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Joint simulation of stationary grade and non-stationary rock type for quantifying geological uncertainty in a copper deposit

Mohammad Maleki, Xavier Emery

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1 **Joint simulation of stationary grade and non-stationary rock**
2 **type for quantifying geological uncertainty in a copper deposit**

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Mohammad Maleki¹, Xavier Emery²5 **Abstract**

6 In mineral resources evaluation, the joint simulation of a quantitative variable, such as a
7 metal grade, and a categorical variable, such as a rock type, is challenging when one wants
8 to reproduce spatial trends of the rock type domains, a feature that makes a stationarity
9 assumption questionable. To address this problem, this work presents methodological and
10 practical proposals for jointly simulating a grade and a rock type, when the former is
11 represented by the transform of a stationary Gaussian random field and the latter is obtained
12 by truncating an intrinsic random field of order k with Gaussian generalized increments.

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¹ Department of Mining Engineering, University of Chile, Santiago, Chile.

Advanced Mining Technology Center, University of Chile, Santiago, Chile.

² Corresponding author

Department of Mining Engineering, University of Chile, Santiago, Chile.

Advanced Mining Technology Center, University of Chile, Santiago, Chile.

E-mail address: xemery@ing.uchile.cl

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