**Supplemental file 5 (SF 5):**

**Table S3** Biophysical table(Wang et al. 2016, Sharp et al. 2016, China Soil Map Based on Harmonized World Soil Database 2015). Kc: the plant evapotranspiration coefficient for each LULC classe; root\_depth: the maximum root depth for vegetated land use classes in mm ; usle\_c and usle\_p: two parameters in the SDR model (equation 19); sedret\_eff: the maximum soil retention efficiency for each LULC ; load\_n: the original nitrogen loading for each LULC in kg/ha•yr; load\_p: the original phosphorus loading for each LULC in kg/ha•yr; eff\_n: the maximum nitrogen retention efficiency for each LULC; eff\_p: the maximum phosphorus retention efficiency for each LULC; LULC\_vegetation: a flag to distinguish barren land with vegetated land, 1 for vegetated land and 0 for others.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LULC\_description | LULC\_code | Kc | root\_depth (mm) | usle\_c | usle\_p | sedret\_eff | load\_n | eff\_n | load\_p | eff\_p | LULC\_vegetation |
| Forest | 1 | 1 | 7000 | 0.003 | 0.2 | 0.6 | 8 | 0.8 | 1.6 | 0.8 | 1 |
| Grassland | 2 | 0.8 | 2000 | 0.01 | 0.2 | 0.4 | 10 | 0.4 | 3 | 0.4 | 1 |
| Water | 3 | 1 | 1000 | 0.001 | 0.001 | 0.8 | 0.001 | 0.05 | 0.001 | 0.05 | 0 |
| Garden | 4 | 0.6 | 3000 | 0.006 | 0.3 | 0.3 | 20 | 0.45 | 6 | 0.45 | 1 |
| Developed | 5 | 0.3 | 500 | 0.001 | 0.001 | 0 | 30 | 0 | 8 | 0 | 0 |
| Urban green | 6 | 0.5 | 2000 | 0.01 | 0.2 | 0.5 | 6 | 0.5 | 0.06 | 0.5 | 1 |
| Cultivated | 7 | 0.6 | 1000 | 0.35 | 0.4 | 0.25 | 80 | 0.2 | 24 | 0.2 | 1 |
| Bared | 8 | 0.2 | 500 | 0.01 | 0.2 | 0.05 | 10 | 0.05 | 0.14 | 0.05 | 0 |