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**HYDROMORPHOLOGICAL AND ECOLOGICAL CHANGES IN
THE SCHELDT ESTUARY IN THE PAST CENTURY: TOWARDS A
BETTER UNDERSTANDING OF ANTROPOGENIC IMPACTS**

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The River Scheldt has a macrotidal estuary with a tidal reach up to 160km upstream. The estuary has been heavily influenced by anthropogenic pressures such as land reclamation, harbour expansion, dredging activities, embankments and urbanisation. A good understanding of the impact of these human interventions on the ecological functioning of the estuarine ecosystem is required in order to take the appropriate compensation or mitigation measures in response to possible negative effects of future anthropogenic changes in combination with the general sea level rise.

In this study, available data on tidal regime, bathymetry, salinity, water quality and aerial photographs were compiled and analysed as much as possible for the Sea Scheldt (Scheldt estuary upstream the Dutch-Belgian border) in the past century. Hydromorphological changes were then related to ecological changes and the evolution of ecotopes such as shallow subtidal areas and tidal mudflats and marshes. Results show that evolution and spatial distribution of intertidal mudflats and marshes greatly depend on the interaction between hydrodynamics, channel geomorphology, suspended solids and embankments. Within the tidal marshes spatial distribution of ecotopes depends mainly on inundation frequency, marsh topography and land-use.

The ecological interpretation of historical changes was calibrated through detailed analysis and comparison of vegetation maps and physical data for 1992 and 2003. Interpretation of these short term evolutions allowed to correlate changes in tidal conditions with marsh morphology and vegetation turnover.

This combination of long and short term evolution analysis improves our understanding of pressures and impact on the estuary and will help to predict changes in the spatial distribution of ecological units following induced or natural physical changes.