

*Supplement of*

## **Integrated Catchment Classification Across China Based on Hydroclimatological and Geomorphological Similarities Using Self-Organizing Maps and Fuzzy C-Means Clustering for Hydrological Modeling**

Jiefan Niu<sup>1,2,3</sup>, Ke Zhang<sup>1,2,3,4,5</sup>, Xi Li<sup>1,2,3</sup>, and Hongjun Bao<sup>4,6</sup>

<sup>1</sup> The National Key Laboratory of Water Disaster Prevention, Hohai University, Nanjing, Jiangsu, 210098, China

<sup>2</sup> Yangtze Institute for Conservation and Development, Hohai University, Nanjing, Jiangsu, 210024, China

<sup>3</sup> College of Hydrology and Water Resources, Hohai University, Nanjing, Jiangsu, 210024, China

<sup>4</sup> China Meteorological Administration Hydro-Meteorology Key Laboratory, Hohai University, Nanjing, Jiangsu, 210024, China

<sup>5</sup> Key Laboratory of Water Big Data Technology of Ministry of Water Resources, Hohai University, Nanjing, Jiangsu, 210024, China

<sup>6</sup> National Meteorological Center, China Meteorological Administration, Beijing, 100081, China

*Correspondence to:* Ke Zhang (kzhang@hhu.edu.cn), Hongjun Bao (baohongjun@cma.gov.cn)

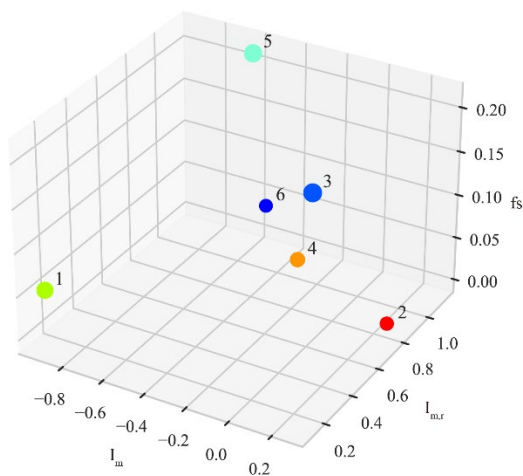


Figure S1. Climate cluster centroids in climate feature space. The three dimensions of the coordinates indicate  $I_m$ ,  $I_{m,r}$ , and  $fs$ . Color coding correspond to  $T_m$  with the blue and red to low and high values, respectively. Marker size corresponding to  $T_{m,r}$ .

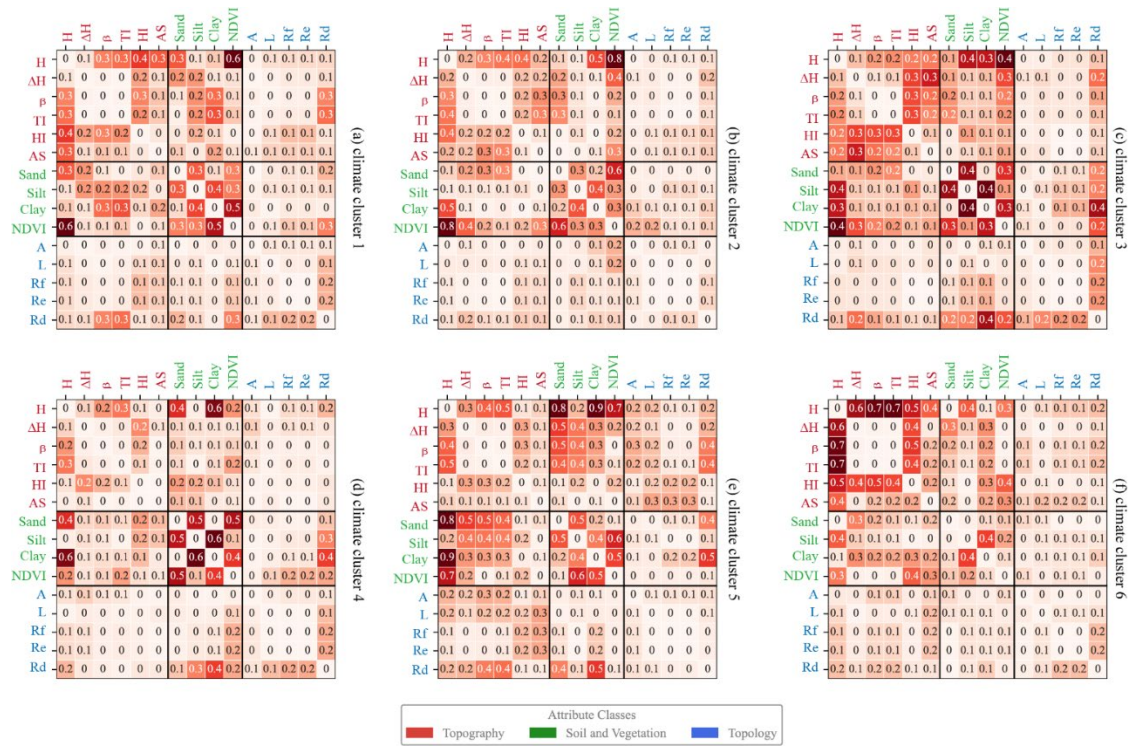
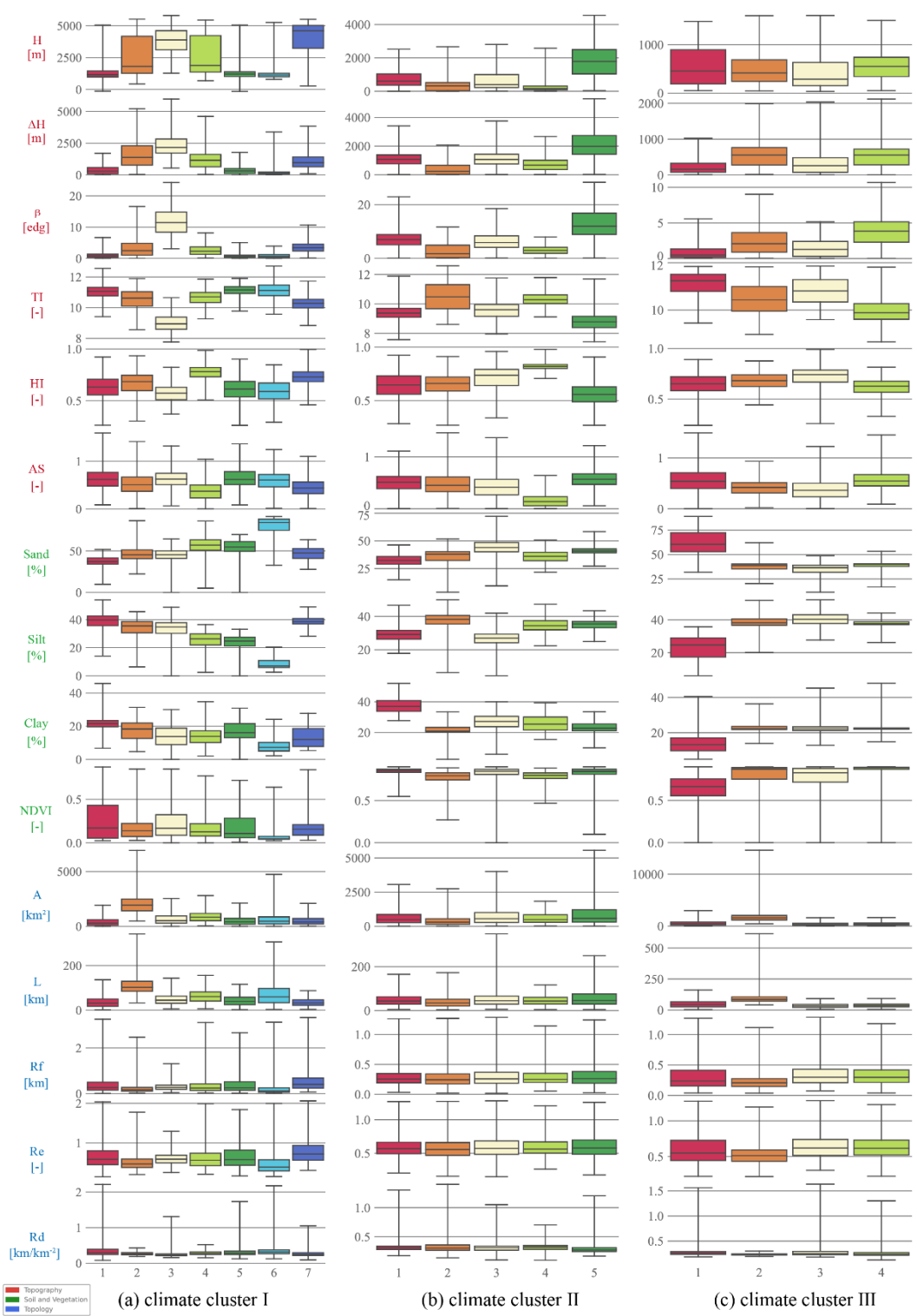


Figure S2. Absolute differences of the correlation coefficients between the climate regions and average in China.



(a) climate cluster I

(b) climate cluster II

(c) climate cluster III

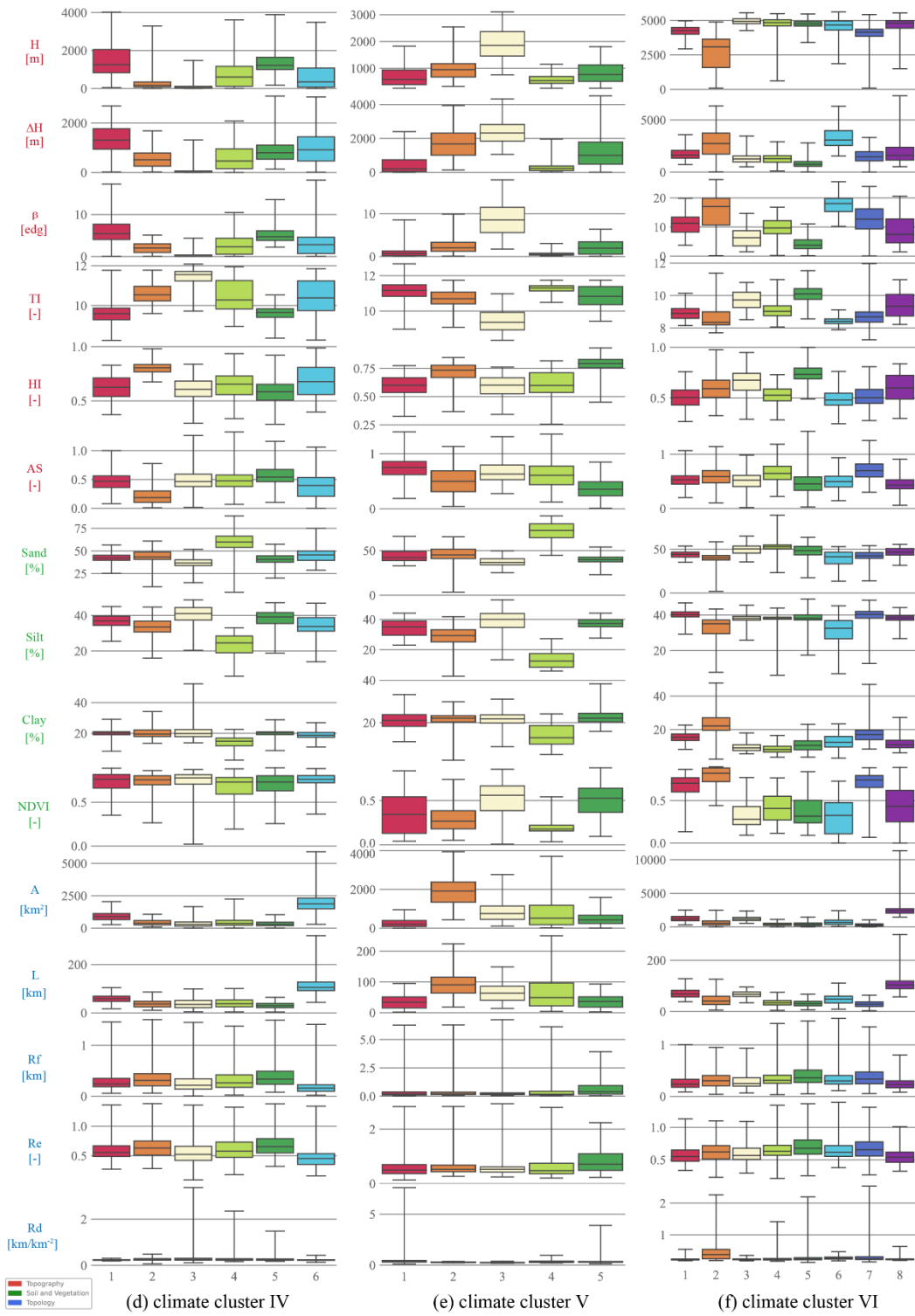


Figure S3. Catchment attribute boxplots of the clusters in different climate regions.