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TITLE OF DIPLOMA THESIS:

Prevention and Flood Risk Management of Tsunami and Storm Surge at the Coastal Zone - Flood Risk Management of Storm Surge at Eftalous' Coast

AUTHOR: Ginopoulos Zafeirios

ABSTRACT

This thesis has as its main objective, the systemic approach of flood risks' prevention and management, triggered from natural disasters, such as storm surge and tsunami. Flooding events has always been a real physical danger for coastal areas. In recent years, a result of increased human activity for the acquisition of material goods, has brought about a significant change in the weather and climate on a global and local scale. Extreme natural phenomena, (fires, floods, heat waves, sea pollution etc.) occur with great frequency and have an adverse effect on human life. At the same time, they cause dangerous situations, for the safety and well-being of the inhabitants of a country. The second goal is the presentation of the quantitative appreciation of flood risk, having as reference the Directive 2007/60 of the European Union for a better flood risk management. This thesis usefulness' lies in the fact that, presents detailed flood risk maps due to the phenomena of storm surges and tsunamis across the Mediterranean Sea. The syntax of these maps is the result of likening the two phenomena with mathematical models. This thesis consists of eight chapters. Originally, are addressed briefly the main natural hazards and their socio-economic consequences, citing at the end of the chapter some tools for natural hazards management. Then, follows the introduction to the causes of global climate change, their influence on the phenomena addressed by this thesis, the impact on the global climate and the proper treatment and management. Along the way, there is an extensive reference to impacts on coastal areas due to the intensive growth of natural phenomena and climatic changes. Follows, a detailed description of the flooding causes in coastal areas. Particular emphasis was given to flood risk's quality assessment and the flood's quantitative calculation through the modeling of this phenomenon. Afterwards, follows a detailed presentation of the simulation models of meteorological tides and tsunamis and their results, that is the production of flood risk maps and the identification of areas where expected the extreme manifestation of phenomena. The following chapter records the principles, objectives, actions and measures proposed in the Integrated Management of Coastal Areas. Finally, the storm surge effects in the area of the coast of Eftalou in Lesvos are being described, as well as the modeling of this phenomenon and the protective measures taken in the area.

KEYWORDS

Natural hazard, Climatic change, Flood risk, Flood risk map, Storm surge, Tsunami

