Geophysical Research Abstracts, Vol. 8, 06503, 2006
SRef-ID: 1607-7962/gra/EGU06-A-06503

Coastal Risk Analysis of Tsunamis and Environmental Remediation: risk management and mitigation measures

A. Cavalletti (1,2), P. Polo (2) and M.Gonella (2)

(1) Italian Ministry of Environment and Territory, Italy, (2) Med Ingegneria s.r.l., Italy. (acavalletti@gmail.com)

For those coastal areas subject to a high risk (because of population density, presence of valuable infrastructure, tourism, environmental resources) a detailed study will assess the potential damages due to Tsunami waves, thus providing information required for the design of prevention and mitigation plans or for the development of protection structures.

CRATER is the Italian technical contribution to the Tsunami affected area implemented by experts of the Italian Ministry of Environment and Territory.

Particular emphasis will be here given to the risk management and proposed guidelines for mitigation measures. The presentation of results and discussion will focus on the two pilot area chosen, Kamala beach (Phuket province, Thailand) and Laem Pakharang (Phang Nga Province, Thailand).

Risk management is a two parts process involving risk assessment and risk evaluation.

Main vulnerable parameters -in the case of a Tsunami event- identified during the present study are: population, built environment, infrastructures, ecosystem and environment.

Understanding vulnerability and hazard level, identification of possible mitigation measures, of the socio-economic impact caused by the event and the cost-benefit trade off they all give information needed to evaluate the level of risk. Decision makers and end users such as local authorities, NGOs, disaster and prevention officers will be able 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.

Data gathered in situ and results outcoming from the analytical and numerical model are collected in a multi layer Geographic Information System to be delivered to the various authorities of the two provinces of Phuket and Phang Nga.

Implementation of escape route and evacuation plans is part of the CRATER project. Evacuation plan problem at the “local scale” and at the “medium scale” is thus analyzed.

The “Local scale evaluation” is applied within a building, a hotel or a multipurpose building, where the Emergency Tsunami Plan is developed following similar criteria to the fire alarm-fire escape route. In the case of the “Medium scale evaluation”, already existing evacuation plans are studied and optimized following a GIS analysis and adopting the criteria of the *shortest way.*

Tools used to identify the shortest way option include spatial analysis, hydrological models and tri-dimensional analysis. These tools are applied using a raster technique, i.e. a detailed representation of the land use.