



Tool for analyzing the vulnerability of buildings to flooding: the case of Switzerland

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Whatever the way used to protect property exposed to flood, there exists a residual risk. That is what feedbacks of past flooding show. This residual risk is on one hand linked with the possibility that the protection measures may fail or may not work as intended. The residual risk is on the other hand linked with the possibility that the flood exceeds the chosen level of protection. In many European countries, governments and insurance companies are thinking in terms of vulnerability reduction. This publication will present a new tool to evaluate the vulnerability of buildings in a context of flooding. This tool is developed by the project “Analysis of the vulnerability of buildings to flooding” which is funded by the Foundation for Prevention of Cantonal insurances, Switzerland. It is composed by three modules and it aims to provide a method for reducing the vulnerability of buildings to flooding. The first two modules allow identifying all the elements composing the building and listing it. The third module is dedicated to the choice of efficient risk reducing measures on the basis of cost-benefit analyses.

The diagnostic tool for different parts of the building is being developed to allow real estate appraisers, insurance companies and homeowners rapidly assess the vulnerability of buildings in flood prone areas. The tool works with by several databases that have been selected from the collection and analysis of data, information, standards and feedback from risk management, hydrology, architecture, construction, materials engineering, insurance, or economy of construction. A method for determining the local hazard is also proposed, to determine the height of potential floods threatening a building, based on a back analysis of Swiss hazard maps. To calibrate the model, seven cantonal insurance institutions participate in the study by providing data, such as the the amount of damage in flooded areas.

The poster will present some results from the development of the tool, such as the amount of damages to buildings and the possibility of analysis offered by the tool. Furthermore, analysis of data from the insurance company led to the emergence of trends in costs of damage due to flooding. Some graphics will be presented in the poster to illustrate the tool design. It will be shown that the tool allow for a census of buildings and the awareness of its vulnerability to flooding. A database development explanation concerning the remediation cost measures and the damage costs are also proposed. Simple and innovative remedial measures could be shown in the poster. By the help of some examples it is shown that the tool allows for an investigation of some interesting perspectives in the development of insurance strategies for building stocks in flood prone areas.