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A 11-year study to understand long-term changes in macrofaunal communities in the Belgian Part of the North Sea

Long-term monitoring of bio indicators is essential to report changes and regime shifts in ecosystem status. Such changes can result from both global and local drivers, and their potential interactions. In soft-sediment benthic communities, the relative importance of broad scale (e.g. climate phenomena such as severe winters) and local drivers (e.g. change in sediment composition) for long-term change and stability are not well understood. This study aimed 1) to report the temporal changes that occurred in macrobenthic communities from different habitats, and 2) to identify the main governing factors of such temporal change. Therefore biological and environmental data was sampled from three coastal and three offshore stations located in the Belgian part of the North Sea over a 11-year period (2003-2013). A significant interaction between location and time on the macrofaunal community composition, abundance and contribution of dominant species was found. Furthermore, preliminary data analysis shows significant correlations between yearly macrobenthos attributes and the annual average of; suspended sediment concentration, water column salinity, temperature, chlorophyll-a, and median grain-size concentration illustrating the potential role of both local and global processes in determining macrobenthos community stability.

Keywords: Long-term changes; Macrobenthic community; Climate change; Anthropogenic disturbance; spatio-temporal variability; environmental variables ; Belgian Part of the North Sea.