# Middle Devonian miospore assemblage biozones in Sahara synclines (Algeria): geological implication and evidence for stages boundaries

## Mohamed O. Kermandji

University of Frère Mentouri Constantine 1, Department of Biology, Faculty of Nature and Life, 25000 Constantine, Algeria; omeedmohamed1@gmail.com

## Adnan M. Hassan Kermandji

University of Frère Mentouri Constantine 1, Department of Biology and Plant Ecology, Faculty of Nature and Life, 25000 Constantine, Algeria; omeedomid@gmail.com

## F. Khelifi Touhami

University of Frère Mentouri Constantine 1, Department of Biology, Faculty of Nature and Life, 25000 Constantine, Algeria; Khelifi_t_fatima@yahoo.com

The classic exposed Devonian sedimentary sequences of Oued Saoura in the western Sahara (Algeria) and the Devonian succession in the Steh borehole of the eastern Sahara syncline (Algeria) were studied. The results showed that most palynomorphs occurred in grey to dark grey clayey siltstone and very fine argillaceous sandstone layers. These fossils were mainly mature to highly mature and poorly preserved. Samples from the Steh borehole were moderately to well preserved. The assemblages contained associations of miospores, tetrads, plant remains (cuticles, tissues, and tubular structures), and a few acritarch individuals. The miospore assemblages were identified and keyed into previously described palynostratigraphic miospore assemblage biozones based on deep wells from the Tidikelt Plateau, central Sahara and Oued Saoura outcrops (Hassan Kermandji *et al.*, 2008, 2009) and from the Old Red Sandstone Continent and adjacent regions (Richardson & McGregor, 1986) and from the marine Devonian of the Ardenne-Rhenish regions (Streel *et al.*, 1987).

The biostratigraphic data confirm that the basal strata of the Teferguenite Formation that are exposed at Mongar Debad are of Eifelian age. Miospore taxa in the sequence above the basal strata of the same formation indicate a Givetian age.

The diagnostic elements of the miospore assemblages of Middle Devonian age in Algeria are similar to contemporaneous miospore assemblages from Libya, Tunis, and Saudi Arabia, which implies a correlation within northern Gondwanan and possibly the Northern Hemisphere. The miospore taxa were able to delineate the boundary between Eifelian and Givetian strata.

### References

Kermandji, A.M.H., Kowalski, W.M. & Touhami, F.K. 2008. Miospore stratigraphy of Lower and early Middle Devonian deposits from Tidikelt, Central Sahara, Algeria. *Geobios*, **41**(2), 227–251.

Kermandji, A.H., Touhami, F.K., Kowalski, W.M., Abbés, S.B., Boularak, M., Chabour, N., Laifa, E.L. & Hannachi, H.B. 2009. Stratigraphy of the Lower Devonian of Tidikelt Plateau of In Salah (Central Sahara Algeria). *Comunicações Geológicas*, 67–82.

Richardson, J.B. & McGregor, D.C. 1986. Silurian and Devonian spore zones of the Old Red Sandstone continent and adjacent regions. *Geological Survey of Canada,* (364).

Streel, M., Higgs, K., Loboziak, S., Riegel, W. & Steemans, P. 1987. Spore stratigraphy and correlation with faunas and floras in the type marine Devonian of the Ardenne-Rhenish regions. *Review of Palaeobotany and Palynology*, **50**(3): 211–229.