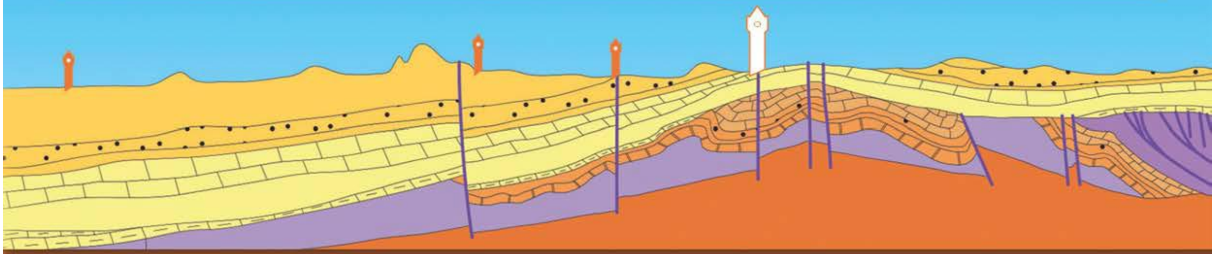
RST Réunion des Sciences de la Terre

SGF Société Géologique de France
Des géologues au service de la société

LILLE 2018
22-26 OCTOBRE



26e Réunion des Sciences de la Terre | 26th Earth Sciences Meeting

Livre des résumés

Abstracts

www.rst-sgf.fr

Avec le soutien de :
Région Hauts-de-France
MEL Métropole

Université de Lille

Sandstone and carbonate concretions in the middle Miocene rocks in Tenes area (Lower Chelif Basin, Nord-West Algeria): anatomy and origin.

AbdelkrimNemra*[1], Abdelkader OualiMehadji [1], AxelMunnecke [2], Salim Belkhedim *[3], Radouane Sadji[3], Lahcene Belkebir [1]

1 Laboratoire de Paléontologie Stratigraphie et Paléoenvironnement, Université d'Oran, 31000, Algeria
2 GeoZentrum Nordbayern, Fachgruppe Paläoumwelt, Loewenichstraße 28, D-91054 Erlangen, Allemagne
3 Laboratoire de Géodynamique des Bassins et Bilan Sédimentaire, Bir El Djir – Algérie

Study of carbonate concretions is mostly employed to understand the circulation, the migration and the evolution of fluids in their environments. The middle Miocene rocks of Tenes area, situated in the North-East of Lower Chelif Basin, in the North-West of Algeria, expose locally two types of concretions newly investigated: calcite-cemented sandstone concretions "CCSC", and carbonate concretions "CC". In this work, these concretions have been studied in two easily accessible localities: Ounsour Anhas and Vieux Tenes outcrops. The goal is to understand the overriding mechanisms responsible the formation of these carbonate concretions.

Calcite-cemented sandstone concretions "CCSC" are recorded in very thick sandstones (sand- stones unit). According to their morphology, they can be distinguished into two types: (i) nodular concretion (spheroidal ellipsoidal, and irregular nodule shape), and (ii) stratiform concretions. These "CCSC" are made up mainly by quartz, and green glauconite grains embedded within microsparry calcite cement. The biogenic contents are represented by dissolved shell fragments and microfauna (essentially foraminifera). Isotopic analysis of "CCSC" show depleted values of δ18O (-10,71 to -9,81 ‰) and slightly depleted values of δ13C (-2,32 to -3,03). These results reflect meteoric pore water influence during concretion growth in diagenetic conditions.

Carbonate concretions "CC" were observed hosted in the marls (marls unit). They exhibit three types: nodular concretions (spheroidal ellipsoidal, disk and irregular nodule shape), stratiform concretions and tubular concretions. Most of tubular concretions are characterized by central conduit. These "CC" are associated with the synsedimentary instability features (synsedimentary faults, slumps) and normal faults, which are well pronounced in Ounsour Anhas outcrop.

They consist of silt-sized and very fine-sand sized grains of quartz interspersed within cemented micritic matrix. The positive to negative δ13C values (-9.82 to +5.85‰ PDB) are interpreted as the result of the balance between the 13C-enriched (residual CO2 from methanogenesis) and 13C-depleted (microbial organic-matter decomposition) added to the pore solutions in the active methanogenesis zone. The low enriched δ18O values in these "CC" indicate that carbonates have been mainly precipitated in low to moderately low temperature normal marine pore fluids whereas the low depleted δ18O values reflect relatively higher temperatures or periods of gas hydrate formation. Consequently, the "CC" were formed by the precipitation of carbonate micrite cement within the host marls at shallow burial depth in the active methanogenesis zone.

Mots-Clés: Calcite, cemented sandstone concretions, meteoric pore water, carbonate concretions, synsedimentary instability, methanogenesis zone, middle Miocene, Algeria.

*Intervenant