

Shoreline Morphodynamics in the Volta Delta of Ghana

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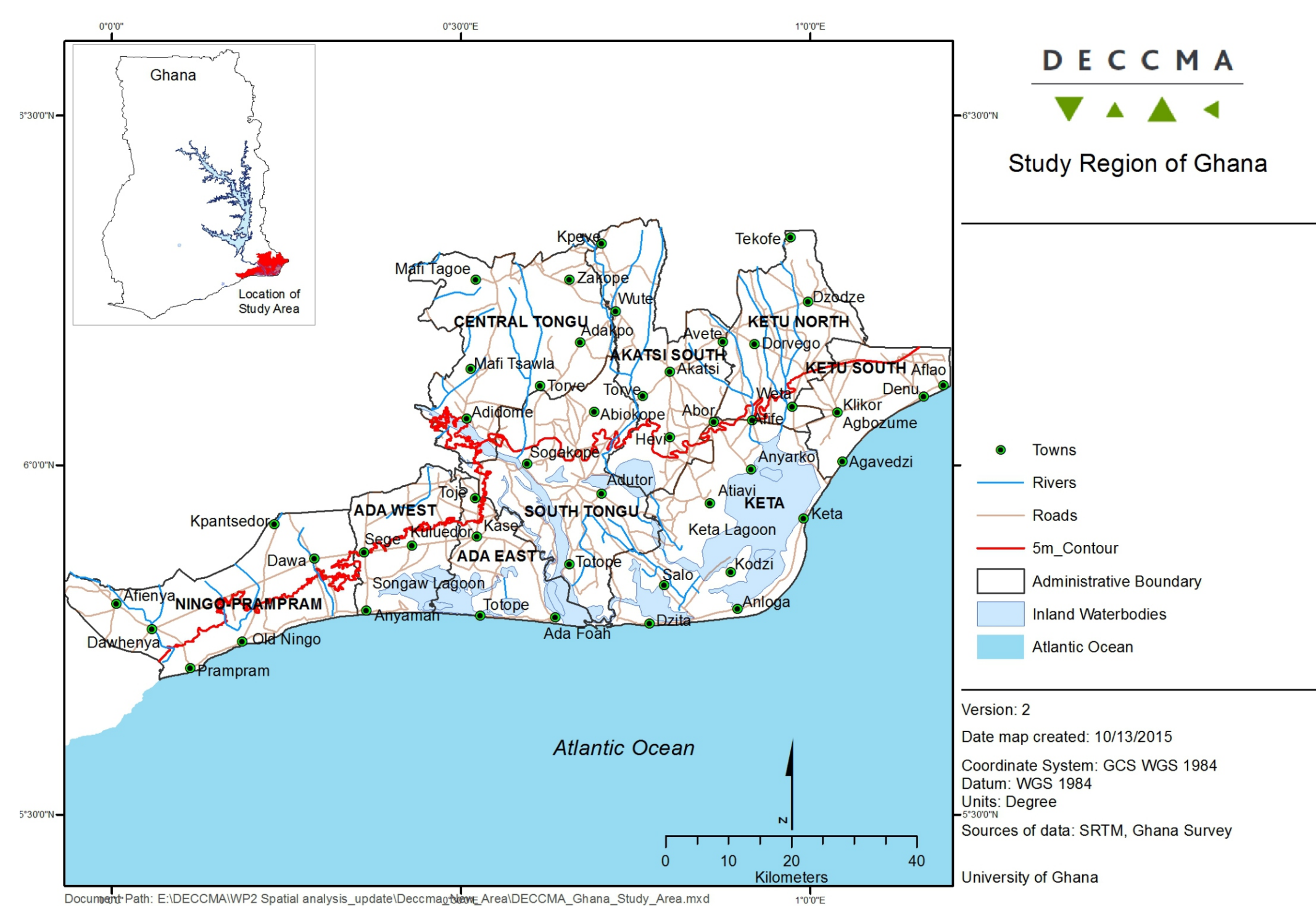
Introduction

- ❖ Deltas have long been seen as highly vulnerable to the impacts of climate change due to their low-lying nature and generally large population. The Volta Delta is not an exception, currently facing increased erosion, flooding and storm surge, among others which poses threat to the region.
- ❖ There is the need to understand and quantify the associated risk with these biophysical processes. Hence, this research focuses on the shoreline morphodynamics, which will help to better understand the evolution trend of the Volta Delta and its implications for sustainable development.

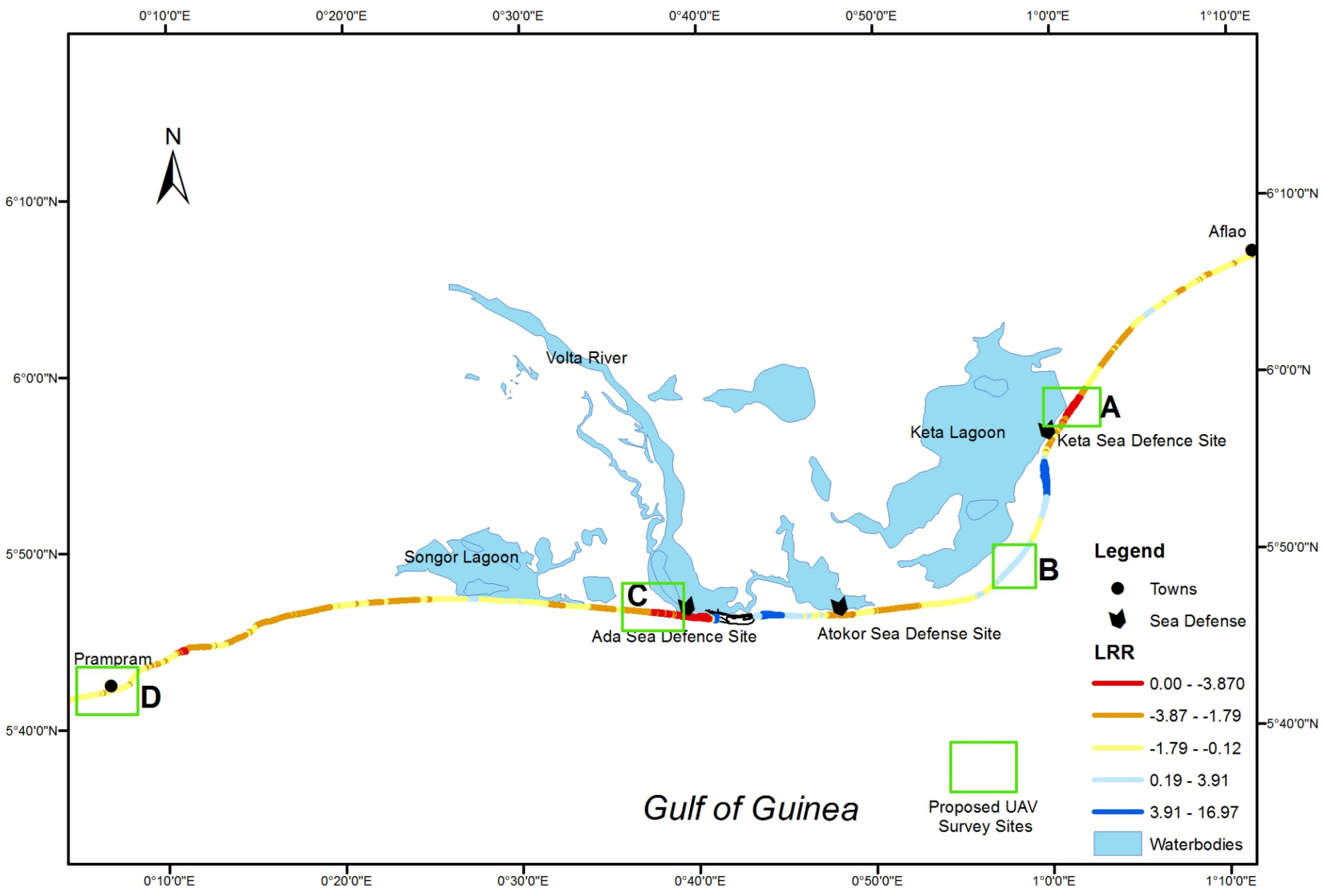
Approach

- ❖ Use of historical data (orthophotos, topographical maps, satellite images) to analyze multi-decadal shoreline evolution in the delta.
- ❖ Analysis of wave, climate and sediment dynamics to understand their impacts on shoreline variability
- ❖ Prediction of future shoreline change under various climate scenarios to inform sustainable development in the region

Study Area

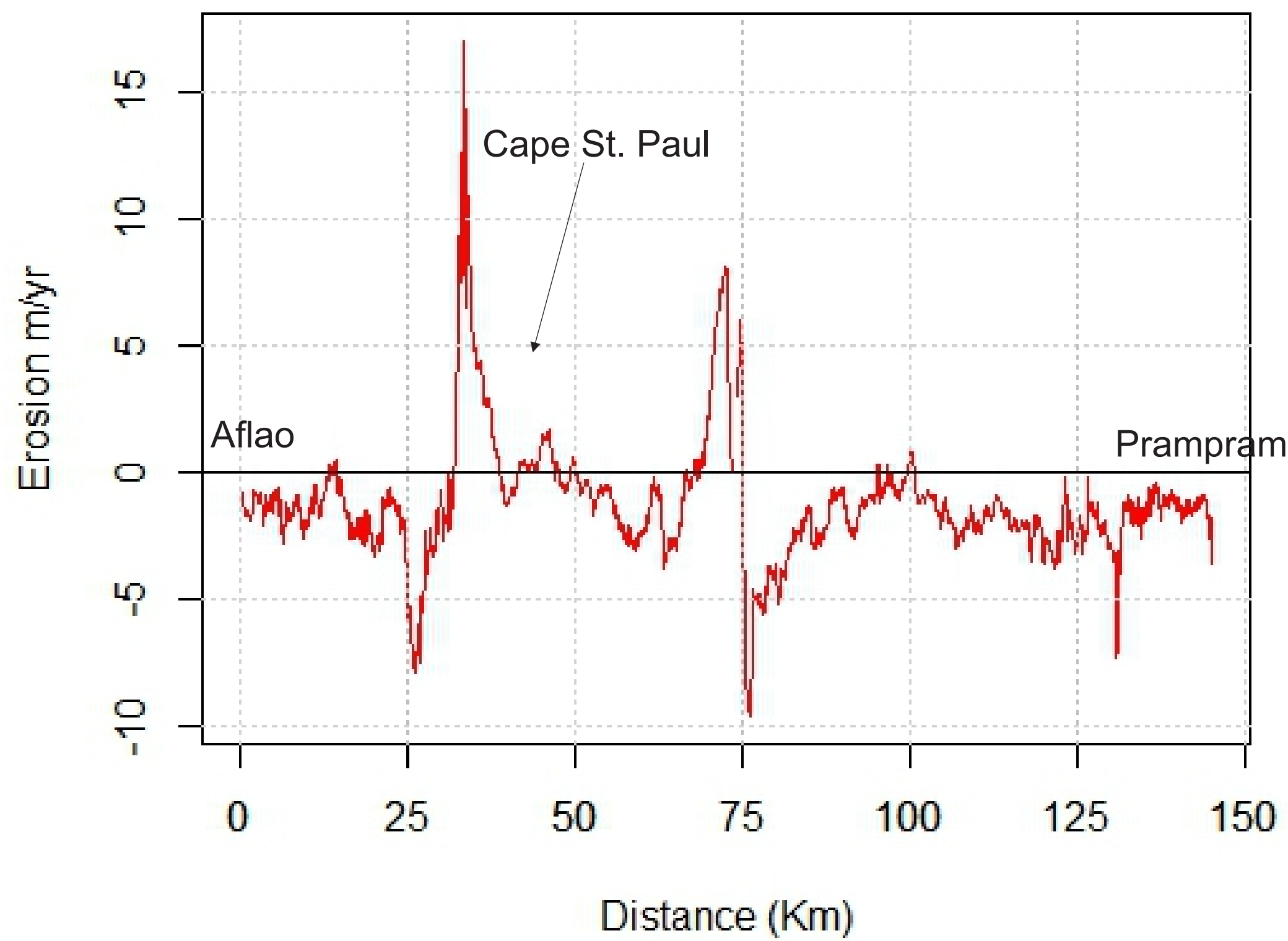


The Volta Delta as defined using the 5m contour (Source DECCMA Ghana, 2015)



Proposed sample areas for detailed analysis

Preliminary Results



Shoreline Change from 1974 to 2014

Conclusion

- ❖ Preliminary results indicate that approximately 85% of beach is eroding at an average rate of 2m/yr with sections accreting at an average rate of 2.8m/yr.
- ❖ Generally, the Cape St. Paul have been accreting over the decades, while the Keta area have been eroding.
- ❖ With the Keta Sea defense project, erosion has stabilized around Keta but increased downdrift (Appeaning Addo, 2015).
- ❖ There is the need for short to long term high resolution monitoring to better understand the variability in the shoreline

Literature Cited:

- ✓ Appeaning Addo K. (2015) Assessment of the Volta Delta Shoreline Change. Journal Coastal Zone Management 18: 408.
- ✓ DECCMA Ghana (2015). Definition of Ghana Study Area. DECCMA Work Package 2 deliverables.