Figure S1. The Topographic Wetness Index (TWI) of the CONUS.
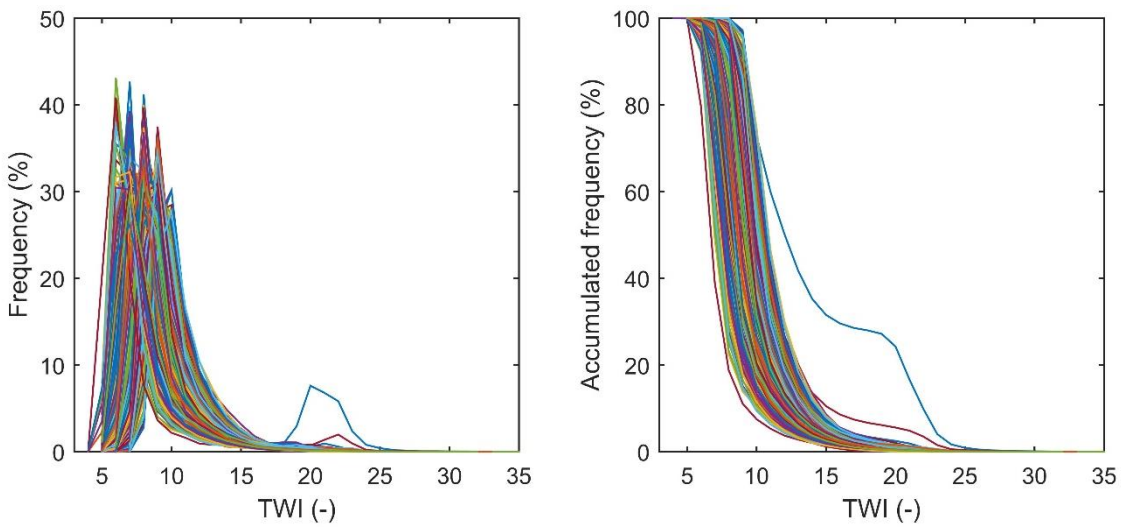
Figure S2. a) The frequency distribution of the TWI of the 323 MOPEX catchments; b) the accumulated frequency distribution of TWI of the 323 MOPEX catchments.
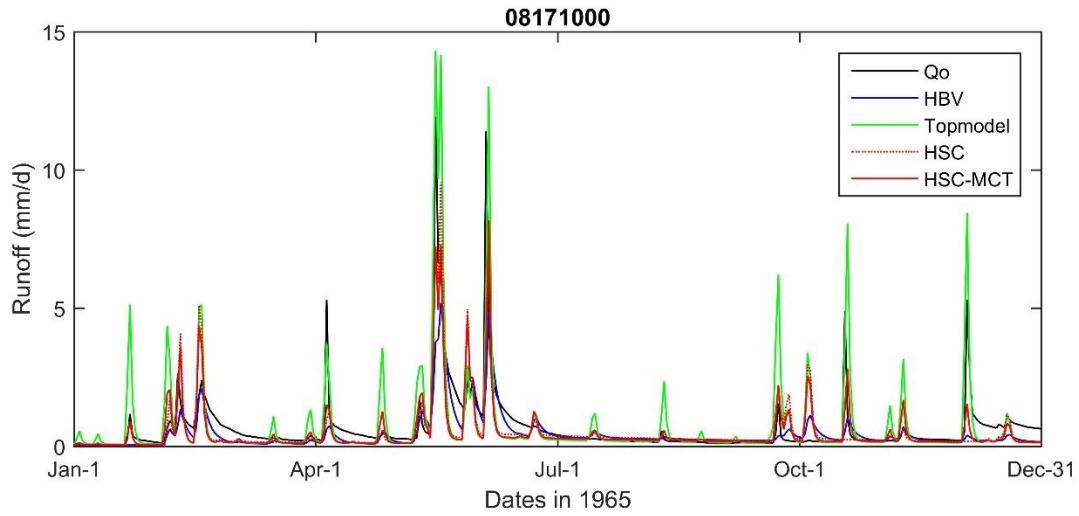
Figure S3. The observed and simulated hydrographs of four models in the 08171000 catchment.
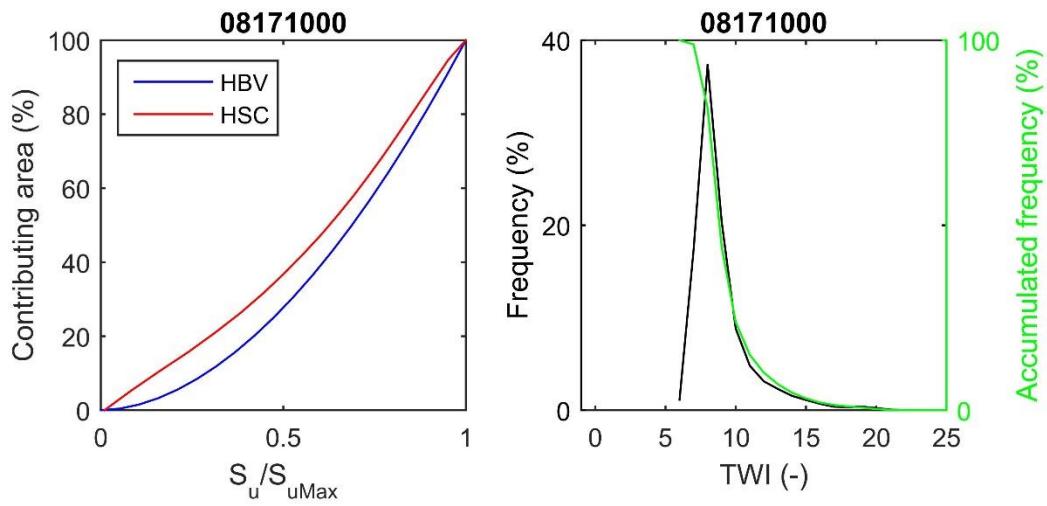
Figure S4. The curves of the beta function of HBV model, and the Su-As curve generated by HSC model (the left figure). The frequency of TWI and accumulated frequency of the TWI in 08171000 catchment (the right figure).