



## **Measurement of the influences relating to anthropization on the temporal evolution of the gravitational risks and the vulnerability.**

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The objective of this paper is to show the impact of the instrumentation on an urban area on the principle of prevention of the landslides risk and thus to contribute to decrease the vulnerability for an urban long-term future development. We show that the analyze by instrumentation of triggered factors which characterize the risk (by the quantification of the evolution in time of the mechanical properties versus weathered processes) suggest that it exists a relation between “susceptibility of landslides” and urban development. The evolution of the stakes during time is at the same time, factor of evolution of the susceptibility and triggered factor of the vulnerability evolution of urban areas. The scientific goal relates to the urban systems vulnerability and resilience modelling versus landslides processes for the assistance to the risks prevention. Indeed, the installation of an effective risks prevention policy is based on a good evaluation of the intensity, the period of return of the phenomena and their zone of expansion, but also on an identification of the sectors exposed to the risks, their vulnerability and their resilience. The strategy of prevention of the risks generally relates to the construction of fortifications to protect the society but it can also be founded on the resilience concept. This other approach is not opposed to the risk, but proposes to reduce the impacts. The anthroposysteme concept of makes it possible to take into accounts the determining role played by the human society in the space system evolution; natural and social systems associated on a given territory. The study of a space system passes then by the identification of components of the physical world (natural) and the living world (social), these two components forming integral part of the Society. To be concluded, this paper and study applies to the Mediterranean coastline anthroposystemes (northern bank) where urban growth, saturation of the littorals, constructions in danger zone, dynamic of risks and vulnerabilities are strongly overlapping. The town of Grasse in the Maritimes-Alps (France) is more particularly retained for this study. This choice is not trivial. The studied sector cumulates two important characteristics (I) the urbanization was made on slopes higher than  $10/20^\circ$  in an unfavourable geological context (urbanization, risk and vulnerability are thus in interaction) (II) an important demographic expansion passed and to come. The Geographical Information System (ArcGis) will be common support of this study which materialize simulations, observations and results of instrumentations carried out on tests sites, but also the landslides models of simulation.