



The effects of urbanization on catchment storage capacity of surface water – a conceptual model in plain catchment in Yangtz river delta

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Hydrological process in Yangtze river delta area have been significantly changed due to rapid urbanization. A conceptual model involved four modules - river network, lakes/reservoir, wetland and forest – was proposed to quantify the surface water storage capacity in Qinhuai River Basin, Yangtz River Delta, and its temporal variation and sensitivity from 1980s to 2010s was analyzed. The data source includes MSS/TM images, thematic maps, Digital Elevation Model, and gauged hydrological data from 1980s and 2010s. The main findings indicated that, 1) the construction land expanded by eight times, while the forest area decreased by 55%; 2) although the total water area increased, the complexity and stability of river network declined; 3) the surface water storage capacity of Qinhuai river catchment decreased by 13.45%, from $207.39 \times 10^6 \text{ m}^3$ to $179.49 \times 10^6 \text{ m}^3$ during the study period; 4) the lake/reservoir storage is the most sensitive module to the urbanization, while the river network module serves as main contributor to the total storage. More effects should be made in the protection and restoration of the low-level rivers, forest and wetlands to protect the catchment storage capacity. The results of the study would provide support in policy formulation and intervention strategies.