Magyar Állami Eötvös Loránd Geofizikai Intézet
GEOFIZIKAI KÖZLEMÉNYEK
XVII. kötet, 1–2. szám

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KOLLINEÁRIS NOMOGRAMRENDSZER TOPOGRÁFIAI KORREKCIÓK MEGHATÁROZÁSÁRA

A topográfiai korrekciót többnyire állandó sűrűséggel számítják. A tanulmány olyan nomogramok szerkesztésének elvét ismerteti, amelyek – ha változó sűrűséggel kell korrigálni – sok számítást megtakarítanak.

A nomogramok az ELGI Gravitációs Osztályán megtekinthetők.

ФАЙКЛЕВИЦ, З.

СИСТЕМА КОЛЛИНЕЙНЫХ НОМОГРАММ ДЛЯ ОПРЕДЕЛЕНИЯ ТОПОГРАФИЧЕСКИХ ПОПРАВОК

Топографические поправки, как правило, вычисляются с использованием постоянных величин плотности промежуточного слоя. В настоящей работе излагаются принципы составления номограмм, позволяющих в значительной мере сократить об'ем вычислительных работ при необходимости применения переменных величин плотностей.

Номограммы могут быть осмотрены в Гравиметрическом отделе Венгерского государственного геофизического института им. Л. Этвеша.

COLLINEAR NOMOGRAMS FOR GRAVITY TERRAIN CORRECTION*

Z. FAJKLEWICZ

As soon as gravity meters of high precision have been introduced the calculation of the terrain correction became necessary.

In calculating the gravity terrain correction the following formula is generally applied (Lukawczenko, 1951):

$$\Delta g_t = \frac{2}{n}\pi k^2 \sigma \Sigma (r_{m+1} - r_m + \sqrt{h^2 + r_m^2} - \sqrt{h^2 + r_{m+1}^2}) \qquad (1)$$

where k^2 – means the gravity constant, σ – the density of the surface "layer", h the average height of the topography in n sectors (into which a ring of r_m internal radius and external radius is divided), the station being placed in the center of the ring.

A kézirat 1966. IX. 30-án érkezett.

* Bányászati és Kohászati Akadémia, Krakkó

The formula (1) logarithmed on both sides transforms into the equation:

$$h(z) = af(x) + bg(y) + c \tag{2}$$

where $h(z) = \log \Delta gt$

$$af(x) = \log \sigma$$

$$bg(y) = \log \Sigma(r_{m+1} - r_m + \sqrt{h^2 + r_m^2} - \sqrt{h^2 + r_{m+1}^2})$$

$$c = \log \frac{2}{n} \pi k^2.$$

By the aid of (2), where functions $f(x)$, $g(y)$ and $h(z)$ are – within the divisions considered – monotonous and limited, one can draw up a collinear nomogram (J. Lukaszewicz, M. Warmus, 1956).

In the set of nomograms in question, density terrain correction and the average height of the (sector) topography are involved.

The nomograms contain the values of the gravity terrain correction for any surface density required.

Lukawczenko's nomograms (1951) used so far offered the same values only for a constant density ($\sigma = 2{,}0$ g/cm^3).

When detailing on rough topography (where individual calculations are needed) it is easy to comprehend that Lukawczenko's nomograms are apt to fail, in consequence of the enormous quantity of additional calculations required.

Collinear nomograms, however, offer direct reading of the terrain corrections.

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A set of collinear nomograms for practical purposes was constructed by the author. The nomograms are available on application to the author (Cracow, Poland), or to the "Roland Eötvös" Geophysical Institute (Budapest, Hungary).