General Information

BOOK REVIEW

"Estimated Sea Floor dynamics in the Southern North Sea to improve Bathymetric Survey Planning"

Prepared by Leendert Louis Dorst.

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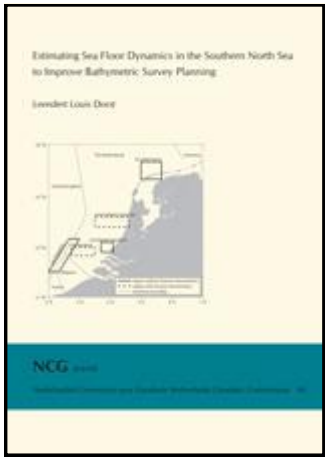

The work described in this book was part of a PhD dissertation although its origins came from the Hydrographic Service of the Royal Netherlands Navy. The research carried out at the University of Twente , although academic, has a very practical objective. The Netherlands coast and indeed the coast of most of the Southern North Sea, is of a sedimentary nature, affected by ever varying tidal currents and consequently is mobile and the undersea topography subject to change. To the Hydrographic organisations responsible for surveying and charting the area this presents a great challenge. As these changing depths have a direct effect on the under keel clearances for shipping re-surveys are an essential part of the work. The location and frequency of these surveys is an important decision to be made.

The book describes how the sea floor can be described statistically and this can be used to predict future changes. Kriging is used to produce a time series of grids of depth values and their variances. It then uses deformation analysis based on testing theory. This analysis is particularly aimed at the changes in the areas of tidal sand waves, which can be quite extensive in the Southern North Sea. The theoretical developments were then tested in practice on an area Maas West near the Port of Rotterdam and found to provide satisfactory estimates and predictions of sand wave patterns and their mobility. The author states that migration rates of these features are up to 7.5 metres a year with a 95% confidence interval that depends upon the regularity of the pattern. Following work on the test area the author analysed several other areas using data from the archives of the Netherlands HO to develop some general conclusions. From these they were able to formulate four indicators and from these make recommendations for the re-survey policy on the Belgian and Netherlands Continental Shelf.

The book is well written in English, well designed and with ample clear illustrations.

The following are the main subject headings: Introduction; Bathymetric applications of Geostatistics; Estimating sea floor dynamics; analysis of migrating tidal sand waves; spatial variations in sea floor dynamics; application to the re-survey policy; conclusions and recommendations.

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