|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |

Figure S1. Historical monthly precipitation from 1974 to 2013 of seven weather stations.



Figure S2. Historical monthly precipitation depths for station MI203858.

Table S1. Historical period included in the databases and the observed and simulated AAP of stations in the counties that had changed urban runoff categories by using CCD-based and UCD-based precipitation estimates.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| County | CLIGEN station | Historical period used in CCD (Years) | Observed AAP of CCD station (mm) | Observed AAP of UCD station (mm) | Observed AAP differences from CCD to UCD (mm) | Simulated AAP of CCD station (mm) | Simulated AAP of UCD station (mm) | Simulated AAP differences from CCD to UCD (mm) |
| Racine, WI | Wi475479 | 1949-1992 (44) | 823 | 874 | 51 | 820 | 854 | 34 |
| Wi476922 | 1949-1992 (44) | 850 | 889 | 39 | 847 | 873 | 26 |
| Wi471205 | 1952-1992 (41) | 811 | 837 | 26 | 800 | 816 | 16 |
| Will, IL | Il111577 | 1928-1992 (65) | 818 | 985 | 167 | 803 | 969 | 166 |
| Il116616 | 1952-1992 (41) | 904 | 985 | 81 | 862 | 952 | 90 |
| Il110338 | 1901-1992 (92) | 871 | 941 | 70 | 857 | 905 | 48 |
| Williamson, IL | Il111265 | 1910-1992 (83) | 1089 | 1127 | 38 | 1075 | 1087 | 12 |
| Allen, IN | Oh336465 | 1936-1992 (57) | 862 | 893 | 32 | 849 | 897 | 48 |
| In123037 | 1948-1992 (45) | 918 | 956 | 38 | 914 | 949 | 35 |
| Oh338609 | 1936-1992 (57) | 922 | 946 | 23 | 911 | 925 | 14 |
| Kent, MI | Mi203429 | 1948-1992 (45) | 828 | 887 | 59 | 811 | 856 | 45 |
| Mi203661 | 1948-1992 (45) | 825 | 940 | 115 | 799 | 933 | 134 |
| Mi203858 | 1948-1992 (45) | 886 | 962 | 76 | 842 | 905 | 63 |
| Mi205712 | 1948-1992 (45) | 819 | 856 | 38 | 791 | 836 | 45 |
| Mi203769 | 1948-1992 (45) | 792 | 831 | 39 | 772 | 814 | 42 |
| Genesee, MI | Mi202846 | 1948-1992 (45) | 774 | 803 | 29 | 748 | 791 | 43 |
| Mi206300 | 1948-1992 (45) | 729 | 769 | 41 | 708 | 752 | 44 |
| Mi201299 | 1948-1992 (45) | 731 | 775 | 44 | 710 | 733 | 23 |
| Mi205452 | 1948-1992 (45) | 781 | 736 | -45 | 757 | 723 | -34 |
| Mi203477 | 1950-1992 (43) | 823 | 869 | 46 | 807 | 859 | 52 |
| Mi202015 | 1952-1992 (41) | 772 | 838 | 66 | 753 | 834 | 81 |
| Macomb, MI | Mi206680 | 1948-1992 (45) | 793 | 833 | 40 | 795 | 807 | 12 |
| Summit, OH | Oh331657 | 1948-1992 (45) | 942 | 1002 | 60 | 932 | 984 | 52 |
| Oh333780 | 1900-1992 (93) | 991 | 1094 | 103 | 982 | 1085 | 103 |
| Oh331541 | 1936-1992 (57) | 944 | 999 | 55 | 951 | 992 | 41 |
| Oh330058 | 1948-1992 (45) | 918 | 1011 | 93 | 910 | 1002 | 92 |
| Lake, OH | Oh336389 | 1950-1992 (43) | 923 | 998 | 75 | 912 | 978 | 66 |
| Oh331458 | 1945-1992 (48) | 1149 | 1261 | 112 | 1136 | 1239 | 103 |
| Mahoning, OH | Oh339406 | 1948-1992 (45) | 952 | 1007 | 54 | 937 | 1001 | 64 |
| Pa366233 | 1926-1992 (67) | 970 | 999 | 29 | 971 | 992 | 21 |
| Oh338769 | 1936-1992 (57) | 921 | 1009 | 88 | 907 | 1012 | 105 |
| Oh335315 | 1936-1992 (57) | 958 | 930 | -28 | 954 | 907 | -47 |

Note: Historical period used in UCD is 40 years from 1974 to 2013. Observed AAP of CCD and UCD were calculated based on observed monthly average precipitation shown in CLIGEN output. Simulated AAP based on CCD and UCD were calculated based on 50 years of simulated daily precipitation.