



## **Urban Flood Risk Assessment and Flood Damage Assessment for extreme Floods**

R. Frei

Graz Technical University, Institute of Hydraulic Engineering and Water Resources  
Management, Austria

The catastrophic floods which Europe has seen in recent years have demonstrated that total protection from inundations is impossible. In addition, intensive use of flood plains has led to an increase in damage from floods, despite the ever greater sums that are being spent on flood protection measures.

The aim of the case study discussed in this report was to identify the possibilities and limits of flood protection measures on the basis of a risk-oriented approach. This report presents the results of a risk analysis conducted for an area protected by a levee, with special allowance being made for events exceeding the event used in the design. The study also includes the complex interaction between hydrological and hydraulic processes in the hinterland (catchment area, tributaries, surface drainage).

Possibilities for reducing not only flood risk, but risk as a whole, are discussed. Particular attention is given to the possibilities of reducing the damage potential considering the fact that both engineering and ecological measures are effective only against minor floods of major frequency. The results serve as a basis for planning remedial action so as to allow optimal and economic use to be made of the limited funds available for flood control measures and flood precautions. Further to this it has been found that talking with the people affected by the floods helps to increase risk acceptance.