

ASSESSING THE STORM VULNERABILITY OF THE BELGIAN COASTLINE

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Climate change is likely to induce increased sea level and storm frequency. As such, assessing the strength of the Belgian coastal defence infrastructure against natural hazards is of primordial importance to reduce inundation consequences to properties and nature. This study presents an integrated methodology to estimate damage risks from a hypothetical storm with a surge level of +8m TAW and a duration of 45 hours along the entire coastline. After translation of deep water hydrometeorological conditions to the nearshore, several failure modes of the defence infrastructure are modelled: beach and dune erosion, collapse of dikes due to wave impact and overtopping, and subsequent breach forming and flooding of the low-lying coastal plain. Attention was paid to the various model uncertainties. Damage of infrastructure, properties and human casualties are calculated using a raster-based GIS model. Multiplication of the results with a rate factor based on prognoses of the evolution of socio-economic parameters allows projection of the results to 2050. All this, in combination with a social cost benefit analysis, will provide a tool for supporting coastal zone management in Belgium in a quantitative way.