

MORPHOLOGICAL DEVELOPMENT OF THE PERKPOLDER BASIN

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Introduction

Since 2003 the ferry between Kruiningen (Zuid-Beveland) and Perkpolder (Zeeuws-Vlaanderen) is out of service, which was also a starting point for regional development initiatives at Perkpolder. These initiatives combine housing, recreation and development of a salt water natural area. For the development of this area, Rijkswaterstaat made an opening in the original dyke of 400 m and constructed a new dyke around this new tidal basin with a surface of 75 ha. After the opening in June of 2015, the area gets flooded twice per day, which results in sediment import from the Western Scheldt (Figure 1). The potential sediment import, and the accumulation rate are important parameters in the development of salt marches, and the possibilities for recreational usage. In this study the morphological development of the Perkpolder basin is investigated and compared with reference basins in the vicinity. This research is part of three year monitoring and research program, executed by the partners of Centre of Expertise Delta Technology.

Methodology

For this study the basin hypsometry (Boon & Byrne, 1980) of the Perkpolder tidal basin is investigated and compared with other areas (Land van Saeftinghe and Sieperdaschor), to give an estimate of the sediment storage capacity of the newly created basin. In order to obtain a deeper understanding of the sediment accumulation rate, the elevation development of these additional areas is used as projection of the development at the Perkpolder tidal basin. In the coming years the sediment accumulation of the basin will also be monitored with the help of field measurement.

Findings

A comparison of the basin hypsometry of the different areas shows the large sediment storage potential of the Perkpolder basin. The basin has relatively low elevation compared to the present tidal range (MLW is -2.1 m NAP and MHW is 2.6 m NAP). This is due to the fact that the area was a part of a polder which was already embanked in the 13th century. The average elevation of the Perkpolder basin is -0.8 m NAP, as compared to the present average elevation of the Land van Saeftinghe, which is 2.0 m NAP.

References

Boon, J.D. and R.J. Byrne, 1981. On basin hypsometry and the morphodynamic response of coastal inlet systems, *Mar. Geol.* 40: 27-48



Figure 1. Overview of the Perkpolder basin, direction of photo is SE. Source: Rijkswaterstaat, Edwin Pारे