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Nota di contenuto	Speleothem Science; Contents; Preface; Acknowledgements; I: Scientific and geological context; CHAPTER 1: Introduction to speleothems and systems; 1.1 What is all the fuss about?; 1.1.1 What types of speleothem are useful for generating climate archives?; 1.1.2 Where do speleothems occur?; 1.1.3 How do they form?; 1.1.4 How do we date them?; 1.1.5 What are the proxies for past environments and climates?; 1.1.6 How do speleothems compare with other archives?; 1.1.7 What next for speleothem science?; 1.2 How is this book organized?; 1.3 Concepts and approaches of system science Box 1.1 Box models and feedback 1.4 The speleothem factory within the karst system; 1.4.1 Long-term change; 1.4.2 Annual-scale behaviour; 1.4.3 Decadal- to multi-millennial-scale changes; CHAPTER 2: Carbonate and karst cave geology; 2.1 Carbonates in the Earth system over geological time; Heat transferred from the rock; 2.2 Lithologies of carbonate host rocks; 2.2.1 Carbonate facies; 2.2.2 The architecture of carbonate host rocks: sequence stratigraphy; 2.2.3 Impure and geologically complex host rocks; 2.2.4 Carbonate porosity; 2.3 Carbonate diagenesis and eogenetic karst 2.3.1 Early diagenesis in marine waters and brines 2.3.2 Vadose

diagenetic processes; 2.3.3 Meteoric phreatic diagenesis; 2.3.4 Eogenetic karst development; 2.3.5 Burial diagenesis; 2.4 Speleogenesis in mesogenetic and telogenetic karst (with contributions from John Gunn and David J Lowe); 2.4.1 Chronologies of cave development; 2.4.2 Geometry of cave passages and systems; 2.4.3 Localization of caves: the inception horizon hypothesis; 2.4.4 Mesogenetic caves; 2.4.5 Modelling the development of conduits and networks; 2.5 Cave infilling; 2.5.1 Mechanisms of cave infill and their relative power  
2.5.2 Dating the infills  
2.5.3 Physical sedimentology; 2.5.4 Archaeological issues; 2.5.5 The long-term prognosis; 2.6 Conclusion;  
CHAPTER 3: Surface environments: climate, soil and vegetation; 3.1 The modern climate system; 3.1.1 The global energy budget; 3.1.2 Global patterns of temperature, rainfall and evapotranspiration; 3.1.3 The general circulation of the atmosphere; 3.1.4 Ocean circulation and land-ocean interactions; Box 3.1 Climate indices; Box 3.2 Back trajectory analysis; 3.2 Water isotopes in the atmosphere  
3.2.1 Variation in stable isotopes owing to evaporation and Rayleigh condensation  
3.2.2 Other factors responsible for variations in isotopic composition; 3.2.3 Isotopic variations in space within the annual cycle; 3.2.4 Inter-annual isotopic variations; 3.3 Soils of karst regions; 3.3.1 Processes of soil formation; 3.3.2 Soil development through time; 3.3.3 Concluding views on karst soils; 3.4 Vegetation of karst regions; 3.5 Synthesis: input to the incubator; II: Transfer processes in karst;  
CHAPTER 4: The speleothem incubator; 4.1 Introduction to speleophysiology

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## Sommario/riassunto

Speleothems (mineral deposits that formed in caves) are currently giving us some of the most exciting insights into environments and climates during the Pleistocene ice ages and the subsequent Holocene rise of civilizations. The book applies system science to Quaternary environments in a new and rigorous way and gives holistic explanations the relations between the properties of speleothems and the climatic and cave setting in which they are found. It is designed as the ideal companion to someone embarking on speleothem research and, since the underlying science is very broad, it will also be

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