

**Geochemical steps of carbonate diagenesis for Modern to Miocene shallow water carbonates : examples from south Pacific High Carbonate Islands and Andros mangrove deposits, Bahamas.**

**BOURROUILH-LE JAN F. G., Laboratoire CIBAMAR, Université Bordeaux 1, Avenue des Facultés, F-33405 Talence Cedex, FRANCE**

Modern tropical shallow water carbonates are mainly composed of 60 to 99 percents aragonite, rich in 6 000 to 8 000 ppm of Sr and of 40 to 1 percent high Mg calcite rich in Mg.

In consequences, Sr and Mg contents of carbonate sediments have been analyzed in different reef and mangrove environments and also in different shallow carbonate facies of identified ages.

Carbonate diagenesis can be traced by the Sr and Mg contents and emersions or submersions of sediments or rocks can be demonstrated, i.e. sea level variations.

On one hand, Sr content in carbonate sediments varies according to the surrounding fluid variations when marine aragonite passes from its marine origin environment - to fresh water lagoon (i.e. Clipperton atoll, E Pacific), - or to highly salted lagoon (Mataïva, Tuamotu) - to an emerged position back from mid-Holocene, - or back from Pleistocene, Pliocene or Miocene (Loyalty Is.). Sr is slowly decreasing with decreasing aragonite content but can still be present in a totally calcitized sample.

As for Mg content, two types of dolomitizations can be distinguished, a bahamian supratidal hurricane influenced dolomitization and phreatic dolomitization.

Sr and Mg content are excellent tools to control and define the different paths followed by carbonate diagenesis, calcitization or dolomitization through emersion or submersions processes.