عنوان مقاله:

Modeling groundwater quality using three novel hybrid support vector regression models

محل انتشار:

فصلنامه پیشرفت ها در فناوری محیط زیست, دوره 6, شماره 2 (سال: 1399)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

During recent decades, the excessive use of water has led to the scarcity of the available surface and groundwater resources. Quantitative and qualitative surveys of groundwater resources indicate that accurate and efficient optimization methods can help to overcome the numerous challenges in assessment of groundwater quality. For this purpose, three optimization meta-heuristic algorithms, including imperialist competitive (ICA), election (EA), and grey wolf (GWO), as well as the support vector regression method (SVR), were used to simulate the groundwater quality of the Salmas Plain. To achieve this goal, the data of the groundwater quality for the Salmas plain were utilized in a statistical period of ۱۰ years (۲۰۰۲-۲۰۱۱). The results were evaluated according to Wilcox, Schuler, and Piper standards. The results indicated higher accuracy of the GWO-SVR method compared to the other two methods with values of R۲=۰.۹۸۱, RMSE=۰.۰۲۰ and NSE=۰.۹۷۵. In general, a comparison of the results obtained from the hybrid methods and different diagrams showed that the samples had low hardness and corrosion. Also, the results indicated the high capability and accuracy of the GWO-SVR method in estimating and simulating the groundwater quality.

کلمات کلیدی:

Meta-heuristic algorithms, Groundwater quality, Modeling, Salmas plain

لینک ثابت مقاله در پایگاه سیویلیکا: