
Editorial

Floods and debris flows are among the most destructive of all water related disasters. These hazards are likely to become more frequent and more relevant in the future, due to the effects of increase in population, urbanization, land subsidence and the impact of climate change. They affect both rural and urban areas, particularly in river basins and coastal zones in a wide range of morphoclimatic environments. Knowledge and advanced scientific tools play a role of paramount importance in coping with these phenomena.

Flood and debris flow management in both flat and mountain areas deals, by definition, with multifunctional aspects. Effective measures to protect life and property in flood and debris flow – prone zones must be integrated with other aspects such as socio – economics, culture, nature and environment.

Sustainable solutions are needed, for which a tailor – made concept in a particular case must be found in such a way that both integrated water management and spatial planning in flood plains and debris flow – prone zones are kept in balance.

New methods and measures are needed, wherein attention is given to nature, environment and to sustainable solutions in such a way that a better balance is achieved between economy and ecology, prosperity and welfare.

This concept leads to a new integrated risk management approach which comprises the systematic process, administrative decisions, organization, operational skills and abilities to implement policies, strategies and coping capacities of the society and communities to lessen the impact of natural hazards and related environmental disasters.

This approach provides measures for preventing a hazard turning into a natural disaster and consists of systematic actions in a cycle of preparedness, response and recovery that should form part of any integrated land and water resources management procedure.

The Special Issue focuses on flood and debris flow management. The idea was to invite contributions by some of the delegates that took part in the two International Conferences held in Milan in 2010, i.e.

- Monitoring, Simulation, Prevention and Remediation of Dense and Debris Flow; and
- Flood Recovery, Innovation and Response

The meetings were jointly organized by the Wessex Institute of Technology, the Universities of Milan and Wolverhampton and the Politecnico di Milano, with the support of the Lombardy Region and the endorsement of EurAgEng (European Society of Agricultural Engineers), CIGR(International Commission of Agricultural and Biosystems Engineering) and ICID (International Commission on Irrigation and

Drainage).

More specifically, the Special Issue concerns papers on flood and debris flow related issues written by renowned international scientists and professionals. Illustrative and informative case studies in various Countries have been also selected, giving particular attention to theoretical, experimental, institutional and managerial aspects such as: advanced mathematical models, laboratory tests and new integrated hazard defence and mitigation measures.

All the papers in this Special Issue contain a valuable contribution to “lesson learned” and to the design of a new balanced approach aiming at reducing the vulnerability of the environment to flood and debris flow related hazards.

The Guest Editors

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