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Isotope (^{18}O & D) monitoring in Yangtze River Basin, China

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Yangtze River is the longest river in China, and the third longest around the world. The isotope composition of D and ^{18}O is of significant importance in understanding the global hydrological cycle and water balance in large river basins. Since 2003, 4 regular monitoring stations have been selected for isotope monitoring, and 72 water samples at 41 monitoring stations were recovered during a two-week campaign in January 2003 and analyzed for D and ^{18}O composition. Results exhibited that variation in the D and ^{18}O of water samples along the main stem of the Yangtze River strongly reflects the isotope pattern of the regional precipitation. The average fractionation rate of ^{18}O along the main stem of Yangtze River is –2.07 ‰ per 1000 km, which is consistent with the fractionation rate of continental regions (–2‰ per 1000km). Furthermore, enrichment of D and ^{18}O is obvious due to the evaporation effect by the main reservoirs (Ge zhouba, Three Gauge dam) and lakes (Dongting Lake, Honghu Lake, Poyang Lake) along the main stem of Yangtze River. In addition, the relationship of isotope composition (D and ^{18}O) in the 4 regular monitoring stations is in good accordance with the GMWL.