Adriatic or Southalpine plate motion (30-15 Ma) resolved in SW-NE compressive stresses and NW-SE tension. This released initial sinistral shear along the Oligocene Periadriatic lineament, which is in concordance to kinematic studies, and sinistral shear along the Inntal fault. Simultaneously Oligocene plutons, that are exclusively found to the west of the Pöls-Lavanttal fault system, intruded along the Periadriatic fault. From Mid-Miocene times onwards stresses released by the Adriatic plate became N-S compressive leading to shear reversal along the Periadriatic fault system that now became dextral. Direction of compressive stresses during this period was fairly orthogonal to the Periadriatic fault. Thus we suggest that dextral displacement is to a lesser extend stress induced but much more controlled by eastward motion (extrusion) of Austroalpine units that experienced enhanced extension between 15 and 12 Ma. During this phase the Periadriatic fault may therefore be visualized as a southern boundary fault (i.e., stretching fault) of the extruding East Alpine wedge that accommodated extrusion. Interestingly, deposition of intramontaneous basins commenced at this time (*ca.* 15 Ma) suggesting onset of enhanced extrusion induced exhumation within eastern sectors of the central Austroalpine realm. By contrast, the domain to the east of the Adriatic – Pannonic plate boundary (east of the Pöls-Lavanttal system) remained under extension throughout time.

Geoecology of the Black Sea Coast of Georgia

Kvinikadze M., Kuparadze D., Pataridze D., Khundadze N. and Kirakosyan V.

Department of Geoecology and Applied Geochemistry, Alexander Tvalchrelidze Caucasian Institute of Mineral Resources; # 85, Paliashvili str., 0162 Tbilisi, Georgia, d.kuparadze@gmail.com, d.pataridze@internet.ge.

The combined geoecological works, carried out within the bounds of Black Sea coastline (Georgian Section) in 2008, gave the following results: contamination of sea water surface with oil products does not exceed the regulatory values; Hydrochemical parameters of sea and the rivers discharging into the sea were determined. High concentrations of magnesium and arsenic were observed in the bottom sediments of sea and Rioni River in Poti water area; the composition of copper, lead, zinc, magnesium and arsenic highly exceed the Dutch Norms (Fomin, Fomin, 2001) in some samples of toposoils taken along the agricultural terrain and motor road. As a result of radiation measurements carried out in the Black Sea coastline, the sites are allotted where radiation is higher than the accepted norms; the concentration of magnesium in the biosamples (tea and eucalyptus) highly exceeds the maximum permissible concentration.

East Taygetos Fault Zone (Peloponnesus, Southern Greece): Dormant fault zone bordering awake neotectonic structure

Lalechos S.[1], Metaxas Ch.[1], Karvela V.[2] and Stefouli M.[3]

[1]*Earthquake Planning & Protection Organization / Dpt of Seismotectonics, GR-15451 Neo Psychiko, Athens, Greece, slalexos@oasp.gr, xmetaxas@oasp.gr*
[2]*Kharokopeio University of Athens / Dpt of Geography, Eleftheriou Venizelou 70, GR-17671 Kallithea, Greece*
[3]*Institute of Geology & Mineral Exploration, Entrance C', 1, Sp. Louis St., Olympic Village, Acharnae, P.C. 13677, Greece*

The eastern flank of Taÿgetos Mountain (southern Peloponnesus) is bordered by a normal fault zone striking NNW-SSW from Megalopolis basin to Lakonikos gulf near Gythio town, with a total length of about 80 km. A segment of this fault zone forms an impressive morphotectonic feature that is known as Sparta fault and it is located between Sparta town and Potamia village. The total length of this segment is about 20 km. Though this fault zone seems to be active since Pliocene, its present seismicity appears to be very low and sparse.

In order to assess the geometrical parameters of this fault zone, a morpho-structural analysis was carried out using combinations of Landsat ETM+ panchromatic and multi-spectral images (bands 1, 3, 4, 5 & 7) filtered with edge enhancement 3x3, the geological

maps covering the area from Megalopolis basin to Lakonikos gulf and the Global Elevation Model (GDEM) derived from Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) imagery. The GDEM has a nominal 30 meter cell size, but its effective spatial resolution is estimated between 100 and 120 meters. All these data were integrated in a GIS environment using the Greek coordinate system EGSA 1987.

The kinematic analysis based on field observations shows the following multiple reactivations with a dip-slip movement of the entire fault zone since Pliocene: 1) an E-W extension during upper Pliocene 2) a NE-SW extension during lower Pleistocene and 3) a NW-SE extension during middle Pleistocene to the present. Assessment of the seismicity associated with this fault zone and the seismic potential based on its geometric and kinematic characteristics shows that it is a seismically dormant fault zone segmented into at least 3 segments of a length of about 20-25 km.

The strong earthquakes of VI and V century BC which struck Sparta town seem to be associated with the central segment of the zone known as Sparta fault. Based on morpho-structural analysis, the average slip rate since Early Quaternary could be estimated as 0.5 mm/yr, which allows us to characterize the fault as of moderate activity. Mmax for the fault of 20 km length could be estimated as M=6.5 and the corresponding Recurrence Time as 2,000 years average.

The results of the estimated fault potential (Mmax, RT) using calculations of slip-rate model (slip rate 0.5 mm/yr) and EZ-FRISK software (Risk Engineering, 2005) fit to the parameters derived from empirical relations.

The great destruction that Sparta town suffered at 550 B.C. and 464 B.C. could be attributed to high values of acceleration due to the close proximity to seismogenic fault (near field effect) as well as to the amplification of the strong ground motion due to loose quaternary deposits lying under Sparta town.

Variscan transpression and related voluminous magmatism in Central Strara Planina Mountain, Bulgaria

Lazarova A.[1], Gerdjikov I.[2], Vangelov D.[2] and Georgiev N.[2]

[1]*Department of Geotectonics and Regional Geology, Geological Institute, BAS, Sofia, Bulgaria, alazarova@geology.bas.bg*

[2]*Department of Geology, Paleontology and Fossil fuels, Sofia University, Sofia, Bulgaria*

In the area of Central Stara Planina Mountain and northernmost parts of Central Sredna Gora the pre-Mesozoic basement of Balkanides is largely exposed. Despite Alpine tectonic overprint the area provides unique chance to deciphering the Variscan history. Of greatest interest is the contact juxtaposing two contrastingly different units (terrains): i) the basement of Central Sredna Gora, comprising high-grade metamorphites (paragneisses, amphibolites, minor orthogneisses, and schists as well as isolated bodies of metagabrros and eclogites) migmatized at 336.5 ± 5.4 Ma; ii) the basement of Central Stara Planina Mountain consisting of Early Paleozoic low-grade metasediment-dominated complex (locally named Diabase-Phyllitoid Complex). Recently, we carried out detail structural observations along this E-W trending contact designated as the Stargel-Boluvanya Tectonic Zone. All features suggest it is related to transpressive crustal-scale deformation. The zone is traced for about 40 km and its general thickness reaches up to 4 km. It accommodated an intense ductile deformation, which is prograde for the low-grade metamorphites and retrograde for the high-grade rocks. The detail mapping of continuous profiles across the zone, where indications of Alpine overprint has not been established, clearly demonstrates that the syn-metamorphic shearing caused a juxtaposition of both contrast metamorphic units or an emplacement of the high-grade on to the lower-grade rocks. Within the zone, a W-SW trending foliation is ubiquitous, moderately to steeply dipping to the south or sub-vertical. This fabric associates with less pronounced S-SW-plunging or sub-horizontal stretching lineation. The observed sense of shear criteria indicate: i) top-to-north tectonic transport in sectors where the foliation is moderately dipping to the south and the lineation is SW-plunging; ii) dextral (?) shearing in sectors of the zone where the foliation is sub-vertical and the lineation is sub-horizontal. The observed field