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RISK ASSESSMENT AND CLASSIFICATION FOR DETENTION BASINS BASED ON PARTICLE SWARM OPTIMIZATION - SUPPORT VECTOR REGRESSION (PSO-SVR) IN HUIIHE RIVER BASIN, CHINA

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Abstract

With global climate change, flood disasters occur frequently and detention basins are facing greater flooding risk. The flood risk assessment of detention basins becomes an important content for the management of detention basins.

In this study, the index system of flood risk assessment of detention basins in Huaihe River Basin is established according to the natural and social properties of detention basins flood disasters. The flood risk assessment methods are proposed based on support vector regression with particle swarm optimization (PSO-SVR). The 28 detention basins of Huaihe River Basin are evaluated by PSO-SVR and risk grades are obtained. The 28 detention basins are classified for three categories: 14 detention basins belong to lower risk areas, 10 detention basins belong to moderate risk areas and 4 detention basins belong to higher risk areas. The assessment results are consistent with the actual conditions of detention basins of Huaihe River Basin.

The study shows that the PSO-SVR model is effective for flood risk assessment of detention basins and can provide decision-making support for detention basins management.

Key words: detention basin, Huaihe River Basin, risk assessment, support vector regression (SVR)

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