

Preliminary results of ¹⁴C dating of tidal deposits and oolitic aeolianites, Dubai - Abu Dhabi: Tracking Holocene coastline changes

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Sediment deposition during the Late Pleistocene to Holocene in the UAE coastal and near coastal areas records complex patterns of interplay between the terrestrial and marine environments. The major controls are sealevel rise and fall (eustatic effects of climate change), neotectonics (subsidence and uplift), and sediment supply and redistribution. These variable factors have resulted in sequence stratigraphic termination and modern parasequences. Features representing these events include progradation of alluvial and aeolian clastics, up to the beginning of the Holocene, followed by retrogression, with deposition of marine sequences and formation of coastal sabkha at different sealevel rise periods during the Holocene. The precise age estimation of sequence stratigraphic developments is typically challenging. In this study, ¹⁴C dating, together with fossil assemblage identification and interpretation of sedimentary structures, were used to identify late Pleistocene to Holocene aeolianites and tidal deposits. The aeolianites were deposited during the last glacial maximum when sealevel was at its lowest stand. The aeolianites are composed of transported oolites, microfossils, macrofossil and algal fragments and minor quartz-dominant mineral grains. The ¹⁴C isotopic dating of the oolites and shell particles from the aeolianites gave ages as great as 28,000 years. The tidal retrograde facies is characterized by bedded carbonate evaporites hosting a variety of macrofossils such as *Cerithium sp.*, *Cardium sp.*, and *Donax sp.* The ¹⁴C dates obtained for these evaporite sediments ranged from 2,000 to 4,000 years. The data provide evidence of paleoshoreline migration inland at variable rates during the Holocene.

Biography

Osman Abdelghany has completed his PhD at the age of 34 years from the Institute of Paleontology, Faculty of Natural Sciences, Vienna University, Austria. He is a faculty member of the Department of Geology at the United Arab Emirates University. He is particularly interested in the stratigraphy and micropaleontology of the Western and Eastern Deserts of Egypt, and the southern Sinai, and the United Arab Emirates. He has published numerous papers on Cretaceous and Tertiary foraminifera in international journals.

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