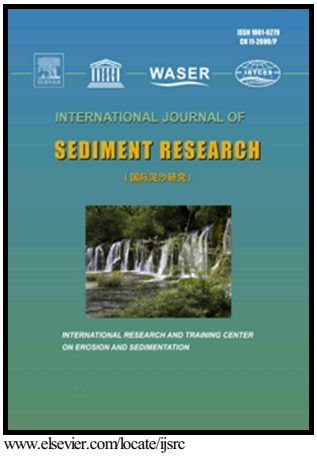

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Depth of closure: New calculation method based on sediment data

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Abstract

Obtaining depth of closure (DoC) in an accurate manner is a fundamental issue for coastal engineering, since good results for coastal structures and beach nourishment depend mainly on DoC. Currently, there are two methods for obtaining the DoC, mathematical formulations and profile surveys. However, these methods can incur important errors if one does not take into account the characteristics and morphology of the area, or if one does not have a sufficiently long time series. In this work the DoC is obtained from the break in the trend of the sediment with the depth, that is, in general with the increase of the depth a decrease in the size of the sediment takes place. However, at one point this tendency changes and the size increases, and then decreases again. When comparing the point where the minimum sediment size occurs before the increase, it is observed that the error incurred is small compared to other methods. If the Standard Deviation of Depth Change (SDDC) method is considered as the most accurate method, the error incurred by the proposed method is less than 7%. In addition, it can be seen that the dispersion of the sediment method always occurs outside the zone of bar movement. Whereas in the methods of profiles survey (using 2 cm precision profiles), sometimes the DoC is obtained within the active zone of bar movement. In addition, where the relative minimum of the median sediment size is found, and the sizes of 0.063 and 0.125 mm predominate in the composition of the sample. Therefore, this new method allows the precise location of the DoC to be obtained in a fast and simple way. Furthermore, this method has the