

## 31 years of macrobenthic data on the Thorntonbank and Goote Bank: a parallel evolution or not?

Coates Delphine, Jan Vanaverbeke and Magda Vincx

Research Group Marine Biology, Biology Department, Ghent University, Krijgslaan 281, S8, 9000 Gent, Belgium

E-mail: [Delphine.coates@ugent.be](mailto:Delphine.coates@ugent.be)

The first offshore wind farm in the Belgian part of the North Sea became functional in May 2009 on the Thorntonbank. The sandbank contains coarse, sandy sediments with a relatively poor macrobenthic community, dominated by a few species (Reubens *et al.*, 2009). Since 2008, samples have been taken yearly to determine any primary impacts on the community that could have arisen during and after construction. However, before any impacts can be detected it is crucial to understand the long-term natural fluctuations of the macrobenthic communities as a result of sediment movements, plankton blooms, eutrophication, industrial and fishing activities or even climate change. Any impacts caused by the construction of offshore wind farms can subsequently be separated from natural fluctuations in the macrobenthic community (Hiscock *et al.*, 2002).

The historical and recent monitoring data were therefore incorporated into the Marine Biology Macrobenthos database (Macrodat). A temporal analysis was carried out over a period of approximately 31 years starting from 1979 until 2010 on both the Thorntonbank and Goote Bank (reference stations). Autumn samples were selected from the database together with a selection of one replicate for every station. The data was analysed at both species and higher taxonomic levels to detect any possible changes in the macrobenthic assemblages over the years and between the two sandbanks. Beside macrobenthic density; species richness, taxonomic diversity ( $\Delta$ ) and taxonomic distinctness ( $\Delta^*$ ) provide more insight in how the assemblages evolved on both sandbanks during the past decades. Multivariate community analyses were subsequently carried out with PrimerV6 and PERMANOVA on square root transformed data to detect differences in the structure of multivariate assemblages on both the Thorntonbank and Goote Bank.

### References

- Hiscock K., H. Tyler-Walters, H; Jones. 2002. High level environment screening study for offshore wind farm developments - marine habitats and species project. Report from the Marine Biological Association to The Department of Trade and Industry New & Renewable Energy Programme. (AEA Technology, Environment Contract: W/35/00632/00/00). p.156.
- Reubens J., S. Vanden Eede and M. Vincx. 2009. Monitoring of the effects of offshore wind farms on the endobenthos of soft substrates: Year-0 Bligh Bank and Year-1 Thorntonbank. p.61-91. In: Offshore wind farms in the Belgian part of the North Sea: State of the art after two years of environmental monitoring. Degraer S., Brabant R. (Eds), Chapter 6. Royal Belgian Institute for Natural Sciences, Management Unit of the North Sea Mathematical models.