

Author's Accepted Manuscript

Developments in acoustics for studying wave-driven boundary layer flow and sediment dynamics over rippled sand-beds

Peter D. Thorne, David Hurther, Richard D. Cooke, Ivan Caceres, Pierre. A. Barraud, Agustín Sánchez-Arcilla



www.elsevier.com/locate/csr

PII: S0278-4343(18)30093-1
DOI: <https://doi.org/10.1016/j.csr.2018.07.008>
Reference: CSR3794

To appear in: *Continental Shelf Research*

Received date: 21 February 2018
Revised date: 12 June 2018
Accepted date: 19 July 2018

Cite this article as: Peter D. Thorne, David Hurther, Richard D. Cooke, Ivan Caceres, Pierre. A. Barraud and Agustín Sánchez-Arcilla, Developments in acoustics for studying wave-driven boundary layer flow and sediment dynamics over rippled sand-beds, *Continental Shelf Research*, <https://doi.org/10.1016/j.csr.2018.07.008>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Developments in acoustics for studying wave-driven boundary layer flow and sediment dynamics over rippled sand-beds

Peter D. Thorne^{a*}, David Hurther^b, Richard D. Cooke^a, Ivan Caceres^c, Pierre. A. Barraud^{b1}, Agustín Sánchez-Arcilla^c

^aNational Oceanography Centre, Joseph Proudman Building, 6 Brownlow Street, Liverpool, L3 5DA, United Kingdom.

^bLaboratory of Geophysical and Industrial Flows (LEGI), CNRS UMR 5519, University Grenoble Alpes, France

^cLaboratori d'Enginyeria Marítima (LIM/UPC), Universitat Politècnica de Catalunya (UPC)-Barcelonatech, Campus Nord, c./ Jordi Girona, 1-3. 08034 Barcelona, Spain.

*Corresponding author. National Oceanography Centre, Joseph Proudman Building, 6 Brownlow Street, Liverpool, L3 5DA, United Kingdom. pdt@noc.ac.uk

ABSTRACT

The processes of sediment entrainment, transport, and deposition over bedforms are highly dynamic and temporally and spatially variable. Obtaining measurements to understand these processes has led to ongoing developments in instrumentation for studying near-bed sediment dynamics, with the outputs applied to the development and assessment of sediment transport modelling. In the present study results are reported from three acoustic systems deployed to make observations of bedforms, bedload, suspended concentration and horizontal and vertical velocity components. To evaluate the instruments a series of near-bed boundary layer measurements were collected in a large scale flume facility over a rippled bed of medium sand under regular waves. The observations were conducted as part of Joint Research Activities within the EU funded Hydralab project. The suite of acoustic instruments consisted of a Bedform And Suspended Sediment Imager, BASSI, a three dimensional acoustic ripple profiler, 3D-ARP, and three Acoustic Concentration and Velocity Profilers, ACVP's. Here results are reported from the deployment of the instruments, to illustrate the ongoing

¹ Current affiliation TIMC, CNRS, University Grenoble Alpes, France

Download English Version:

<https://daneshyari.com/en/article/8883997>

Download Persian Version:

<https://daneshyari.com/article/8883997>

[Daneshyari.com](https://daneshyari.com)