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

Madeja G. and Mrowczyk P.

Department of General Geology, Environmental Protection and Geoturism, Faculty of Geology, Geophysics and Environmental Protection, AGH University of Science and Technology, Al. Mickiewicza 30, 30-059 Kraków, Poland, madeja@geol.agh.edu.pl, mrowczyk@geol.agh.edu.pl

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

Magaldi D.

Department of Plant, Soil and Environmental Science, Faculty of Agriculture, University of Firenze, Piazzale delle Cascine 18, 50144 Firenze, Italy, donatello.magaldi@unifi.it

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

$UO_2 (CO_3)_2^{4+}$. The Uranium ionic radium (1.05 A°) is almost similar to one of Calcium (1.06 A°). Uranium is assumed to move freely in the water of soil profile after the processes of dissolution and precipitation of carbonate parent material occurred. It is claimed that its mobility is favoured by acid conditions, whereas in an alkaline pH the adsorption of its oxide would be increased. Until now very few papers studied natural Uranium in soils. Recently, the concentration of naturally occurring radionuclides (238U, 232Th, Knat) was measured in some Red Mediterranean soils from carbonate rocks in Spain, Italy and Turkey using gamma-ray spectrometry at the Gran Sasso National Laboratory of INFN (Italy). The Uranium content ranges from 1 to 5 ppm, the content for Thorium ranges from 3 ppm up to 30 ppm, whereas for Potassium varies between 0.13% and 1.3%. The results indicated that soils characterised by absence or scarcity of 2:1 clay minerals are poor in uranium, whereas soils with illite–smectite as the dominant minerals in clay fraction are noticeably richer.

Continuing some previous study on the paleosols natural radioactivity, this research demonstrated that soil Fe/Mn glaebules (nodules and concretions as well as the related coatings) are able to capture and include significant uranium contents together with some rare heavy metals. The research was carried out using thin section autoradiography by CR 39 transparent plates in order to locate the alpha track emitters. Transparent plates of CR 39 (artificial poly carbonate) were placed for exposition on the glaebules polished section for several months. After a chemical etching (by a NaOH solution) of CR 39 detectors to show alpha tracks damage, their location on thin section by overlapping of CR 39 transparent plates and the corresponding density of tracks (proportional to % of U (being assumed the thorium absence) was performed by an image analysis software (Image J). Some results were validated by the gamma- ray spectrometry and also suggested useful application to identify the uranium movement along soil profile and as strong relationship which are like to exist between uranium and some component of organic matter as well as the phosphate material and natural bitumen in both soils and some carbonate rocks.

First results of a geophysical Pre-Site Survey in the Philippi peat basin, eastern Makedonia, northeastern Greece

Maith I.[1], Tougiannidis N.[1], Jakob J.[1], Gurk M.[2], Kalisperi D.[3] and Melles M.E.[1]

[1]Institute for Geology and Mineralogy, University of Cologne, Zülpicher Str. 49a, D-50674 Köln, johannesjojojakob@googlemail.com, geo.nikolas@gmx.de, i.maith@gmx.de, mmelles@uni-koeln.de

[2]Institute of Geophysics and Meteorology, Geophysics Section, University of Cologne, Zülpicher Str. 49a, D-50674 Köln, gurk@geo.uni-koeln.de

[3]Department of Natural Resources, Systems Engeneering, Technological Educational Institute of Crete, GR-731 33 Chania –Crete, dkalisperi@chania.teicrete.gr

Under the administration of the Centre of Quaternary Science & Geoarchaeology (QSGA) the Collaborating Research Centre (CRC) 806 „Our Way to Europe“ started in summer 2009. The project is founded by the German Research Foundation (DFG). In this CRC the QSGA is concerning about the dispersal of modern Man from Africa and the permanent establishment of Man in Central Europe (QSGA, 2009). The fieldworks, done during the summer 2009 in Greece by the Institute for Geology and Mineralogy from the University of Cologne, was targeted as a preside survey to find therein after a location for a drilling. This drilling is aimed as an extendend paleoclimatic research analog to the works of Müller but with the intention to drill at greater depths. With different geophysical methods (TEM, VES, RMT) the quality of the Tenaghi-Philippon-Basin as a historical climate archive should be evaluated. The Tenagi-Phillipon Basin is the south-west part of the larger Drama Basin. The Drama Basin is an intermontane basin lying in-between the metamorphic rocks of the Rila-Rhodope-Massif. It was generated during a late brittle deformation in Miocene times after the exhumation of the Southern Rhodope Core Complex (SRCC) in middle Eocene times. Therefore, the SRCC and the associated Negoene sedimentary basins offer the most complete record of the about 40 My of Aegean extension. The dimension of the basin and its sediment deposition is tectonically as well as climatically controlled. The sedimentation of peat endured over the last 700 000 yr until the drainage of the basin in 1931 to 1944 for