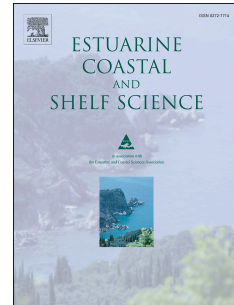


# Accepted Manuscript

The effect of successive storm events and seagrass coverage on sediment suspension in a coastal lagoon

P.L. Forsberg, V.B. Ernstsens, T.J. Andersen, C. Winter, M. Becker, A. Kroon



PII: S0272-7714(17)30939-3

DOI: [10.1016/j.ecss.2018.07.006](https://doi.org/10.1016/j.ecss.2018.07.006)

Reference: YECSS 5908

To appear in: *Estuarine, Coastal and Shelf Science*

Received Date: 28 September 2017

Revised Date: 29 June 2018

Accepted Date: 7 July 2018

Please cite this article as: Forsberg, P.L., Ernstsens, V.B., Andersen, T.J., Winter, C., Becker, M., Kroon, A., The effect of successive storm events and seagrass coverage on sediment suspension in a coastal lagoon, *Estuarine, Coastal and Shelf Science* (2018), doi: 10.1016/j.ecss.2018.07.006.

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 proof before it is published in its final 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.

1 Estuarine, Coastal and Shelf Science

2 **The effect of successive storm events and seagrass coverage on sediment suspension in a**  
3 **coastal lagoon**

4 Forsberg, PL.<sup>1</sup>, Ernstsen, VB.<sup>1</sup>, Andersen, TJ.<sup>1</sup>, Winter, C.<sup>2</sup>, Becker, M.<sup>2</sup>, Kroon, A.<sup>1</sup>

5  
6 <sup>1</sup> Department of Geosciences and Natural Resource Management. University of Copenhagen, Øster Voldgade 10, DK-  
7 1350 Copenhagen K, Denmark, pefo@ign.ku.dk.

8 <sup>2</sup> MARUM – Center for Marine Environmental Sciences. University of Bremen, Leobener Str., D-28359, Bremen,  
9 Germany.

10  
11 **Abstract**

12 The effect of a succession of eleven storm events (hourly averaged wind speeds exceeding 10.8 m s<sup>-1</sup>)  
13 <sup>1</sup>) on the sediment suspension was investigated in a coastal lagoon through in situ measurements of  
14 hydro- and sediment dynamics from a mobile jack-up platform. Results showed that wave-driven  
15 bed shear stress (0.1-0.7 N m<sup>-2</sup>) was the main driver for sediment suspension in contrast to large-  
16 scale flushing, which did not trigger sediment suspension. The suspended particulate matter concen-  
17 tration (SPMC) reached a maximum of 200 mg l<sup>-1</sup>. A meteorologically-driven lagoonal seiche effect  
18 was identified, which could be the driver for advective sediment transport in the lagoon. Two major  
19 findings for the suspension of sediment can be drawn from the results. First, the energy applied to  
20 the bed during successive high-energy storm events caused a reduction in the vegetation cover dur-  
21 ing a particular strong storm event. This increased the SPMC relative to the bed shear stress, sug-  
22 gesting that the sediment availability increased. Second, successive high-energy storm events de-  
23 creased the bed shear stress threshold for sediment suspension subsequent to initial consolidation of

Download English Version:

<https://daneshyari.com/en/article/8884659>

Download Persian Version:

<https://daneshyari.com/article/8884659>

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