



Distance education course on spatial multi-hazard risk assessment, using Open Source software

C.J. van Westen (1) and S. Frigerio (1,2)

(1) International Institute for Geoinformation Science and Earth Observation (ITC), Enschede, Netherlands (westen@itc.nl),

(2) Department of Environmental Sciences, University of Milan-Bicocca, Piazza della Scienza 1, 20126 Milan, Italy

(frigerio@itc.nl)

As part of the capacity building activities of the United Nations University – ITC School on Disaster Geo-Information Management (UNU-ITC DGIM) the International Institute for Geoinformation Science and Earth Observation (ITC) has developed a distance education course on the application of Geographic Information Systems for multi-hazard risk assessment. This course is designed for academic staff, as well as for professionals working in (non-) governmental organizations where knowledge of disaster risk management is essential. The course guides the participants through the entire process of risk assessment, on the basis of a case study of a city exposed to multiple hazards, in a developing country. The course consists of eight modules, each with a guide book explaining the theoretical background, and guiding the participants through spatial data requirements for risk assessment, hazard assessment procedures, generation of elements at risk databases, vulnerability assessment, qualitative and quantitative risk assessment methods, risk evaluation and risk reduction. Linked to the theory is a large set of exercises, with exercise descriptions, answer sheets, demos and GIS data. The exercises deal with four different types of hazards: earthquakes, flooding, technological hazards, and landslides. One important consideration in designing the course is that people from developing countries should not be restricted in using it due to financial burdens for software acquisition. Therefore the aim was to use Open Source software as a basis. The GIS exercises are written for the ILWIS software. All exercises have also been integrated into a WebGIS, using the Open source software CartoWeb (based on GNU License). It is modular and customizable thanks to its object-oriented architecture and based on a hierarchical structure (to manage and organize every package of information of every step required in risk assessment). Different switches for every component of the risk assessment course have been defined and through various menus the user can define the options for every exercise. For every layer of information tools for querying, printing, searching and surface analysis are implemented, allowing the option to compare maps at different scale and for on-line interpretations.