POZVÁNKA

na přednášku v rámci

Semináře z aplikované statistiky

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Spatial clustering in Bayes spaces
for functional compositions in heterogeneous systems

Abstrakt

The statistical analysis of Functional Compositions (FCs) is a key issues in Earth Sciences. For instance, proper characterization FCs is crucial to the environmental applications whose data bases are probability density functions, e.g., in climatic studies (precipitation distributions), groundwater modeling or geochemical mapping (soil compositions). We here investigate the problem of clustering FCs, possibly in the presence of spatial dependence. We rest our developments on the theory of Bayes Hilbert spaces, combined with the viewpoint of Functional Data Analysis. The former allows to cope with the data constraints, the latter enables to overcome the curse of dimensionality which inevitably affects the statistical analysis of infinite-dimensional data. We revise the key concepts of clustering functional data in the light of the Bayes space theory and consistently develop an original K-means method for spatially dependent FCs. Further, we show how to incorporate the clustering information into a geostatistical model and accordingly perform predictions via Class-Kriging. We demonstrate the potential of the proposed methodology through a field scale setting relying on a set of particle-size densities collected within a three-dimensional heterogeneous aquifer, which is conceptualized as a composite system associated with an uncertain spatial arrangement of geomaterials.

K účasti jsou srdečně zváni všichni učitelé, vědečtí pracovníci a studenti,
kteří mají zájem o danou problematiku.

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