

BOOK REVIEWS

NOFFKE, N. 2010 *Geobiology. Microbial Mats in Sandy Deposits from the Archaean Era to Today*. xii + 194pp. Springer. Price £90.00, US\$129.00 (HB). ISBN 978 3 642 12771 7.
doi:10.1017/S0016756810001032

Nora Noffke has produced an excellent text book covering a relatively recently developed field – the study of microbial mats in shallow water environments. Stimulated by the geobiological approach advocated by the Oldenburg/Wilhelmshaven group of Wolfgang Krumbein and Gisela Gerdes, Nora Noffke has taken the field to new depths through her in-depth investigations. She provides an excellent introduction that sets the scene for the concepts of geobiology and, more specifically, microbially-induced sedimentary structures (MISS). This is followed by an exhaustive analysis of the different types of MISS, their preservation in the geological record and their usefulness in palaeoenvironmental interpretations.

MISS apparently form in a particular ecological window – fine sandy sediments deposited in a shallow water environment subjected to a moderate hydraulic regime. Noffke provides a good analysis of the stages of formation of these photosynthetic microbial mats and their environmental influence. Her description of the processes leading to the preservation of MISS in the geological record is thorough, although she could have cited more recent literature with respect to the fossilisation of microorganisms. The section on how to search for and identify MISS in rocks will greatly help students of MISS.

Noffke concentrates on one particular example in the fossil record, the 2.9 billion-year-old MISS in the Pongola Group of South Africa, that she illustrates with useful photographs of similar modern structures. She claims that the MISS in the Pongola sediments were formed by cyanobacterial mats, similar to recent and modern MISS, thus making them the first known examples of cyanobacteria. The evidence for this is, however, tenuous and the purported images of fossil cyanobacteria are not convincing. But could MISS have been formed by anoxygenic photosynthesising microbial mats? Nevertheless, the very detailed descriptions she provides of MISS in the Pongola sands are very clear and didactic.

The book is well laid out and the text is clear and well-written, although the font is rather small. Noffke has a fluid style that is a pleasure to read. The various aspects of MISS, both modern and ancient are well illustrated. There is slight repetition between the extensive introduction and the exhaustive descriptions but I recommend it to both the general reader, as a good introduction to MISS, and to the dedicated student of MISS in the geological record.

Frances Westall
Centre de Biophysique Moléculaire, CNRS, France

HAVSKOV, J. & OTTEMÖLLER, L. 2010. *Routine Data Processing in Earthquake Seismology*. xi + 347pp. Springer. Price £81.00, US \$120.00 (HB). ISBN 978 90 481 8696 9.
doi:10.1017/S0016756811000094

A common epithet addressed to critics of some topic or person or work is ‘the lowest form of life.’ Clearly, critical activity is both influential and hazardous. On this account,

plus pressure of work, I was leery of the invitation to review the new book by Jens Havskov and Lars Ottemöller. However, my principal research activity involves earthquake seismology, so, in the hopes of finding a book useful for training students in basic analysis skills, I gulped, winnowed my work schedule and said, ‘OK’.

The book has a clear target audience: the routine analysts who manually process seismic network data. Their tasks are to determine locations, magnitudes, focal mechanisms and attenuation characteristics. The book contains some theoretical precursors, chapters devoted to each of these meat-and-potatoes topics, and some final ones on miscellaneous topics: array techniques and network operations. The approach could be characterized as suitably utilitarian.

A strength of the book is the assumption that operators will use one of the existing seismic data analysis systems. The authors have a fairly wide knowledge of present systems and data recording formats and present some useful critiques of them. The discussion of particular data recording formats is detailed and reveals the many considerations going into their definition. The final book chapter contains a less detailed summary of different processing system capabilities. Inevitably, both are useful, albeit imperfect representations of reality needing correction in later editions. (One ill-designed feature of SEED data records not included in the discussion: the merely heuristic way to determine data endianness, blockette 1000 notwithstanding.)

A weakness of the book is its non-uniform level of suitable detail. I yearn for a pithy and accurate discussion of the practical aspects of instrument response to which to direct all those e-mailed questions about what to do with poles and zeroes. The book’s treatment includes two separate discussions (and notations) for analogue instrument response (free period and damping) and transfer functions (poles and zeroes). They have slightly different intents: one is instrument selection at the network design stage, while the other is handling instrument response. Only the latter is an analyst’s (and a student’s) concern. Frequency-amplitude-phase is mentioned but not discussed, and the units (f or ω convention) are unreported for various pole-zero responses given for the key instrument types to calculate magnitudes. A final example is the table of phases in the basic seismology chapter, which conflates a (scarily large) ray nomenclature list with amplitude measurement types.

If I were handed this book as a new employee of a seismic observatory, after reading it I’d know what the wiggles represented and what underpins the analyses I’d be doing with the software I’d be trained to use. As a research group leader, I’d recommend the chapters on signal processing and data formats for background and as an introduction to the topic. As a student text? No.

George Helffrich
University of Bristol

ELEWA, A. T. M. (ed.) 2010. *Morphometrics for Nonmorphometricians*. Lecture Notes in Earth Sciences, vol. 124. xii + 367pp. Springer-Verlag. Price £117.00, US\$169.00 (HB). ISBN 978 3 540 95852 9.
doi:10.1017/S0016756811000045

Richard Strauss’ forward to this collection explains the volume’s aim as being to ‘present the various aspects of