**Table S1.** Overview of 44 catchments in Xinjiang.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Catchment short name** | **Catchment full name (Station name)** | **Area (km2)** | **Catchment average elevation (m)** | **Catchment average annual precipitation (mm)** | **Catchment average annual temperature (℃)** |
| AHYZ | Aheyazi | 2651.09 | 3427.24 | 70.17 | 11.29 |
| HWQ | Huiwuqiao | 1166.52 | 3032.41 | 163.38 | 6.74 |
| JFDQ | Jiefangdaqiao | 9180.10 | 2596.28 | 93.80 | 10.49 |
| JK | Jiangka | 5736.29 | 3619.54 | 61.96 | 12.62 |
| KKS | Kukesu | 5656.25 | 2984.02 | 133.25 | 8.03 |
| ML | Mulei | 453.22 | 2467.66 | 186.16 | 12.47 |
| QP | Qiapu | 1314.41 | 2230.19 | 185.26 | -0.74 |
| ZKT | Zeketai | 3958.50 | 2082.32 | 184.67 | -0.74 |
| BYH | Baiyanghe | 270.50 | 2789.84 | 266.94 | 4.90 |
| BJHH | Baijiahuhe | 1162.82 | 3276.92 | 255.19 | 1.24 |
| DDLK | Dongdalongkou | 196.00 | 2826.00 | 204.02 | 9.65 |
| JLD | Jilede | 942.79 | 2959.37 | 182.74 | 1.77 |
| JH | Jinghe | 1413.00 | 2612.10 | 154.45 | 6.48 |
| KKH | Kaikenhe | 382.18 | 2478.50 | 183.27 | 12.48 |
| LMM | Lamamiao | 1079.76 | 3258.33 | 204.16 | 1.35 |
| NPZ | Nianpanzhuang | 1709.02 | 2671.50 | 276.53 | 5.35 |
| MNS | Manasi | 5109.32 | 3248.62 | 225.56 | 4.36 |
| WLMQ | Wulumuqi | 4684.21 | 2970.54 | 287.61 | 3.80 |
| SMZ | Shimenzi | 588.46 | 3238.11 | 211.66 | 7.02 |
| WSG | Wushenggong | 163.20 | 3070.37 | 196.16 | 10.58 |
| ZYC | Zhiyaochang | 845.25 | 2712.69 | 292.23 | 4.27 |
| BC | Baicheng | 435.89 | 2214.50 | 68.44 | 11.24 |
| HZH | Heizihe | 4619.76 | 2399.93 | 141.37 | 6.84 |
| KLBL | Kalabeili | 14578.74 | 3605.88 | 140.35 | 7.95 |
| KLS | Kalasu | 1315.77 | 2723.49 | 68.42 | 11.26 |
| KMLK | Kamuluke | 2074.41 | 3242.58 | 69.40 | 11.25 |
| KEGD | Keergudi | 1050.51 | 3024.20 | 179.88 | 6.70 |
| LG | Langan | 2950.30 | 2557.38 | 150.73 | 5.01 |
| PLQ | Piliqing | 822.72 | 1873.91 | 161.74 | 6.73 |
| QQG | Qiaqiga | 3773.72 | 3270.16 | 134.41 | 9.17 |
| QKD | Qiekede | 289.82 | 2627.58 | 163.38 | 6.71 |
| TL | Tailan | 1370.88 | 3719.90 | 84.52 | 11.12 |
| ZFC | Zhongfengchang | 3819.75 | 2901.23 | 189.84 | 0.10 |
| CL | Cele | 1835.24 | 3324.19 | 50.13 | 12.49 |
| KLK | Keleke | 634.23 | 4408.30 | 130.57 | 10.98 |
| KLY | Klya | 14335.10 | 4920.50 | 48.02 | 11.95 |
| PS | Pishan | 1953.46 | 3862.23 | 61.05 | 12.62 |
| NY | Niya | 1691.10 | 4192.52 | 46.50 | 11.87 |
| SM | Shaman | 2216.10 | 4077.92 | 124.89 | 12.33 |
| BEJ | Buerjin | 8500.01 | 2152.58 | 186.77 | 5.05 |
| DQH | Daqinghe | 1626.46 | 2389.03 | 190.82 | 3.38 |
| KL | Kelan | 2359.87 | 2429.38 | 206.29 | 5.29 |
| KLTS | Kelatashi | 5867.57 | 1844.58 | 186.69 | 4.99 |
| KAYEST | Kayiersite | 1624.98 | 2200.04 | 222.38 | 5.48 |
| KUYEST | KUyiersite | 1967.14 | 2540.94 | 220.16 | 5.32 |
| XQH | Xiaoqinghe | 1341.08 | 2234.71 | 190.05 | 3.35 |