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The prediction of geophysical time series using empirical mode decomposition

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In this paper we offer to use Empirical Mode Decomposition (EMD) to construct a neural networks vector predictor for a time series global forecasting. These modes allow representing a time series as a sum of a slow trend and a set of high-frequency 'details' or internal modes. Minimal account of internal modes, that in sum approximates an original time series accurately to inessential details, is equivalent to noise filtration. This method is tested on the example of the predictions implemented with the help of Artificial Neural Networks (ANN) for time series of monthly Wolf numbers (Numbers of Sunspots). The empirical mode decomposition can be applied for improving nonlinear long term time series predictions.