



GIS based vulnerability assessment using multi-criteria analysis

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Natural catastrophes, including earthquakes, flooding, droughts, tsunamis, land slides, and storms represent dangers to both humans and natural ecosystems. Climate change is expected to increase the risk of these events in many coastal areas.

The juxtaposition of these events with inappropriate land uses and inadequate contingency plans cause the greatest threat to human life and property. In many areas, intensive human alteration and overexploitation of coastal environments have reduced the resilience of the natural systems.

Innovative solutions for vulnerability assessment of coastal areas have become an essential tool for contributing reducing the global threat of natural hazards.

In the present work vulnerability is assessed in a comprehensive way, taking into account all the vulnerable parameters that are most likely to be affected by a natural hazard: population, built environment, socio-economic aspects and environment.

The new methodology here presented assesses vulnerability level of each of the above mentioned parameters giving a quantitative evaluation by means of the multi-criteria analysis.

Pair wise comparison between impact elements, (impact elements are those characteristics of the parameter considered that could be mostly affected by the given hazard) is here performed and shown through evaluations matrix.

The final evaluation grid and all the parameters information are then presented in a Geographic Information Systems (GIS), built on purpose for a better and more user-friendly usage of the risk assessment and evaluation exercise.

Decision makers and end users such as local authorities, NGOs, disaster and prevention officers will be able, by means of this tool, to decide the level of “acceptability” of the risk and plan which protection level is needed to be put in place and which proposed mitigation measures is best to apply.