Exploring Neogene Carbonate platforms. When sea-level isn’t enough to explain changes in depositional and diagenetic styles.

During the Neogene, several climatic, oceanographic and biological events occurred, which had a significant impact on carbonate production and sedimentation. This research attempts to reveal the effect of allogenic factors different than sea-level on Neogene carbonate platforms. We explore two examples, 1) Bonaire island, Dutch Caribbean and Kardiva Platform, Maldives, Indian Ocean, to study those processes. First, The Neogene carbonate succession on the island of Bonaire shows complex geometries associated with a sequence of depositional and erosional events which reflects the history of this isolated platform and the interaction between tectonics and oceanographic processes. Second, The Maldives archipelago is another example for understanding the dynamics of isolated carbonate platforms. Data from the IODP Expedition 359 reveals the abrupt onset of the South Asian Moonsoon and the subsequence increase of the bottom current circulation that promote changes on sedimentation pattern on the platform. In addition, diagenetic processes such as Neogene dolomitization has received considerable attention since, it shows significant abundance leading to the hypothesis of possible synchronous events. But, after compilation of substantial published data, the evidence of the dolomitization events seems to be present, in spite of, the explanations are controversial we present a new hypothesis to clarify their origin. In conclusion, the study of Neogene carbonate platforms reveals a series of new processes which can provide much more suitable explanation of changes in depositional and diagenetic styles. Therefore, we can better understand the response of the carbonate deposits to environmental changes through time.

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