

QUATERNARY DATING METHODS

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The Quaternary is the most recent major subdivision of the geological record, covering the last 2.5 million years or so of Earth history and extending to the present day. Over the course of the Quaternary, the earth's global climate system oscillated between glacial and interglacial modes. A reliable chronology is key to our understanding not only of the dramatic changes in the physical and biotic landscapes that resulted from these major climatic shifts, but also of the important human evolutionary and dispersal events that occurred during this period. *Quaternary Dating Methods* describes the different techniques that can be employed to establish a Quaternary timescale, and shows the wide range of contexts in which these can be applied.

The book begins with a review of the history of Quaternary dating from the early attempts based on biblical genealogies to recent developments involving radiometric methods. The basics of radioactivity and concepts of Quaternary stratigraphy are also introduced. Subsequent chapters cover the different dating techniques, beginning with those based on the radioactive decay of certain chemical elements, through the use of annually-banded records such as tree-rings and varves, to methods that enable materials either to be ranked in terms of relative order of antiquity or to be correlated using time-parallel marker horizons in different sedimentary sequences.

This book:

- Introduces each dating technique in a clear and straightforward manner, with a minimum of technical detail
- Discusses the strengths and weaknesses of each method
- Focuses on the practical aspects of dating, with specific examples that show the versatility of the different approaches
- Covers a broad field, including Quaternary Science, Earth Science and Archaeology

This book is essential reading for second and third-year undergraduates in Physical Geography, Environmental Science, Earth Science and Archaeology, and for students taking courses in Quaternary Studies, Geochronology, and Palaeoclimatology. It is equally important for professionals in the fields of Earth, Environmental and Archaeological Sciences, who need to know about the range of dating techniques that are available, and about their strengths, limitations and potential applications.

Cover design: Gary Thompson

Cover photographs: (upper) Bristlecone pines, the oldest living trees in the world, growing on the slopes of the White Mountains, eastern California, USA; (lower) terminal moraine in the Indus Valley near Leh, northwest India, which has been dated using cosmogenic nuclides to the penultimate glacial cycle (130,000-200,000 yrs ago).

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