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Special Issue "Impact of Natural Hazards on Urban Areas and Infrastructure" in the Bulletin of Earthquake Engineering

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This special issue includes selected papers on the topic of earthquake impact from the sessions held in 2004 in Nice, France and in 2005 in Vienna, Austria at the first and respectivelly the second European Geosciences Union General Assembly. Since its start in 1999, in the Hague, Netherlands, the hazard of earthquakes has been the most popular of the session.
The respective calls in 2004 was for:
Nature's forces including earthquakes, floods, landslides, high winds and volcanic eruptions can inflict losses to urban settlements and man-made structures such as infrastructure. In Europe, recent years have seen such significant losses from earthquakes in south and south-eastern Europe, floods in central Europe, and wind storms in western Europe. Meanwhile, significant progress has been made in understanding disasters. Several scientific fields contribute to a holistic approach in the evaluation of capacities, vulnerabilities and hazards, the main factors on mitigating urban disasters due to natural hazards.
An important part of the session is devoted to assessment of earthquake shaking and loss scenarios, including both physical damage and human causalities. Early warning and rapid damage evaluation are of utmost importance for addressing the safety of many essential facilities, for emergency management of events and for disaster response. In case of earthquake occurrence strong motion networks, data processing and interpretation lead to preliminary estimation (scenarios) of geographical distribution of damages. Factual information on inflicted damage, like those obtained from shaking maps or aerial imagery permit a confrontation with simulation maps of damage in order to define a more accurate picture of the overall losses.
Most recent developments towards quantitative and qualitative simulation of natural hazard impacts on urban areas, which provide decision-making support for urban disaster management, and success stories of and lessons learned from disaster mitigation will be presented. The session includes contributions showing methodological and modelling approaches from scientists in geophysical/seismological, hydrological, remote sensing, civil engineering, insurance, and urbanism, amongst other fields, as well as presentations from practitioners working on specific case studies, regarding analysis of recent events and their impact on cities as well as re-evaluation of past events from the point of view of long-time recovery.
In 2005 it was called for:
Most strategies for both preparedness and emergency management in case of disaster mitigation are related to urban planning. While natural, engineering and social sciences contribute to the evaluation of the impact of earthquakes and their secondary events (including tsunamis, earthquake triggered landslides, or fire), floods, landslides, high winds, and volcanic eruptions on urban areas, there are the instruments of urban planning which are to be employed for both visualisation as well as development and implementation of strategy concepts for pre- and post-disaster intervention. The evolution of natural systems towards extreme conditions is taken into consideration so far at it concerns the damaging impact on urban areas and infrastructure and the impact on the natural environment of interventions to reduce such damaging impact.