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Valuation of natural hazard insurance data for a quantified vulnerability assessment. Case studies for flood and hail using insurance data of Swiss public insurance.

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The natural hazard damage cost is very expensive for insurance companies and has been increasing for several years. Since about 2004, in Switzerland, the cost of natural damage to buildings has exceeded the cost of fire damage to buildings. This fact results in particular from an efficient fire prevention policy led by public insurance companies for several years. Consequently, the public insurance companies have increasingly focused their interest on the vulnerability of buildings against natural hazard processes (especially flood, storm, and hail).With regard to the natural damage, insurance companies possess lots of data on damage costs: invoices with detailed description of buildings damage, and also value, location and construction date of the insured buildings. In the presented study, a part of these data has been recovered to learn more about the impact of natural hazards on buildings and assess a quantified vulnerability, first step to assess risk.

In many European countries, governments and insurance companies are thinking in terms of risk reduction. Several tools have been developed in different countries (Austria, Germany, Switzerland ...) to assess vulnerability or risk. In Switzerland, an insurance data analysis of flood damage of different events has been led during the development of a tool dedicated to public insurance companies, which permits to assess buildings vulnerability to flooding. An illustrated demonstration of this tool will be shown. During the development of this tool, many statistics have been made from the analysis of damage data. The costs of damage are thus better known and it is possible to determine in a quantitative way the most expensive costs in buildings due to damage. For example, the cleaning after flooding represents a third of damage costs. A similar analysis is underway for hail damage and will be presented.

In a quantitative risk assessment, an insurance data analysis, as will be presented, may help to quantify the risk parameters, such as vulnerability, exposure or exposed buildings values. An example will show that coupled with a hazard analysis model, insurance data may lead to a quantitative risk assessment model.