

# Multivariate simulation of block-support grades at Mehdiabad deposit, Iran

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### Abstract

The evaluation of process performance within mining operations at Mehdiabad complex deposit, Central Iran, requires modelling the spatial variability of six cross-correlated grade variables: zinc (Zn) and lead (Pb) as the main products, silver (Ag) and copper (Cu) as byproducts, and iron (Fe) and manganese (Mn) as contaminants. To this end, the variables are first transformed into spatially uncorrelated factors, using the minimum/maximum autocorrelation factors approach, then the factors are simulated directly at the target block support. The result is a set of realisations (equiprobable scenarios) of the grade distribution within the deposit, which reproduce the joint dependence relationships and natural variability at all spatial scales. This model can decrease the level of uncertainty in Mehdiabad project development and consequently in production.

### Palabras clave

Palabras clave de autor: [Geological uncertainty](#); [joint simulation](#); [direct block simulation](#); [minimum/maximum autocorrelations factors](#)

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