

## Water Quality Simulation in reservoirs in series on the Maotiao River, Southwest China

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The construction of dams in series has a great impact on the quality and structure of aquatic ecological system of river basin. In this study, we investigated six reservoirs in series on the Maotiao River, southwest China. A monthly sampling strategy was performed in these reservoirs, during year of 2006 to 2007. Nutrients concentration and other parameters, such as DO, T and pH along the river reach and water column in reservoirs were determined. The results showed that seasonal DO and thermal stratification were developed obviously in the Baihua Reservoir and the Hongfeng Reservoir. In addition, we used WASP software to simulate the water quality of these six reservoirs. By comparison, simulated value fitted well with the monitoring values, especially the DO. In the Baihua Reservoir, serious pollution was frequently occurred in October, and DO concentration was extremely low, due to the water overturn. Based on our monitoring and simulating results, we tried to adjust the inflow discharge, and we found that the simulated value of DO in epilimnion in the Baihua Reservoir can be increased by 1.3 mg/L in October. This result indicates that the discharge regulation in upstream reservoirs is a potential method to mitigate the water pollution in downstream reservoir.

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## Geoelectrochemical anomaly, mechanism and exploration of copper and nickel deposit, Hongqiling, Jilin, China

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The geo-electrochemical study of Hongqiling Cu-Ni deposit resulted in a significant understanding of the geo-electrochemical feature of this copper nickel ore deposit, such as finding the ore-forming halo mechanism of the electrochemistry, which can be used for exploring the concealed ore deposits. This exploration method, called geo-electrochemical extraction, was successfully applied in the area of the Hongqiling mining area, Jilin province, China. The geo-electrochemical result shows that there exist geochemical anomalies of Cu, Ni, Co, Pt, Cr, Sr over the ore bodies. These anomalies, with synchronous vertical feature, are characterized variable value order from high to low: Cu>Ni>Co>Pt>Cr>Sr. The study of the electrochemical dissolution of Cu- Ni ores shows that after 24-hour,  $2.2 \times 10^{-6}$  of  $\text{Cu}^{2+}$ ,  $1.8 \times 10^{-6}$  of  $\text{Ni}^{2+}$ , and  $1.5 \times 10^{-6}$  of  $\text{Co}^{2+}$  dissolved from the ores appear in the solution. This experimental work proves that the Cu-Ni ores can be dissolved by using electrochemical method, and thus the geo-electrochemical extraction is feasible in searching for concealed ore deposits. The success of this exploring technique in the exploration for concealed ore deposits has been demonstrated in the subsequent exploration activities in the Hongqiling area, and resulted in discoveries of 3 areas of geo-electrochemical anomaly.