DETAILED LOCALIZATION OF POTENTIAL VICTIMS IN NUCLEI FOR SUPERSTORM EVENTS AT THE BELGIAN COAST

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Description of research

The expected number of victims resulting from superstorm events at the Belgian Coast previously have been presented by tables listing total amounts, supplemented by small-scale maps that give an impression of the location of high-risk areas (*e.g.* Vanpoucke *et al.*, 2009). These reports provide no quantitative details on the local geographical level. The present study is aimed at visualizing the spatial distribution of victim risks in so called 'victim nuclei' or 'victim core areas'. The study focuses on observation zones ('*aandachtszones*'), that are related to weak links in the coastal defence, and observation areas ('*aandachtsgebieden*'), that are flooded as a consequence of breaches or wave overtopping of the coastal protection constructions (+8m TAW, +7,5m TAW, +7 TAW and +6,5m TAW superstorm events). Seventeen weak links in the coastal defence along the Belgian coastline, as listed in Vanpoucke *et al.* (2009), were taken into account. The visualization of vulnerability differentiation within the inundated areas highly depends on the classification method applied to the available geographical data, as it leads to spatial variation of the map content. The current data were processed in a GIS environment that offered seven discretization methods, allowing to identify none, one or various local subareas in which high victim concentrations could be found. The study aimed at the identification of 'optimal' class boundaries. Core area victims were quantified as percentages of the total number of expected victims in the concerning observation area or zone. The preferred discretization technique in combination with the classes that were selected for further research appeared to be deciding factors for the nucleus percentage calculation. Adding or dropping a class and comparing the final results have lead to the process of 'trial and error'. It was assumed that theoretically, a nucleus could be defined when more than 50% of the total number of victims was located in an area that, in proportion to the total flooded area, covered a smaller part (*i.e.* <50% of studied area or zone). It should be noted that the percentages and respective nuclei are not to be interpreted as absolute results, as they give an indication of the most vulnerable subzones of the study areas. Given the time consuming character of victim core area determination (infinite number of possible combinations of classification method and number of classes), it can not be assured that each nucleus is the most 'concentrated' one, defining concentration as nucleus victim number/nucleus area ratio. However, the elaborated methodology was applied in such a way that each victim nucleus took up equal to or more than 90% of the total expected number of victims in the respective study area (Figure 1). Such a refinement of victim variation without taking (spontaneous or organized) evacuation into account will make it possible in the future research phase to delineate priority evacuation areas. The sharp core area boundaries will however be transformed into fuzzy ones in order to obtain meaningful results.

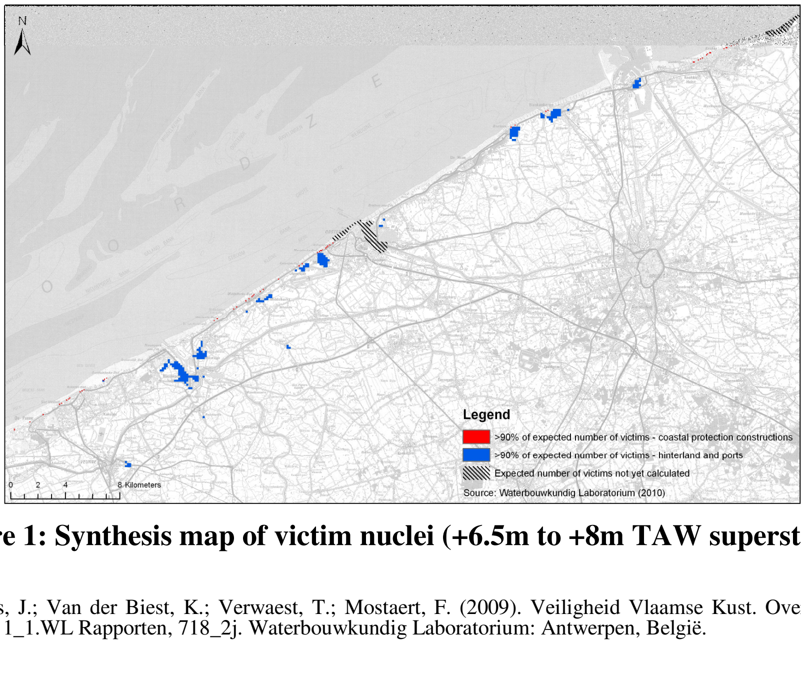

Figure 1: Synthesis map of victim nuclei (+6.5m to +8m TAW superstorms)

References

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