Carnian Pluvial Event in the Mežica area, Karavanke Mts., Slovenia

Kolar-Jurkovšek T.[1] and Jurkovšek B.[2]

[1]*Department of Palaeontology and Stratigraphy, Geological Survey of Slovenia, 1000, Ljubljana, Slovenia, tea.kolar@geo-zs.si*
[2]*Department of Palaeontology and Stratigraphy, Geological Survey of Slovenia, 1000, Ljubljana, Slovenia, bogdan.jurkovsek@geo-zs.si*

The Carnian Pluvial Event (CPE) denotes a wet climatic interval. This phenomenon was first identified in the Northern Calcareous Alps and was later recognized throughout the Tethys. A short humid event characterizes one of the most severe ecological crises and it corresponds to a sudden input of siliciclastic sedimentation. The causes of the CPE are still not well explained, but is seems they are all associated with the rifting of Pangaea. In order to make paleoenvironmental reconstruction of the region several biostratigraphic studies have been carried out more recently. The study area is situated north of the Periadriatic Lineament in the Northern Karavanke Mts., Eastern Alps. Carnian rocks of the "Raibl Beds" in the Mežica area are characterized by three clastic horizons of marly-shaly rocks positioned within dolomite-limestone succession what means the carbonate sedimentation was three times interrupted. The cyclicity of the "Raibl Beds" is explained as eustatic sea-level fluctuations. An increase of carbonate amount is evidenced from the first clastic horizon to the third clastic horizon. Differences are observed also in composition of the three palynological assemblages and a decreasing deltaic influence parallel to an increasing marine influence is evidenced from the first, through the second and to the third horizon. The obtained assemblages belong to the northern palynofloras of the wide equatorial palynofloristic domain. Quantitative palynological analyses of the first and the second clastic horizons indicate hygrophytic associations, whereas the third clastic horizon is marked by prevailing xerophytic elements. The Julian age of the first clastic horizon is dated by ammonoid *Carnites floridus*. Based on the typical Carnian sporomorphs the CPE is constrained to the hygrophytic associations of the first two clastic horizons in the study area, and their age is confined to the Julian, but the second clastic horizon might be partly Tuvalian. Macrofauna of the second clastic horizon is rare. It is limited to the two thin beds with frequent bivalves *Hoernesia sturi*. The footwall of the second clastic horizon is marked by diversified invertebrate fauna that includes bivalves, gastropods, crinoids, brachiopods and others. Crinoid fauna is characterized by the prevailing *Laevigatocrinus* and *Tyrolecrinus*, and the absence of encrinids is obvious. Within the second clastic horizon particular layers and lenses of limestone occur. Several limestone samples were treated for conodonts, but a single one was productive. Well preserved elements are represented by the monospecific conodont fauna of *Nicorella? budaensis* that also enables apparatus reconstruction. *Nicorella? budaensis* has been hitherto known only from few locations where it appears in a muddy bituminous limestone in an oxygen deficient sediment demonstrating stressed conditions, where conodonts could still live. The presence of a short-lived conodont species *Nicorella? budaensis* is important tool for a better understanding of the CPE in the Northern Karavanke Mts.

Permo-Triassic and Jurassic palaeomagnetic components in the Greek Pelagonian and sub-Pelagonian zones: Implications for successive counterclockwise and clockwise rotations

Kondopoulou D.[1], Aidona E.[1], Rassios A.[2] and Edel J.B.[3]

[1]*Department of Geophysics, School of Geology, Aristotle University of Thessaloniki, 54124, Thessaloniki, Greece, despi@geo.auth.gr, aidona@geo.auth.gr*
[2]*Institute of Geology and Mineral Exploration, Lefkovrisi,50100 Kozani-Greece,*
[3]*E.O.S.T. Université de Strasbourg, 5 Rue R. Descartes, 67000, Strasbourg - France*

During the last three decades, comprehensive palaeomagnetic investigations have been conducted in North and North – Western Greece. A variety of formations ranging in age from Cenozoic to Paleozoic/Mesozoic were analyzed. These reveal the existence of an "ancient" component directed WNW, acquired probably in Late-Jurassic/Cretaceous times. A younger ENE direction of Tertiary age has previously been reported from Western /South Western and Northern Greece. In order to further extend this dataset, we have sampled systematically along the Greek Pelagonian and Sub/ Pelagonian zone. Emphasis was placed on the Vourinos and Orthrys ophiolites and nonophiolitic accompanying sediments and lavas.

The Vourinos Ophiolite is one of the best documented ophiolitic complexes on global scale. It comprises a continuous ~12km thick Jurassic lithospheric section relatively unbroken by late intraformational tectonism. The entire pseudostratigraphic section, in today’s geologic setting, is oriented (from east to west) steep westward dipping – vertical – overturned to east-dipping. Much of the rotation of this lithospheric section occurred previous to the upper Cretaceous, and an internal “bowing” in the ophiolitic section could represent inhomogeneous strain recorded during transport from spreading center to initiation of obduction. The sampling localities in Vourinos represent two depths within the oceanic lithosphere and a later, post-emplacement, formation.

The Jurassic-aged Orthris ophiolite is a thrust disrupted lithospheric section. A continuous section is lacking, though some nappes include over-lapping pseudo-stratigraphic elements. None of the composite nappes are overturned, and a reverse lithospheric-stratigraphic order is observed. The entire nappe sequence is emplaced above older lava-sediment sections and in the east, the Pelagonian margin. Western Othris, like the Pindos ophiolite, is in its entirety re-thrust above the Pindos flysch (late Cretaceous – Eocene). This latter backthrust occurred approximately 100 My later than the original ophiolite obduction.

In many areas, the standard palaeomagnetic and rock magnetic procedures revealed the presence of westward directions grouping around $D=330^0$. Secondary overprints correspond to the Tertiary clockwise rotation and often masked the older component. Inclinations are very low for the Permo-Triassic, implying an almost equatorial position for the area, in contrast to the ones corresponding to Jurassic / Cretaceous which are not far from the present position.

These results, together with previous research, are analyzed within the geotectonic framework of the broader area, providing an opportunity to compare palaeomagnetic directions during different stages of ophiolite emplacement.

Magnetic signature of plutons and implications for emplacement conditions: examples from Northern Greece

Kondopoulou D.[1], Zananiri I.[2] and Dimitriadis S.[3]

[1]*Department of Geophysics, School of Geology, Aristotle University of Thessaloniki, 54124, Thessaloniki, Greece, despi@geo.auth.gr*
[2]*Institute of Geology and Mineral Exploration, Division of General Geology & Geological Mapping, 1 Spirou Loui str., Olympic Village, Entrance C, 136 77 Acharnae, Greece, izanan@igme.gr*
[3]*Department of Mineralogy & Petrology, School of Geology, Aristotle University of Thessaloniki, 54124, Thessaloniki, Greece, sarantis@geo.auth.gr*

The magnetization of batholiths is often unstable as a result of slow cooling and unroofing during their formation. These factors favour crystallization of coarse grains and mineralogical changes. Nevertheless, numerous studies have revealed the existence of stable magnetic recordings in batholiths, which can help to unravel the history of the pluton as far as its stability, translation or tilting is concerned. When an accurate isochron is established, it is possible to date the magnetic components through to blocking temperature spectra since isotopic and magnetic closure temperatures can be compatible. Finally, additional examination of other geophysical data and estimation of cooling rates can help the detection of burial conditions of the pluton. The majority of the above conditions apply successfully to large plutonic bodies. The present study focuses on Tertiary plutons in Northern Greece, covering more than 1200 km^2, classified from intermediate to large (70-430 km^2), where extensive paleomagnetic and rock magnetic studies were carried out. Accurate radiometric ages are available for all studied plutons. The new data (Symvolo and Vrondou), along with previously published results (Elatia, Samothraki, Sithonia, Symvolo, Vrondou and Xanthi) compiled a detailed paleomagnetic dataset which constitutes an important step towards