



## **A conceptual model for analysing the “behavior” of urban systems coping with natural hazard**

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Looking at the damages caused in different cities by natural hazards, it is possible to note that damage has many faces, changing from time to time starting from the impact of the natural event. Nevertheless, most of the studies aimed at describing the damages determined by a natural hazardous event, looking at the single elements of the city (buildings and network infrastructures), have been mainly focused on physical damages, occurring after the event and on consequent loss of human lives. Very few studies, looking at the city as a whole, tried to highlight the multiple dimension of damage, focusing on all the different faces of urban damage (physical, functional, economic, social) and on the different periods of time they generally occur after an hazardous event. With reference to these considerations and basing on the analysis of the features of different natural events (earthquakes, volcanic eruptions, floods, etc), this study aims at understanding how the city, considered as a complex system, reacts to an hazardous event or, in other words, its “behavior” coping with natural hazards. This “behavior” depends on many components, such as the features of buildings and infrastructures; the organizational capacity of institutional bodies; the capacity of urban systems to supply the demand for activity and services of the population during the emergency phase. With respect to the latter, this paper outlines a conceptual model for analysing the “demand” for activities and services of the population arising in the emergency due to the considered natural events. This model can be relevant to define the evolution of the activity and services demand in order to support the definition of urban planning actions aimed at improving supply and/or re-direct demand and, consequently, the capacity of the city to cope with the natural hazards, at least in the emergency phase.