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, β-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 ($MJ/m^2$) 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 ($MJ/m^2$): 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

the degradation and deterioration phenomena. Also, for their analysis the nature and characteristics of the stone have been considered, along with the procedures of manufacturing, restauration, identifying some anomalies and inadequate interventions, already notorious.

## Jurassic calc-alkaline granitoids associated with the East Vardar Ophiolites

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There are two major styles of Jurassic granitic magmatism associated with the Vardar Zone ophiolites: (1) strictly intra-ophiolitic intrusions dominating in the northern part and (2) magmatic bodies intruding both ophiolites and the basement in the southern part.

The intra-ophiolitic granitoids occur near Ždraljica and Kuršumlija (Serbia) and form dykes and small irregular bodies cutting gabbro-diabase ophiolite complexes. Geochemically, three subgroups are distinguished: (i) intermediate rocks, (ii) low-$Sr_i$ granites and (iii) high-$Sr_i$ granites. Intermediate rocks are represented by diorites, quartz diorites and quartz monzodiorites with $Sr_i$=0.70557 – 0.70746 and $\varepsilon_{Nd}$(T) -4.5 – -0.8. The low- and high-$Sr_i$ granites are petrographically similar, but differ in isotope composition, i.e., $Sr_i$=0.70330 – 0.70767 and $\varepsilon_{Nd}$(T) -5.1 – 1.5 and $Sr_i$=0.70956 – 0.71602, $\varepsilon_{Nd}$(T) --6 – -5.1, respectively. Furthermore, the high-$Sr_i$ granites have higher HREE and Y contents.

The southern granitoids in F.Y.R. of Macedonia and Greece (Fanos) form large bodies that intrude both the Vardar Zone ophiolites and metamorphic rocks of the Serbo-Macedonian Massif. The rock suite of F.Y.R. of Macedonia includes intermediate to acid members (diorite, quartz monzodiorite, granite) and shows a trend of decreasing radiogenic $\varepsilon_{Nd}$(T) -(3.3 – -8.9) and increasing $Sr_i$ (0.70740 – 0.71588) with increasing silica content. In contrast, the Fanos granite is isotopically relatively uniform with $Sr_i$=0.70516 – 0.70559 and $\varepsilon_{Nd}$(T) -= -1.6 – -0.7.

Geochemical modeling suggests that the high-$Sr_i$ granites derived from peraluminous magmas that were generated by obduction-induced melting of (meta) sedimentary rocks. The low-$Sr_i$ granites and the intermediate rocks of Serbia formed separate, possibly small, magma chambers, partly related to obduction-induced melting of a low-$Sr_i$ source, formed in part by subduction related volcanic arc magmatism.

Granitic magmatism in the southern part of the Vardar Zone is characterized by melting of slightly enriched mantle- and lower crustal magmas that were modified by AFC processes in F.Y.R. of Macedonia and FC processes in Fanos. Their emplacement was favored by collisional processes resulting in great crustal thickness and the post-collisional emplacement of mantle-derived magmas that provided the heat for partial crustal melting.

## Paleoenvironmental setting of rudists in the Upper Cretaceous (Santonian-Campanian) deposits from Valea Neagră de Criş (Borod Basin)-Northern Apuseni Mts, Romania

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The Upper Cretaceous deposits located in the eastern extremity of Borod Depression represent, for the Northern Apuseni Mountains, a well-known cropping out area for Gosau-type facies with rudists which is similar to the typical Eastern Alps section. The investigated