**Title**: Data for Upper Gila, Salt, and Verde Rivers: Arid Land Rivers in a Changing Climate

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**Description:**

The datasets include monthly and annual streamflow, precipitation, and temperature data, for the years 1921-2019, for the Upper Gila, Salt, and Verde River basins in southwestern New Mexico and Arizona. The data were plotted and analyzed to determine the main climatic controls on streamflow. Drought periods were assessed as well as trends over four different time periods, using two different gridded climate datasets. See Additional Notes below for more details.

**Description details:**

1. Gage records used for this study are shown in the table below. Water year values were used for the years 1921-2015, and monthly values from 1950-2019. Units are billion cubic meters (BCM). Source: US Geological Survey Water Data for the Nation (<https://waterdata.usgs.gov/nwis>).

|  |  |  |
| --- | --- | --- |
| Gage name | USGS gage # | years |
| Verde River below Bartlett Dam AZVerde River below Tangle Ck. above Horseshoe Dam AZSalt River near Roosevelt AZGila River at head of Safford Valley near Solomon AZ\* | 09510000095085000949850009448500 | 1921-19441945-20191921-20191921-2019 |

\*The Gila River near Safford contained missing data for 1933-1935; water year for these years was estimated using linear regression and flow records from the Gila River near Redrock NM and the San Francisco River near Glenwood NM after Meko and Hirschboeck (2008).

2. Climate data from two gridded data products, Parameter-elevation Regressions on Independent Slopes Model (PRISM) (Daly et al. 2008) and nClimGrid (Vose et al. 2014) were used for 1921-2019. Units are millimeters (mm) and degree C.

Grid points within the level-8 Hydrologic Units (HUC) that contained and/or were above the target gages, and that contributed to streamflow were averaged at the HUC 8 level, then at the basin level. For the Salt River, four HUC8s were averaged: Black, White, Upper Salt, and Carrizo. For the Upper Gila, five HUC8s averaged: Upper Gila, Upper Gila Mangas, San Francisco, San Carlos Reservoir, and San Simon. In the case of the Verde River, all three of the level-8 HUCs were included, so the level-6 HUC was used (representing the entire Verde River basin).

Vose, R.S., Applequist, S., Squires, M., Durre, I., Menne, M.J., Williams, C.N., Fenimore, C., Gleason, K., and Arndt, D. 2014: Improved Historical Temperature and Precipitation Time Series for U.S. Climate Divisions. Journal of Applied Meteorology and Climatology, 53, 1232–51. <https://doi.org/10.1175/JAMC-D-13-0248.1>

Daly, C., Halbleib, M., Smith, J.I.,Gibson, W.P., Doggett, M.K., Taylor, G.H., Curtis, J., and Pasteris, P.P. 2008: Physiographically Sensitive Mapping of Climatological Temperature and Precipitation across the Conterminous United States. International Journal of Climatology, 28, 2031–64. <https://doi.org/10.1002/joc.1688>

3. Percentile values for water year streamflow and selected seasonal total precipitation and average temperatures were used to facilitate comparisons among basins and hydroclimate variables. In the conversion to percentile, values are ranked and scaled so that the lowest value is 1 and the highest is 99, with the median value equal to 50.

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