

Deep-Water Contourite Systems:
Modern Drifts and Ancient Series, Seismic and Sedimentary Characteristics

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Deep-Water Contourite Systems: Modern Drifts and Ancient Series, Seismic and Sedimentary Characteristics

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Preface

Contourites are an extremely significant but still relatively little known group of sediments that represent a widespread component of deep ocean basins and their margins. They are coming to play an increasingly critical role in paleoceanographic studies, in that they hold an important key to the decoding of paleocirculation records encapsulated in oceanic drifts and corresponding hiatuses. These are closely linked to past climatic change. Furthermore, they are an important part of the spectrum of deposits that confront the oil industry as exploration moves into progressively greater water depths. Thick units of sandy contourites together with bottom-current reworked sandy turbidites are potentially important as hydrocarbon reservoirs where suitably buried in association with source rocks. The nature and effects of bottom currents on margin stability, the wear and tear of submarine cables, and on subsea engineering projects still need to be carefully evaluated.

However, because they are complex deposits with very subtle characteristics that are not easily recognized and decoded, they have been surrounded by controversy since they were first recognised in the early 1960s. Their occurrence and recognition in ancient series now exposed on land or in deeply buried successions of oil exploration boreholes has become particularly contentious in recent years.

In order to foster greater international dialogue on these issues, to help resolve some of the more controversial aspects, and to stimulate more focused research, an *International Geological Correlation Programme* initiative (Project 432) on *Bottom Currents, Contourites and Paleocirculation* was launched in 1998. One of the aims of this project was to publish a compendium of examples of contourite systems, both modern and ancient, and

this volume is the result. Our task as editors has been facilitated by a series of IGCP432 workshop meetings, some of which have resulted in separate publications – *Deep-Water Sedimentary Systems: New Models for the 21st Century* (Stow & Mayall, eds., 2000, *Marine & Petroleum Geology*, v17); *Recognition and Interpretation of Deep-Water Sediment Waves* (Wynn & Stow, eds., 2002, *Marine Geology*); and *Seismic Expression of Contourites and Related Deposits* (Rebesco & Stow, eds., 2003, *Marine Geophysical Researches*, in press).

This Memoir includes 30 papers involving over 75 key scientists from around the world. Following an introductory state-of-the-art paper by the editors, there are 25 separate case studies on modern drifts and four on ancient contourite series. As far as possible, we have tried to ensure that each of these contributions highlights the specific geological and oceanographic setting, bathymetry, physiographic and stratigraphic context, seismic attributes and sedimentary characteristics of the contourite system in question. Case studies range from some of the well-documented North Atlantic drifts to those much less known from the Mediterranean, from important syntheses of the Gulf of Cadiz and Vema Channel Gateway, to completely new data on South Atlantic, Pacific and Antarctic margin systems. The four papers on ancient series – from Japan, China and Cyprus – serve to emphasize the complex nature and subtle characteristics of contourites, which make their identification such a scientific challenge.

This volume is dedicated to the memory of Charley Hollister (1936–1999), one of the founding fathers and pioneers of contourite research. Charley was an enthusiastic supporter of IGCP 432, and had agreed to write the *Preface* for this Memoir before his untimely death in 1999.