A Review on Geostatistics and Applications of Geostatistics

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Abstract

Geostatistics is a powerful statistical framework for analyzing and modelling spatially correlated data. It has found widespread application in various fields, including geology, hydrology, environmental sciences, and mining, among others. This abstract provides an overview of the fundamental concepts and methods in geostatistics, highlighting its key principles, techniques, and applications. The abstract begins by introducing the concept of spatial variability and the challenges associated with analyzing and interpreting spatial data. Geostatistics offers a systematic approach to address these challenges by characterizing and quantifying spatial dependence through the concept of variograms. Variograms provide valuable insights into the spatial structure of data, allowing for the estimation of spatial continuity and the prediction of values at unsampled locations using interpolation techniques such as kriging.

The abstract further discusses the importance of sampling design and data quality in geostatistical analysis. It emphasizes the need for representative sampling schemes that capture the spatial heterogeneity of the study area and the importance of data validation and quality control procedures. Various geostatistical methods, such as ordinary kriging, universal kriging, and indicator kriging, are presented, along with their respective assumptions and applications. Additionally, the abstract highlights the integration of geostatistics with Geographic Information Systems (GIS) and remote sensing technologies. This integration enables the incorporation of spatial covariates and the integration of multiple data sources, enhancing the accuracy and robustness of geostatistical analyses. The abstract also discusses the advancements in geostatistical software and computational techniques that have facilitated the implementation and interpretation of geostatistical models.

Geostatistical so ware and tools: [illegible]

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