

# CARBON DYNAMICS IN AGHANASHINI ESTUARY, RAMSAR WETLAND

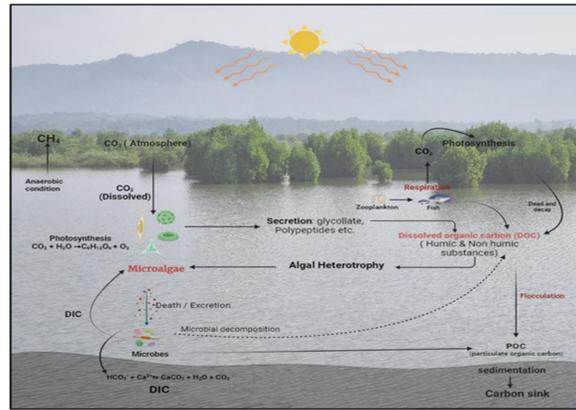
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## INTRODUCTION

- Wetland ecosystems are considered the most productive ecosystems in the world, with a wide array of goods and services.
- Aghanashini Estuary, a Ramsar wetland of International Importance, designated on 31<sup>st</sup> January 2024, is a highly productive and biologically rich waterscape of coastal Karnataka, India. The Estuary is home to a wide variety of biota.
- Wetland ecosystems have a significant role in mitigating climate change by acting as a **sink for carbon**, especially **coastal wetlands** can absorb carbon at a rate of around ten times higher per unit area.

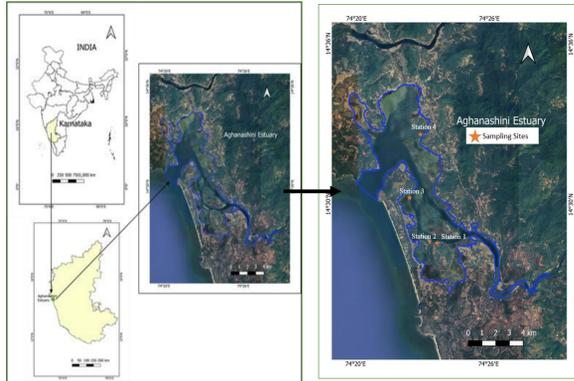


## OBJECTIVE

- Analysis of estuarine water quality
- Analysis of organic and inorganic carbon of estuarine water
- Quantification of Microalgae biomass (Floating and attached)
- Quantifying the mangrove biomass and carbon using a Non-destructive method
- Estimation of soil organic carbon and carbon burial rate.

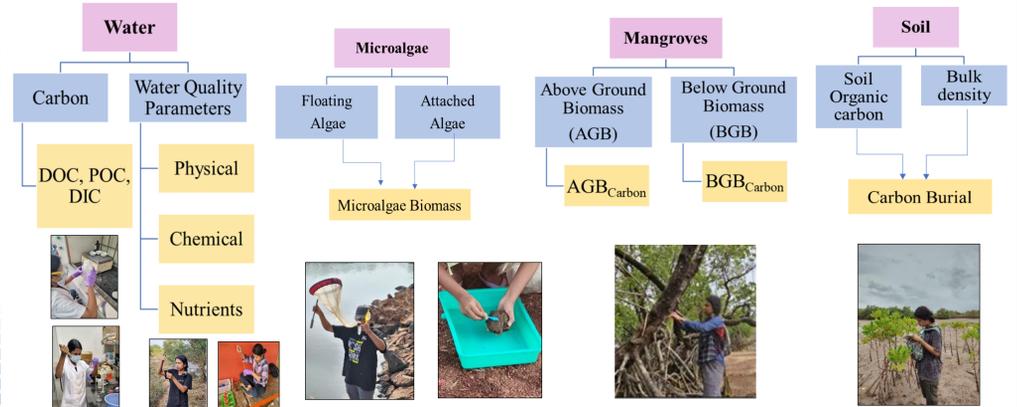
## STUDY AREA

- Aghanashini Estuary- Ramsar Wetland of International Importance
- Aghanashini estuary is about 48 sqkm and located at lat. 14.3910-14.5850° N, long 74.3040-74.5160° E.



Study Area: Aghanashini Estuary

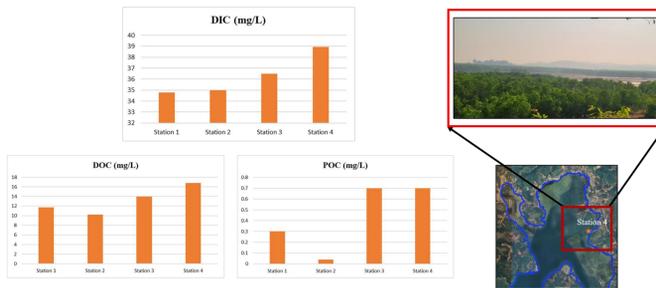
## METHODOLOGY



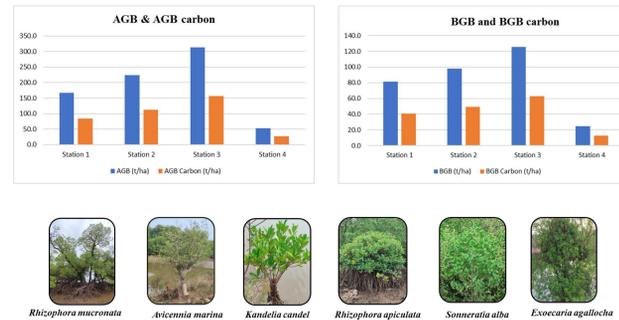
## RESULTS AND DISCUSSION



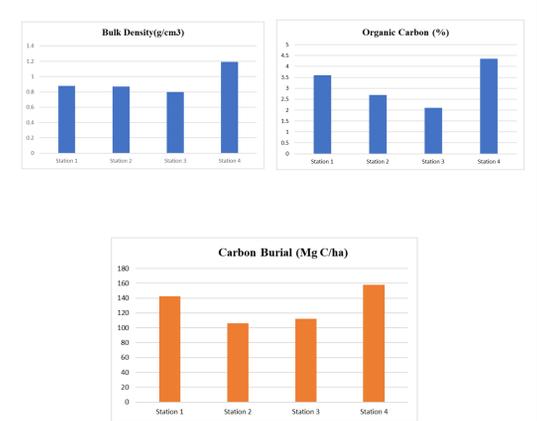
### Water Carbon



### Mangrove



### Soil



Sl.No	Mangrove region	Soil carbon	Reference
1	Kadalundi wetland, southwest coast of India	63.87 ± 8.67 t C ha <sup>-1</sup>	Vinod et al., 2018
2	Kerala, southwest coast of India	81.26 ± 10.16 t C ha <sup>-1</sup>	Harishma et al., 2020
4	Vellar-Coleroon estuarine complex, Bay of Bengal in southeast coast of India (Planted with <i>Avicennia marina</i> )	23.52 t C ha <sup>-1</sup>	Kandasamy et al., 2021
5	Mangroves at Kochi coast in Kerala state	73.22 ± 39.40 t C ha <sup>-1</sup>	Rani et al., 2023
6	Aghanashini Estuary, Uttara Kannada, Karnataka	~160 t C ha <sup>-1</sup>	Current Study

## CONCLUSION

Aghanashini Estuary is a highly productive and biologically rich waterscape of coastal Karnataka, with a wide variety of biota. The carbon burial rate in the study was found to be 2 times higher than in other studied estuarine systems. This suggests that the undisturbed nature of the ecosystem significantly enhances its capacity for carbon sequestration, particularly in sediments. The efficient burial of organic carbon in such systems underscores the critical importance of conserving these ecosystems.

## ACKNOWLEDGEMENT

We are grateful to the WWF-India, EIACP Division, MOEFCC, and IISc for the Research Support.