

MONITORING SHORELINE CHANGE IN GHANA

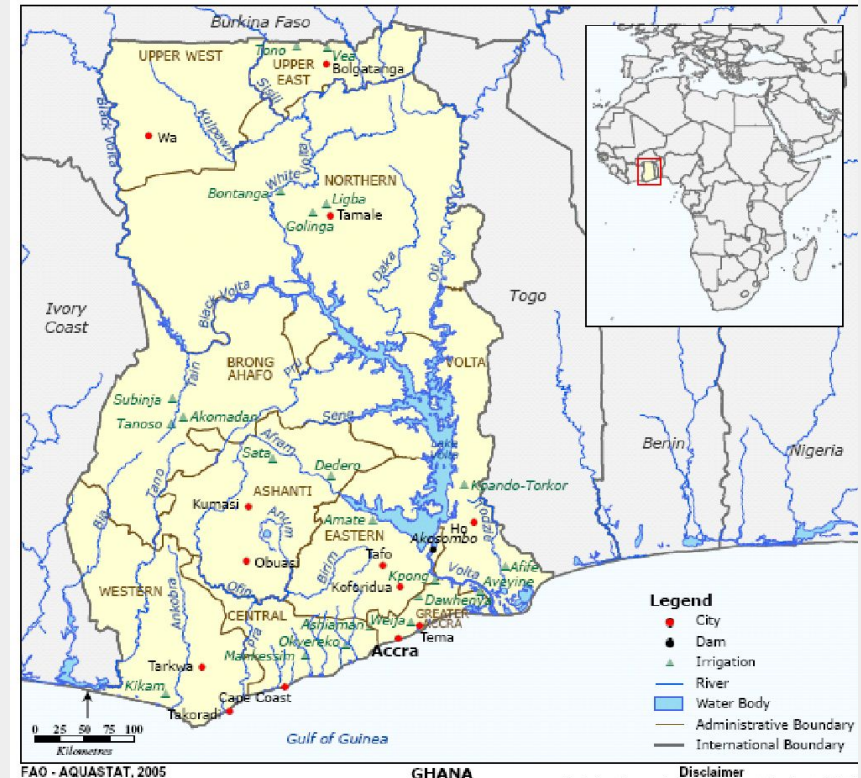
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The Ghana Coast

- Shoreline is 560 km long and categorised into three geomorphologic sections—western, central and eastern
- Waves direction is south-southwest; wave height is 1.4 m; period is from 10 to 15 seconds; about 1 m; SLR is about 3.1 mm/year; estimated sediment yield from rivers is between 30-80 tonnes/km² per annum
- Coastal zone of Ghana is 7% of the total land area
- Coastal population is 25% of national population
- 70% of industries and business are coastal



Challenges in the coastal zone

- **Coastal erosion**
- Coastal flooding
- Saltwater intrusion
- Subsidence
- Sargassum invasion (emerging risk)



Coastal erosion at Fuvemeh

School building
February 2016



Coastal erosion in Fuvemeh

June 2016



Sept 2016



From 2005 and 2017:

- About 37% of Fuvemeh land area lost to erosion
- Over 77 houses destroyed
- over 300 inhabitants displaced



Coastal erosion at Ada



Managing Coastal erosion in Ghana



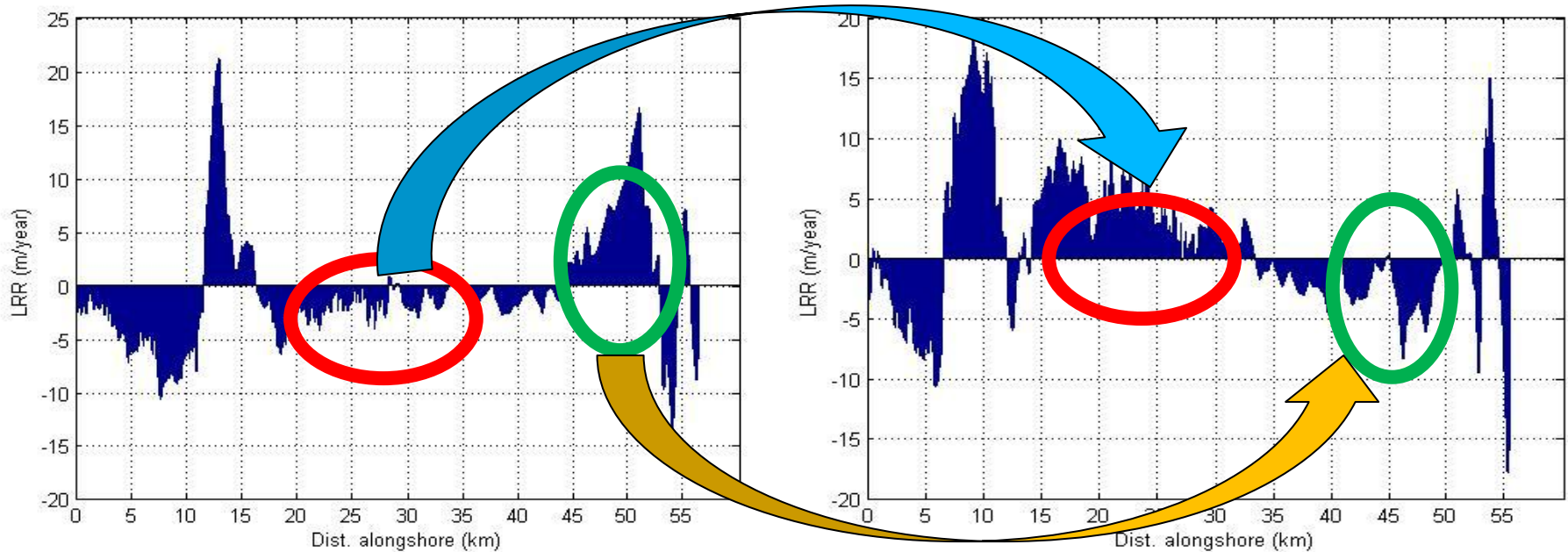
Revetment



Groyne



Impact of Keta sea defense project



- Before KSDP (1986 to 2001) entire shoreline was almost eroding (about 72%)
- Rates along transects ranged between 0.01 and 15.30 m/year with an average of 3.04m/yr
- Accretion rates ranged from 0.01m/year to 21m/yr with an average of 5.80m/yr.

- After KSDP (2001 and 2013) erosion has reduced (47% of shoreline eroding)
- Rates along transects ranges from 0.01 to 17.74m/yr; average of about 3.40m/ year
- Accretion rates ranges from 0.01 to 18.22m/yr and average of 5.15m/yr.

Challenges

Lack of data; Lack of capacity; No policy



Approaches adopted

GPS (RTK) mapping



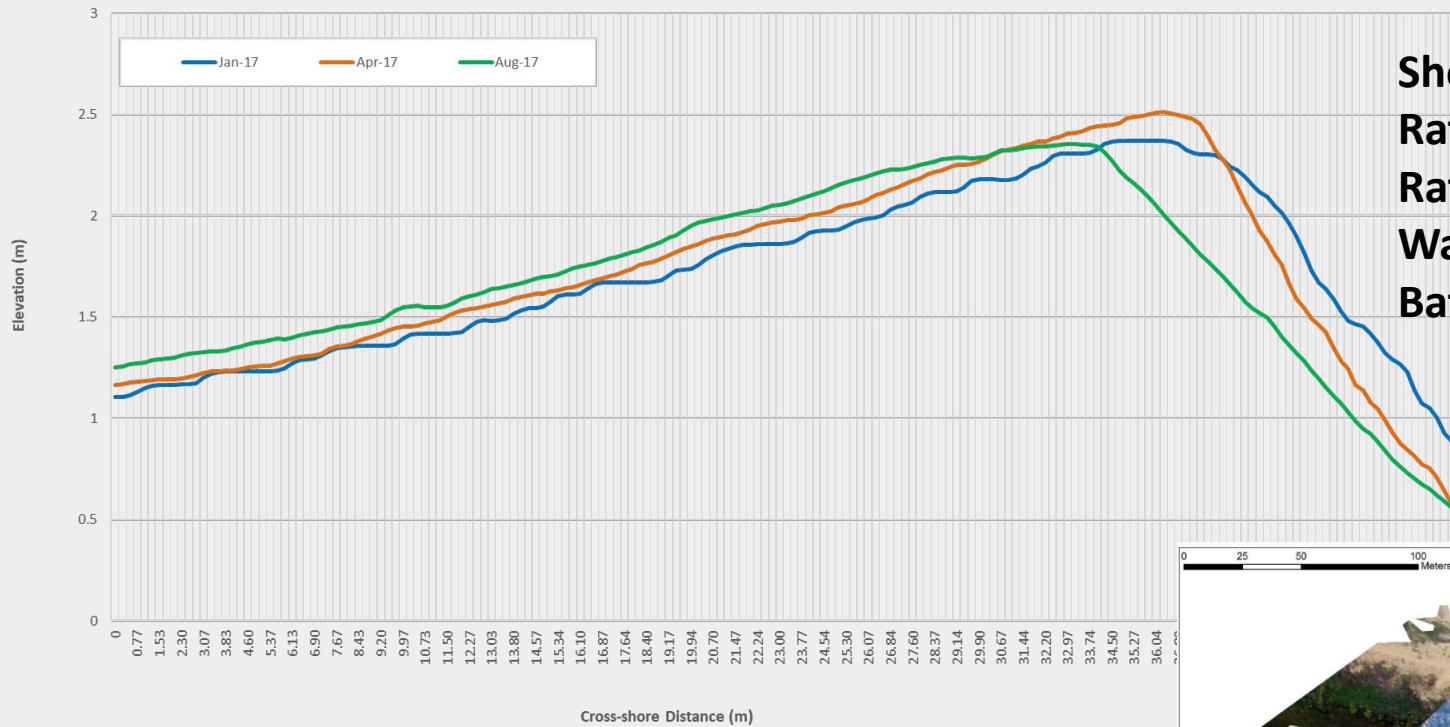
Videogrammetry



Drone

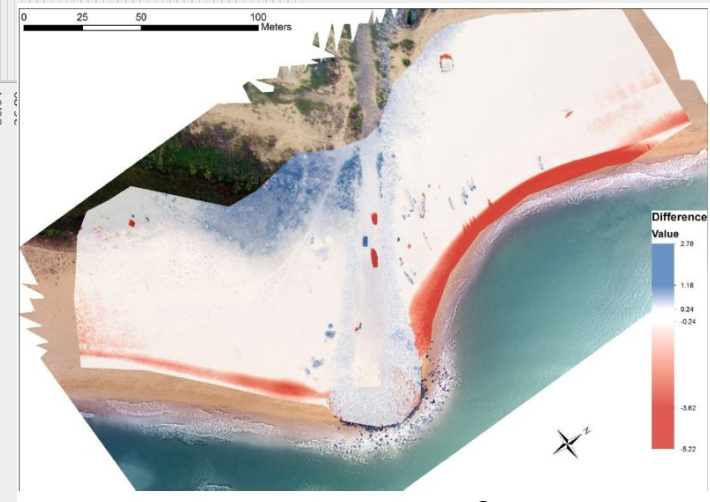


Samples of data



Shoreline Changes
Rates of erosion
Rates of Sea level rise
Wave intensity
Bathymetry

Beach Profile Change



Groyne performance

Conclusion

- The coastal zone is under stress due to natural and anthropogenic factors
- Managing erosion has been adhoc due to lack of data and policy
- Innovative monitoring approaches have been adopted
- There is the need for enhanced regional data management





Thank you very much