

Interactive comment on “An overview of underwater sound generated by inter-particle collisions and its application to the measurements of coarse sediment bedload transport” by P. D. Thorne

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The intention of the manuscript is to provide an overview on the production of sound by impacting bodies and how such sound may be used to measure bedload transport. It was written in response to a request from the organisers of the International workshop of Acoustic and Seismic Monitoring of Bedload and Mass Movements held in Zurich Switzerland, 4th -7th September 2013. The expectation was that I would produce a manuscript along the lines of the Keynote presentation I gave at the conference on ‘The acoustics of colliding bodies and its use in monitoring bedload’ for the SI ‘Acoustics and

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seismic monitoring of bedload and mass movement’ in ESurf.

To provide the reader with an overview on the topic the major part of the manuscript was aimed at synthesising earlier works on impact sound radiation. It is readily acknowledged that works from the 1980’s are used; however, as far as the author is aware the laboratory and theoretical studies of Thorne et al have not been superseded. The aim in the manuscript was not to present new theoretical research works, but utilise the impact theory in a somewhat different manner than previously employed. In the earlier theoretical studies the main aim had been to understand experimental observations of impacting spheres. However, in the present study, the object was to examine more systematically the effect different impact parameters had on the radiated sound and present a manuscript with results more focussed on acoustic monitoring of bedload transport and thereby more relevant to coastal and riverine scientists.

Regarding the inference to a lack of references from the past decade, the author carried out a number of searches and contacted some of the leaders in the field. The reason for choosing the Nature paper, to highlight the field capability of acoustic monitoring of bedload transport, is that it has been one of the more successful field studies. The author would be happy to receive contemporary papers/references on successful field studies of acoustic measurement of bedload sediment transport processes.

The author prepared the manuscript with the aim of making the understanding of acoustic monitoring of bedload transport more accessible to the non-acoustician wanting to use the technique. It is anticipated that equipped with this understanding the earlier more detailed papers could then, if required, be usefully engaged. This understanding and access is the contribution the author wishes to make to the SI and scientific community in the present overview manuscript.

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