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Coastal Geo-Hazards around the Mediterranean Sea and Risk Reduction

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Shorelines along the Mediterranean Sea are exposed to high risk of marine geohazards (tsunami generated by earthquakes, volcanic eruptions, and submarine slope failures). Historical records report many powerful tsunamis that have taken the lives of thousands over the ages and affected disastrously the coastal towns and economies many times. Tsunami influences are known from Italy to the Gulf of Corinth, Crete, Cyprus, the Turkish and the Levantine coasts, and the Nile Delta. Paleotsunamigenic sediments were identified along the coasts of Italy, and Greece, western Anatolia and Marmara indicate those areas have been repeatedly suffered by tsunamis, killing and injuring people and destroying hundreds of houses. As many as circa 100 tsunami events are reported, starting from Minoan Santorini volcano-tsunami in the Aegean until recent 1999 earthquake in the Marmara Sea.

Since several catastrophic events, risk assessment studies have been given high priority. Scientific and technical progress has been one of the causes in the huge achievement that has been obtained in the disaster mitigation science. Based on most of research work in the region, studies indicate a possible earthquake of Mw=7.4 near to Istanbul that might cause more than 50,000 lives and cost economic losses of more than $60 billions. The expected number of injuries requiring hospitalization is around 150,000; and 30% of hospitals are located in risky coastal areas of the city. Even if the earthquake large enough, a preliminary warning will be released, it takes very short time for a tsunami to cause disaster in areas nearby the earthquake in the Marmara and Mediterranean Sea. Offshore infrastructures (harbors, transportation lines, bridges, tunnels, pipelines, telecommunication cables, platforms) and onshore facilities (industrial, touristic) are also exposed to high risk of marine geohazards near the populated areas in the region.

World-shaking catastrophic events gave us important lessons: insufficient coordinated disaster management system, communication system for disaster information, development in the field of disaster reduction, public awareness and knowledge in mitigation. While the production of risk maps is based on scientific data gathering and analysis, but risk mitigation is not only a technical issue but mostly a legal and socio-political issue, in order to contribute to all marine geo hazard loss reduction for creating “disaster resistant coastal cities and regions” by building up a culture of prevention and risk management. Disaster management is a system which is related to the whole of society and social groups, such as governments, organizations (scientific and educational), volunteers, private sector, public, and media. In order to achieve the mission that benefits all society, nation, region, all take part in mitigation actions: to build up capacity of academies, organizations to play an active role in their own countries related to marine geohazards and disaster mitigation studies; awareness/train&education/documentation about the marine geohazards and disaster mitigation; stimulate political committment to mitigate risks in marine geo-hazards prone regions; providing sound to advice to decision makers; building disaster forecast/monitor/warning systems/methodology and disaster information systems; providing marine risk mapping (basic geo-data and all vulnerabilities), conducting and supporting for marine geohazards real-time disaster assessment studies and disaster mitigation related national, regional and international scientific studies on critical issues for marine disaster mitigation.