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Simulation of Lithological Classification in Choshui river Alluvial Fan based on Multiple-point geostatistics

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In the applications and studies of subsurface flow, it is necessary to understand the geological lithological composition in the study area. So as to find out the lithological distribution in the study area, many geological spatial statistical methods used to analyze the lithological composition on unsampled points. One of the drawbacks in the traditional two-point based geostatistical methods(e.g., Kriging) is that they based on variogram, thus, inability to handle complex and heterogeneous spatial structures. Furthermore, they produce excessively smooth results. The goal of Multiple-point geostatistics is to overcome the limitations of the variogram. Multiple-point geostatistics is a general statistical framework to model spatial fields with complex structures. It uses training image(TI) instead of variogram to estimate the conditional probability at interpolation location by the observed data and the already interpolated data. Take advantage of TI helps extracting spatial structure information and precisely describing more complex structures. This study focuses on Choshui river alluvial fan, using multiple-point geostatistics method to do simulation of lithological classification.