Supporting information for "Irrigation, damming, and streamflow fluctuation of the Yellow River"

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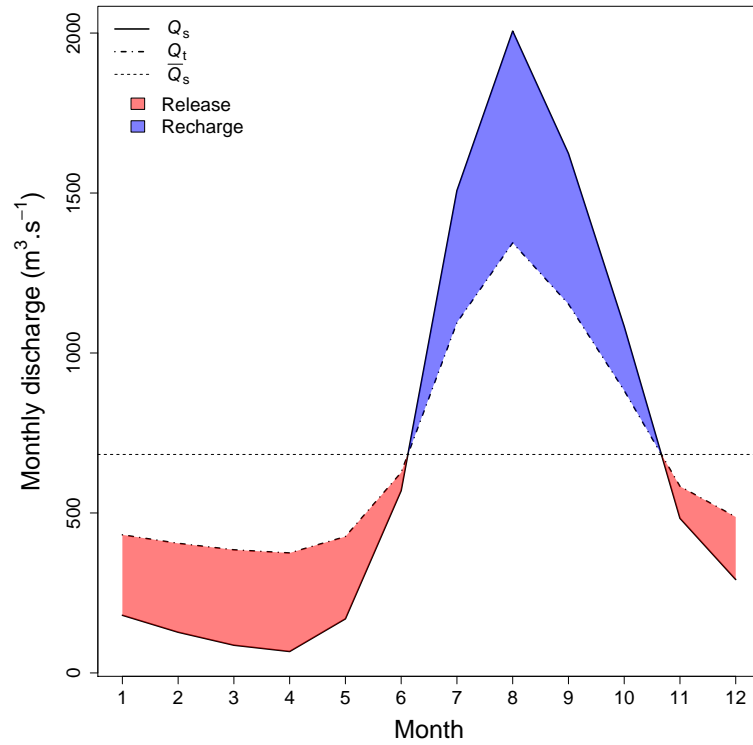
Figure S1. Conceptual plot for the dam operation model. Solid line is multi-year averaged monthly discharge (Q_s, Eq. 1). Solid-dashed line is the targeted monthly discharge (Q_t, Eq. **??**). Dashed line is multi-year mean monthly discharge. One year is divided into recharging and releasing season. Blue and red patterns indicate targeted water storage change ΔW_t during the recharging and releasing season, respectively.
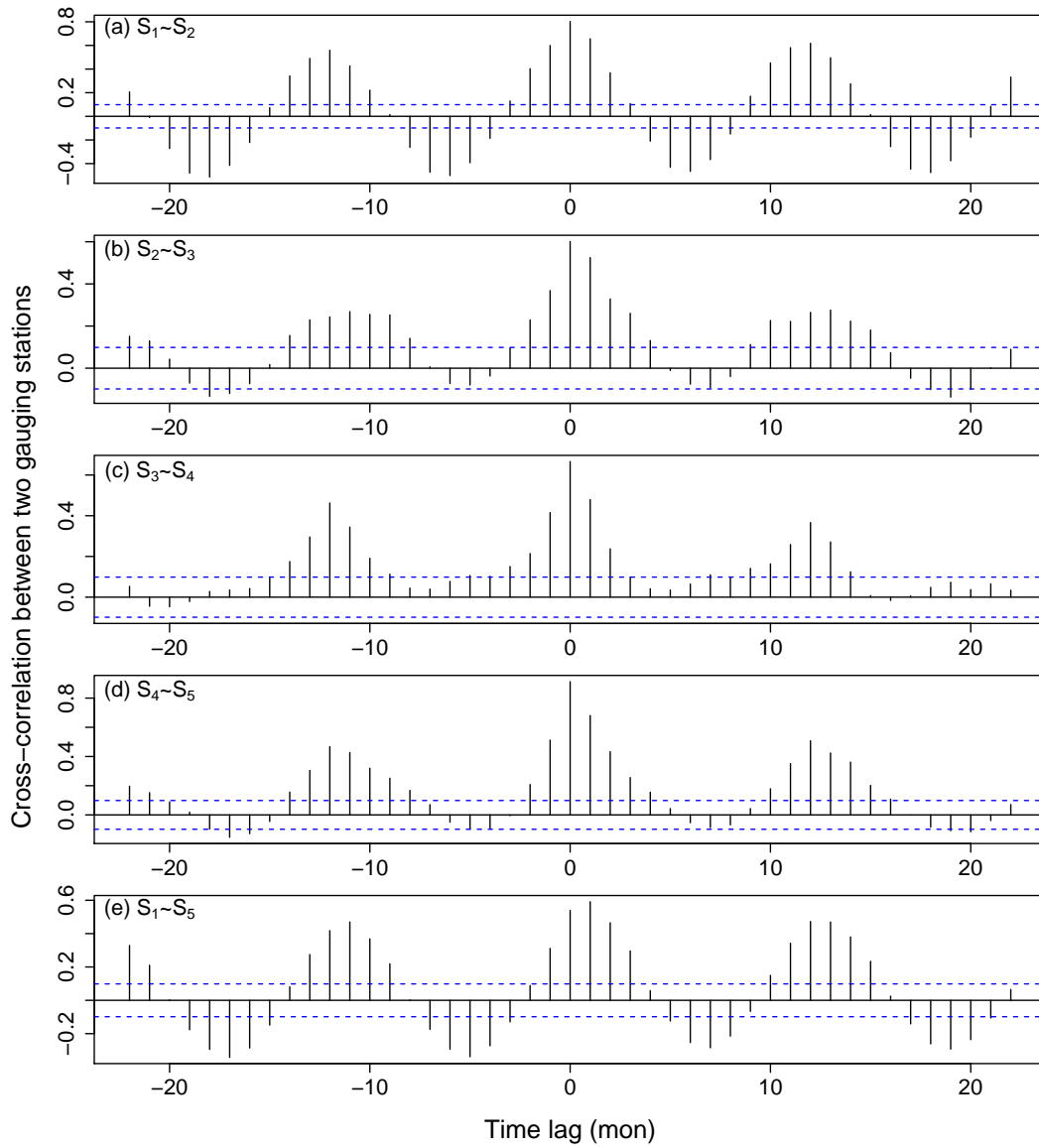
Figure S2. (a)-(d): cross-correlations of observed Q from two neighbour gauging stations. x-axis is the time lag in month. Blue dashed lines are thresholds of significant correlations. (e): cross-correlations of observed Q between the first and the last gauging stations.
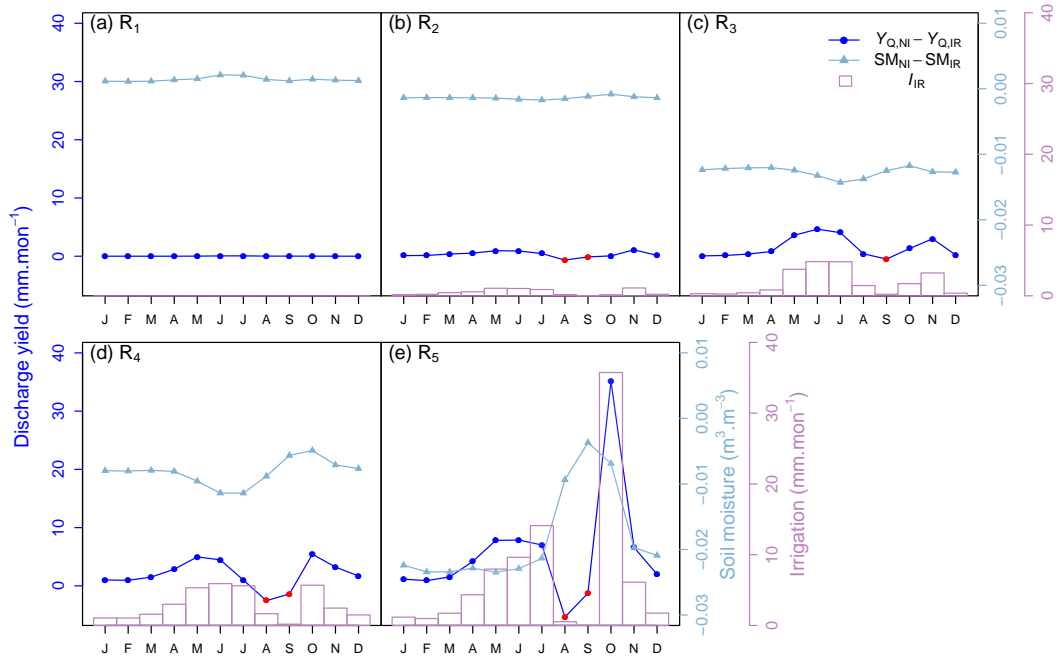
Figure S3. Effects of irrigation on soil moisture (SM) and discharge yield (Y_Q, sum of surface runoff and deep drainage) in each R_i. In the case of Y_Q, negative points are colored red. Purple bars are monthly irrigation based on IR simulation.
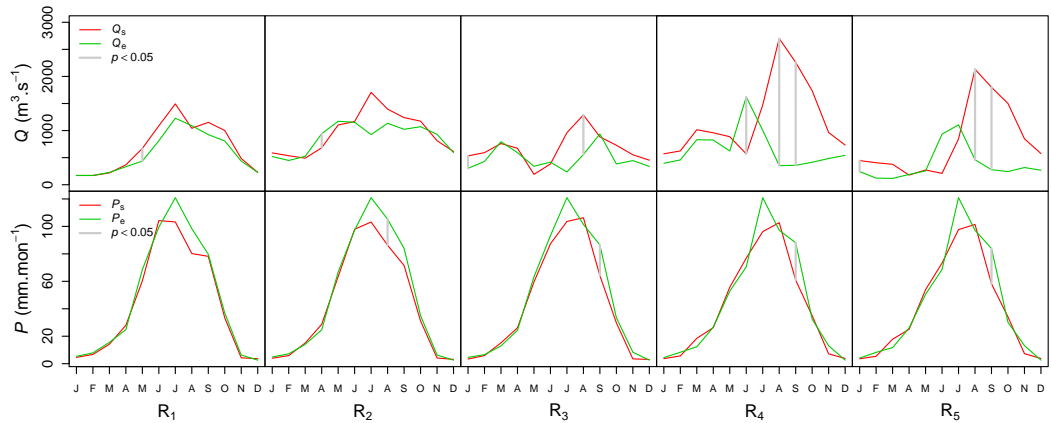
Figure S4. Top panel: changes of observed Q from 1982 to 2014. Red and green lines represent monthly Q at start and end of the diagnosing period based on linear regression. Gray bars indicate significant trends found based on Mann-Kendall test. Sub-figures correspond to specific sub-regions. Bottom panel: same as the top panel but for P from GSWP3 forcing.

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