

## **A New Method to Quantify Carbonate Accumulation: Application to the Ziz Section (Upper Cenomanian – Turonian, Preafrican Trough, Morocco)**

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The atmospheric concentration of CO<sub>2</sub> during geological times is difficult to estimate. It was shown that there was a close relationship between that concentration and the quantity of carbonate produced in oceanic environment.

Thus, an indirect mean to evaluate CO<sub>2</sub> contents is to estimate precisely, on a regional scale, the quantity of carbonate accumulated, in order to better constrain dynamic carbon cycle models.

To carry out this regional valuation, it is first necessary to develop a rigorous quantification method. From the study of the carbonate accumulation on an outcrop, we propose a new quantification method, which takes into account the diagenetic transformations undergone by the rock.

We developed this method from the study of the Upper Cenomanian-Turonian series outcropping near the Ziz river, in Morocco. This method evaluates and quantifies the various phases of late dissolution and cementing which affected the rock since its formation, modifying the CaCO<sub>3</sub> concentrations. We could estimate the percentage of primary porosity and thus quantify the real carbonate content accumulated on the studied area, during the considered period.

The accumulation rate of carbonate sediments is estimated at 18.94 m/Ma for the Upper Cenomanian and at 2.51 m/Ma for the Turonian.

We show that the quantification methods suggested in the literature over-estimate either of 10% (calcimetry method) or of 4% (calcimetry and porosimetry method) the accumulation rate of carbonate sediments.

Key words: Carbonate accumulation rates of, Method, Upper Cenomanian-Turonian, Preafrican Trough, Morocco.