

grained packstones, rich in foraminifera, echinoderms, calcareous as well as siliceous sponge spicules and other bioclasts. Some quartz crystals are well observed. Cavities and chambers in some fossils are filled with relatively coarse-grained mosaics of authigenic sparry calcite. Fabric-selective porosity is controlled by primary depositional fabrics that include interparticle and intraparticle pores. A system of secondary pores, developed independently of texture or fabric (channel porosity) is also observed.

Detailed porosimetric analysis has been conducted using mercury intrusion technique. Through this measurement, pore radii, pore size distribution, pore volume and pore surface area can be evaluated. Porosity in all studied samples is high (29-30 vol. %), the specific surface area of meso-macro-and coarse pores (range of measured pore radii where from 3 nm to 58 μm) varies between 14.04-14.17 m^2/g and the volume of all pore size categories ranges from 160.71-163.43 mm^3/g . Also values of specific surface area and volume of mesopores (2-50 nm), macropores (50-7.500 nm) and coarse pores (over 7.500 nm) were measured respectively. Mineralogy, chemistry, thin section criteria, together with porosity and microstructure characterization, allow these natural building limestones to be used as compatible replacement materials in reconstruction works of certain buildings (monumental and other), that have been previously built with similar natural stones.

Early Pliocene deposits in Kephallonia (Ionian Islands): Biostratigraphy and paleoenvironmental-paleoclimatic implications

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The island of Kephallonia is located in the eastern part of the Ionian Sea, off the shores of Western continental Greece. The Paxos geotectonic unit comprises the largest part of the island, while in the eastern part outcrop the Ionian unit sediments. The studied marly limestones and marls in Livadi (approx. 30 m thick) are located on the northeastern part of Paliki peninsula, north of the city of Lixouri. Katelios section (approx. 70 m thick) located at the southeastern coast of the island, consists of marls alternating with sandy layers and marly limestones. The exposed sediments at Livadi represent part of the latest synorogenic deposits of Paxos unit, corresponding to the Trubi limestones above the Messinian evaporites. Katelios sequence is located immediately below the Ionian thrust on Kephallonia Island and could comprise the continuation of the Livadi sequence. Micropaleontological analyses (calcareous nannofossils, dinoflagellates and foraminifera) have been performed on both studied outcrops in order to determine their age and investigate the paleoenvironmental and paleoclimatic depositional conditions.

Calcareous nannofossil biostratigraphy revealed a number of bioevents establishing the chronostratigraphic correlations of the studied deposits. In the sediments of Livadi section, the presence of *Sphenolithus* spp. (abundance >5%), several discoasterid species (*Discoaster brouweri*, *D. pentaradiatus*, *D. surculus*, *D. intercalaris*, *D. variabilis*) and abundant planktonic foraminiferal species *Sphaeroidinellopsis* spp. along with the moderate presence of *Amaurolithus* spp. and *Reticulofenestra pseudoumbilicus* (abundance 1-2%) documents the biostratigraphic correlation with the nannofossil biozone NN12. Livadi outcrops are more precisely assigned within the *Sphaeroidinellopsis* Acme Zone, just below the Paracme Zone of *R. pseudoumbilicus*. Therefore they are of Early Zanclean age, ranging between 5.30-5.21 Ma. The sequence of Katelios section is featured by the dominance of *R. pseudoumbilicus* (abundance >20%), the presence of *Pseudoemiliania lacunosa* and *Discoaster asymmetricus*, *D. pentaradiatus*, *D. surculus*, that enable the biostratigraphic assignment within the NN14-15 nannofossil biozone (4.12-3.839 Ma) during the Late Zanclean.

The dynamics of calcareous planktonic and benthic communities are of paramount significance in estimating the palaeoenvironmental conditions because they quickly respond to oceanographic changes (primary production, water stratification, temperature, salinity, etc.).

Warm surface water conditions in a pelagic environment are assumed for the interval just above the Miocene-Pliocene boundary (uppermost synorogenic sediments of Paxos unit,

Livadi section), as documented by the nannofossil assemblages and the well developed planktonic microfauna. In particular the presence of discoasterids, *Rhabdosphaera* spp., *Sphenolithus* spp., *Scyphosphaera* spp., *Amaurolithus* spp., *R. pseudoumbilicus*, *Sphaeroidinellopsis* spp. and the calcareous dinoflagellate *Thoracosphaera heimi* is indicative of warm subtropical conditions. Relatively increased productivity is implied by the presence of *Helicosphaera* spp., which is known to preferentially high productivity waters in the middle photic zone. In this study, the genus *Helicosphaera* is represented mainly by *H. carteri*, a species with preference in warm waters and moderately elevated nutrient levels.

The Late Zanclean deposits of Katelios section are associated with a shallow depositional environment marked by the presence of abundant benthic foraminifera. The nannofossil assemblages indicate warm-temperate and high-productivity conditions due to the abundance of *R. pseudoumbilicus*. Additionally the dominating discoasterid species (abundance >5%) *D. pentaradiatus*, *D. asymmetricus*, *D. brouweri* favour warm and more productive intervals, in contrast to rare *D. variabilis* and *D. surculus* which are mostly associated with colder conditions.

Vrancea and Hindu Kush areas of mantle earthquakes: Comparative tectonic analysis

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The Late Cenozoic tectonics in the Eastern Carpathians and the Pamir-Hindu Kush region are compared to ascertain structural position and origin of strong mantle earthquakes in the Vrancea and Hindu Kush megasources. Intensive Oligocene–Quaternary deformation took place in the Pamir-Hindu Kush region. Under compressive regime, large upper crust blocks were detached and displaced up to several hundred kilometers. Relics of the oceanic crust of the Precambrian, Hercynian Paleo-Tethys and Early Meso-Tethys were overthrust by the upper crust blocks and subsided to the depth of 40–70 km, where they were metamorphosed into higher density metabasites of the granulite-eclogite type. In the Pliocene–Quaternary, the region was quickly elevated, mainly because of decrease of density of the upper mantle. As a result, the detached dense metabasite slab began to move down to the depths of 270–300 km. The same processes took place in the Vrancea area. The basic rocks of the Inner Carpathian zones were moved and underthrust the Moesian Platform with simultaneous overthrusting by the Outer Carpathian zone. Under the load of the Outer zone nappes and the Focsani basin sediments, the basic rocks were metamorphosed into the dense metabasite slab. After decrease of the upper mantle density because of asthenospheric convection beneath the Carpathians, the slab began to move downwards. Destruction of the moving slabs produced the mantle earthquakes.

Brittle tectonic events in the western boundary of the East Serbian Carpatho-Balkanides: preliminary results based on structural and paleostress analyses in the Gornjak area

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The Carpatho-Balkanides in the East Serbia are composed of multiple longitudinal tectonic zones characterised by various stratigraphic/lithofacial differences and very complex structural or tectonic compositions. In this paper we analyse and discuss a relatively small amount of collected data and present determination of paleostress tensors in the Gornjak area.