Geosystems of Transition Zones, 2018, vol. 2, N 2, p. 125–130
Геосистемы переходных зон, 2018, т. 2, № 2, с. 125–130
http://dx.doi.org/10.30730/2541-8912.2018.2.2.125-130

Full text RUS
https://elibrary.ru/item.asp?id=35076998

Algorithm of optimal choice of time series ranges for fractal analysis

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Abstract

Algorithm for optimal choice of time-series ranges for fractal analysis based on proper dividers is developed. Main advantages of the proposed algorithm are shown using rescaled range method in comparison with standard bisection algorithm: minimal information loss, more accurate estimation of fractal characteristics due to a larger number of approximation points, and ability to process shorter time series with a length of less than 256 samples. The developed algorithm can be used as a preliminary stage in estimation of fractal characteristics by such methods as Rescaled Range Analysis, Detrended Fluctuation Analysis, and Variance-Time Analysis.

Keywords

Fractal analysis, Fractal dimension, Rescaled range method, Proper dividers, Hurst parameter

References

For citation: Cheshev M.E., Sychev V.N., Imashev S.A. Algorithm of optimal choice of time series ranges for fractal analysis. *Geosystems of Transition Zones*, 2018, vol. 2, N 2, p. 125–130. (In Russian). doi:10.30730/2541-8912.2018.2.2.125-130