

A story of water, salt and sediments: constraints for adaptive management in the River Rhone delta

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Abstract The “Ile de Camargue” is a complex hydrosystem, including agricultural drainage basins, marshes, and the brackish shallow Vaccarès lagoon system. This hydrosystem is particularly affected by water management and its endykement from the river and the sea. Decrease of sediment river input to the coast and sea level rise contribute to a global erosion of the shoreline. Within the endyked hydrosystem, during the rice cultivation period, large amounts of water are pumped from the river for irrigation, generating important water and sediment fluxes. Hydrosystem modelling and multi-source data are used to derive the suspended sediment balance and salt stock dynamics. Current water management and climate forcing will make it impossible to manage efficiently both water levels and salinity in the delta. A more natural deltaic hydraulic functioning, which implies increased hydraulic connectivity with the river and sea appears to be the only sustainable way in the long term.

Key words Rhone delta; Mediterranean wetland; coastal hydrosystem; rice irrigation; salt and suspended sediment budget