

General Theme 1

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Microbial carbonates occur in shallow and deep marine environments, in cave, spring and seep deposits, and lakes. They can record changes in biological and chemical conditions in Earth surface environments over billions of years. Despite decades of research, numerous gaps in understanding remain. What are the earliest microbial carbonates, how did they form, and what factors were most important in determining changes over successive eons? What are the similarities and differences between shallow marine microbial carbonates and those of methane seeps and terrestrial springs and lakes? How well do present day examples reflect those of the past? How can we improve description and categorization of microbial carbonate deposits and fabrics, and better explore the connections between the sedimentology, geochemistry, and microbiology of these deposits to confidently relate processes and products? These and many other outstanding questions stimulate us to think more deeply about processes of carbonate precipitation near the biotic-abiotic interface, abrupt as well long-term environmental controls, and interactions with non-microbial organisms. Many parts of Earth's rich ancient marine microbial carbonate record remain poorly explored. At the same time, non-marine carbonates provide diverse and accessible additional sources of information to link fabrics and processes, and elucidate abiotic influences. This session on modern and ancient microbial carbonates focuses on the full range of current developments in this complex, rapidly advancing and important field of sedimentology at the interface between carbonate precipitation and microbial processes. It provides a forum for new and established researchers to share results, discuss questions, gain insight, and develop collaborative links.