

Characterization of the organic matter mineralisation in paralic aquatic system in the southern Mediterranean coast (the Northeast of Tunisia)

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This research aimed to evaluate the sedimentary organic matter in an aquatic suboxic system: the lagoon of Bizerte through a qualitative and a quantitative characterization of various samples collected in the Northern (Menzel Abderrahmen), the Southern (Menzel Bourguiba) and the East (Menzel Jemil) of the lagoon.

Investigation focuses on mineralogical analysis (DRX), bulk analysis (the total organic carbon (TOC), the total nitrogen (TN), the total Phosphor (TP) and the Sulfur (S) analysis). humic substances (HS) were extracted and quantified (TOC) to estimate the degree of organic matter mineralisation.

The lithological and the mineralogical investigations show the dominance of sandy detrital sediments rich in fragments of shell and vegetables. The northern zone of the lagoon reveals a heterogeneous level characterized by the presence of a carbonated mud.

We note a variation of the contents of TOC from 0,70% in Menzel Jemil to 1,65% in Menzel Bourguiba. This is accompanied by a rise of the contents in TN which ranged from 0,02 % in the East to 0,29 % in the Southern of the lagoon. C/N ratio showed that the OM is essentially issued from planctonic origin with light continental contributions. The TP contents of the East and the North of the lagoon records 0,033% and 0,049% respectively. C/P ratio shows low values which indicate that a part of the phosphor is inorganic. The contents S ranged from 19 to 53 mg S⁻²/KgMs.

The study of the TOC contained in humic substances (HS) in the Northeast of the lagoon shows that the contents ranged from 11,66 % to 92,31 %. These levels reveal the increase of the percentages of the HS with depth. This is explained by the fast insolubilisation of HS were transformed in Humic insoluble. These results seem to reflect the installation of aerobic conditions which promotes the degradation of the OM.