

## A BIVARIATE GEOSTATISTICAL MODEL FOR COMPOSITIONAL DATA

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- *ABSTRACT: This work is motivated by the interest in modeling spatial patterns of compositional data. Target problems includes soil fractions or rock chemical composition, or, more generally, data structures with observations being parts of a whole and recorded spatial locations. The main interest is joint prediction of the components within the study area accounting for the adding to one restriction. Methods for compositional data analysis, initially developed for independent observations, are combined with a multivariate geostatistical model. An explicit parametric model is assumed for the variables. In particular, a bivariate model is presented with associated likelihood based methods of inference and results for spatial prediction as well as a computational implementation. Three simulated data with different characteristics are used to illustrate the methods of analysis and results are presented by prediction maps.*
- *KEYWORDS: Multivariate geostatistics; compositional data; likelihood.*

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