

## Chapters and sub-sections

### 1 Rocks, dissolution and karst

Limestone lithologies  
Limestone and dissolution  
Karst landforms developed by dissolution  
Climatic influence on limestone karst  
Dolomite and its sinkholes  
Chalk and its sinkholes  
Evaporite rocks and their sinkholes  
Man's influence on sinkholes

### 2 Sinkhole classification

Sinkholes and dolines  
Classification of sinkholes  
Solution sinkholes and solution dolines  
Collapse and caprock sinkholes  
Subsidence, suffusion and dropout sinkholes  
Buried sinkholes

### 3 Rock failure in collapse sinkholes

Karstic collapse  
Collapse of cave chambers  
Collapse sinkholes  
Caprock sinkholes  
Breccia pipes  
The collapse geohazard

### 4 Soil failure in subsidence sinkholes

Subsidence sinkhole morphology  
Types of subsidence sinkholes  
Dropout sinkholes  
Distribution of subsidence sinkholes  
The subsidence sinkhole geohazard

### 5 Buried sinkholes and rockhead

Buried sinkhole morphology  
Buried sinkholes as engineering hazards  
Buried sinkholes and soil pipes in chalk

### 6 Sinkholes in insoluble rocks

Lava tubes  
Sinkholes in other forms of pseudokarst

### 7 Rock failure under load over caves

Collapse sinkholes induced by loading  
Bearing capacity of cave roofs  
Safe cover thickness over caves  
Existing structures over caves

### 8 Sinkholes induced by engineering

Sinkholes induced by increased water input  
Sinkholes induced by water table decline  
Sinkholes induced by ground disturbance  
Avoidable geohazard of induced sinkholes

### 9 Ground investigation

Preliminary stages  
Ground investigation fieldwork  
Ground-based geophysical surveys  
Airborne and satellite remote sensing  
Direct investigations

### 10 Hazard and risk assessment

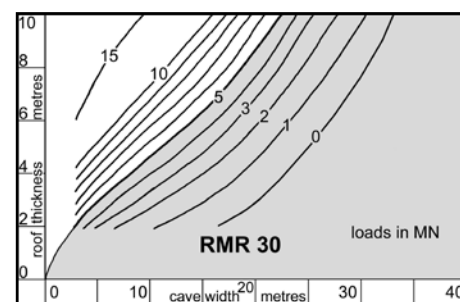
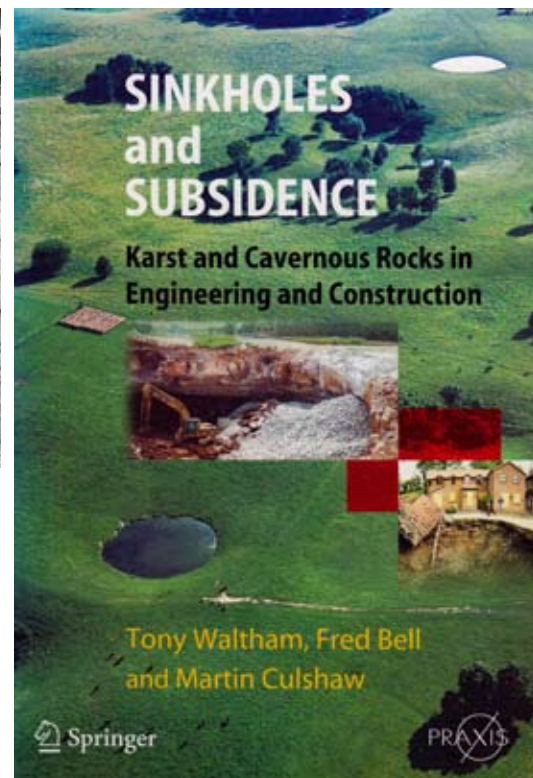
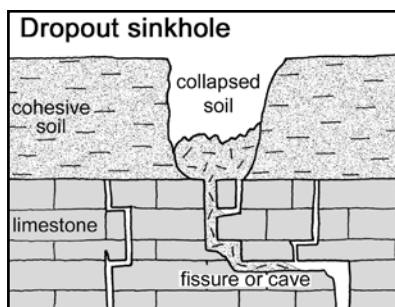
Hazard and risk  
Risk management  
Karst hazard analysis  
Hazard maps and land-use planning  
Legislation related to sinkhole hazards  
Sinkholes and insurance

### 11 Prevention and remediation

Soil treatment as sinkhole prevention  
Sinkhole remediation  
Landfills in sinkhole karst

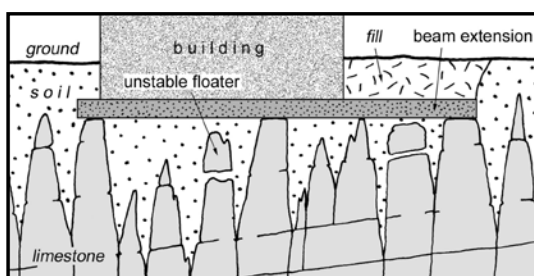
### 12 Construction in sinkhole terrains

Construction on soil over karst  
Roads and railways on karst  
Foundations on karst bedrock  
Tunnels through cavernous ground  
Dam construction in sinkhole karst



**Sinkholes and Subsidence** is a comprehensive and accessible source of information about one of the most difficult types of ground conditions encountered by civil engineers - cavernous karst. Its aim is to provide an understanding of ground cavities, subsurface processes, sinkhole collapses and ground subsidence, thus helping construction engineers to design structures that will stand safely on this type of ground.

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### The Case Studies

Remediation of a sinkhole over gypsum at Ripon, UK  
Collapse sinkhole at Dishman Lane, Bowling Green, Kentucky  
Caves and sinkholes in motorway construction, Slovenia  
Road built over Sung Gul lava tube, Korea  
Prevention of karst collapse for the Shui-Nan Highway, China  
Construction over a cave in Huntsville, Alabama  
Sinkhole destruction of Corporate Plaza Building, Pennsylvania  
Subsidence over a chalk pipe at Chalfont St Peter, UK  
Geophysical investigations of sinkholes in chalk, UK  
Detection of caves by microgravity geophysics, Bahamas  
Sinkholes and subsidence over salt at Wink, Texas  
Subsidence over buried karst at Centurion, South Africa  
Agriculture on sinkhole karst on gypsum, Lithuania  
Sinkhole remediation over Weeks Island salt dome, Louisiana  
Hazard assessment on dolomite at Simunye, South Africa  
Ground investigation in covered karst near Tournai, Belgium