

Uncertainties in import/export studies and the outwelling theory. An analysis with the support of hydrodynamic modelling

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ABSTRACT of ORAL COMMUNICATION

According to the “outwelling theory”, salt marshes are net exporters of primary production. This view has been contested, inducing a considerable interest in the subject. Both theses are based on annual budgets of organic matter exchange across salt marsh boundaries. These budgets are a function of integrated fluxes computed from water discharge and concentration of solutes and suspensates. Inaccuracies can follow from errors in velocity measurement and subsequent flow rate calculations as well as from analytical errors. Furthermore, the oscillatory nature of tidal transport implies that net budgets are at present one order of magnitude lower than total fluxes. Therefore, only rather more accurate methods can lead to safe conclusions on this issue. Moreover, a number of other fundamental uncertainties remain with the processing of organic matter in salt marsh sediments. These questions are discussed within the framework of the results of a European comparative salt marsh study on the Mira estuary in Portugal. Hydrodynamic modelling has been shown to be a useful tool particularly in situations where velocities are most of the time below the range of accuracy of commercial current meters ($< 5 \text{ cm s}^{-1}$).

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