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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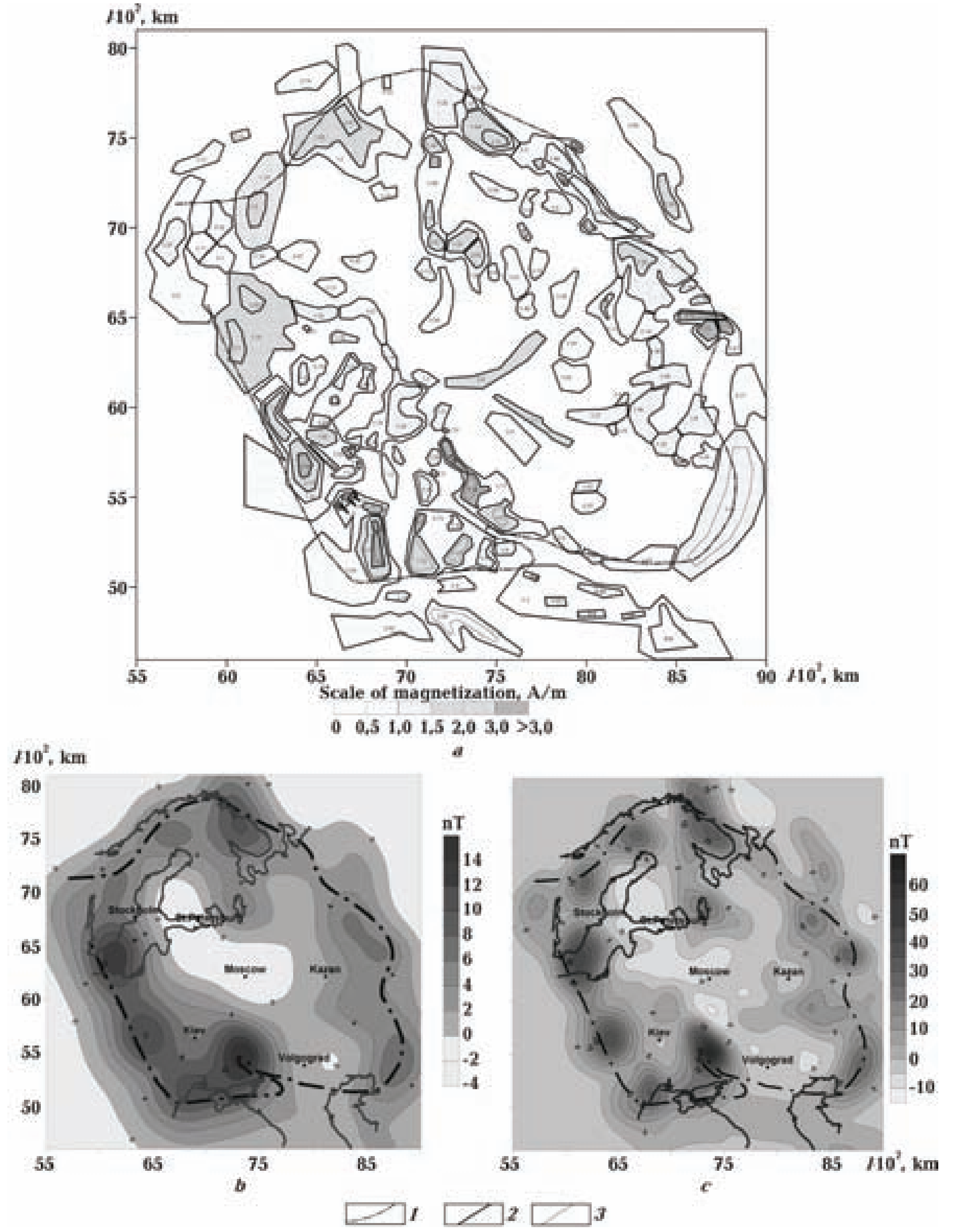
Creation of 3D regional magnetic model of the East European Craton (EEC) for spherical Earth's needs corresponding cartographic support notably availability of a geomagnetic maps of a geomagnetic anomaly of the total intensity scalar $(\Delta B)_a$ and its normal component B_{IGRF}. At present time there 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



3D magnetic model of the East European Craton (*a*) and magnetic anomalies from a model on height 400 km (*b*) and 200 km (*c*): *1* — boundary of the EEC, *2* — contours of lower, *3* — upper magnetic sources (in case of the inclined lateral sides).

field [Purucker, 2007] published under the aegis of UNESCO became the results of common 50-years researches concerning analyses of different-time and non-uniformly scaled terrestrial, marine, aero- and satellite surveys. These maps enabled to separate a regional component of the EEC magnetic field and to propose as a first approximation a 3D magnetic model of the Earth's crust [Orliuk, 1984; 1996; 2000; Orliuk, Pashkevich, 1995; Pashkevich et al., 1990]. Digital map of the regional component of EEC anomaly magnetic field was developed [Orliuk et al., 2007] with using the results of the works [Orliuk, 2000; Purucker, 2007]. Developing 3D Earth's crust magnetic model of a big territories it is important to take into account the values of Earth's normal magnetic field B_{IGRF}. For the EEC on the epoch of 2005 [http://ccmc.gsfc.nasa…] minimal values of the field B_{IGRF} are observed in south-western part of the territory (48000 nT) and maximum values — in the north and north-eastern of the territory (56000 nT).

First approximation of regional magnetic model for EEC was formed with using digital anomaly magnetic maps, Precambrian basement depths, temperature within the crust and petromagnetic rock. 3D regional magnetic model of the territory (Figure) was developed in the sequel using program-algorithmic complex [Kovalenko-Zavoisky, Ivashchenko, 2006] to solve direct task of magnetometry in spherical coordinates. The models of magnetic sources were set a few spherical blocks, each of which was characterized homogeneous magnetic susceptibility, and different, in the case of necessity, values component of the normal geomagnetic field.

Depth of magnetic sources was set in limits from 10 km (depth of a top edge of magnetic sources) to 40 km (depth of a base surface). The field calculated by model was compared in terms of quantity with the interpreted field. After several iterations the minimal differences between these fields were achieved.

Under obtained model of the EEC there are a large Earth's sections with magnetization values from 0,5 to 1,75 A/m and which sizes are 200—300 km. The sources having magnetization values 1,0—2,0 A/m and sizes of 40—100 km are located in the limits of these blocks. The magnetization values more that 2 A/m are inherent to the solids that are the sources of such regional magnetic anomalies as one: Kursk (>6,35 A/m), Odessa (3,5 A/m), Lvov (3,18 A/m), Gaisyn (3,23 A/m), West-Ingulets (3,6 A/m), Kiev (2,71 A/m), Kungursk (3.72 A/m) et al.

Intensity of magnetic field from 3D magnetic model at height of 10 km changes in limits ΔB_a=–(300—1200) nT, on height of 200 km ΔB_a=–(15—70) nT and at height of 400 km ΔB_a=–(4—14) nT.

As you can see from figure sources of magnetic anomalies are situated to boarder part of the EEC.

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