Tectonosedimentary reactions induced by collisions of the African Plate with Iberian Plate and Corsican-Sardinian Microplate in the Magrebides forelands situated to the North of the South Atlasic Fault Throw in Tunisia and Morocco

A. EL GHALI[1], E.H. BOUMAGGARD[2], R. GRIBOULARD[3], M. BAGHRI, C. BOBIER[4] & N. BEN AYED[1]

[1]*Faculty of Sciences of Bizerte, Tunis II University, abdessalem.elghali@fsb.rnu.tn*
[2]*Dept of Geology, Faculty of Sciences and Technologie-Gueliz, University of Cadi Ayad, Marrakech, boumaggard@fstg-marrakech.ac.ma*
[3]*UMR EPOC 5805 University of Bordeaux 1*
[4]*Dept of Geology, University of Mohammed V, Rabat, Morocco.*

During Paleocene and Eocene some platforms of the northern border of the African Plate in Morocco and Tunisia have been favourable to the accumulation of phosphates bearing sedimentary series. Development, extension in space and stopping of the genesis of phosphates have been controlled by the interactions between structural evolution of the basins due to collision of Iberian Plate against African Plate, eustatic fluctuation of sea level and climatic variations. In present paper we compare the results of these interactions between Tunisia and Morocco. This comparison shows that synchronous processes due to global phenomena appear before Lutetian in the two countries. Particularly synchronous genesis of phosphates is favoured by: 1) warm climate inducing high biologic productivity, 2) high mean sea level which has favoured circulation of marine waters and the rising of upwellings under large continental platforms, 3) structural evolution of the two platforms part of wrench faults corridories activated by rejuvenation of crustal discontinuities during collision of continents. Such structural framework permits the development of subsident areas (en echelon synclines, rhomb graben) separated by rises. Such a tectonic context found around Kasserine Achipelago in central Tunisia and in the Essaouira basin of Morocco favours appearance of area where superficial currents are inducing concentration of pellets. During Lutetian general cooling of sea surface temperature and eustatic fall of the mean sea level has induced reduction of the genesis of phosphates while collision between Iberian and African Plates has induced separation between Atlantic and eastern Thetys. So the synchronous evolution of phosphated bearing sedimentary series disappeared progressively.

Transmission of stress through the foreland of the Appalachian–Ouachita Orogen during the Alleghanian Orogeny

T. ENGELDER

Department of Geosciences, The Pennsylvania State University, University Park, U.S.A.

The collision between Pangaea and Laurasia is responsible for the Appalachian–Ouachita Belt, a mountain belt having a variety of styles for the transmission of stress (i.e., strain) into the foreland. The Appalachian–Ouachita Orogen is characterized by a dual coupled-uncoupled model for stress transmission. This conclusion is based on evidence that the foreland transmission of stress is a two tier process. Cover detachment was responsible for stress transmission through the more dramatic foreland structures whereas basement possibly carried stress into the interior of continents by as much as 2000 km (i.e., van der Pluijm et al, 1997). Calcite strain advances beyond the reach of obvious detachment and well into the interior of continental North America. The preferred explanation is that calcite strain reflects stress coupled to basement deformation during the Alleghanian orogeny. The style of stress transmission in the uncoupled cover is greatly dependent on the pre-collision tectonosedimentary evolution of the foreland that can be divided into three major provinces including the Central Appalachian Mountains, the Southern Appalachian Mountains, and the Ouachita Mountains. Transmission of stress to