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Analysis of the Changing Laws and Influencing Factors of Social and Economic Indicators in the Upper Reach of Han River basin

Wei Xiu (1), Liu Dengfeng (1), Luan Jinkai (1), Li Mingliang (2), Lin Mu (3), and Yang Qian (1)

(1) State Key Laboratory Baes of Eco-hydraulic in Arid Area,School of Water Resources and Hydropower Engineering,Xi'an University of Technology,Xi'an710048,china, (2) General institute of water resources and hydropower planning and design,Ministry of Water Resource,Beijing100081,china, (3) School of statistics and Mathematics,Central University of Finance and Economics,Beijing 100081,china

Abstract [U+FF1A] In the socio-hydrological system, the social processes, ecological processes and hydrological processes coupled together and interacted [U+3002] The base of the analysis and modeling of socio-hydrological processes society is the quantitative analysis of the social processes.The construction of the middle route of the South-To-North Water Diversion Project and the implementation of the Dan River ecological management project will have an important impact on the socio-economic development of the upper Han River basin.In order to reveal the changing laws of social and economic indicators in the Upper Reach of Han River,The social and economic processes in the Upper Reach of Han River are quantitatively analyzed.In this study, 12 socio-economic indicators,such as Total population, Gross domestic product (GDP),Per capita net income of farmers,Fiscal revenue,Common cultivated land area and Total grain output of the 29 counties in the upper reaches of the Han River Basin are utilized.based on the year of Han River Ecological Comprehensive Management,the indicators and their growth rates are analyzed by methods of one-dimensional linear regression,Mann-Kendall comprehensive test and cumulative departure.Economic indicator curves charts and mutation analysis shows that before and after the Han River Ecological Management,the total grain output changed from the decline trend to significantly decreased,the common cultivated land area has experienced from the reduction to the significant reduction,then to the relatively stable change,the oil-bearing crops output showed a slight upward trend,and the other economic indicators changed from the slow upward trend to a significant upward trend.Growth rates curves of socio-economic indicators and mutation analysis shows that,during and after the period of Dan River Comprehensive Management,except the total population growth rate, the rest of growth rates of the socio-economic indicators showed a downward trend in different ranges.According to the analysis results, some relevant ecological compensation suggestions are put forward for the Upper Reach of the Han River Basin.

Key Words: Han river basin,Mann-kendall comprehensive test,One-dimensional linear regression analysis,Cumulative departure,Ecological management,Ecological compensation.