Metamorphic P-T conditions in the marbles and the enclosing lithologies are estimated using calcite-dolomite solvus thermometry and other conventional thermometers. For chloritoid-bearing metapelites from the area of the village of Byala Cherkva (Asenitza unit) the results are: 330-360 ^{o}C at 5 kbar (Bt-Ms thermometer) and 350-370 ^{o}C at 5 kbar (Grt-Bt thermometer). The calcite-dolomite solvus thermometry of dolomite-bearing marbles from L3 yields 360-470^{o}C at 5 kbar for the matrix calcite and 560-610 ^{o}C at 5 kbar for the large calcite clasts. Those PT conditions are comparable to values determined from metapelites from the Lower terrain in northern Greece.

Marble samples from the three different locations in the Rhodope massif exhibit significant mineralogical, textural and stable isotope differences. While L2 and L3 samples have similar textural characteristics and stable isotope compositions, these differ from the Asenitza unit (L1) samples. That indicates that marbles from the southern part of the Rhodope massif (i.e., the Yagodina and Trigrad area) are part from the Lower terrain (Lower tectonic unit) or Pangeon unit i.e. they present a tectonic window.

Recent tectonic activity of the Polish Western Outer Carpathians: Geomorphic and gravimetric constraints

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Two geodynamic test transects across the Polish segment of the Western Carpathians, crossing the Orava Basin in the west (KO) and the Pieniny Klippen Belt and Magura Nappe along the Dunajec River valley in the east (DD) have recently been analysed. Multidisciplinary studies conducted along these transects included gravimetric, geodetic, geologic and morphostructural investigations. Gravimetric and geodetic results appear to suggest recent subsidence of the Orava Basin, particularly intensive in the Wróblówka Graben, confirming conclusions derived from geomorphic analyses. Data obtained for the Dunajec River transect do not show any particular differentiation among individual benchmarks, what can point to either minor uplift of the entire area (already suggested by the results of geomorphic and morphotectonic studies), minimal differences between successive slices of the Magura Nappe and the Pieniny Klippen Belt, or both. Horizontal displacements of benchmarks, different for the KO and DD transects, towards the west and SW as well east and SE, respectively, can result from general uplift of the area comprised between these transects, i.e. the Gorce Mts. A new geodynamic transect DS, running along the Soła River valley cuts several units of the Outer Western Carpathians of Poland. These are, from the south, the Magura Nappe, Fore-Magura group of nappes, as well as the Godula and Cieszyn units of the Silesian Nappe, sub-Silesian Nappe, Skole Nappe, and the Carpathian Foredeep. Within the Magura Nappe, thrust faults of subordinate units (slices) are of the order of a few kilometres, and individual slices are composed of strongly imbricated anticlines and synclines striking SW-NE. The Fore-Magura group of nappes is composed of thrust sheets including both Magura- and Silesian-type lithostratigraphic members that build strongly imbricated folds of northern vergence. The Silesian Nappe is subdivided in this portion of the Western Carpathians into the Cieszyn (northern part) and Godula (southern part) units. In a tectonic window close to Żywiec, the Godula unit is underlain by the Cieszyn unit which overlies the sub-Silesian Nappe. Strata belonging to the latter nappe are exposed farther north in a number of small-scale outliers in front of the Silesian Nappe, north of Bielsko-Biała and close to Kęty-Wadowice. The nappe is composed of several north-verging imbricated folds, thrust one over another. All these units are cut by strike-slip and oblique-slip faults oriented roughly N-S. One of the most prominent fault zones accompanies the Soła River valley, dextrally offsetting the Carpathian frontal thrust. These faults were mainly formed during final stages of thrusting of the flysch nappes, postdating Burdigalian time. The discussed western portion of the Outer Carpathians is traversed by several sets of regional and local photolineaments, coinciding to a large extent with the Soła River fault and associated subordinate faults. In the

Pliocene and Quaternary, the area witnessed differential vertical and some remnant horizontal movements resulting in the formation of elevated and subsided areas. In the study area, the Soła River valley separates two prominent elevated regions that were uplifted in the Pliocene and early Pleistocene. A probably younger episode of Pleistocene and Holocene uplift is marked by the presence of two, nearly E-W trending, zones of abnormally high river bed gradients: one associated with the Jabłonków Depression in the south, and another one situated north of Żywiec, in the Beskid Śląski and Beskid Mały Mts. dissected by the Soła River water-gap. Recent uplift is usually observed in frontal parts of nappes, slices and imbricated folds and probably results from buckling induced by the ongoing thrusting.

Phenomenon of mud volcanoes in western Romania as a geoturism object

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The biggest mud volcanoes in Europe are located in eastern Romania, in the center of the Carpathian Foredeep, in the anticline structure called Berca-Arbanasi extending for 20 km north-southward. The volcanoes are located there in four zones: Beciu, Paclele Mici (PMI), Paclele Mari (PMA) and Fierbatori at a distance about 20 km northwest from Buzau. In 1924 the volcanoes PMI and PMA received the status of geological reserve, and nowadays are one of the major geotourism attractions in the country. The volcanoes in both regions are either cone- or pie- shaped. In the mud samples drawn from both regions the separation of fractions was carried out. It indicates that the muddy substance is composed mainly of grain fraction of 0.5-0.18 mm and 1.0-0.5 mm. The mineral composition, determined by means of polarizing microscope on fraction 0.5-0.18 mm in both regions, indicates that prevailing, however distinct in percentage share, minerals are the following: quartz grains, claystones and mudstone fragments. This identification was confirmed by X-ray pattern, which showed the mud volcanoes transport mostly mud composed of clay minerals represented by illite-smectite. Chemical analyses performed using ICP method showed that volcano waters are composed of mud mixed with salty waters. Moreover, chemistry of these waters collected from the two separate volcanoes are different too, and the main elements are the following: B, Ba, Br, Ca, I, K, Li, Na, Mg and Sr. Results of chemical analyses confirm various sources of salty waters as well as their migration across various evaporites present below volcanoes. The research shows significant differences between these two apparently identical objects, making them even more attractive as far as geotourism values are concerned. Establishing an appropriate geotourism infrastructure would serve at least three purposes: enriching the aesthetic impressions after visiting the region, allowing tourists to get to know the differences and enhancing the educational offer of the reserves.

The uranium capturing by Fe/Mn glaebules of some Quaternary paleosols of Italy

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As it is well know, uranium is now recognized as a ubiquitous element, easily recognizable also in small occurrence. Their concentration in carbonate rocks is of the same order of magnitude as the lithospheric content (2.2 ppm). Uranium can replace calcium in the lattice of calcite or be adsorbed by the principal phosphate minerals. The large uranyl ions are adsorbed easily and can form the soluble complex