

Stochastic investigation of two-dimensional cross sections of rocks based on the climacogram

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The statistical properties of soil and rock formations are essential for the characterization of the porous medium geological structure as well as for the prediction of its transport properties in groundwater modelling. We investigate two-dimensional cross sections of rocks in terms of stochastic structure of its morphology quantified by the climacogram (i.e. variance of the averaged process vs. scale). The analysis is based both in microscale and macroscale data, specifically from Scanning Electron Microscope (SEM) pictures and from field photos, respectively. We identify and quantify the stochastic properties with emphasis on the large scale type of decay (exponentially or power type, else known as Hurst-Kolmogorov behaviour).

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