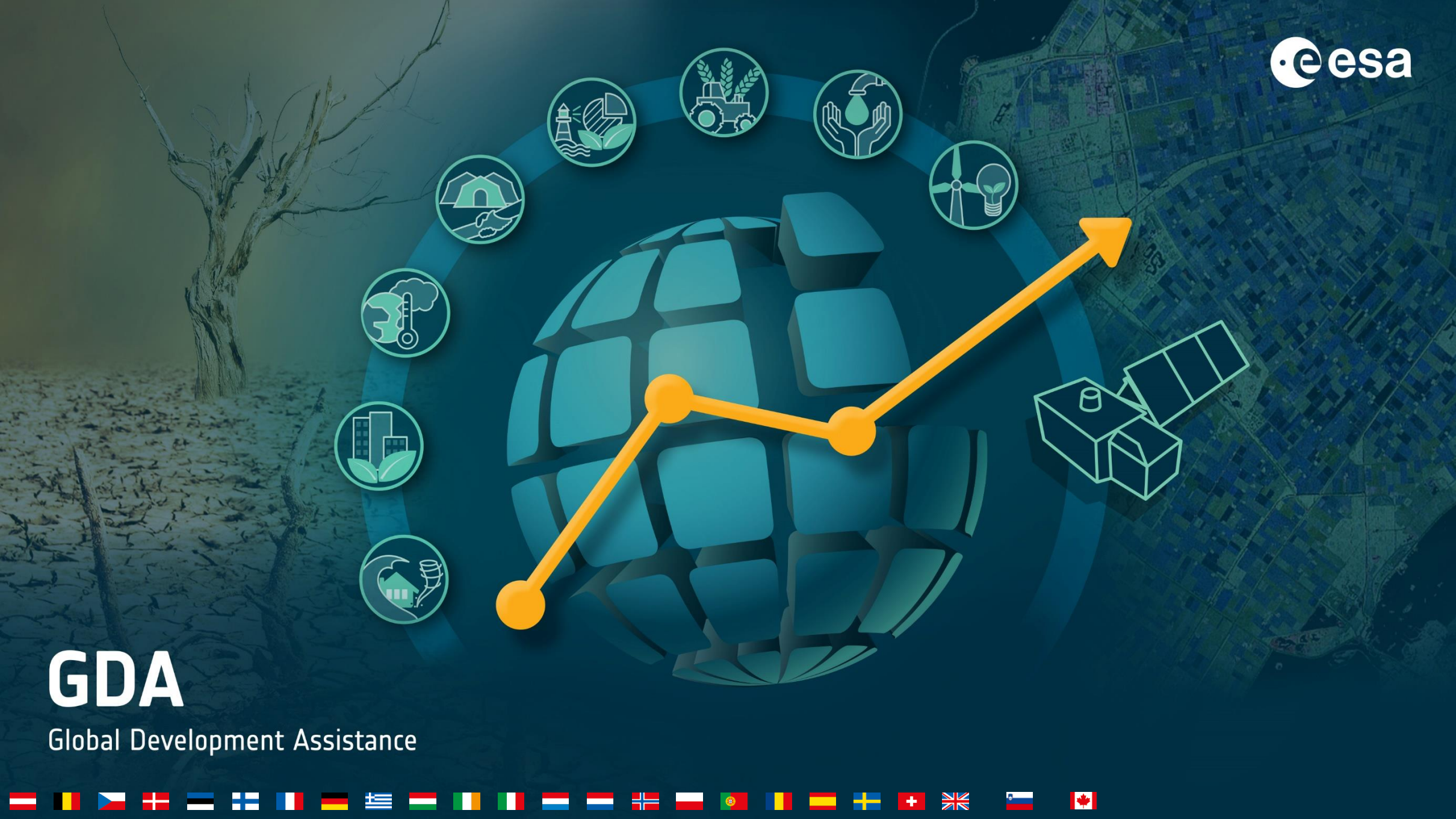
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Use Case 3 and use of NoR S23 API

Coastal Resilience Objectives with our partners

1. **Coastal change mapping**
2. **Sediment source and transport**
3. **Coastal resilience assessment**

Multi scale analysis

Worldwide Coverage

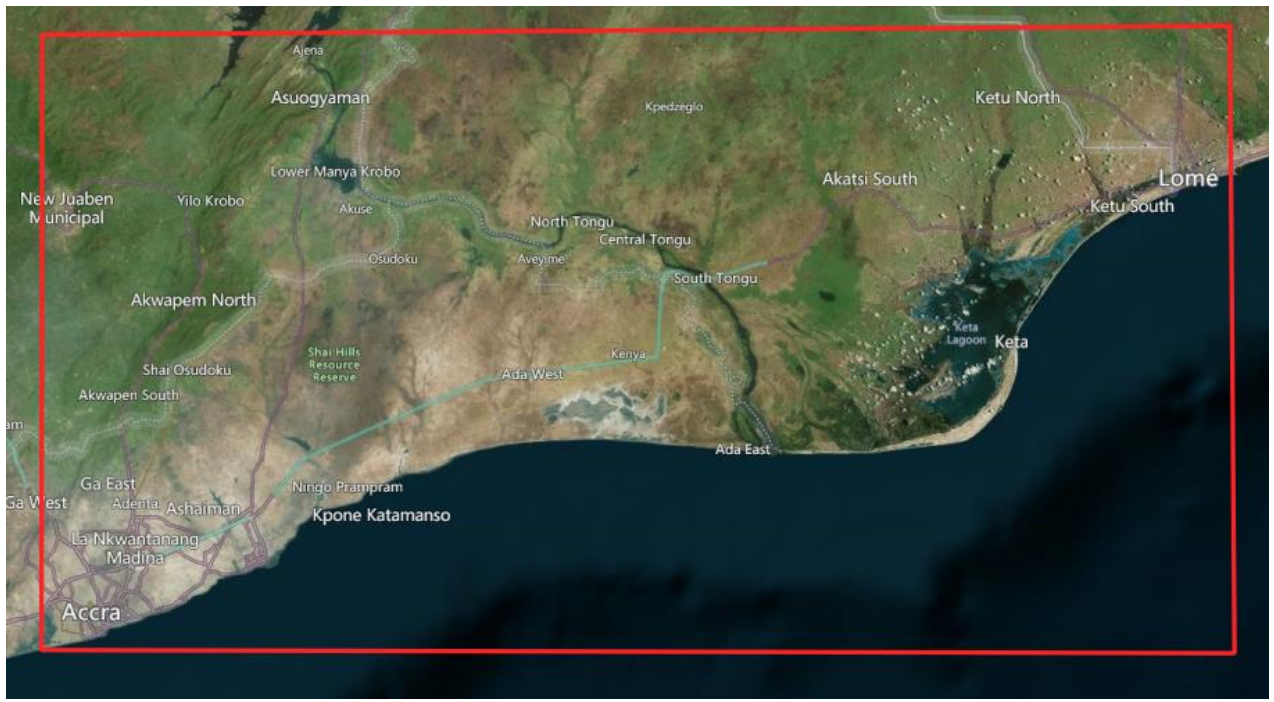
Access to historical information

Use Case 3

The process and why NoR was vital for change mapping

1. **Generate waterlines that show the sea/land boarder at time of satellite overpass – customers need as many as practicable so that the effect of manmade activity can be evidenced.**
2. **This process required a unique coastal strip cloud filter for Sentinel 2 to be developed to maximise the number of waterlines, hence NoR request to access API.**
3. **Then amend each waterline to a tidal datum refence line such as MSL – these are called shorelines.**
4. **Compare shorelines across time to witness changes.**

Study site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North Tongu
Central Tongu
Osudoku
Avevime
South Tongu
Akwapem North
Keta Lagoon
Keta
Shai Hills Resource Reserve
Kenya
Shai Osudoku
Ada West
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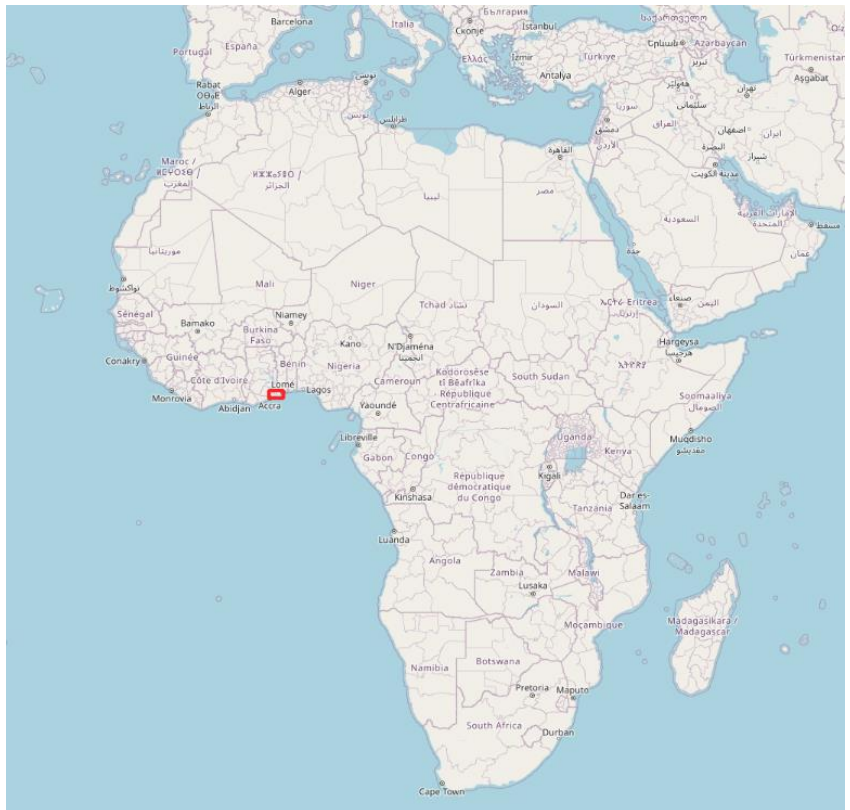
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South Sudan
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Monrovia
Abidjan
Accra
Yaoundé
Soomaaliya الصومال
Libreville
Gabon
Congo
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Kenya
Muqdisho مقديشو
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Luanda
Angola
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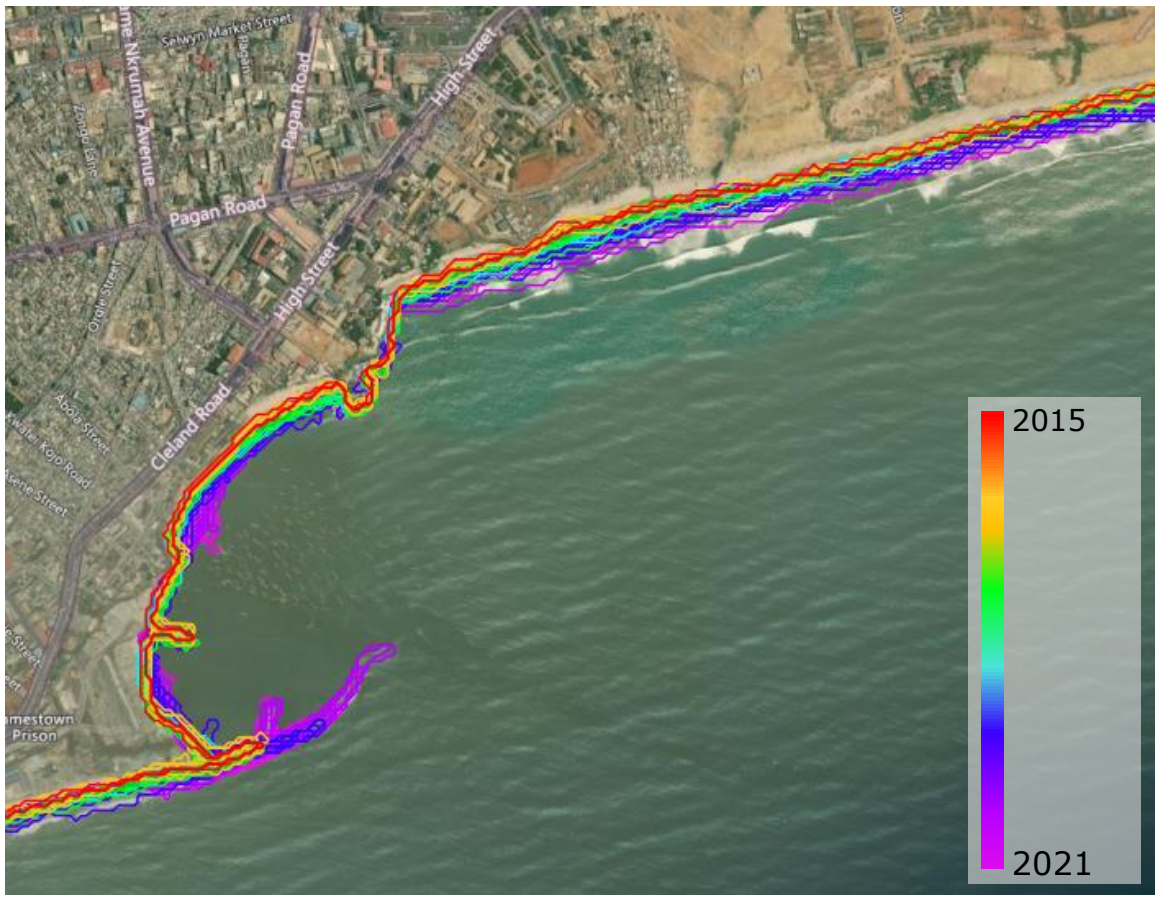
Madagasikara / Madagascar
Namibia
Botswana
Pretoria
Maputo
South Africa
Durban
Cape Town

Cycle 1 production

Coastal Indicators

- Waterline



Cycle 1 production

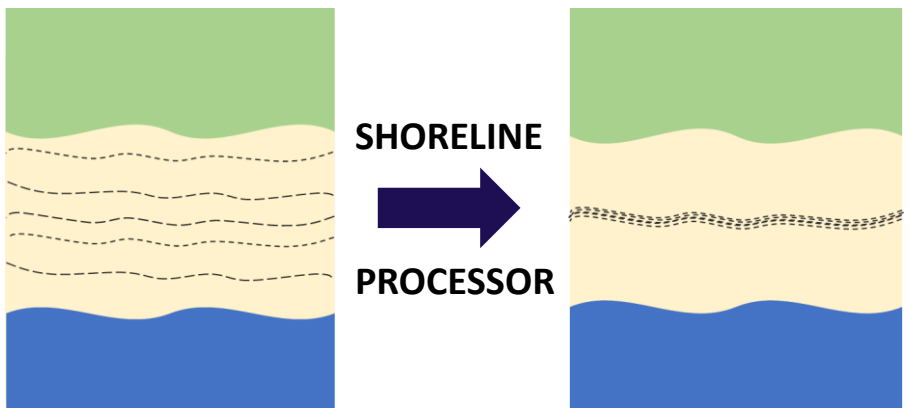
Coastal Indicators

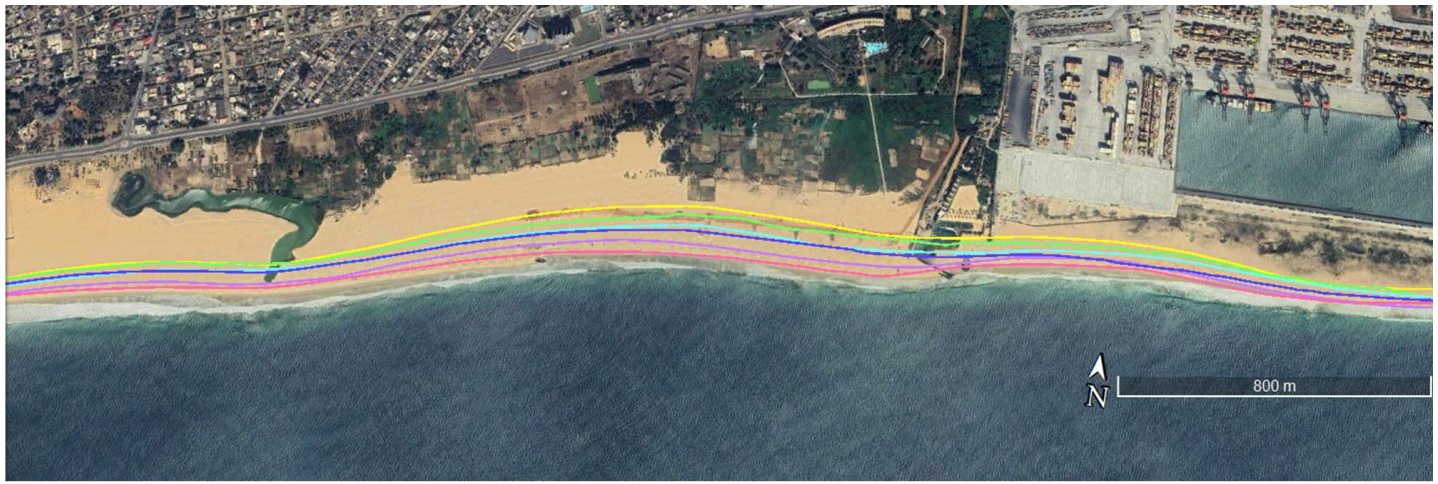
- Shoreline

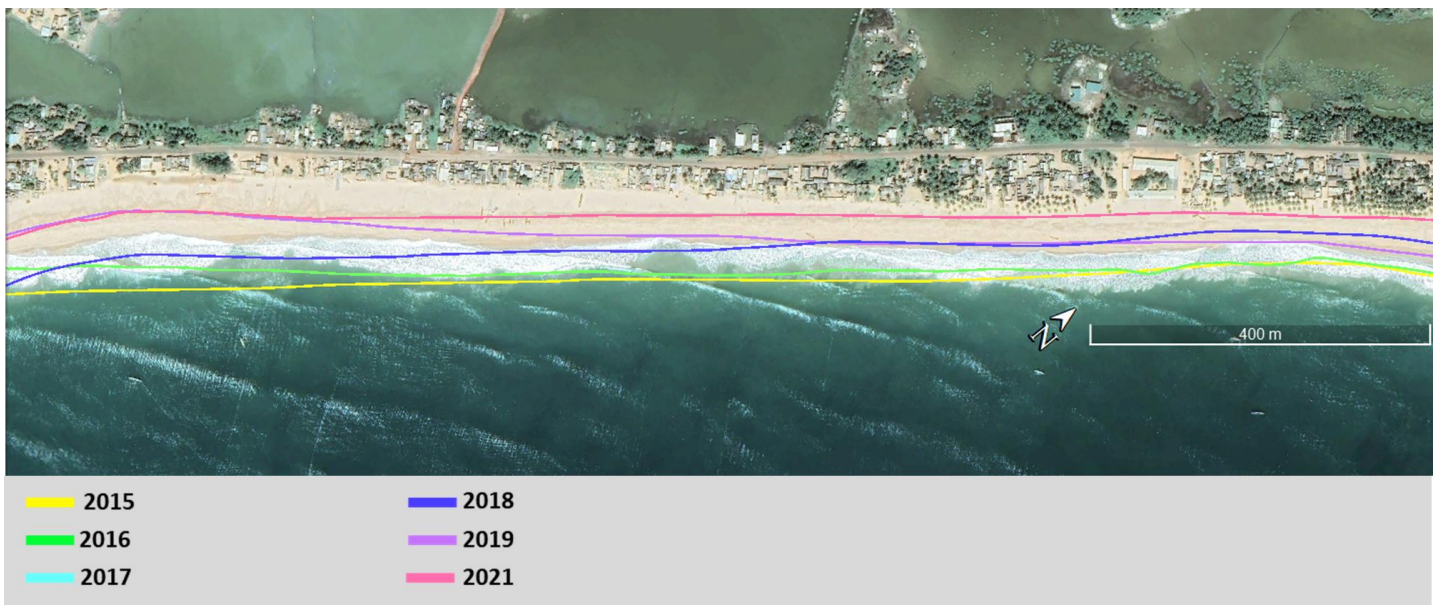
Waterline: a **dynamic** water level

Shoreline: a **fixed** water level

Where would this waterline be positioned, if the tide was at MSL?



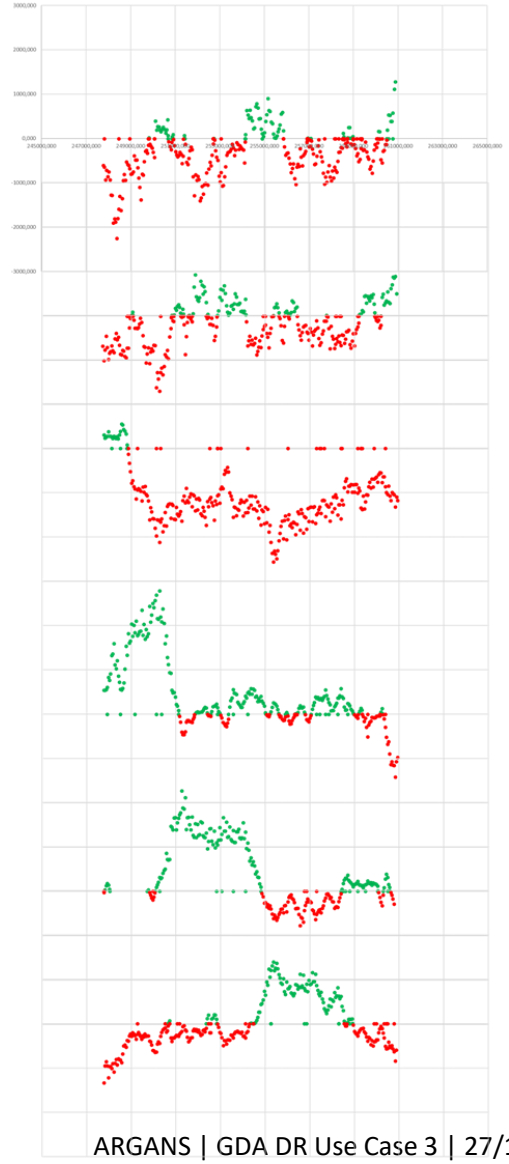




Cycle 3 production

Combined Analysis

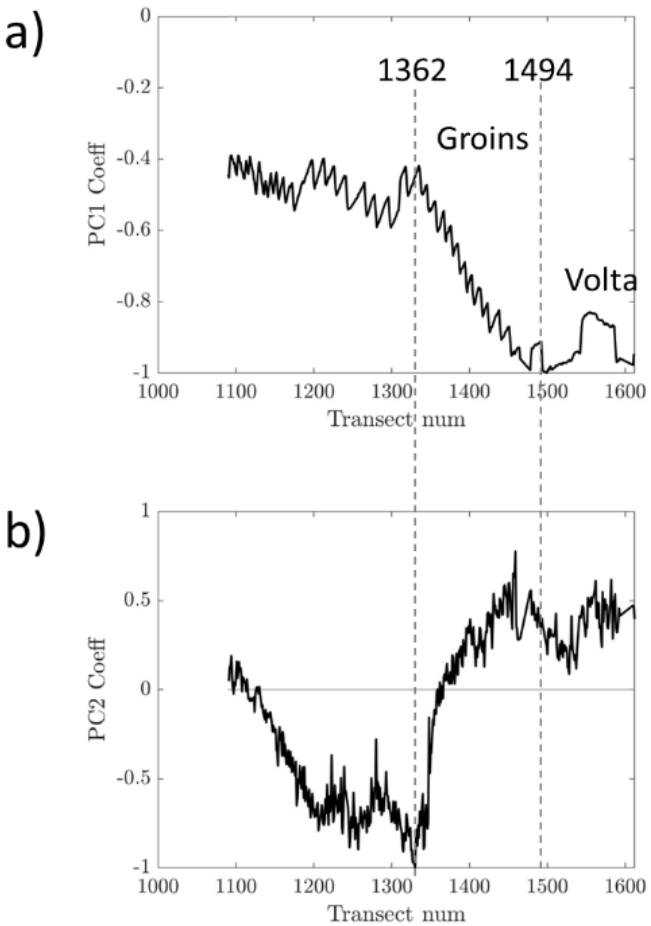
- Region 1



Cycle 3 production

Combined Analysis

- Region 1



Key Observations

- There is both accretion and erosion observed but NOT in a uniform manner.
- Around Keta accretion can be matched to plumes observed
- Around Keta easterly wave patterns are associated with the accretion
- The accretion in earlier years is followed by a stable period after the sea defences are in place
- Beach rotation and the effects of sand mining can be observed

Key Recommendations

- The geospatial products (waterlines/shorelines, land cover maps) are the foundation service and could extend along the complete Gulf of Guinea coastline
- The time series products identifies the nature of the coastal change BUT NOT the cause therefore working closely with local expertise is vital
- The subsidiary products (sediment flow/source and wave properties) enable a transport estimate and weak spots in the coast to be identified. This approach could be adopted along the complete coast and should be shared with those planning coastal construction work
- The subsidiary products provide insights as to the causes which can lead to appropriate mitigation measures and better resilience