Editorial to the 40th anniversary of the international research society INTERPRAEVENT: hazard analysis and mitigation of mass movements in an alpine environment

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In history, excessive disasters often have changed human awareness of natural hazards and initiated fundamental changes in catastrophe management policies. In 1965 and 1966, the region of the Southern Alps was hit by a series of devastating floods, which motivated decision makers in Austria to establish a forum of leading experts (“Research Association for Preventive Action against Flooding”) in order to discuss the causes of these natural events, as well as appropriate strategies (measures) for protection and damage limitation in an integrated and interdisciplinary sense. The primary goal of this forum, whose first meeting was held in Klagenfurt (Carinthia) in 1967, was to enable experts from the scientific, technical, and administrative fields to extensively analyze the causes of flooding and develop protective plans. The Association also placed great importance on encouraging applied research at universities, experimental stations, and building authorities and regularly spoke out to raise the awareness of people and sensitize the public concerning the issues of natural hazards. In 1990, the Association was renamed “The International Research Society INTERPRAEVENT”.

The major purpose of the society is to facilitate interdisciplinary research in order to protect human living space against flooding, debris flows, landslides, avalanches and rock fall, as well as anthropogenic (man-made) influences and destruction, and another is to make the results of research accessible (applicable) for decision makers, administration, and engineering practice. The most important activities of INTERPRAEVENT in fulfillment of these goals are the organization of an international symposium for scientists and practitioners every 4 years, the publication of the results of these symposiums as well as

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other scientific work, the dissemination of latest results of research to decision makers in politics, administration, science, and economy, the training of specialists, and regular transnational exchange of information and knowledge. INTERPRAEVENT is the only international organization worldwide linking scientists, policy makers, and practitioners in the field of natural hazard management in equal level. In course of its already more than 40 years of history, INTERPRAEVENT has developed from a regional expert platform to an internationally acting network of 34 member-organizations in Austria, Switzerland, Italy, France, Germany, Slovenia, Japan, and Taiwan contributing to the global risk dialogue.

The latest symposium INTERPRAEVENT was held in 2008 in Dornbirn (Vorarlberg) bringing together more than 400 experts from natural sciences, civil engineering, socio-economy, and practical natural hazard management. The assembly gained extraordinary public interest, encouraging the society to further the publication of selected contributions (out of the conference proceedings) in scientific journals. Together with the editorial board, it was agreed to compile a special edition of *NHAZ* journal on the occasion of 40th anniversary of INTERPRAEVENT (1968–2008). The resulting publication covers the whole scope of scientific fields represented by the society and comprises representative contributions on “hot-spot issues” in ongoing research.

For this special publication, a “cross section” of natural hazard topics was created. The selected papers proof the remarkable diversity of scientific disciplines that contribute to an integrated natural hazard management:

According to the analysis of recent flood events (2002, 2005), woody debris represents a major risk in torrential rivers. Mazzorana et al. present a modeling approach that allows the estimation of woody material erosion from banks and floodplains and the evaluation of the disposition for woody material entrainment and transport along the stream. The model enables the delineation of hazard process patterns such as the blocking of bridges and narrows and the triggering of subsequent bursting events.

Three contributions are dedicated to snow hazard-related topics. The investigation by Barbolini et al. is focused on the problem of hazard mapping over large undocumented areas. A new method combines GIS tools, computational routines, and statistical analysis in order to provide a “semi-automatic” definition of areas potentially affected by avalanche release and motion. Wastl et al. describe an assessment of avalanche hazard potential and the resulting risks on mountain roads for a 38.7-km-long road section in northern Iceland following a regional scale approach developed in the Alps. Teufelsbauer presents the results of a study on snow creep and settlement of alpine snow packs. A detailed investigation into the constitutive behavior of snow for long-term creeping under low strain was performed.

Taking into account the limits of protection by technical measures sophisticated strategies and measures risk and disaster management in the framework of the “risk cycle” seems to be a reasonable alternative for the near future. This hypothesis was proven by Chiba, who describes the situation at the time of several sediment-related disasters (debris flows and landslides) in the Nagano Prefecture (Japan) in 2006, the evacuations in the municipalities of Okaya and in Suwa, and their consequences from the point of view of disaster-prevention personnel and retirement-home staff. Factors that should be considered in formulating warning and evacuation systems in response to sediment-related disasters are discussed. The consequences drawn from the analysis of similar case studies represent an important basis for the applicability of disaster management systems such as IFKIS-Hydro. Romang et al. have developed this information and warning system for hydrological hazards in small- and medium-scale catchments. The system collects data such as

weather forecasts, precipitation measurements, water-level gauges, discharge simulations, and local observations of event-specific phenomena. The assessment of risk associated with a potential tsunamigenic rockslide is the topic of the contribution by Eidsvig et al. The paper introduces the application of a simple and practical method for estimating the risk potential, by assessing quantitatively hazard, vulnerability, and elements at risk. In general, research dealing with disaster response topics will be of major importance in future.

The field of soil bioengineering is finally represented by Krautzer, who has investigated the problems related to erosion and all of its aftereffects (from increased surface drainage and erosion to the formation of karst), when undertaking recultivation following necessary interventions in the sub-alpine and alpine vegetation stage (high zones).

In spite of the heterogeneous selection of topics, all contributions have one fact in common: they are strongly oriented toward the application of results in practice. This will be one of the major strengths of INTERPRAEVENT in future; another will be the interdisciplinary approach. Nevertheless, this demand brings about an important challenge: how to preserve this interdisciplinarity while facing the ongoing “explosion in knowledge”? The risk will be to fall back into a sectoral view of natural hazard protection; the chance will be to earn a rich and diverse range of views and opinions from multiple scientific and technical disciplines for a fruitful risk dialogue. The future will show how much of this demanding goal can be realized and what will be the role of INTERPRAEVENT in this development, we certainly hope a leading one.