## **Accepted Manuscript**

Macro-tidal beach morphology in relation to nearshore wave conditions and suspended sediment concentrations at Mariakerke, Belgium

Evelien Brand, Anne-Lise Montreuil, Sebastian Dan, Margaret Chen

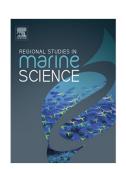
PII: \$2352-4855(17)30317-1

DOI: https://doi.org/10.1016/j.rsma.2018.08.002

Reference: RSMA 406

To appear in: Regional Studies in Marine Science

Received date: 20 September 2017 Revised date: 6 August 2018 Accepted date: 11 August 2018



Please cite this article as: Brand E., Montreuil A., Dan S., Chen M., Macro-tidal beach morphology in relation to nearshore wave conditions and suspended sediment concentrations at Mariakerke, Belgium. *Regional Studies in Marine Science* (2018), https://doi.org/10.1016/j.rsma.2018.08.002

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.

## **ACCEPTED MANUSCRIPT**

Macro-tidal beach morphology in relation to nearshore wave conditions and suspended sediment concentrations at Mariakerke, Belgium

Evelien Brand a, Anne-Lise Montreuil b, Sebastian Dan c, Margaret Chen d

a. Vrije Universiteit Brussel Pleinlaan 2 1050 Elsene, Belgium evelien.brand@vub.be Corresponding author

b. Vrije Universiteit Brussel Pleinlaan 2 1050 Elsene, Belgium anne-lise.montreuil@vub.be

c. Flanders Hydraulics Research Berchemlei 115 2140 Antwerp, Belgium sebastian.dan@mow.vlaanderen.be

d. Vrije Universiteit Brussel Pleinlaan 2 1050 Elsene, Belgium margaret.chen@vub.be

This study relates changes in beach morphology to nearshore hydrodynamics and suspended sediment concentrations using in-situ measurements for a macro-tidal, sandy beach in Belgium. More than 1.5 years of data were collected and analyzed including wave characteristics, water level, monthly beach morphology, and 6 months of suspended sediment concentrations. The results indicate that the beach grows when the wave steepness is very small (< 0.010) and it erodes when wave steepness is very large (> 0.018). This trend is opposite for medium wave steepness (0.012-0.016) with beach erosion under small waves and accretion under large waves. An increment of the suspended sediment concentration follows wave steepness when it is medium, which is most likely due to the start of wave breaking over a sandbank in front of the coast. Flood dominant cross-shore currents transport the suspended sediment shoreward resulting in partial compensation of the erosion by waves. A conceptual model is established to demonstrate the relation between waves, suspended sediment supply, and morphological change. It shows that the morphodynamics of macro-tidal beaches is not only controlled by wave conditions, but also by the currents and sediment supply.

## Download English Version:

## https://daneshyari.com/en/article/8872523

Download Persian Version:

https://daneshyari.com/article/8872523

<u>Daneshyari.com</u>