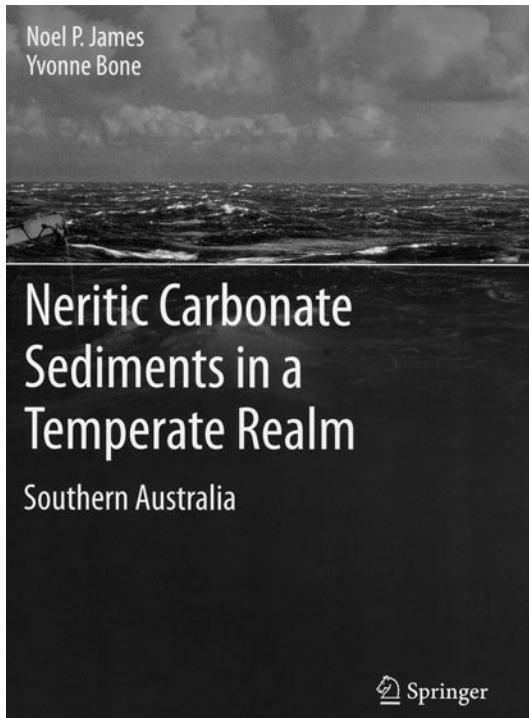


**Neritic carbonate sediments in a temperate realm – southern Australia**, by Noel P. James & Yvonne Bone, 2011. Springer Science + Business Media V.B. Hardbound, 254 pages. Price EUR 106,95. ISBN 978-90-481-9288-5.



Carbonate sediments are usually interpreted as deposits of a tropical, warm-water environment, and they have been viewed as indicators of such conditions in numerous palaeoclimatic reconstructions. It is common knowledge that they accumulate also in cool- and cold-water environments, but this aspect is usually treated marginally in popular sedimentological textbooks. The book under review here efficiently fills this information gap.

The southern shelf of Australia is the largest area in the world of cool-water carbonate deposition. The book's authors and their numerous colleagues investigated this region during the last twenty years and the book presents the results of these investigations. In this textbook, the contemporaneous history of the shelf is presented against the background of the geological history of Australia. Also described are the climatic, meteorological and oceanographical conditions of sedimentation. This information, perfectly illustrated by numerous maps and schemes, is included in the first three chapters. The value of such data is highly significant, especially in the context of the large amount of

older sediments that have been redeposited in the recent sedimentary environment ('palimpsest sedimentation').

The book is perfectly illustrated. James is known as the author of numerous handbooks; all of them are characterised by clear, synthetic descriptions and perfect graphic schemes and photos. This is also the case here. Brief summaries of the major points after each chapter ('Synopsis') are an excellent idea; together with complete references and index, they simplify the use of the book.

In the succeeding chapter, a detailed description of the biotic components of sediments is presented. Especially exhaustive is the characterisation of calcareous algae and bryozoans, which have been discussed more extensively than other invertebrates, because they are the dominating sediment component. In particular, the 10-page thick chapter on bryozoan morphology could be treated as an exceptionally complete compendium of knowledge on this group of invertebrates. Especially useful is the simplified classification table, which enables discrimination of genera within this group during fieldwork, even by investigators who are not professional biologists. The preparation of such schemes for personal purposes would require long-term specialistic biological studies.

Although the basic subject of the book are neritic deposits, Chapter 5 contains a consistent description of the deposition in marginal marine environments. It allows to understand the neritic environment in the context of the entire shelf, including its shallowest zones.

Chapter 6 is the most important and innovative part of the book, determining its significance due to the classification of neritic facies. Generally, 23 facies are distinguished, which are grouped into five megafacies. The primary factor which enables discrimination of these facies is the proportion of recent and relict components (grains reworked from older deposits). A secondary factor is the content of bioclastic grains. This methodology is analogous to the

typical procedure in the microfacies analysis of carbonate rocks. The classification of facies is presented in tables, and each definition is extended and commented in short, more analytical sections. Each facies is perfectly illustrated through numerous photos.

Reading this chapter will probably give the impression that the discrimination of facies is too detailed, and that some of them are very alike. This reservation disappears, however, after acquaintance of the next chapter, where the facies are attributed to particular zones of sedimentation. These zones are distinguished on a slightly arbitrary basis (water depth), but they also have a morphological expression. Four general zones are distinguished; among them it is possible to recognise 13 subzones. It appears that nearly all facies have an unequivocal sedimentary interpretation in the context of shelf subdivision. It seems therefore that the discrimination of facies has an interpretative value, which is most important for the carbonate sedimentologist.

The following three chapters are dedicated to the characterisation of the geographical distribution of specific facies in three broadly defined regions of the Australian shelf. Numerous maps and cross-sections reveal the enormous amount of work put into the investigation of facies and they illustrate the facies differentiation. With regard to the great extent of the southern Australian shelf (thousands of kilometres), this cartographical picture may only be treated as an approximation of the real facies arrangement.

The methodology of investigation described in the book (bottom material was obtained

usually using a pipe dredge or beam trawl) delimited the number of data connected with diagenetic processes. This chapter is relatively inconspicuous, but some remarks, for example those concerning syndepositional dissolution, are very interesting.

The last chapter constitutes some kind of summary of all previous chapters. This final summary seems unnecessary, however, in the context of the summaries after each chapter, but probably some readers who would like to find a short description of the entire book will be satisfied. An important statement, which is underlined here, is the discussion of the relationship between shelf sedimentation and climate changes, which imply changes of the sea level.

In the final part of the book, the authors write that the application of fundamental concepts of modern cool-water carbonate deposition to the rock record is one of the current challenges of carbonate sedimentology. It is reasonable to agree with this sentence and in this context examples of the analysis of older rock successions would be favoured here. Comparison of three lithotype examples from Oligocene, Permian and Carboniferous successions (last figure of the book) barely touches the problem.

In summary, this excellent textbook can without doubt be recommended to all libraries and to students and geologists who investigate carbonate successions.

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