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The impact of the tsunami of December 26, 2004 in Sri Lanka clearly showed the importance of a thorough knowledge of coastal risks and of taking these into account in order to reduce their impacts. We present here a project funded by French Government (*Ministère des Affaires Etrangères)* and BRGM Research Division including both Sri Lankan and French institutions. The aims of this project are to implement an effective tool designed to reduce the impact of coastal natural hazards and to anticipate and optimize preparations for a period of crisis.
The project focuses on erosion, marine submersion (storm surge and long term sea level rise) and tsunami hazards. It has been conducted on a pilot site, representative of the most threatened types of coastline, extending over 60 km along the coastline in the SW of Sri Lanka. Policymakers' needs have been taken into account from the beginning of the project in order to meet their expectations as closely as possible.

Three complementary approaches have been used within this project:

- Realization of a coastal hazards GIS including geographical, human infrastructures and hazards layers (tsunami, storm surge, long term sea level rise and erosion)
- numerical modelling of monsoon waves and tsunami propagation and inundation from regional to local scale
- risk scenarios simulations using ARMAGEDOM software on specific local area.

The coastal GIS have been set up by building up homogeneous data from existing data bases and from new acquisitions on the field. Coastal hazard levels have been cross-referenced in order to evaluate the exposure of coastal populations and infrastructure to coastal hazards. The GIS includes a characterisation of the aggressions resulting from the events, an inventory of the physical elements exposed, a valuation of the exposed elements and an assessment of their vulnerability.
The GIS approach supported risk scenarios in order to determine whether the cross-referenced data provide an adequate basis for the management of these coastal areas or whether there is added value in the scenario approach. Coastal risks result from a combination of the hazard itself, vulnerability (response of exposed elements) and value (stakes involved). Thus, a coastal risk scenario involves estimation of the impact and consequences of an event (tsunami, storm, etc.), particularly on human assets. Simulating risk scenarios identifies "weak points" in human settlements and is useful for testing the exposure of future development.
Tsunami numerical modelling have been realized using seismic parameters of the Dec 26 2004 event. Results will be compared with data acquired on the field and integrated in the GIS (inundation and destruction limits) in order to validate the model. It will be thus possible to simulate different range of tsunami events and to analyse their impact on human settlement using scenario tools.

Conclusion

The GIS will supplement the international tsunami alert system in the Indian Ocean and is fully consistent with natural risk management policies. The results obtained form a basis for anticipating coastal risks as part of a risk prevention and crisis management policy. A coastal GIS associated with modelling (numerical and scenarios) can be used as a decision-support tool for policymakers, political and economic decision-makers. Policymakers need concrete assessments of the impacts of coastal hazards. These require an integrated multi-hazard approach. This would enable identification of risk-prone areas and subsequent implementation of an integrated strategy covering harmonious development and risk prevention and management in the relevant zones.