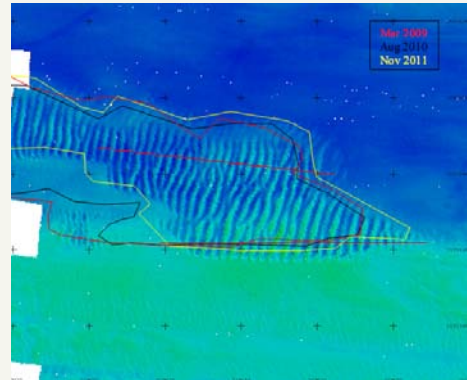


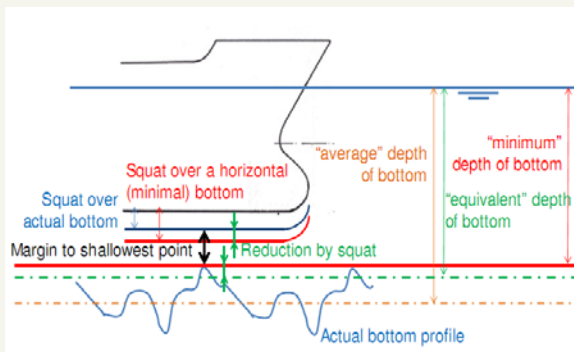
This is the twelfth [newsletter](#) of the *Knowledge Centre Manoeuvring in Shallow and Confined Water*, which aims to consolidate, extend and disseminate knowledge on the behaviour of ships in shallow and confined water. In this newsletter, we have an item on a research project that was carried out in order to more accurately consider the depth of an irregular bottom of shallow waterway.

It is important to have a good knowledge of the depth of a shallow waterway, not only for safe nautical access but also for other aspects such as correctly setting dredging objectives. For certain ports, such as the Port of Antwerp, it is particularly important to monitor the depth of the access channels. Recent hydrographical surveys have shown that there are certain areas where the sandy bottom is not flat or mildly undulating but is clearly wavy with variations in height of around 1m. The surveys also demonstrate that the location of these so-called “megaripples” shifts in time.



These megaripples will not show up on ECS charts and dredging charts due to the current conversion process used for generating these charts from hydrographical survey charts. It is feared that they may jeopardize nautical safety in these areas. A research project was therefore carried out by [Ghent University – Division of Maritime Technology](#) and [MARIN](#) on behalf of the common Dutch-Flemish Nautical Authority to determine a scientifically based algorithm to create more accurate ECS-charts in the access channel to the mouth of the Western Scheldt.

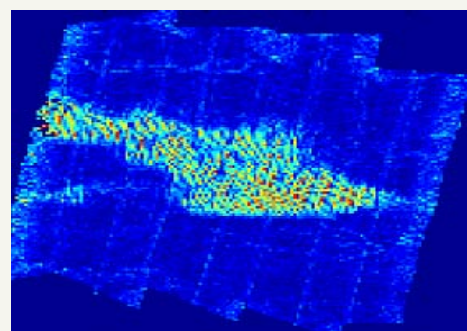
It was considered that a conservative algorithm based on the shallowest points of the navigation area will result into safe charts but will also lead to a lower allowable draft for the vessels or a significant increase of dredging costs. A simple algorithm based on an average of the shallowest points over a certain grid size, on the other hand, may obscure too many tips of the megaripples and may jeopardize shipping traffic safety.



Instead of looking at purely the bottom characteristics, the proposed algorithm considers an “equivalent depth of the bottom” which also takes the behaviour of a ship in a shallow waterway into account. One (but not the only) aspect that needs to be considered is [squat](#) and the [literature database of the Knowledge Centre](#) was used to study squat behaviour over bottoms that are not flat but which vary in height.

The algorithm ultimately proposes an equivalent depth of the bottom which lies in between the minimum depth determined by the shallowest point of the bottom and the average depth of the bottom. The equivalent depth does not jeopardize the safety of a vessel, even if the bottom is locally more shallow than the equivalent depth. This equivalent depth can be used to create ECS and dredging charts in such a manner that the vessels using this equivalent water depth have enough information to transit the seaway in a safe manner according to the present [admittance policy](#).

The concept of equivalent water depth is particularly relevant for specific regions on the Belgian territory of the North Sea and also on Dutch territory at the mouth of the Western Scheldt which are characterised by megaripples. The project has also proposed a simple method to generate charts which immediately identify those areas. Part of this research will be presented at the upcoming [MARID IV Marine and Fluvatile River-Dune Dynamics conference](#), which will be held in Bruges in April 2013.



Based on the more than 40 abstracts that have been accepted for the [Third International Conference on Ship Manoeuvring in Shallow and Confined Water](#), which will be held in Ghent, Belgium, on 3 – 5 June 2013, the conference is set to offer a wide ranging and interesting program. The main theme of the conference, which is ship behaviour in locks, is not only covered by researchers who made use of the [open access experimental benchmark data](#) for validating numerical codes, but also by nautical experts who are willing to share their experience in lock manoeuvres. Other aspects of ship behaviour in shallow and confined water, such as bank effects and ship – ship interaction, will be discussed as well.



The registration fees can be consulted from the [website](#) and secure online payment by credit card will be possible from February 1, 2013.



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