



## Evaluating Ordnance Survey sheets (1890s – 1957) for shoreline change analysis in the Maltese Islands

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The assessment of coastal erosion through shoreline change analysis, is an exercise of national utility undertaken in many countries. The Maltese Islands are particularly vulnerable to coastal erosion given the economic value of coastal activities and their high ratio of coast-to-land surface. The integration of historical cartographic material is often used to hindcast shoreline change across long periods of time, as well as to model future erosion rates. The Public Works Department have produced detailed 1:2500 maps of Malta in collaboration with the British Ordnance Survey from the end of the 19th century to 1957, however these maps have never been scientifically assessed. The initial research carried out evaluated the usefulness of the two oldest 25-inches Maltese maps series (early 20th century and 1957) for shoreline change analysis. The two series were digitised, georeferenced, and compared in a GIS environment to assess their differences. The inaccuracies of the original drawings, absent shoreline indicators, and the absence of a geographic coordinate system (datum and projection) were identified as limitations for their use in evaluating small gradual changes, but were ideal for the identification of stochastic, large-scale historic erosion events using difference maps. This assessment showed that the two series are highly congruous and any changes between the two series are largely attributed to changes in infrastructure. There were, however, minor exceptions and these need to be explored on a case-by-case basis. These methods and the insights garnered from their production will function as scientific steppingstones towards developing a holistic coastal erosion national monitoring program.