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## Morphodynamic response of tidal sand waves to sand extraction in the Belgian North Sea

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Tidal sand waves are rhythmic bed forms with wavelengths of several hundreds of meters, height of several meters and they migrate over the sandy bed of continental shelf seas with several meters per year. They are often dredged for sand extraction, maintaining navigation depths or cable and pipeline burial in offshore wind farms. However, little is known on how sand waves respond to such perturbations. Observations in the Seto Inland Sea in Japan (Katoh et al., 1998) and model experiments of Campmans et al. (2021) suggest that sand waves tend to recover after dredging. This hypothesis is tested by the analysis of high resolution multibeam bathymetry data of three areas in the Belgian part of the North Sea. These three areas have been subject to sand extraction and were frequently surveyed, which continued in the years after extraction had ceased. From these observations, the time evolution of sand wave height, length, width, orientation and migration is determined. In one of the three sites, tidal sand wave height increased in the 10 years after closure. The other two sites show no sign of sand wave growth yet. These observations will be discussed considering the different environmental characteristics of these three sites: grain size, water depth, tidal characteristics, and the presence of smaller and larger bed forms.

### References

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