remote sensing

MDPI

Article (Supplementary Materials)

Mapping and Analyzing the Spatiotemporal Patterns and Drivers of Multiple Ecosystem Services: A Case Study in the Yangtze and Yellow River Basins

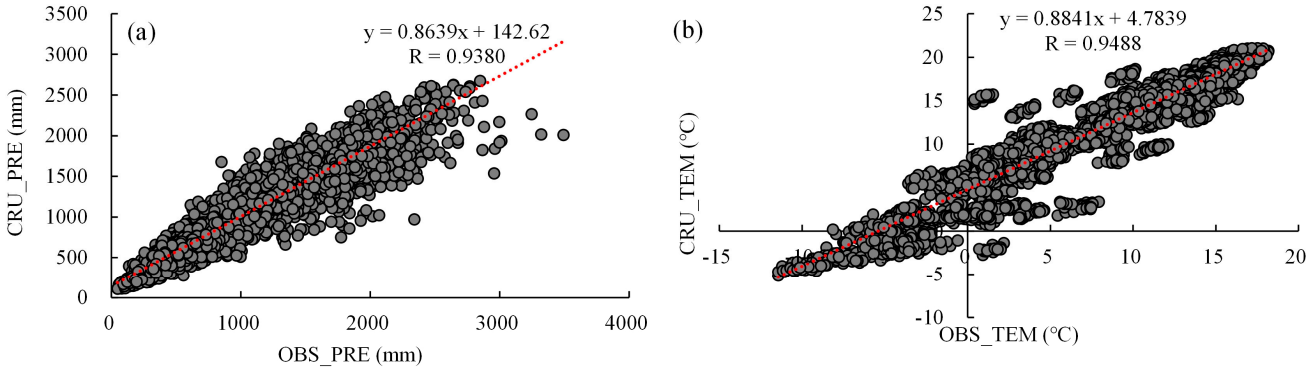

Figure S1. (a,b) Accuracy of CRU precipitation and temperature from 2000 to 2020 (n=7098). OBS_PRE and CRU_PRE represent the annual precipitation data of meteorological stations and CRU TS4.06 respectively, OBS_TEM and CRU_TEM represent the annual mean temperature data of meteorological stations and CRU TS4.06.

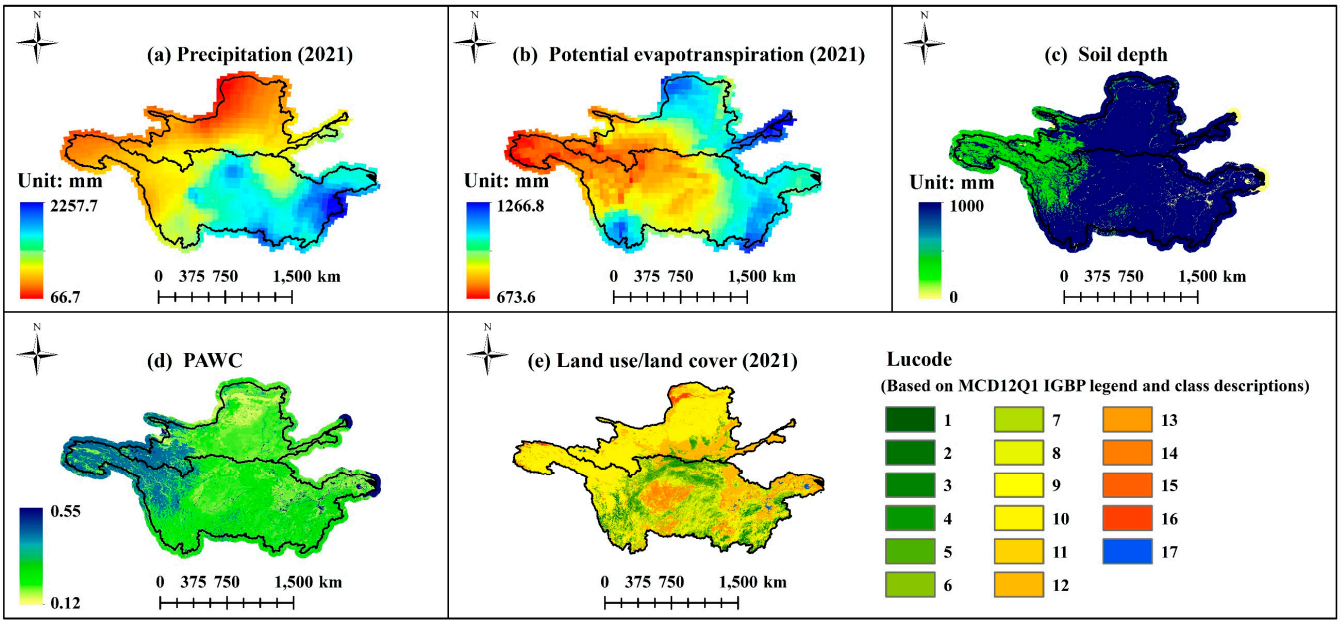

Figure S2. The raster data input to the InVEST water yield module. (a) Precipitation in 2021; (b) Potential evapotranspiration in 2021; (c) Soil depth; (d) PAWC-plant available water content; (e) Land use/land cover in 2021, Lucode is consistent with the Lucode in the Table S2.

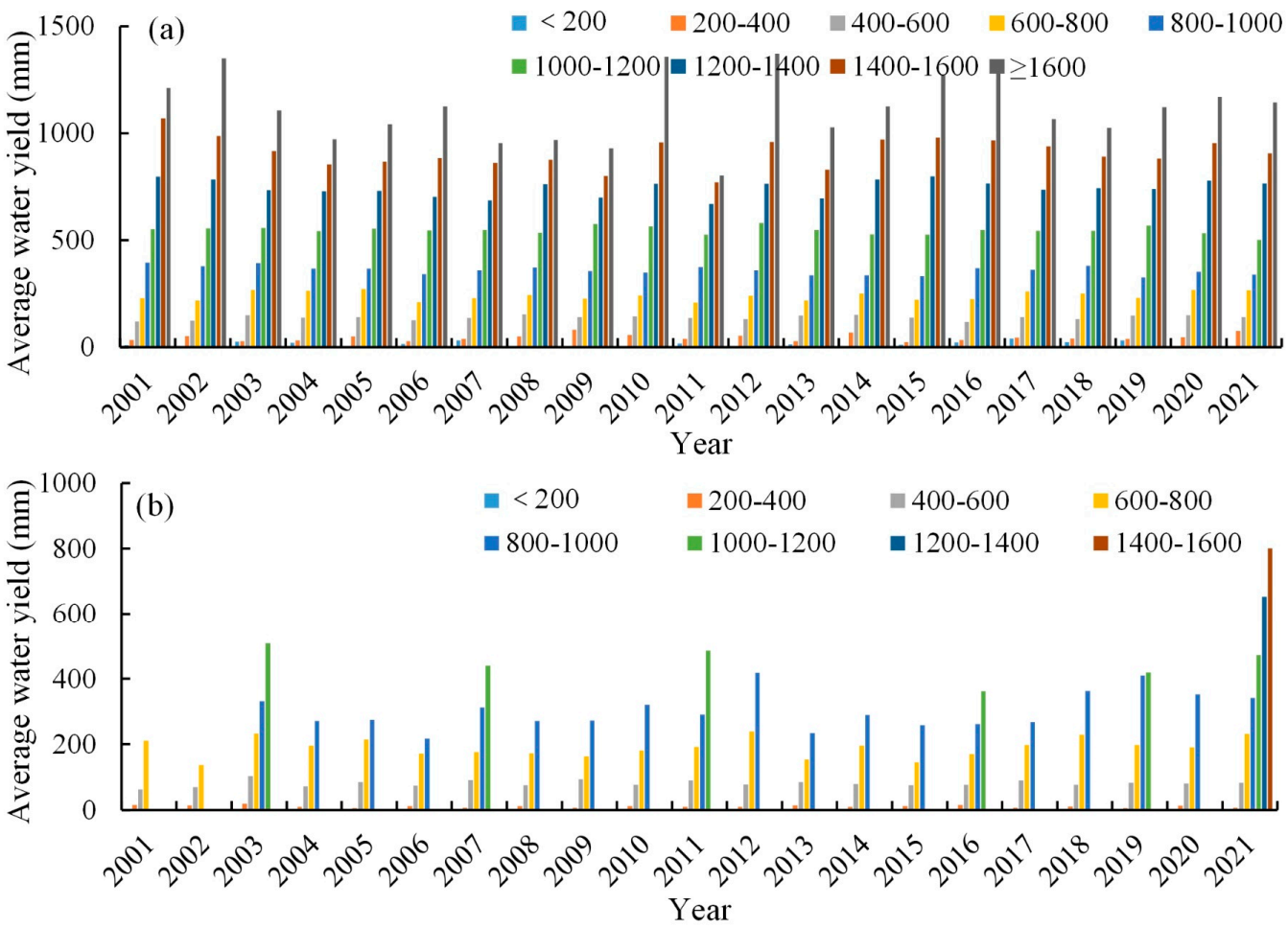

Figure S3. The annual average changes of WY in the YZRB (a) and the YRB (b) under different precipitation gradient grades (unit: m).

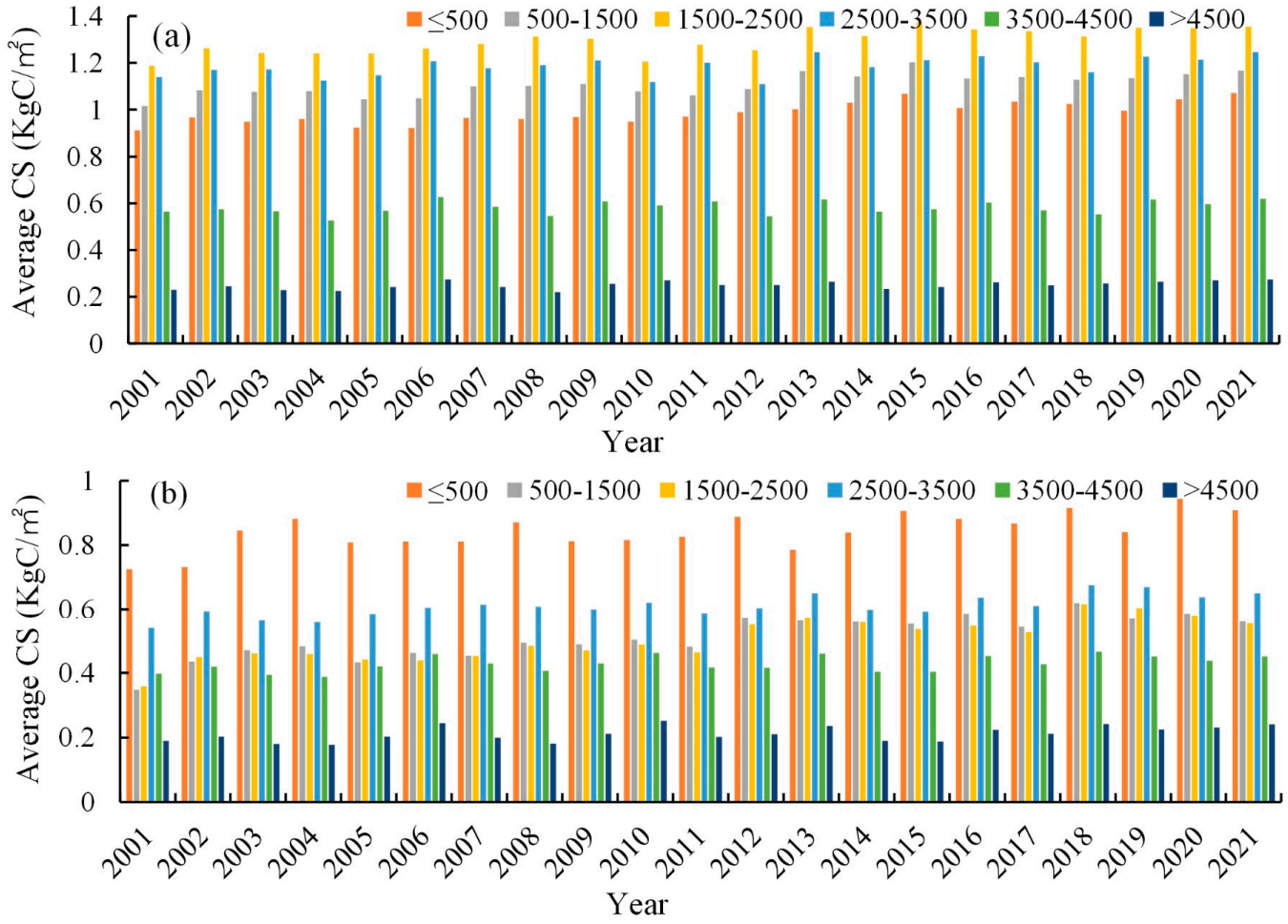

Figure S4. The annual average changes of CS in the YZRB (a) and the YRB (b) under different elevation gradient levels (unit: m).

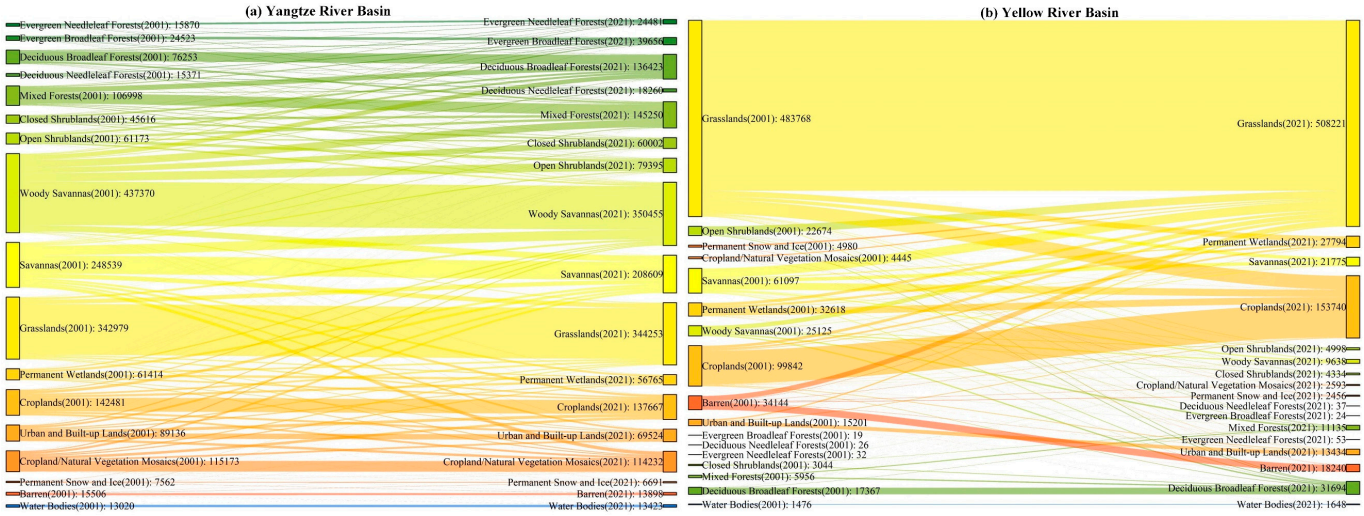

Figure S5. The transition of LULC based on MCD12Q1 in the YZRB and the YRB from 2001 to 2021.

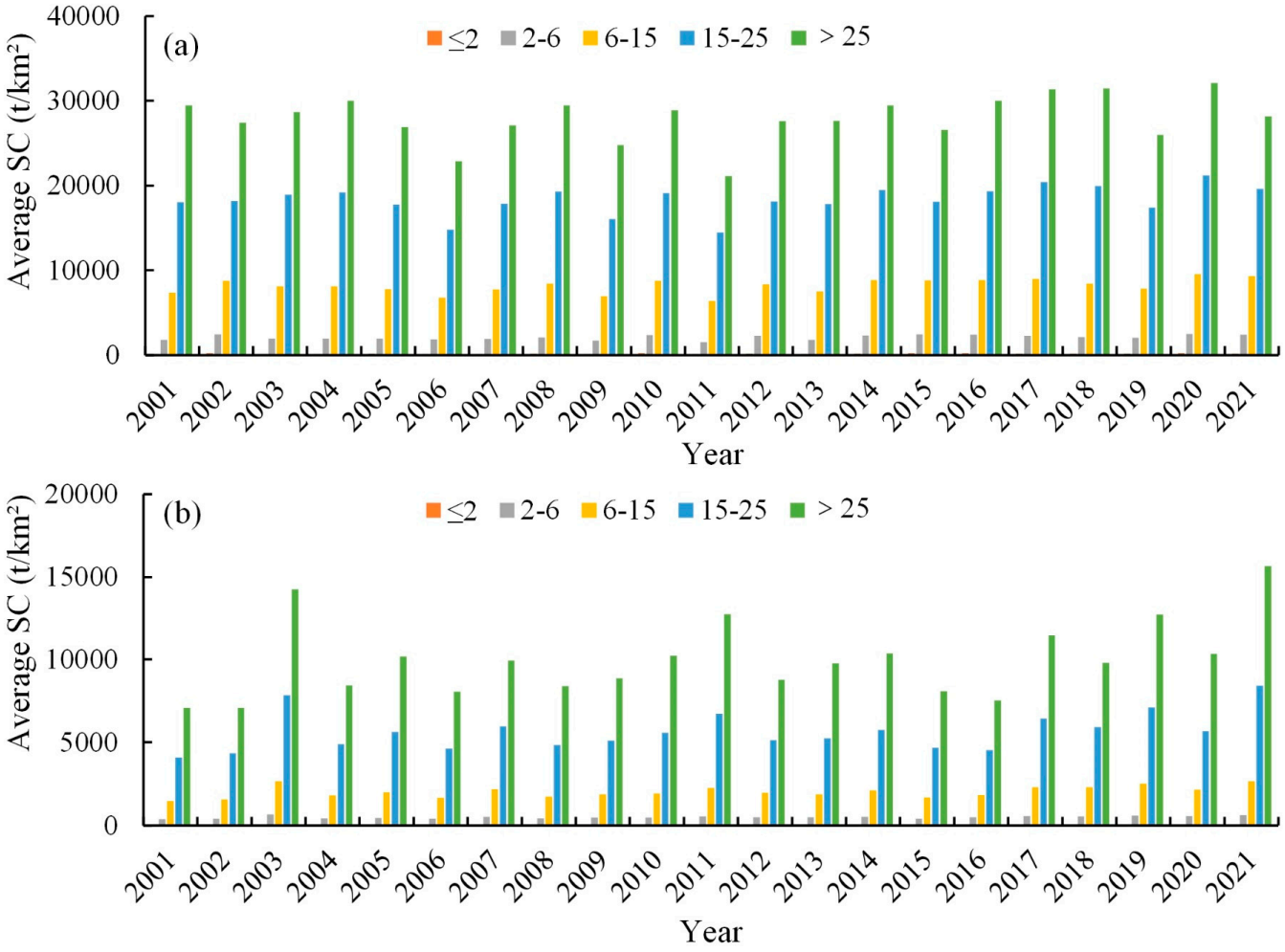

Figure S6. The annual average changes of SC in the YZRB (a) and the YRB (b) under different slope gradient levels (unit: °).

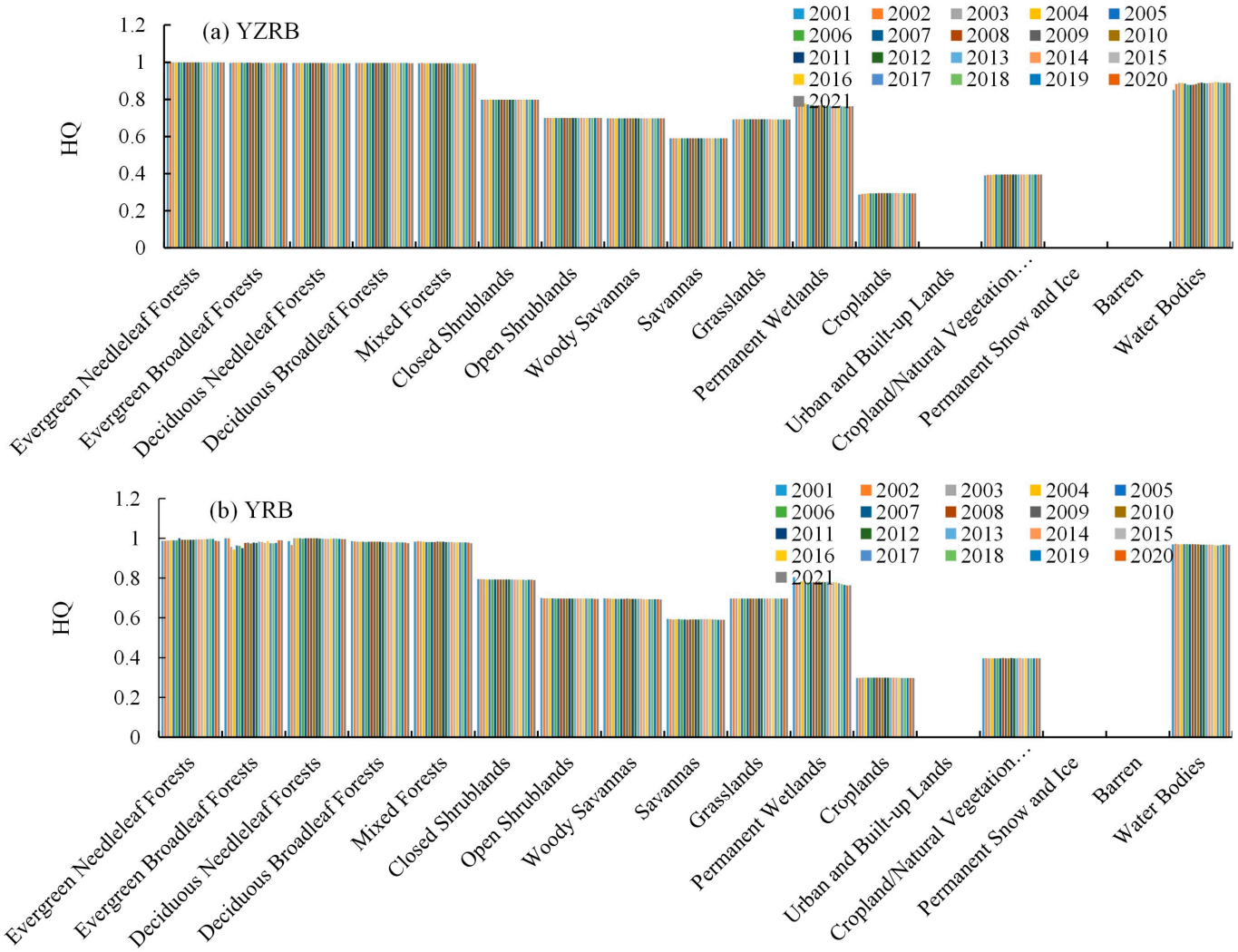

Figure S7. The annual average changes of HQ in the YZRB (a) and the YRB (b) under different LULC types.

Table S1. Biophysical parameters used in the InVEST water yield model

LULC_description	Lucode	Root_depth	Kc	LULC_veg
Evergreen Needleleaf Forests	1	7000	1	1
Evergreen Broadleaf Forests	2	7000	1	1
Deciduous Needleleaf Forests	3	7000	1	1
Deciduous Broadleaf Forests	4	7000	1	1
Mixed Forests	5	7000	1	1
Closed Shrublands	6	5200	0.95	1
Open Shrublands	7	5200	0.93	1
Woody Savannas	8	2300	0.65	1
Savannas	9	2000	0.65	1
Grasslands	10	2600	0.65	1
Permanent Wetlands	11	2000	1	0
Croplands	12	2100	0.65	1
Urban and Built-up Lands	13	500	0.3	0
Cropland/Natural Vegetation Mosaics	14	2100	0.65	1
Permanent Snow and Ice	15	100	0.4	0

Barren	16	300	0.2	0
Water Bodies	17	1000	1	0

* Lucode: The coding of IGBP land cover type; LULC_description: the name of IGBP land cover type; Kc: plant evapotranspiration coefficient for each LULC type; Root_depth: the maximum root depth for each LULC type; LULC_veg: 1 represents the LULC type can be vegetated, and 0 means that it cannot be vegetated.

Table S2. Biophysical parameters used in the InVEST Sediment Delivery Ratio model

Description	Lucode	usle_c	usle_p
Evergreen Needleleaf Forests	1	0.02	1
Evergreen Broadleaf Forests	2	0.02	1
Deciduous Needleleaf Forests	3	0.02	1
Deciduous Broadleaf Forests	4	0.02	1
Mixed Forests	5	0.02	1
Closed Shrublands	6	0.08	1
Open Shrublands	7	0.1	1
Woody Savannas	8	0.09	1
Savannas	9	0.2	1
Grasslands	10	0.3	1
Permanent Wetlands	11	0	0
Croplands	12	0.5	0.4
Urban and Built-up Lands	13	0.001	0
Cropland/Natural Vegetation Mosaics	14	0.14	0.5
Permanent Snow and Ice	15	0.001	0
Barren	16	1	1
Water Bodies	17	0.001	0

Table S3. The threat factor parameters of habitat quality (HQ)

MAX_DIST/km	WEIGHT	THREAT	DECAY
8	0.7	Croplands	linear
10	1	Urban and Built-up Lands	exponential
5	0.5	Cropland/Natural Vegetation Mosaics	linear
4	0.4	Barren	linear

Table S4. The sensitive parameters of habitat quality (HQ)

Land types	Habi-tat	Cropla nds	Urban and Built-up Lands	Cropland/Natural Vegetation Mosaics	Barren
Evergreen Needleleaf Forests	1	0.8	1	0.6	0.2
Evergreen Broadleaf Forests	1	0.8	1	0.6	0.2
Deciduous Needleleaf Forests	1	0.8	1	0.6	0.2
Deciduous Broadleaf Forests	1	0.8	1	0.6	0.2
Mixed Forests	1	0.8	1	0.6	0.2
Closed Shrublands	0.8	0.4	0.6	0.3	0.2
Open Shrublands	0.7	0.3	0.5	0.2	0.2
Woody Savannas	0.7	0.4	0.6	0.3	0.1
Savannas	0.6	0.3	0.5	0.2	0.1
Grasslands	0.7	0.4	0.6	0.3	0.5
Permanent Wetlands	1	0.8	0.9	0.7	0.1
Croplands	0.3	0	0.7	0	0.4

Urban and Built-up Lands	0	0	0	0	0
Cropland/Natural Vegetation Mosaics	0.4	0	0.6	0	0.3
Permanent Snow and Ice	0	0	0	0	0
Barren	0	0	0	0	0
Water Bodies	1	0.7	0.9	0.6	0.4