

Early diagenesis and preservation of organic matter in anoxic aquatic environments : lagoon of Bizerte - Tunisia

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The main objective of this work was to study the early diagenesis of organic matter in recent aquatic sediments (lagoon of Bizerte). The approach was based on the study of 22 samples collected from a core length of 44 cm.

The lithological study (macroscopic and microscopic observation) performed on the samples showed that the core was composed of sandy detrital, heterogeneous level in the upper part to a heterogeneous clay in the bottom. The mineralogical study revealed that the basal part of the core (34-44 cm) is a carbonated mud.

The geochemical study showed that the sandy sediment are marked by low values of TOC (1.38% - 2.22%) and N (0.09% - 0.24%). However, sediments rich in carbonate mud, presents high values of TOC (1.54% - 5.84%) and N (0.71% - 0.95%). The C/N ratios revealed that organic matter is clearly of marine origin with light continental contributions and a predominance of marine origin towards the base of the core.

The composition of humic compounds allow the distinction of two stage. The first stage characterized by a bottom marine level which presents 93% of TOC content in humic substances. These results proved that this level, rich in organic matter, is characterized by anaerobic conditions. This environment preserves humic substances (HS) because of the slow degradation kinetics of organic matter by anaerobic process. While, the second stage characterized by composite origin (marine and continental) surface level had relatively poor humic substances wich represented about 20% of TOC. This level seems to reflect a tendency to aerobic condition that promotes the degradation of organic matter.