

# A modeling analysis of the morphodynamics of the Scheldt mouth

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The bathymetry of the Scheldt mouth is characterised by an extensive shallow area (region of approximately 5x15km with a depth less than 5m). This region (the “Vlakte van de Raan”) is flanked by two deeper (shipping) channels, i.e. the “Wielingen/Scheur” which extends along the coast of Zeeuws-Vlaanderen and the “Oostgat” along the coast of Walcheren, see e.g. Dumon *et al.* (2006). As such, the morphology of this region echoes the characteristics of an ebb-tidal delta.

The Scheldt mouth comprises a significant ecological and economic value. For example, it is considered “Natura 2000” area due to its abundance of marine mammals (van Hooff *et al.*, 2012). On the other hand, the morphology of the channels flanking the Vlakte van de Raan control to a large extent the access of vessels to the Scheldt Estuary, and thus the harbours of e.g. Vlissingen and Antwerp.

Even though, the overall morphology of this area appears relatively stable, the bathymetrical evolution of this region exhibits several remarkable features. For instance, the channel-shoal region south west of the coast of Walcheren has rotated in the north west direction over the last two decennia (Kornman *et al.*, 2000); while the Oostgat is continuously erosive towards the coastline.

The overarching goal of this study is to identify the key factors leading to the present morphology and observed bathymetrical evolution. In particular, by using a numerical morphological model as an experimental tool, we aim to quantify the relative importance of several particular characteristics of the Scheldt mouth (hydrodynamic forcing, geometry,...) on the resulting bathymetry. As such, this study is intended to complement predictive numerical modelling results by identifying overall physical mechanisms governing the phenomena.

## References

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