

SHURYGIN, N.A., SHURYGIN, A.M., Dept. of Geology, Dept. of Mech. and Math., Moscow State University, Moscow, Russia.

All methods of resource calculation use sample means or weighted sample means. These estimators are the best when the distribution of variables is normal. We have such distribution when the variable is a sum of components. But in geology, we have not sum but multiplication: linear resource is the product of thickness by specific concentration, which contains multiplicative errors of laboratory analysis.

Let x_1 and x_2 be standard normal variables and $y = x_1|x_2|^\alpha$, $0 \leq \alpha \leq 1$. Then for estimation of the distribution center of y , variance of the sample median becomes less than variance of the sample mean, when $\alpha > 0.3$. When $\alpha = 1$, it is three times less! So, for the multiplicative case, the sample median estimates the distribution center much better than the sample mean. When the sample median is used, the problem of "hurricane samples" disappears automatically.

The estimator of minimum contrast for the median weighted by zones of sample influence is obtained. The random process of the multiplied fractal Brownian motions is considered and estimators of the integral (i.e. resource) and its error are written out.

The proposed method is compared with traditional one for real objects. It usually gives resource estimates that are less than traditional ones. So frequent facts of resource and its error overestimation turns out to be the result of using statistical methods which do not fit for the geological problem of resource calculation because of multiplicative noise in data.