ture more complicated particularly for the 1990—1995 years (Fig. 2, *b*), where its intensity noticeably lower (18 nT/y) in comparison to IGRF-10 model (22 nT/y) and epicenter is located in Poland region.

Different changes in SV structure happen in 1995—2005 years. In fact during the 1995—2000 years the Balkan SV focus is cease to be effective. In the area of Black Sea the global minimum of secular variation (16 nT/y) from IGRF data become apparent (Fig. 3, *a*). The central and western part of Europe is under the influence of the global focus in the north-west part of Europe. Instead of IGRF model the global minimum according to the magnetic observatories is absent in the Black Sea region, while the SV structure in the area of Rumania and East Ukraine sophisticated by the regional minimum (22 nT/y, Fig. 3, *b*).

During the 2000—2005 years IGRF — 10 model do not contain particular anomalies in the SV structure (Fig. 4, *a*). Secular variations field slightly unvarying decrease in the north — west and western direction. However, magnetic observatories data more expressive indicate that the morphology of the SV field allocate the global focus in the north-west part of Europe (Fig. 4, *b*).

For the X, I and D components secular variation structure do not disagree with the structure of *Z*-omponent. In general, comparison of the SV structures based on IGRF model and observatories data indicate about its adequacy. In western part of Europe the differences much higher than in the eastern part [Maksymchuk et al., 2010].

For our opinion we have grounds to maintain that the SV focus which toke place in the Europe during the 70th in the end of XX century was collapsed. Time of its existence do not exceed more than 25—30 years. By the spatial and time characteristics it could be referred to the short periodic SV focus and its nature can be related to the magnetic field generation in the Earth kernel.

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Results of the geomagnetic survey on the Ukrainian repeat stations network for the 2005 year epoch

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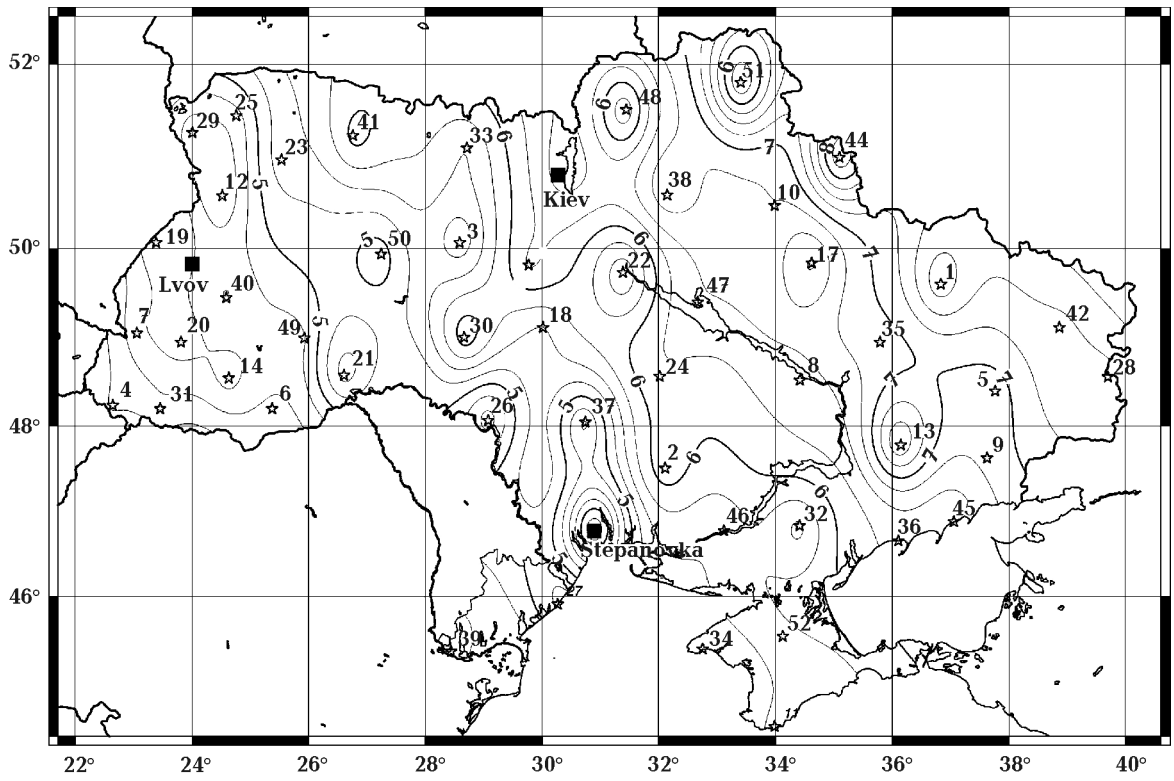
During 2003—2007 years there was renewed and enlarged the Ukrainian geomagnetic repeat stations (RS) network by the co-workers of Carpathian Branch of Subbotin Institute of Geophysics, Sub-

botin Institute of Geophysics and Ukrainian State Geological Prospecting Institute. At present time RS network contains 51 points. The distances between RS are about 100 km, i. e. the density of RS is about 1 point for 10 000 km^2. Similar networks are created in most European countries. The works of this scientific branch are coordinated by MagNetE (Magnetic Network in Europe) organization, which was founded in Potsdam in 2003. For accurate reduction of geomagnetic field components it is necessary to refer the RS measurements data to the continuous magnetic variation observations that are carried out on close by magnetic observatories (MO) or set of MO. There are 3 MO in Ukraine "Kyiv", "Lviv" and "Odesa", besides for the reduction accuracy increasing we can use the data of neighbouring countries MO such as "Belsk", "Tihany" etc. as well as the data of permanent magnetic variation on geophysical stations such as "Nyzhnje Selysche" etc.

The main task of magnetic RS measurement consists in creating the maps of normal geomagnetic field components and theirs secular variation (SV) rates. Alongside of geomagnetic fundamental problems decision the results of RS measurement allows to perform reduction of different time magnetic data to common epoch and unified normal field level. This is very important for creation of aggregated anomalous field maps of large areas. The results of RS magnetic measurements may be very useful in navigation and topographic mapping where magnetic declination D and its yearly changes are given.

Actuality of RS network magnetic measurements and creating the newest maps of normal magnetic field as well as its SV rate on the territory of Ukraine is emphasized also because of appearing of SV rate focus at the end of XX century in the Eastern Europe. The appearing of this focus makes it more difficult to use the worked out local anomalous magnetic field models and investigate this field temporal changes for tectonic magnetic investigations as well as for geophycical exploration. Comparison of SV rates calculated due to model IGRF-2005 with rates obtained on MO of Europe reveal as noticeable distinctions of theirs special structures and morphology of time series between them as well [Maksymchuk et al., 2010].

We did follow the international recommendations [Newitt et al., 1996] when selecting the place of RS founding and performing measurements of magnetic field components. The scalar of geomagnetic field



Isogons distribution on the territory of Ukraine reduced to epoch 2005.5. RS — Asterisks. MO — Black squares.

vectors were measured by proton magnetometers with sensitivity 0.1 nT. Magnetic declination and inclination (I) were determined with ferrosonde magnetometer mounted on demagnetized theodolite of 1 arcsec scale accuracy. The reductions of magnetic field *X*-, *Y*-, *Z*-components were done to middle of observation years epochs and to common epoch 2005.5 as well. These reductions were performed referencing the data of permanent observation of MO "Belsk", "Kyiv", "Lviv". Standard deviations of obtained results are in the range from 2 nT to 3.5 nT for *X*-, *Y*-, *Z*-components and lesser then 30″ for *I* and 50″ for *D*. These results were summarized in catalogue of Ukrainian RS for the 2005.5 epoch. We also created a set of maps for geomagnetic field components.

Comparison of components values that were obtained on Ukrainian RS network with the same components calculated due to IGRF-2005 model shows, that differences for linear (*X*, *Y*, *Z*) components lie in the range from several to several hundreds of nT. Apparently these differences are caused mainly by effect of magnetic anomalies localized in the Earth's crust. The map of magnetic declination *D* (isogons) has a particular applied interest. Such map due to 1st cycle of Ukrainian RS network measurements is shown on Figure. The values of *D*, reduced to epoch 2005.5 on the territory of Ukraine lie in the range from 4° in the western region to 8° in the eastern region. The isogons shown on Figure noticeably differ from the same calculated by model IGRF-2005. Unlikely to model isogons the observed ones are of very complicated configuration. One can easily distinguish several anomalies of regional scale on the background of global trend. The general features of isogons distribution configuration are in concordance with tectonic structure and anomalous magnetic field of regional scale.

Conclusion. The RS network creation on the territory of Ukraine allows make use of the obtained data in process of new generation IGRF model construction. Even results of 1st cycle measurements may be useful as for IGRF model more precise definition and for tectonomagnetic investigations as well. Undoubtedly it is necessary to fulfill the next cycle of measurements on the created RS network and if it would be possible to enlarge the number of RS.

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3D magnetic model of the East European Craton and its effect at near-surface and satellite heights

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Creation of 3D regional magnetic model of the East European Craton (EEC) for spherical Earth's needs corresponding cartographic support notably availability of a geomagnetic maps of a geomagnetic anomaly of the total intensity scalar $(\Delta B)_a$ and its normal component B_{IGRF}. At present time there are published and digital maps of a geomagnetic field, that give a possibility to perform a small-scale zoning, to separate a regional component $(\Delta B)_{a.reg.}$, as well as to evaluate inhomogeneity degree of the Earth's magnetic field. The first map of anomaly magnetic field for studied territory has been developed under the editorship of Z. A. Makarova [The Map …, 1977]. Next important achievement in magnetic mapping was creation a map of anomaly magnetic field of the Europe under the editorship of T. N. Simonenko and I. K. Pashkevich [The Map …, 1990]. Digital map of the world anomaly magnetic