

## **Recent benthic foraminifera assemblages from mangrove swamp and channels of Abu Dhabi (UAE)**

Flavia Fiorini (1), Stephen W. Lokier (1), Weaam A.S. Al Odeh (1), Andreas Paul (1), Jianfeng Song (1), Mark Freeman (2), and Françoise Michel (2)

(1) The Petroleum Institute, Petroleum Geosciences, P.O. Box 2533, Abu Dhabi, United Arab Emirates (ffiorini@pi.ac.ae), (2) Noukhada Adventure Company, P. O. Box 73373, Abu Dhabi, UAE

Zonation of Recent mangrove environments can be defined using benthic foraminifera, however, little is known about foraminifera from mangrove environments of the Persian/Arabian Gulf. The objective of this study is to produce a detailed micropaleontological and sedimentological analysis to identify foraminiferal associations from mangrove swamps and channels located on the eastern side of Abu Dhabi Island (UAE).

Detailed sediment sampling collection in mangal environments of Eastern Abu Dhabi was carried out to assess the distribution of benthic foraminifera in different sedimentary facies in the mangal and in the surrounding natural environments of the upper and lower intertidal area (mud flats and channels). A 100 m transect across a natural channel in a mangal on the eastern side of Abu Dhabi Island was sampled in detail for sedimentological and foraminiferal analysis. Forty-seven samples were collected at 2 meter intervals along the transect in a number of different sedimentary facies including; fine sediment in areas exposed during low tide and close to mangrove trees (*Avicennia marina*), fine sediment rich in leaf material, coarse sediment in channels, and coarse sediments with a shell lag.

At each sampling location environmental parameters were recorded, including water depth, salinity, temperature and pH. Samples collected for foraminiferal analysis were stained in rose Bengal in order to identify living specimens.

Samples collected on the mud flat at the margin of the channel show a living foraminiferal assemblage characterised by abundant foraminifera belonging to the genera *Ammonia*, *Elphidium*, *Criboelphidium*, *Triloculina*, *Quinqueloculina*, *Sigmoilinita*, *Spiroloculina*, *Peneroplis* and *Spirolina*. Samples collected in the lower (wet) intertidal area close to *Avicennia marina* roots, presented a low-diversity assemblage mostly comprising small-sized opportunistic foraminifera of the genera *Ammonia* and *Criboelphidium* along with rare *Triloculina* and *Quinqueloculina*. Samples from the upper intertidal areas (often dry) close to *Avicennia marina* roots and leaf material, produced an assemblage exclusively composed of small-sized opportunistic *Ammonia* and *Criboelphidium*, together with abundant specimens of agglutinated foraminifera belonging to the genera *Trochammina*. The samples collected in the higher energy settings (channels) were rich in foraminiferal tests, rare living forms were found in the coarser grained facies. The more abundant genera of foraminifera in these facies were miliolids belonging to the genera *Triloculina*, *Quinqueloculina*, *Sigmoilina* and epiphytic larger benthic foraminifera belonging to the genera *Peneroplis*, *Spirolina* and *Sorites*.

The distribution of Recent benthic foraminifera from the mangrove environments of the Abu Dhabi region present a powerful tool for constructing a zonation of marine coastline environments and can be employed as a modern analogue for interpreting the depositional environment of ancient coastline sediments.