## Contents

### Part I  Geomorphology and Geophysics

1. Shui Jing Po Shilin, Rock and Relief of Stone Forests on Cone Hills, Yunnan, China ............................. 3  
   Martin Knez, Hong Liu and Tadej Slabe

2. Geomorphometric Analysis of Karst Terrains ................................................................. 21  
   Eulogio Pardo-Igúzquiza, Juan José Durán, Juan Antonio Luque-Espinar and Pedro Robledo-Ardila

3. Distribution and Features of Natural and Anthropogenic Sinkholes in Apulia ............................. 27  
   Mario Parise and Carmela Vennari

4. Advanced Airborne Electromagnetics for Capturing Hydrogeological Parameters Over  
   the Coastal Karst System of Tulum, Mexico ................................................................. 35  
   Arnulf Schiller, Robert Supper, Ingrid Schattauer, Klaus Motschka, Gonzalo Merediz Alonso  
   and Alejandro Lopez-Tamayo

### Part II  Geological Control and Speleogenesis

5. Characterization of a Paleokarstic Oil Field (Rospo Mare, Italy): Sedimentologic and Diagenetic  
   Outcomes, and Their Integration in Reservoir Simulation .................................................. 47  
   Arnaud Fournillon, Giuseppe Bellentani, Andrea Moccia, Clement Jumeaucourt, Paolo Terdich,  
   Francesco Siliprandi and Fabio Peruzzo

6. Subsurface Flow and Sulfate Dissolution Response to the Construction and Restoration  
   of the River Weir in Hessigheim, Germany ................................................................. 57  
   Héctor Montenegro, Regina Kauther, Daniel Strasser, Tanja Liesch and Nico Goldscheider

7. Development of Sulphate Karst Under Technogenic Impact Conditions in the Western Urals ........ 65  
   Nikolay Maksimovich and Olga Meshcheryakova

8. An Integrated Approach for Investigations of Ground-Subsidence Phenomena in the Ovaro  
   Village (NE Italy) ............................................................................................................. 71  
   Chiara Calligaris, Stefano Devoto, Luca Zini and Franco Cucchi

9. Investigating Physical Processes Leading to Sinkhole Occurrence in Val d’Orléans (France) .......... 79  
   Jérôme Perrin, Sylvain Pasquier, Alexis Gutierrez, Damien Salquèbre, Émilie Vandouwheusden,  
   Emmanuelle Joigneaux, Christophe Château, Audrey Guirimand-Dufour, Nevila Jozja,  
   Christian Défarge and Stéphane Binet
Part III  Hydrodynamics

10  Topographically Driven Fluid Flow at the Boundary of Confined and Unconfined Sub-basins of Carbonates: Basic Pattern and Evaluation Approach on the Example of Buda Thermal Karst........... 89
  Judit Mádl-Szőnyi and Ádám Tóth

11  Modeling the Hydrologic Cycle in a Mediterranean High-Relief Karst ......................................................... 99
  Eulogio Pardo-Igúzquiza, Juan José Durán, Juan Antonio Luque-Espin, Pedro Robledo-Ardila
  and Javier Heredia

12  Process-Based Vegetation Models Improve Karst Recharge Simulation Under Mediterranean Forest ........................................................ 109
  Simon Damien Carrière, Charles Danquigny, Hendrik Davi, Konstantinos Chalikakis, Chloé Ollivier,
  Nicolas K. Martin-StPaul and Christophe Emblanch

13  Improved Assessment of Groundwater Recharge in a Mediterranean Karst Region:
  Andalusia, Spain ................................................................. 117
  Lara Kirn, Matías Mudarra, Ana Marín, Bartolome Andreo and Andreas Hartmann

Part IV  Time Series Analysis and Modeling

14  Effect of Cave Ventilation on Karst Water Chemographs .......................................................... 129
  Pierre-Yves Jeannin, Arnauld Malard, Philipp Häuselmann and Pierre-Xavier Meury

15  Comparison of Mine Drainage/Karst Springs Discharge Recession Curves ....................................................... 141
  Peter Malik and Peter Bajtovš

16  Time Lag Analysis of Natural Responses During Unitary Recharge Events to Assess
  the Functioning of Carbonate Aquifers in Sierra de Grazalema Natural Park (Southern Spain) ............ 157
  Damián Sánchez, José Francisco Martín-Rodríguez, Matías Mudarra, Bartolome Andreo,
  Manuel López-Rodriguez and María Rocío Navas

17  Karst Flash Flood Forecasting Using Recurrent and Non-recurrent Artificial Neural Network Models: The Case of the Lez Basin (Southern France) ........................................... 169
  Thomas Darras, Line Kong-A-Siou, Bernard Vayssade, Anne Johannet and Séverin Pistre

18  Spectral Analysis of Time Series of Carbonate Aquifer of Sierra Gorda .................................................. 179
  Juan Antonio Luque-Espin, Eulogio Pardo-Igúzquiza, Antonio González-Ramón,
  Manuel López-Chicano, Juan José Durán-Valsero and David Pulido-Velázquez

19  Decomposition of CO2 Signal in Lascaux Cave. ........................................................................ 187
  Nicolas Peyraube, Roland Lastennet, Philippe Malaurent, Jessica D. Villanueva and Alain Denis

20  Characterizing Functioning of the Dyr Karst (Tebessa, Algeria) by Correlative and Spectral
  Analysis of Hydro-Pluviometric Chronicles .................................................. 193
  Mohammed Laid Hemila, Omar Guefaifia, Layachi Gouaidia and Bilel Djoulah

21  Artificial Neural Networks Modeling of a Karstic Watershed in Mount Lebanon ......................... 203
  Antoine Allam and Wajdi Najem
Part V  Karst Aquifer Management

22 Hydro-System Flow Modelling for Water Resources Management in the Fractured and Karstified Chalk Aquifer Environment of Eastern Normandy ...........................................217
   Didier Pennequin, Pierre-Yann David, Marie Servière, Nadia Amraoui and Chrytèle Loiselet

23 Integrative Passive Samplers to Detect Chlorinated Hydrocarbon Contamination in Karst ..........231
   Hélène Demougeot-Renard, André Bapst, Celia Trunz, Laurence Fischer and Philippe Renard

24 Concentration of Nitrates in Spanish Carbonate Aquifers: Relation with Soil TOC and Land Use ......243
   Juan Antonio Luque-Espinar, Eulogio Pardo-Igúzquiza, Juan Grima-Olmedo, Sandra Martínez-Romero, Juan José Durán-Valsero and Carlos Grima-Olmedo

25 Sin-DRASTIC: A Modified Vulnerability Mapping Method for Alluvial Aquifer Hosted by Karst in the North of Hamadan Province, West of Iran ..................................................255
   Kamal Taheri, Milad Taheri and Mostafa Safari Komail

26 Managed Aquifer Recharge (MAR) to Supply Libreville, a Water-Stressed City (Gabon) .............273
   Bernard Collignon and Claude Ondo

Part VI  Multidisciplinary Regional Studies

27 Hydrogeological Characterization of a Geologically Complex Karst Aquifer Using Natural Responses: An Example from Andalusia, Southern Spain ...........................................285
   Beatriz de la Torre Martínez, Matías Mudarra Martínez, Bartolomé Andreo Navarro and Catherine Bertrand

28 Preliminary Data on the Groundwater Geochemistry of Su Bentu Cave (Sardinia, Italy) .............295
   Laura Sanna and Jo De Waele

29 Comparison of Flow Processes in Drains and Low Permeability Volumes of a Karst System in the French Jura Mountains: High-Resolution Hydrochemical Characterization During a Flood Event .................................................................303
   Sophie Denimal, Catherine Bertrand, Marc Steinmann and Nicolas Carry

30 Hydrochemical and Hydrodynamic Behavior of the Epikarst at the Lascaux Cave (Montignac, France) .................................................................319
   Nicolas Houillon, Roland Lastennet, Alain Denis and Philippe Malaurent

31 Identification of Vadose Karst Voids and Ventilation Patterns Coupling Hydrochemical and Geophysical Methods (Maro Spring, Near Nerja, Southern Spain) ..........................327
   José Benavente, Iñaki Vadillo, Cristina Liñán, Francisco José Martínez-Moreno, Jesús Galindo-Zaldívar and Francisco Carrasco

32 Analysis of Natural Response and Hydrochemical Data by Statistical Approaches to Characterize the Hydrogeological Functioning of a Highly Karstified Evaporitic System in South Spain .................................................................335
   Jose Manuel Gil-Márquez, Matías Mudarra and Bartolomé Andreo

33 Hydrochemical Heterogeneity in Karst Tributaries on Siliciclastic Boundaries: Corrente River, Bahia—Brazil .................................................................345
   Emmanoel V. Silva-Filho, Karina L. Lecomte and Cristina C. Bicalho
Multidisciplinary Hydrogeological Study of a Folded Karst Aquifer Under Intensive Exploitation: The Bedmar-Jódar Aquifer (Southern Spain) ............................................................... 351
Antonio González-Ramón, Sergio Martos-Rosillo, Ana Ruiz-Constán, Antonio Pedrera, Jesús Galindo-Zaldivar and Manuel Martínez-Martos

Examining the Functioning of a Multilayer Karst System: The Case of Toulon Springs (Dordogne, France) ................................................................. 363
Guillaume Lorette, Roland Lastennet, Alain Denis and Nicolas Peyraube
EuroKarst 2016, Neuchâtel
Advances in the Hydrogeology of Karst and Carbonate Reservoirs
Renard, P.; Bertrand, C. (Eds.)
2017, XII, 370 p. 208 illus., 193 illus. in color., Hardcover
ISBN: 978-3-319-45464-1