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# Field measurement of sediment transport in a fetch-limited beach

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Sediment transport at fetch limited beaches is not fully known and only a small number of sediment transport experiments have been performed at these environments. The purpose of this study is to define the sediment transport patterns and rates at a fetch limited beach using detailed field studies.

The field experiment occurred in the 30th and 3st January 2006 at Peninsula do Ancão backbarrier (Algarve, Portugal). Fluorescent tracer (FT) was released during low tide into two distinct points, beach face and longshore bar. Current velocities were measured with an Electromagnetic Current Meter (EMC) located in the beach-face, and with an Aquadopp Profiler (ADP) located in the longshore bar. Beach survey was performed with Total Station and real time Kinematics- differential global positioning system (RTK-DGPS) during low tides. The FT concentration was measured using a portable U.V. source 12 and 24 hours after tracer release within a defined grid. The Sampling Integration Method was employed to calculate the location of the mass centre of the tracer distribution along the two-dimensional grid (Madsen, 1987).

Obtained results shown a higher FT concentration next or at a small distance from both injection points. The tracer pattern and the lack of significant morphological changes in the foreshore and bar position, indicate that the longshore sediment transport directed towards the Ancão Inlet is dominant over the cross-shore transport. The current velocities during the fieldwork exhibit an evident tidal asymmetry between ebb (average longshore current of 0.13 m/sec observed with the EMC) and flood conditions

(average longshore current of 0.04 m/sec observed with the ECM).

The presence of ebb dominance is the main factor governing the sedimentary transport pattern, leading to a predominant longshore component directed towards the inlet.

**References**

Madsen, O.S., 1987. Use of tracers in sediment transport studies. *Proceedings of the International Conference on Coastal Sediments'87*, ASCE, 424-435.