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Effects of Dams Operations on Streamflow Change in Yangtze River Basin, China

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Response of streamflow to dams operations is a hot topic in hydrological relevant fields. In Yangtze River basin, dams operations are very likely to have effects on the change of streamflow. In this study, the effects of dams operations on streamflow change during 1988-2012 were quantitatively evaluated over the Yangtze River basin by means of SWAT model and scenarios analysis. It was found that the operations of dams strongly affected seasonal discharge variations. For the periods of 1993-2002, the maximum compensation and reduction of monthly discharge caused by dams operations reached 5.4% and -3.2% respectively. After the operation of the Three Gorges Reservoir in 2003, influence of dams operations on monthly discharge during 2003-2012 was strengthened. The discharge was compensated from January to May and reduced from July to November, and the maximum compensation and reduction of monthly discharge due to dams operations reached 33.3% and -23.5% respectively. However, the contribution of dams operations to inter-annual variability of streamflow was very small.