



Estimation of Lithological Classification in Taipei Basin: A Bayesian Maximum Entropy Method

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In environmental or other scientific applications, we must have a certain understanding of geological lithological composition. Because of restrictions of real conditions, only limited amount of data can be acquired. To find out the lithological distribution in the study area, many spatial statistical methods used to estimate the lithological composition on unsampled points or grids. This study applied the Bayesian Maximum Entropy (BME method), which is an emerging method of the geological spatiotemporal statistics field. The BME method can identify the spatiotemporal correlation of the data, and combine not only the hard data but the soft data to improve estimation. The data of lithological classification is discrete categorical data. Therefore, this research applied Categorical BME to establish a complete three-dimensional Lithological estimation model. Apply the limited hard data from the cores and the soft data generated from the geological dating data and the virtual wells to estimate the three-dimensional lithological classification in Taipei Basin.

Keywords: Categorical Bayesian Maximum Entropy method, Lithological Classification, Hydrogeological Setting