

The water level of the LGM North Evia lake has been found in seismic profiles at about 90 m below present sea level. Vertical tectonic movements are evident around the Gulf but have not been quantified yet, so the initial lake level can not be determined precisely. Holocene sedimentation in the Gulf is mainly depended on the fertile clastic material supplied by rivers which drain the surrounding mountains. The submerged prehistoric landscape is covered by marine sediments, their thickness being up to 40 m off the outflow of rivers along the southern margin. Limited sedimentation areas or even relict landscapes have been mapped away from river mouths.

Thorough evaluation of the seismic data and sedimentological and laboratory analyses of the sediment cores are essential for the precise reconstruction of the submerged prehistoric landscapes around the Corinth and North Evia lakes during the last glacial maximum and early Holocene. Vertical tectonic movements and sedimentation rates need to be quantified and considered for the final paleo-morphological reconstruction.

## **Preliminary results of provenance analyses of exotic magmatic and metamorphic rock pebbles from the Eocene flysch deposits of the Magura nappe (Krynica facies zone, Polish Outer Carpathians)**

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During the Late Cretaceous to Palaeogene, the Magura Basin was supplied by clastic material from source areas situated at the northern and southern margins of the basin, which are presently not outcropped at the surface. The northern source area is traditionally connected with the Silesian Ridge, whereas position of the southern one is still under discussion. The south-Magura source area supplied the Eocene pebbly paraconglomerates containing partly exotic material. The studied clastic material contains fragments of igneous and metamorphic rocks, derived from a continental type of crust, and frequent clasts of Mesozoic to Palaeogene deep and shallow-water limestones. Volcanites, rarely granitoids as well as schists, gneisses, quartzites and cataclasites were found in the group of crystalline exotic pebbles. Monazite ages of “exotic” pebbles from the Tylicz and Piwniczna-Mniszek sections document the Variscan age of metamorphic rocks. The provenance of these exotic rocks could be connected with the Eocene exhumation of the SE sector the Magura Basin basement or by supply of crystalline material from remote SE source area (Dacia and Tisza mega units).

## **The seasonal variations of ultraviolet radiation result in changes of human serum bone turnover markers**

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Vitamin D is recognized as the sunshine vitamin playing a vital role in maintenance of skeletal health. Vitamin D status depends on latitude, as vitamin D<sub>3</sub> is synthesized in the skin under the influence of UV irradiation from the sun mainly during spring and summer. Biochemical markers of bone turnover can be classified according to the process that underlie in markers of bone formation, [bone ALP, osteocalcin] and markers of bone resorption, [pyridinuum crosslinks, collagen I C- and N-terminal telopeptides (CTX-I and NTX-I)].

The aim of the present study was 1) to investigate in a sunny Mediterranean country like Greece whether bone turnover, as determined by biochemical markers, varies by season 2) to correlate these changes with the quantity of the Ultraviolet radiation (UV) and 3) to determine the degree and the qualitative characters of this variability.

The study was conducted for one year. The study group was composed of two separate groups; each group included 30 healthy adults (15 male and 15 female). In the first group, were studied in a prospective longitudinal manner and remained the same throughout the year. In the second group of healthy subjects were studied in a cross sectional manner and recruited randomly in the same last week of each season from healthy individuals coming to donate blood at the Hospital Blood Centre. Serum and urine calcium, phosphate, albumin, bone alkaline phosphatase were determined. Urinary calcium was measured on a 24h urine sample, delivered on the day of the blood sampling. Electrochemiluminescence immunoassay "ECLIA" (Roche) was used for quantitative determination of serum bone markers Osteocalcin, TP1NP, PTH,  $\beta$ -CrossLaps, Vitamin D3 (25-OH). The UV-B irradiation was measured at a ground-based station located in Patras (38.29° N, 21.29° E) of the Greek UV Network by a NILU-UV multi-channel radiometer. NILU-UV multi-channel radiometers provide UV irradiance measurements at five wavelength bands centered at 302, 312, 320, 340 and 380 nm, with full width at half maximum (FWHM) of approximately 10 nm.

Annually changes of serum bone turnover markers appears early in spring. These changes resulted from expected changes of serum Vit D due to seasonal variation of UV radiation: 1) Seasonal Variation of Bone markers turnover in 30 healthy individuals: UV-B (MJ/m<sup>2</sup>) Winter 1.459, Spring 4.426, Summer 7.475, Autumn 3.438, (n.s.) TP1NP (ng/mL): 43.31±16.34, 52.19±22.33, 45.76±18.20, 44.75±12.95, Vitamin D3(25-OH) (ng/mL): 28.77±4.77, 31.77±6.80, 42.02±14.75, 30.63±7.29, p<0.001, Osteocalcin (ng/mL): 17.70±7.26, 19.95±6.64, 17.46±5.49, 16.86±4.43, p=0.06, B-Crosslaps (ng/mL): 0.275±0.167, 0.339±0.186, 0.299±0.138, 0.259±0.129, n.s., PTH (pg/ml): 36.80±13.32, 34.46±12.27, 32.92±13.47, 35.64±13.49, n.s., Serum Calcium (mg/dl): 9.55±0.38, 9.39±0.66, 9.47±0.70, 9.58±0.61, n.s. Bone Alkaline phosphatase (IU/L): 51.84±13.66, 51.68±14.71, 42.80±12.48, 51.20±15.14, p<0.001, respectively. 2) Seasonal Variation of Bone markers turnover in 120 healthy individuals (30 every season selected randomly UV-B (MJ/m<sup>2</sup>): Winter 1.459, Spring 4.426, Summer 7.475, Autumn 3.438, TP1NP (ng/mL): 36.87±10.88, 44.53±21.00, 36.75±12.93, 38.25±16.76, n.s. Vitamin D3(25-OH) (ng/mL): 21.17±6.27, 29.30±8.20, 31.24±10.47, 25.39±5.42, p<0.001, Osteocalcin (ng/mL): 15.25±4.95, 19.35±6.88, 13.81±3.94, 12.42±5.45, p<0.001, Crosslaps (ng/mL): 0.230±0.130, 0.296±0.201, 0.234±0.141, 0.196±0.088, n.s. PTH (pg/ml): 27.62±11.07, 29.12±12.59, 22.62±6.94, 28.91±10.11, n.s. Serum Calcium (mg/dl): 9.39±0.39, 9.79±0.24, 9.78±0.49, 9.80±0.75, p<0.001, Bone Alkaline phosphatase (IU/L): 44.71±12.11, 46.08±14.16, 33.47±11.88, Autumn(-), p<0.001, respectively.

Based on bone turnover markers, we conclude that bone formation precedes bone resorption.

## The current state of conservation of Romanian stone monuments

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The paper deals with aspects concerning the conservation degree of Romanian stone monuments of different periods affected by natural and anthropogenic causes, with consequences on the historical development of the region. There are discussed main phenomena related to their present state, the stone from monuments restored/preserved, respectively, the recently discovered ones, on which no interventions have been performed. The analysis of these stones was achieved, through a correlation between the destruction and alteration factors, specific to the Romanian region and their casuistics and consequences of