

# Stratigraphy of the Upper Cretaceous–Lower Paleogene Successions at Esh El-Mellaha Area, Gulf of Suez, Egypt: New contribution

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## Abstract

Detailed field and lithostratigraphic studies are carried out on the Upper Cretaceous–Lower Paleogene section at Esh-Mellaha area, Gulf of Suiz, Egypt. The section is located at Wadi Dib. The fieldwork led to recognize four lithostratigraphic units, which are arranged in stratigraphic order as follow: the Sudr, Dib, Esna and Thebes. The Sudr Formations is here differentiated into two distinctive informal new rock units, chalky bedded limestone unit (at base) and calcareous shale unit (at top). The Dib Formation is here proposed for the first time as a new rock unit. It consists of carbonate facies, bioclastic limestone embracing reworked gravelly and pebbly extra-clasts and broken exhumed mega-fossils (e.g. gastropods and bivalves). This formation is equivalent to the upper part of the Dakhla Formation. Chronostratigraphically, it is assigned to the Lower Paleocene (Danian Stage). Chronostratigraphically, the Sudr Formation is here assigned to the Maastrichtian Stage according to the occurrence of *Gansserina ganssei* nad *Plummerita hantkeninoides* index fossils. The Dib Formation is assigned to the Lower Paleocene (Danian Stage) according to the occurrence of *Praemurica uncinata* and *Morozovella angulata* index fossils. The Esna and Thebes formations are assigned to the Lower Eocene (Ypresian Stage) according to the occurrence of *Acarinina sabyaensis* and *Morozovella formosa* index fossils. The Dib Formation is bounded by two regional unconformities surfaces (erosional surfaces) due to the impact of two tectonic events (I, II and III) which were related to the Syrian Arc Orogeny. The Tectonic Event I was recorded at the Sudr/Dib formation boundary and concides with the Cretaceous/Paleocene (K/Pg) boundary. The Tectonic Event II was recorded at the Dib/Esna formation boundary nearly at the end of the Danian age. This event is characterized by the occurrences of paleosol zone and led to the missing of Tarawan

Formation. The tectonic Event III is evidenced by the missing of the upper part of Esna Formation (Abu Had Member).

### الملخص العربي

طباقية تتابع الكريتاوى العلوى-الباليوجين السفلى بمنطقة عش الملاحة , خليج السويس, مصر: اضافة جديدة

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هذا البحث يقوم على دراسات تكاملية حقلية وليثوستراتيغرافية عى تتابعات الكريتاوى العلوى-الباليوجين السفلى بوادى الدب بمنطقة عش الملاحة, خليج السويس, مصر. وبناءا على المشاهدات الحقلية والليثوستراتيغرافية تم تقسيم التتابع الى اربع وحدات صخرية هى من الأقدم الى الأحدث: مكونات الصدر والدب (جديد) والأسنا والطيبة. وقد تم تقسيم مكون الصدر الى وحدتين صخريتين بناءا على المشاهدات الحقلية والصفات الليثولوجية informal هما: **upper calcareous shale** و **lower bedded argillaceous limestone unit**. ايضا تم تعريف لمكون جديد تم تسميته بمكون الدب (Dib Fm.) بناءا على المكان الجغرافى للمكون وهو وادى الدب. وهذا المكون يتكون من **Bioclastic limestone** يحتوى على **gravels and pebbles** منقولة من خارج الحوض الترسيبى. مكون الدب يعلو مكون الصدر ويسفل مكون الأسنا بعلاقة عدم تطابق نتيجة لأحداث تكتونية اثناء الترسيب تنتمى ل **Syrian Arc Orogeny**.