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Monitoring inner shelf sediment transport using fluorescent sand tracers: an example from the south coast of Portugal

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The continuous need for beach nourishment requires a detailed understanding of the sediment transport characteristics at the shelf borrow sites, to assess their recovery rate and to evaluate the long-term sustainability of these operations.

The main objective of this work is to assess sediment transport conditions at an inner shelf borrow site exploited to nourish a beach located at the updrift boundary of the same sedimentary cell (Belharucas, Albufeira, south coast of Portugal).

The work is supported by a sand tracer experiment, where 600 kg of coated sand with fluorescent ink was deposited (August 2020) by divers at 11 m depth (referred to the mean sea level). Periodic sediment sampling using a Van Veen grab was performed using an adaptative sampling grid that accounted for tracer's dispersion trough time. The samples were washed and dried in laboratory and tagged particles were automatically identified using an automated image analysis procedure based on ultraviolet lighting.

Preliminary results show that sediment transport is dominated by a eastward component,probably related with the energetic events from the SW. Ongoing work relates the tracer's displacement with ADCP (wave and current) data measured nearby the borrow site during the experiment.

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