Technical and algorithmic complex of monitoring of the dangerous geodynamics phenomena

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It is set that mechanical changes in the earth's crust cause the change of parameters of all of the geophysical fields — electromagnetic, acoustic, seismic, influence on speed of output of gases from the earth's crust et al. The overhaul of the last looks to co-operation of the geophysical fields is resulted in work [Liperovsky et al., 2008]. These changes are most noticeable at such high-power phenomena, as earthquakes. At what changes in the geophysical fields take a place and registered not only after a basic shove but also during preparation of earthquake and can serve in quality forecasters.

On the basis of world information and own researches we are offer the qualitative model of cooperation of the geophysical fields during development of earthquakes and education of forecasters [Liashchuk et al., 2007]. So as a result of formation of defects as a result of change of the resiliently deformed state (mechanical tension) of the earth's crust before an earthquake, there are hertzian waves and underground acoustic noises. It is related to that every act of formation micro- and macrodefect excitation of acoustic and optical vibrations of crystalline grate, and consequently and by the radiation of acoustic and electromagnetic waves. In same queue the radiation of acoustic waves can result in an accelerating mechanism, essence of which in because intensive formation of defects, which is generated a stress deformation of breeds in the district of the future forms ultrasonic waves which in same queue substantially increase speed of transfer of gases (to the radon in a that number) in the matrix of mountain breeds the epicentre of earthquake. As a result of exit from breeds on the surface of radio-active gas of radon, there is ionic composition of the atmosphere and there is an anomalous electromagnetic radiation in an atmosphere. The increase of tension brings to the compression breeds over in the place of future cell of earthquake, as a result also there is an intensive exit of gases from the earthly bowels of the earth (so-called effect of degassing). At forming of main break, when the system already is in the unstable state, there are noise long-period vibrations of earthly surface, which result in appearance of vertical low-frequency acoustic vibrations — infrasound. Arriving at the overhead layers of atmosphere (ionosphere), infrasound begins to influence on chaotic motion of the charged particles (ions). Motion of ions acquires a certain orientation, what ionosphere currents are as a result of. Ionosphere currents, caused the vibrations of the earth's crust, and also atmosphere ionized before an earthquake can influence on distribution of VLF radio waves, which spread in a waveguide Earth-ionosphere.

Taking into account aforesaid, in the Main center of the special control created system for the exposure of possible predict effects of, which includes for itself the complex of the seismic, electromagnetic, infrasonic, radon measurings and can broaden other geophysical methods. An apparatus for conducting of measurings is oriented to measuring of low-frequency background processes in the earth's crust and atmosphere.

Practice of prognosis researches shows that as a reliable forecaster for every earthquake, none of common geophysical methods can not come forward, as before earthquakes which took a place, in times of systematic supervisions there were cases of and erroneous anomalies, and “admission of purpose”.

The analysis of long-term data of row of geophysical (mainly seismological) forecasters showed that probability of successful prognosis on each of them did not exceed 0.5. One of possible exits from a situation there is the general use a few signs. It is thus necessary to go out from that every separate forecaster represents that, whether other side manysided and not to the end of clear process of preparation of earthquake and is not informing enough from the point of view statistics.

As a result of analysis of the accumulated information we are choose the row of prognosis criteria for each of geophysical methods which are on ob-

servation of MCSM posts. The estimation of probability of that an earthquake will take a place is conducted, taking into account probabilities of possible forecasters for the region of mountains of Vrancha. For each of criteria, offered for a compatible analysis probabilistic indexes settled accounts during throughout the year, a selection is taken in which. An integral criterion which took into account influencing of found out every forecaster settled accounts in future.

It is set that most payment is given by radon and electromagnetic forecasters. However, none of them independently exceeded the value of probability of origin of earthquake for the region of Vrancha (R=0,358). But before an earthquake 12.05.2005 (M=5,1), when all worked criteria are select, probability of origin of earthquake a complex was R=0.77, that in 2,1 times exceeds probability of the simple guessing.

Subsequent development of methods of complex researches and receipt of the unique integral description is on observation posts, will enable yet more to promote reliability and efficiency of prognosis estimations.

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Thermal state of the West Carpathian lithosphere — measured data and modelling results

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We present the results received by the study of the thermal state of West Carpathian lithosphere both by direct methods and by modelling approaches. The direct methods are repre-sented by tables, graphs and maps of measured data — temperature distributions and heat flow density data collected and published mainly in [Atlas …, 1995]. The maps of thermal characteristics constructed in various depths levels of the upper part of the crust are there supplemented by related geological structures. The measured geothermal data were processed by classical interpolation and extrapolation methods. The modelling approaches are represented by results of stationary methods applied on cross sections along six profiles crossing the Carpathian arc [Majcin, 1993], by transient models [Majcin, Tsvyashchenko, 1994; Majcin et al., 1998] and by special 2D integrated modelling [Zeyen, Bielik, 2000; Zeyen et al., 2002; Dérerová et al., 2005; 2006] that combines interpretation of surface heat flow, gravity, topography and geoid data, which was used for calculation of the lithospheric thickness along nine geotransects passing through the Pannonian-Carpathian basin region. The temperature fields were calculated by the means of the finite difference method and of the finite element method. The density of calculated data allows to construct maps with the temperature distribution and distribution of