RT = f(V,P,Q,b,S,T)

Residence Time of Salinity in Bangladesh Coast

Rabeya Akter, Fatin Nihal, Mostofa Najmus Sakib, Tariqul Omar, Delowar Hossain, Dewan Sadia karim

Institute of Water and Flood Management, Bangladesh University of Engineering and Technology, Bangladesh
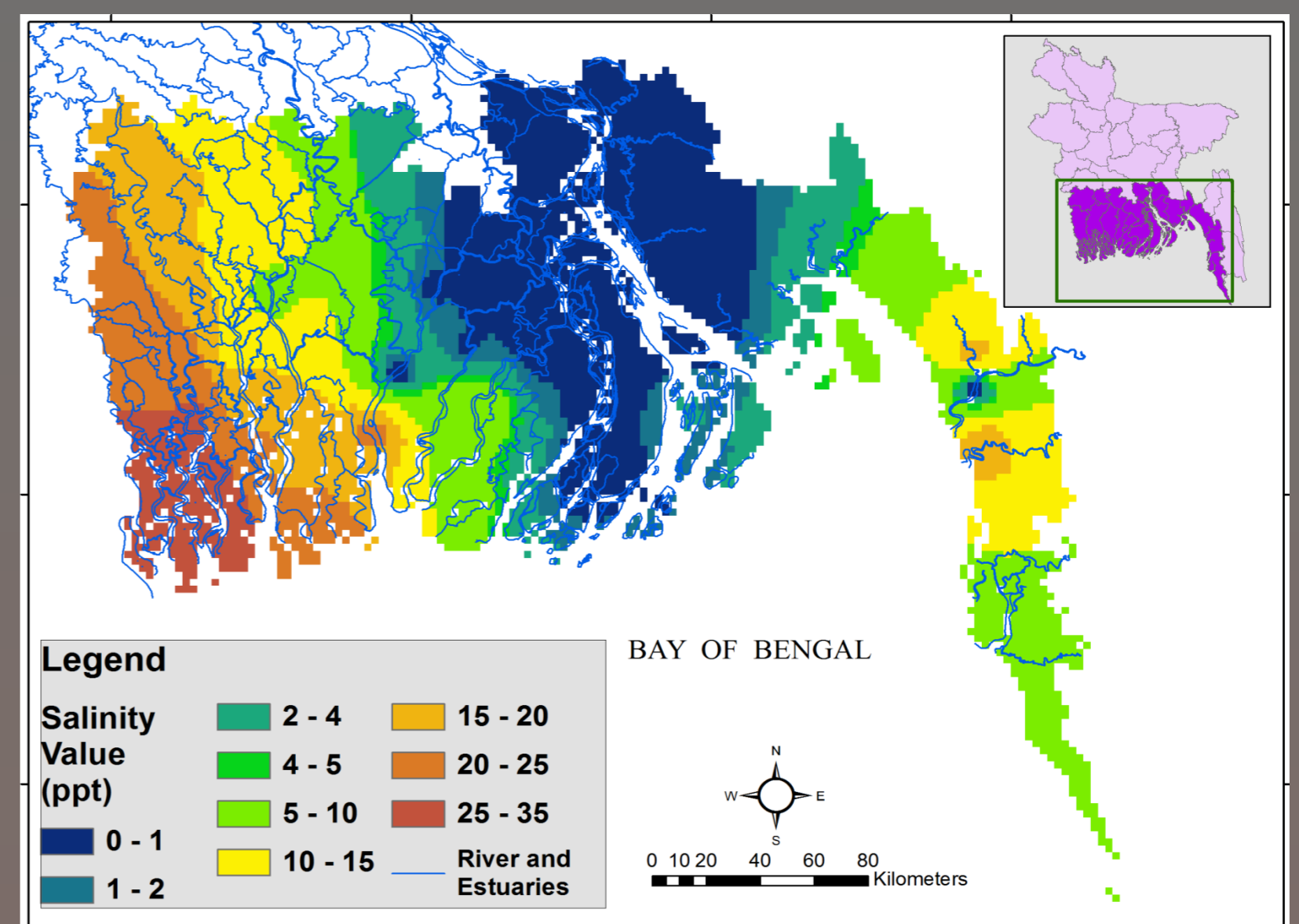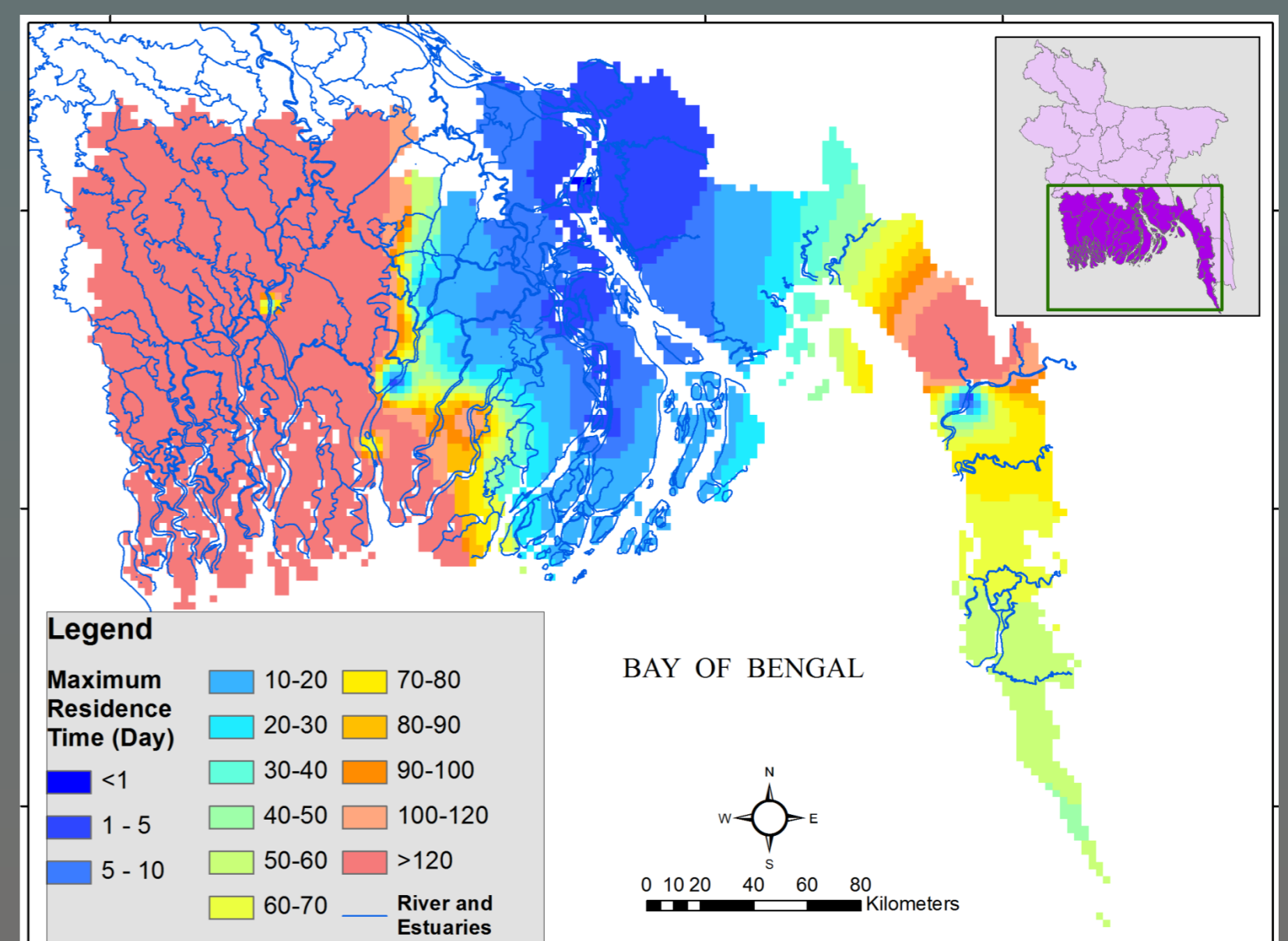
Introduction

Salinity hazard is generally assessed by using the magnitude of salinity. Residence time, on the other hand, is an important parameter, representing the time scale of the physical transport processes of saline water in estuaries. Residence time of salinity depicts the residing time taken by salt mass of particular concentration within the estuary that exposes estuaries to particular salt concentration. Because it predicts the time taken to rid a salt mass from a specific location, it can be used as an indicator of ecosystem health too. This important parameter has never been formulated and computed for Bangladesh coast. This is the first attempt to get an idea how residence time of salinity varies along the coast of Bangladesh.
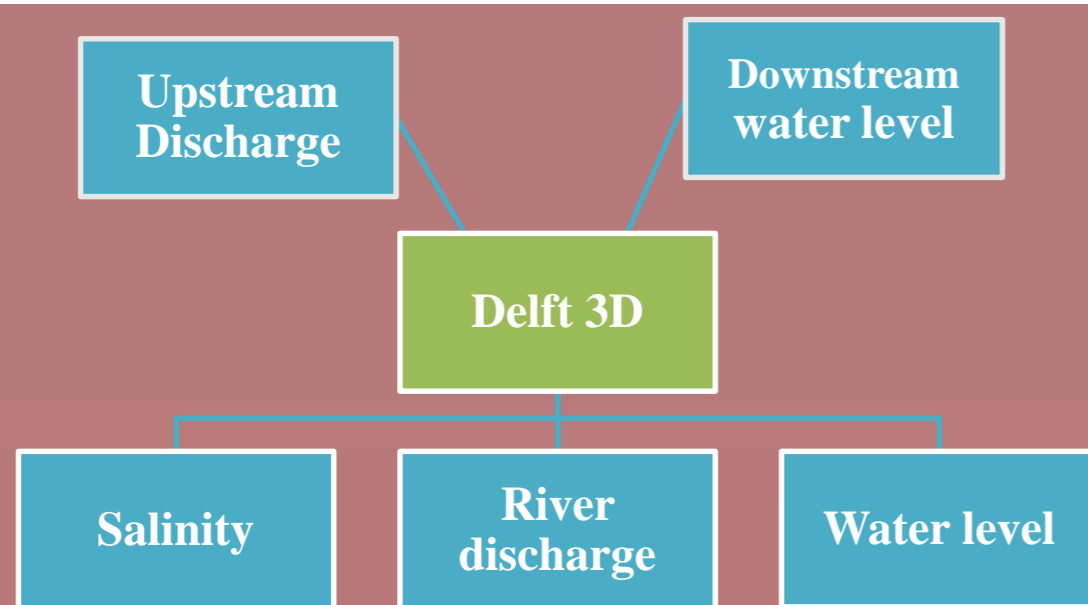
Study Area

Methodology

Residence Time,

$$RT = f(V,P,Q,b,S,T)$$

where, V= low tide volume , P= tidal water storage, b= return flow factor, Q= River inflow, S= salinity at high tide, T= tidal period

Results

Monthly maximum residence time (Day) and correspondence salinity value in a driest month (Year-2000)

Conclusions

❑The west coast of Bangladesh including the Sundarban region have the highest residence time as the salinity values are high (>15 ppt) and river inflow is low. Under the current condition, this region will never be a freshwater region.

❑The central and east coast (Meghna estuary region) have the lowest residence time. It varies between 1 to 5 days for 0 to 2 ppt salinity.
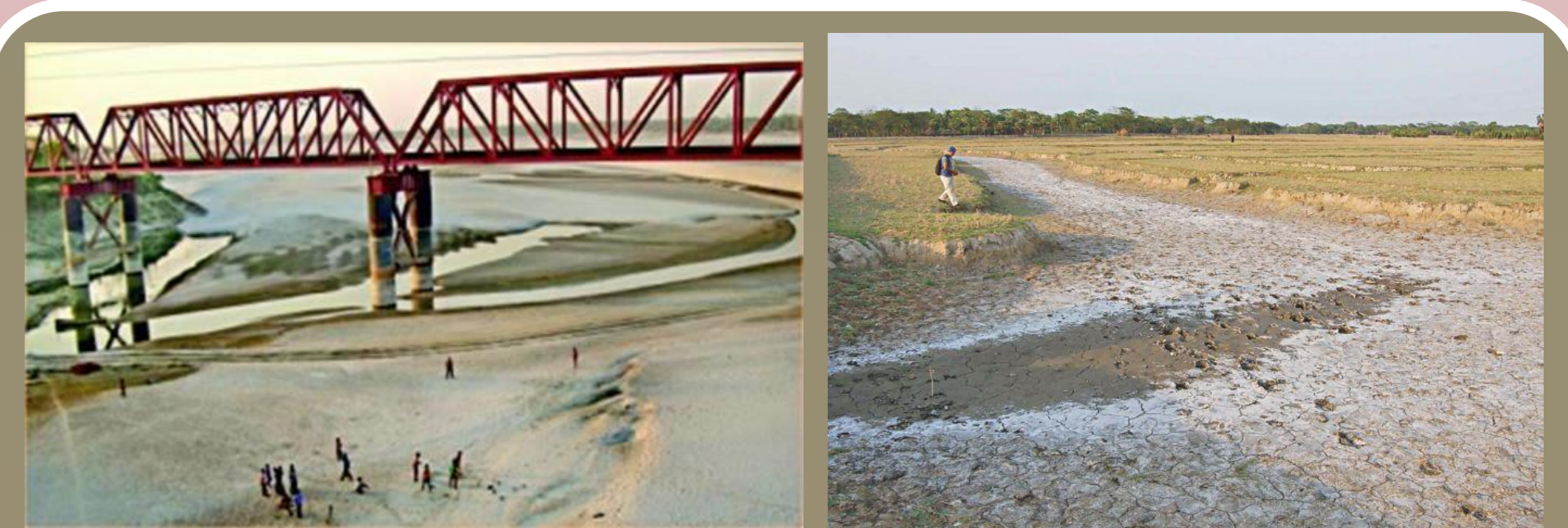
Salinity Intrusion in real field

Acknowledgement