

## NEW BOOK ON MAIN HAZARDS IN KARST: COLLAPSE AND WATER POLLUTION



At the end of 2007 **The Geological Society Publishing House** published its **Special publication No. 279** “**Natural and Anthropogenic Hazards in Karst areas: Recognition, Analysis and Mitigation**”, edited by well known names in the sphere of karstologists, **John Gunn** and **Mario Parise**. European Geosciences Union held its general assemblies at Vienna and traditionally there is a session dedicated to natural and anthropogenic hazards. In the present book the papers, presented at the Second General Assembly in Vienna (April 2005) are published. There are 15 papers published on 208 pages including 133 illustrations and 19 tables. It is difficult to decide, either this work is a book or proceedings. There is an introduction, there is an index, but there are papers, not chapters. But in any case it is worth not just looking at it but reading it.

As it is emphasized in the introduction, the karst is precious resource of karst water representing about 25% of the drinkable supply in the world - and prediction of FAO are increasing it to 75% for the year 2025. Not only water, karst is the source of many other raw materials as well as it is important regarding cultural and natural world heritage and for the recreation. It is also extremely vulnerable and its values and importance are strongly counteracted by the ease with which human activities can negatively impact this precious part of the Earth.

There are many human activities that produce severe impacts in karst, often with irreparable damage. Very good example is the plateau Kras (Karst in sense strict) where deforestation and overgrazing lead to extreme soil erosion and finally to the rocky desert. Rehabilitation was extremely difficult including very high economic cost. On the other hand the live and human activities are somewhere subject to great hazard and risk provoked by karst processes as are subsidence, collapse or flood. In this publication there are very well presented examples for the both sides: impact of man on a karst land and impact of karst upon man's life and activities. according to this the book is divided into three parts treating collapse and subsidence hazards, karst water hazards, and problems of karst managing.

In the first section there are five papers dealing mostly with dolines and sinkholes (in general the synonym for collapse doline) as a risk or a hazard for a man. For the Waltham & Lu paper it can be said that it is little more theoretical talking about natural and anthropogenic rock collapse over open caves. Two papers are dealing with sinkholes and its distribution in Italy (Nisio *et al.*) and on Florida (Brinkmann *et al.*), the traditional sinkhole country. Other two are more specialised, showing the methods how to assess cover-collapse sinkholes, example from Sardinia (Ardau *et al.*) and the method of magnetic

prospection for dolines filled by alluvium or other unconsolidated material. Just the fifth paper does not deal with dolines but with karst processes and slope instability in the Apennine Mountains of Campania (Santo *et al.*).

The second section including six papers is dedicated entirely to hydrological hazards. Five of them are treating the problem of karst water pollution and protection from different aspects. J. Gunn shows the importance of area definition for groundwater source protection, presenting interesting examples from England, Ireland and as far as New Zealand. S. J. Allshorn *et al.* show how the rapid karstic bypass can play very important role in contaminant transport from an example of Yorkshire chalk aquifer. S. H. Botrell presents an example from far away, from Sichuan in China. It is a reconnaissance study of stable isotopes as tracers of natural and contaminant sulphate sources. Intrinsic vulnerability is a question connected with very popular studies of vulnerability and hazards mapping. D. Ducci shows an example of such a study of the Alburni karst system in Southern Italy. Other two papers connected to hydrological hazards are of quite different orientation. The first one (A. Cossu *et al.*) is treating coastal geomorphic site at risk of the floods (an example from Sardinia) and the second one (Delle Rose *et al.*) is evaluating the impact of quarrying on karst aquifers of Salento in Southern Italy.

The last two papers (section Managing karst) are quite different. For M. Day's paper it can be said that it is a regional and a general study on natural (drought and

water supply, floods) and different anthropogenic hazards, deforestation emphasized, in the karst of Jamaica. The paper presents some sorts of pollution and degradation which are not so often treated in karstological literature: agriculture as a factor of degradation, and bauxite mining including groundwater and surface water contamination and the displacement of thousands of local residents. The last paper is different from the others, written by a group of nine authors from five institutes from Grenoble, Lyon, and Paris: Biotic versus abiotic calcite formation on prehistoric cave paintings: the Arcy-sur-Cure "Grande Grotte" (Yonne, France) case. It is a sort of degradation, but the degradation of cultural heritage. Due to the importance of cave paintings, a set of sophisticated analyses and experiments have been carried on to find out the kind of the calcite, covering the paintings and to find out the reason of its deposition. Which is also very important: due to this "multimethod" approach some of the deteriorated paintings were improved and the hope is well grounded that they will find appropriate conditions to conserve the paintings for the future.

The book is available from the Geological Society Publishing House (<http://www.geolsoc.org.uk>) or can be ordered through Online Bookshop: [www.geolsoc.org.uk/bookshop](http://www.geolsoc.org.uk/bookshop). The price is 70/140 British pounds (paperback/hardback), possible reduction for the members of some professional associations.

*Andrej Kranjc*