

First detailed analysis of Early Bartonian orthophragmines from the northern margin of Africa (Damouss section, NE Tunisia) and their paleobiogeographic aspects in the Tethys

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In spite of our rather comprehensive knowledge on the Late Paleocene-Eocene orthophragmines from Europe and eastern Mediterranean region, we have almost no data from Africa and particularly from northern margin of the continent. The Eocene shallow-marine deposits at the northern part of the continent belong to Gondwana and lie in their setting to the south of Tethyan sea and are widely exposed in central Tunisia. In addition, the shallow-marine uppermost Lutetian- lower Bartonian limestones with a limited lateral extent are observed in the north-east of Tunisia between Hammamet and Gulf of Tunis. These carbonates, less than 15 meters in thickness and developed in an otherwise deep-marine sequence, are rich in orthophragmines and nummulitids. A section with limestones overlying a planktonic foraminiferal marly sequence near Damouss yielded loose specimens of orthophragmines and nummulitids at the lowermost part of a the foraminifera-dominated limestone sequence (sample DAM.3) that enables us to carry out a detailed taxonomic work on orthophragmines and make some comments on their paleobiogeographic affiliations.

The orthophragmines in DAM.3 are quite diverse and are represented by 13 species belonging to genera *Discocyclusina*, *Nemkovella*, *Orbitoclypeus* and *Asterocyclina*. These genera are represented by *Discocyclusina pratti* [*D. pratti* ex. interc. *montfortensis* Less- *pratti* (Michelin)], *D. trabayensis* [*D. trabayensis* ex. interc. *elazigensis* Özcan et Less- *trabayensis* Neumann], *D. sella* [*D. dispansa sella* (d'Archiac)], *D. discus* [*D. discus* ex. interc. *adamsi* Samanta et Lahiri -*discus* (Rutimeyer)], *D. radians* (d'Archiac), *Nemkovella* sp., *Orbitoclypeus douvillei* (Schlumberger), *O. haynesi* Samanta et Lahiri, *O. zitteli* Checchia-Rispoli, *Asterocyclina sireli* Özcan et Less, *A. alticostata* [*A. alticostata alticostata* (Nuttall)], *A. kecskemetii* Less, *A. stellata* (d'Archiac). These are accompanied by *Assilina* ex. gr. *alpina*, *Operculina* ex. gr. *gomezi*, *Gyroidinella magna*, *Fabiania cassis*, *Sphaerogypsina* sp., *Orbitolites* sp., *Asterigerina* sp., *Nummulites* spp., and Alveolinidae. The marly levels just below sample DAM.3 contain planktonic foraminifera of *Morozevella lehneri* Zone indicating an Latest Bartonian-Early Bartonian age for sample DAM.3.

Among the orthophragmines the most dominating taxon is *Orbitoclypeus haynesi*, an Early Bartonian species originally described from Kutch (NW India). In Kutch, this species is the only taxon belonging to the genus *Orbitoclypeus* and occur very abundantly at the type-locality. *O. haynesi* has been recorded from the Bartonian beds in Thrace (Turkey) but not known further west in Europe. *Orbitoclypeus varians* and *O. zitteli*, abundantly occurring in time-equivalent units in Turkey and Europe are almost absent in the studied section. Only a single specimen assigned to *O. zitteli* has been described. In addition, the four ribbed *Asterocyclina*, *A. sireli*, originally described from uppermost Lutetian of Turkey and recently discovered in Lower Bartonian Fulra Limestone in Kutch (India), is also identified in the studied sample. This taxon is not known in upper Lutetian-Bartonian beds in Europe. The other taxa identified in DAM.3 are widely occurring in the northern part of Tethyan sea (a territory from France to Turkey). Thus, our data suggest that Damouss orthophragmines contain both assemblages commonly occurring in western India and Turkey and also in Europe.

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