crosscut by dyke swarm of W-E to ENE-WSW direction. The dykes (K-Ar age: 11.94 ±1.0 Ma) are mostly formed by coarse grained amphibole hyperstene andesite porphyry. Dyke swarm of basaltic andesite to basalt (K-Ar age: 12.02 ±1.05 Ma) of ENE-WSW orientation at the SW slope of the Magnetový Vrch hill is most probably related to small parasitic volcano.

Proximal volcanic zone. Deeper levels of the complex of intrusive-extrusive bodies of hyperstene amphibole andesites ±garnet (K-Ar age: 12.10 ±0.38 Ma) characterised by autometamorphic alteration are exposed by erosion. Direction of steep fan-like lineation (fluidality) and zones with autoclastic breccias near the margins indicate forms of dome-type alternatively tholoide-type. Another small-sized of amphibole andesites (K-Ar age: 12.25 ±0.5 Ma) to rhyodacites (K-Ar age: 12.53 ±0.42 Ma) in the northern part of the proximal zone confirms the presence of small parasitic volcanoes in the region of the former volcanic slope. One small parasitic volcano that survived denudation represented by volcanic neck and adjacent remnant of cinder cone (agglutinate pyroclastic deposits) was found.

Distal volcanic zone of the Vepor stratovolcano is represented by denudation remnants of the volcanoclastic rocks that filled former paleo-valleys (canyons) of radial orientation with respect to central volcanic zone. More extensive remnant of NW-SE orientation is the Hajna Hora hill complex located on the NW from the proximal zone. A study of the paleo-valley filling formed by pyroclastic and epiclastic volcanic rocks (block-and-ash flows, ash-pumice flows and lahars) alternating with layers of epiclastic volcanic sandstones and conglomerates enable reconstruction of eruptive cycles and volcanic events. The filling of another radial paleo-valley on the west from the central volcanic zone represented by erosion relict of the lava flow of pyroxene andesite (K-Ar age: 11.56 ±0.43 Ma) of WSW orientation cover the peak area of the Klenovsky Vepor hill. The lava flow overlaid basal fluvial sediments. Pokorádz complex, formed by volcanoclastic and volcanosedimentary rocks, is located SE from central volcanic zone. Deposition of the volcanic material took place in the shallow fluvial-limnic environment. Tuffitic-sandy sedimentation with conglomerate layers was episodically interrupted by a mass transport in the form of gravitational flows, lahars and block-and-ash flows.

On the basis of the field observations and K-Ar data it is possible to reconstruct the complex succession of the volcanic and intrusive events of the Vepor stratovolcano. The K-Ar ages suggest that the stratovolcano was active for a relatively short time during Lower Sarmatian, between 12.53 – 11.56 Ma. The radiometric ages are in a good agreement with biostratigraphic data.

Acknowledgment: This work was supported by the project 16 06 supported by Ministry of Environment of Slovak Republic and by the Slovak Research and Development Agency under the contract No. APVV-0549-07. This work was also supported by the OTKA grant (Hungarian Scientific Foundation) K68153.

A problem of rigidity of the Eurasian lithospheric plate in the light of data on age and dynamics of the Cenozoic intraplate deformations in different regions of the Northwestern Eurasia

Kopp M.

Institute of Geology, Pyzhevsky pereulok, 7, 119017, Moscow, Russian Federation

Now it became obvious that Cenozoic intraplate deformations of the Northwestern Eurasia were connected with the Alpine plate collision. However, areas of dynamic influence of plate-indenters, such as the Periapulian, Periarabian and Periindian “collisional areas”, as well as relations of the Cenozoic intraplate deformations with the contemporary spreading in the north and transcontinental shears along the Tornquist line and Urals must be determined more exactly. Besides, some paleomagnetic data does not correlate well with an uniform rigidity of the Eurasian lithospheric plate. These questions are discussed here in terms of evolution and dynamics of the Cenozoic intraplate deformations in different regions of Northwestern Eurasia. In West Europe, the aulacogen covers were crumbled in the Paleocene (the Laramic orogeny) simultaneously with the plate collision in the Alps. A spreading axis propagated from the Northern Atlantic into the Arctic at the same time, which allows suggestion on interrelation of these events. On the contrary, in East Europe the moderate Laramic compression took place in the southernmost areas only whereas major activity went on much later, in the terminal Early Miocene-Quaternary, periods of the activity being coincident with those in the Caucasus and the phases of the Red Sea opening. In addition, an evidence that the southern East European craton belongs to the Periarabian collisional area is provided by the orientation of stresses which is the same in the intraplate structures and the Caucasus (e.g., submeridional compression) as well as by similarity of structural patterns. A character of the post-Cretaceous deformations in the northern East Europe is less clear. First, their upper age limits are still unknown. Second, a compression axis orientation was sublatitudinal there. This allows suggestion that the deformations were originated under pressure of the adjacent Urals. The recent Uralian orogen began to grow at the Eocene-Oligocene boundary, i.e., much earlier than the formation of the East European intraplate deformations during the Arabia/Eurasia collision. Accordingly, it could not be related to the Periarabian collisional area. On the other hand, the beginning of its growth coincided with a reinforcement of the India/Eurasia collision. Hence, the Urals may be considered to be a peripheral part of the Periindian collisional area. From the dynamic aspect, the Recent Urals was formed as a result of sublatitudinal shortening caused by an underthrust of lithosphere of the West Siberian platform. The uplift of the Uralian Mountains was accompanied by thrust-fold deformations and strike-slips, which were predominantly sinistral. So, compressional intraplate deformations occurred in the northern periphery of a collisional power area of every plate-indenter simultaneously with its northward movement. In addition, the essential changes of the collision zone regime in the south coincided with those of the spreading system in the north. The data generalized allow reconstructing the following scenario of the events. After the West European part of the Eurasian plate and corresponding segment of the spreading zone were blocked by the Paleocene collision in the Alps-Dinarides, the spreading propagated into the Arctic. As a result, East Europe together with Siberia moved southeastward, to the relic Neo-Tethyan subduction zone. They were separated from West Europe by the dextral shear along the Tornquist line. The East European platform was separated from Siberia by sinistral shear along the Urals only in the Oligocene, most likely due to interlock of the Asia movement by Indostan. In the Pliocene, the independent East Europe movement was ceased by the Arabia-Eurasia collision, and since that time Northwestern Eurasia was entirely in compression. Thus, the present view of unity and rigidity of the Cenozoic Eurasian plate is correct only at the first approximation. In reality, the Eurasian plate represented a time-varying kaleidoscope of subplates that moved at different velocities from the Atlantic-Arctic spreading axis. The greatest acceleration was experienced by the Eurasian fragments whose general southeastward motion was in the least degree restrained by the Gondwanian relics colliding with Eurasia.

Seismogenic magnetic activity study

Korepanov V. and Dudkin F.

Lviv Centre of Institute for Space Research, 5-A Naukova Str., 79000, Lviv, Ukraine, vakor@isr.lviv.ua

The earthquakes (EQ) are one of the most devastating natural hazards and their study is a permanent challenge of geophysics. The EQ often occur in Carpathian-Balkan region and any progress in the study of the possibility to predict them is welcome. It is known that seismic, in spite of numerous experimental attempts and theoretical considerations, is not efficient for short-term prediction of EQ. Much more chances have the registration of electromagnetic (EM) radiation. It is experimentally confirmed that the most advantageous for study of magnetic variations accompanying the EQ preparation process is ultra-low frequency (ULF) band (0.001-0.5 Hz), and namely the monitoring of ULF signals is believed to be efficient for the EQ forecasting problem. There are numerous observations of ULF magnetic field enhanced activity before EQ as well as many approaches to construct a credible physical model of this phenomenon. The greatest problem which arises at the attributing of the observed ULF activity to the EQ under preparation is the necessity to separate the seismogenic signals from the natural fluctuations of ionospheric origin which