



Ground water response under infragravity wave forcing on the beach face

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As a part of the ECORS program (financial support SHOM, France), which is a qualification campaign for sandy beach morphodynamic models, an instrumental field study has been conducted on the Truc Vert beach in Aquitaine, France. The main objective of this study was to characterize surf and swash zones dynamics of a barred macro-tidal beach. A particular attention was paid to infragravity energy and groundwater dynamics, and their impact on sediment transport.

A dedicated instrumentation has been deployed to cover a cross-section of the beach from the berm to the intertidal lowest point. It consists in a line of single pressure sensors and velocimeters alternatively immersed and emerged during the tide cycle. In addition, several steel bars (up to 2.5 meters high) supporting 2 or 3 pressure sensors have been buried in the sand in order to combine vertical and horizontal characterization of the water surface for each side of foreshore surface.

Analysis is focused on the transformations of short and long waves in the near shore and their transmission to the groundwater. Thanks to spectral analyses of pressure data, a predominant infragravity energy is observed in the inner surf zone and in the swash zone. This energy, which is supposed to play a significant role in the sediment transport processes, is transferred toward the watertable through pressure wave propagation in the saturated zone and in the capillarity frange.