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The application of empirical mode decomposition method in extracting the period of deposition rate curve

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The rational decomposition of deposition rate curve is a key section of the basin dynamic analysis, and along with that moving window method was used in the current study. This needs a user's judgment about geological period which could be affected by artificial factors. An attempt on using empirical mode decomposition for the decomposition of deposition rate curve is presented in this essay. The deposition rate data from Puguang area of Sichuan basin, north Tarim uplift, Chuxiong basin are used as experimental data. The curves are decomposed series of IMFs, and each IMF is fitted with a sine function with different period, amplitude and phase at different time section especially in high frequency IMF. It can indicate the periodic geological event from the parameter of the function. Compared with the results obtained by moving windows, several conclusions stated that EMD is faster and more convenient: the results from two methods are basically similar, high frequency curve fits better but has relatively bigger error, low frequency curve fits common but has smaller error; however, the EMD method is more simple and efficient to get. The IMFs dissociated from deposition date diagram have better periodicity and stability than the moving windows. But the amplitude is different and has no relations with the energy function. To decompose deposition rate curve with EMD has certain feasibility. As its operation is easy, gives the specific value and is completely derived by data.

Biography

Zhang Bo has completed his Bachelor's degree from China University of Petroleum (Beijing) and currently pursuing his Master's degree at Unconventional Natural Gas Institute of China University of Petroleum (Beijing).

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