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LIVRE des RÉSUMÉS

FACIES AND CLIMATE/ENVIRONMENTAL CHANGES RECORDED ON A CARBONATE RAMP: A SEDIMENTOLOGICAL AND GEOCHEMICAL APPROACH ON MIDDLE JURASSIC CARBONATES (PARIS BASIN, FRANCE)

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A detailed sedimentological, facies analysis, geochemical and mineralogical study is made of the Middle Jurassic limestones of the Paris Basin. The main objectives of this paper are to document and explain the main facies changes in these Middle Jurassic deposits of the eastern Paris Basin. An oxygen isotopic study is carried out to better constrain the palaeotemperature curve of this period and to test the possible influence of climatic and seawater-chemistry changes on biosedimentary systems, and especially on the facies record. Clay mineral assemblages are also analysed to evaluate and specify the possible climatic control of their distribution in this part of the Paris Basin. Ten depositional sequences are identified in carbonate formations of the eastern part of the Paris Basin. They reflect 'third-order' sequences relative to sea-level variations. The Middle Jurassic formations consist of 18 different facies attributed to five major facies associations characterizing distinct depositional environments. Three periods can be distinguished during the Early Bajocian - Early Callovian interval which are characterized by distinct depositional environments and carbonate producers. (1) A large intracratonic carbonate environment with coral reefs and skeletal facies is typical of the Early Bajocian. A major facies change occurred at the Early/Late Bajocian transition with a shift from crinoid- and coral-rich facies to ooid-rich facies. (2) During the Late Bajocian, a southward-dipping ooid ramp with successive progradational trends was emplaced. During the Bathonian, the ooid ramp evolved into a rimmed ramp with a large lagoonal inner ramp and ooid shoals on the mid-ramp. (3) At the Bathonian/Callovian boundary, a second major change occurred with the lagoonal facies being superseded by an ooid-skeletal ramp associated with a waning of carbonate productivity (retrogradational trend). The geochemical study versus palaeotemperature reconstruction allows us to refine the existing sea surface palaeotemperature pattern. This is the first time that a cooling from the latest Early Bajocian to the Late Bajocian and a subsequent warming from the earliest Callovian to the Early/Middle Callovian transition have been described using a proxy of sea surface temperatures. Together with $\delta^{13}C$, mineralogical data and a compilation of palaeotemperature data from the Western Tethys, our new palaeotemperature values suggest a palaeo-climatic/palaeo-environmental control of facies in this shallow carbonate ramp environment.