

Sacramento River Annual Flow Reconstruction

World Data Center for Paleoclimatology, Boulder
and
NOAA Paleoclimatology Program

NOTE: PLEASE CITE ORIGINAL REFERENCES WHEN USING THIS DATA!!!!

CONTRIBUTOR: Dave Meko, University of Arizona
NAME OF DATA SET: Sacramento River Annual Flow Reconstruction

IGBP PAGES/WDCA CONTRIBUTION SERIES NUMBER: 2001-081.

SUGGESTED DATA CITATION: Meko, D.M., et al., 2001,
Sacramento River Annual Flow Reconstruction.
International Tree-Ring Data Bank.
IGBP PAGES/World Data Center for Paleoclimatology
Data Contribution Series #2001-081.
NOAA/NGDC Paleoclimatology Program, Boulder CO, USA.

ORIGINAL REFERENCE:

Meko, D.M., M. D. Therrell, C. H. Baisan, and M. K. Hughes, 2001,
Sacramento River Flow Reconstructed to A.D. 869 From Tree Rings,
Journal of the American Water Resources Association,
v.37, No.4, August 2001.

LAST UPDATE: 11/2001 (Original receipt by WDC-A Paleo)
GEOGRAPHIC REGION: California, USA.
PERIOD OF RECORD: 869-1977 AD

DESCRIPTION:

Meko et al. 2001 Sacramento River Annual Flow Reconstruction.
Reconstruction of total annual flow, in millions of acre/feet,
of the Sacramento River, based on tree ring chronologies.

Note: Two reconstructions of Sacramento River annual streamflow by
David Meko and colleagues are archived at the World Data Center for
Paleoclimatology. Because they are very similar and were published
in the same year (2001), this text clarifies the relationship
between the two reconstructions.

In the late 1990s, Meko and colleagues generated a new reconstruction
of streamflow for the Sacramento River, extending from AD 869 to 1977 (this file).
The reconstruction was based on a set of 36 tree-ring chronologies
collected in California, Oregon, and Nevada by numerous investigators
from the late 1970s to the mid-1990s. This reconstruction was published
in 2001 in the Journal of the American Water Resources Association (JAWRA).

Because the early portion of the "JAWRA" reconstruction depended heavily
on chronologies outside of the Sacramento River basin, Meko generated
a second, updated reconstruction of Sacramento River flow (and also of
its tributary, the Feather River) in 1999-2001. This reconstruction
was based on a set of 42 tree-ring chronologies, 11 of which were not used
in the previous reconstruction, including three collected specifically for
the new work. The updated reconstruction extends from AD 901 to 1977 and
was published in a report to the California Department of Water Resources (CDWR)
issued in July 2001. The newer CDWR reconstruction is archived with the WDC Paleo at:
<ftp://ftp.ncdc.noaa.gov/pub/data/paleo/treering/reconstructions/california/sacramento-flow-cdwr.txt>

Both reconstructions use three time-varying subsets of the tree-ring
data to take advantage of all of the data available in each time period,

and explain a very similar fraction (~80%) of the variance in the gaged record. The updated reconstruction is probably more robust because of the expanded spatial coverage of the tree-ring dataset, particularly early in the reconstruction period.

DATA:

Meko et al. 2001 JAWRA Sacramento River Annual Flow Reconstruction, in millions of acre/feet.

Year	MAF
869	18.28
870	25.72
871	10.25
872	9.74
873	11.08
874	18.42
875	19.74
876	17.86
877	15.18
878	15.57
879	17.47
880	12.71
881	17.66
882	13.09
883	11.30
884	15.60
885	34.32
886	18.14
887	10.99
888	14.35
889	15.76
890	12.95
891	18.50
892	32.81
893	13.49
894	15.06
895	14.47
896	17.12
897	30.63
898	19.30
899	25.97
900	15.92
901	41.38
902	17.73
903	19.30
904	16.55
905	26.88
906	27.36
907	14.58
908	19.80
909	17.87
910	27.84
911	27.81
912	28.58
913	11.12
914	27.83
915	9.18
916	29.37
917	44.28
918	17.61
919	16.68

920	28.95
921	18.96
922	16.89
923	11.65
924	10.83
925	30.55
926	31.47
927	24.41
928	14.73
929	13.12
930	6.40
931	15.23
932	17.52
933	17.98
934	31.07
935	23.56
936	31.11
937	25.50
938	23.89
939	20.12
940	30.66
941	31.64
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943	12.42
944	16.57
945	15.53
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949	15.44
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951	31.11
952	13.51
953	14.32
954	5.50
955	19.41
956	39.36
957	5.50
958	17.87
959	16.47
960	23.46
961	9.16
962	13.72
963	15.19
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965	17.67
966	18.65
967	15.50
968	30.45
969	14.84
970	39.07
971	15.90
972	20.48
973	20.68
974	25.46
975	18.24
976	19.37
977	17.77
978	14.25
979	5.25
980	7.61
981	9.39

982	16.16
983	10.64
984	15.68
985	25.49
986	8.29
987	19.47
988	23.84
989	12.92
990	14.63
991	20.25
992	16.60
993	27.92
994	17.59
995	8.81
996	12.69
997	23.85
998	26.74
999	14.94
1000	18.26
1001	18.43
1002	23.54
1003	19.99
1004	17.72
1005	11.00
1006	20.08
1007	19.26
1008	24.90
1009	25.91
1010	15.81
1011	24.95
1012	8.33
1013	15.35
1014	11.14
1015	16.71
1016	24.06
1017	18.83
1018	14.64
1019	26.20
1020	19.91
1021	15.90
1022	15.87
1023	37.36
1024	20.06
1025	12.77
1026	21.40
1027	22.90
1028	13.52
1029	16.05
1030	22.18
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1032	12.31
1033	12.66
1034	17.07
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1036	29.11
1037	16.34
1038	14.11
1039	12.54
1040	10.43
1041	19.02
1042	28.85
1043	12.70

1044	13.44
1045	25.72
1046	21.03
1047	14.32
1048	11.52
1049	20.83
1050	27.89
1051	17.87
1052	8.82
1053	12.43
1054	27.86
1055	12.87
1056	14.08
1057	22.67
1058	18.49
1059	4.65
1060	11.21
1061	16.41
1062	12.62
1063	18.71
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1071	14.45
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1073	14.76
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1089	24.83
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1091	26.01
1092	15.01
1093	8.45
1094	20.95
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1096	16.66
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1098	7.38
1099	20.31
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1101	19.54
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1103	7.92
1104	22.04
1105	23.25

1106	18.48
1107	17.77
1108	19.44
1109	28.19
1110	24.79
1111	18.84
1112	21.96
1113	28.55
1114	14.51
1115	15.63
1116	23.53
1117	19.31
1118	18.39
1119	19.70
1120	24.91
1121	15.55
1122	25.96
1123	10.49
1124	18.64
1125	25.18
1126	5.63
1127	14.56
1128	29.05
1129	16.13
1130	13.64
1131	15.07
1132	12.55
1133	11.24
1134	16.64
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1136	18.28
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1143	15.33
1144	9.99
1145	7.68
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1160	20.71
1161	11.95
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1163	17.91
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1166	21.20
1167	23.24

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1171	13.17
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1182	19.72
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1185	12.35
1186	17.04
1187	13.39
1188	18.56
1189	15.08
1190	17.59
1191	14.82
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1195	29.97
1196	15.58
1197	17.40
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1200	23.51
1201	21.60
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1203	17.57
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1402	18.37
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1404	21.01
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1407	10.53
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1415	19.64

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1424	24.59
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1426	12.38
1427	17.89
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1433	18.46
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1471	14.78
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1473	13.92
1474	19.99
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1476	10.42
1477	16.08

1478	15.82
1479	7.02
1480	12.01
1481	16.19
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1484	34.86
1485	14.40
1486	22.78
1487	25.26
1488	24.92
1489	23.38
1490	21.64
1491	18.91
1492	11.80
1493	27.18
1494	18.64
1495	19.00
1496	22.36
1497	7.04
1498	15.77
1499	7.19
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1502	18.43
1503	19.47
1504	23.96
1505	9.69
1506	21.50
1507	18.95
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1509	19.05
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1512	18.08
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1514	19.23
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1523	23.15
1524	29.29
1525	17.49
1526	32.09
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1528	15.13
1529	5.05
1530	17.35
1531	14.89
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1533	10.25
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1536	13.50
1537	13.92
1538	16.50
1539	36.00

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1555	11.75
1556	22.13
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1566	17.24
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1603	19.33
1604	28.66
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1611	30.63
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1613	10.70
1614	14.47
1615	17.26
1616	18.19
1617	40.32
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1623	31.68
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1625	31.41
1626	11.18
1627	23.52
1628	17.51
1629	13.49
1630	18.03
1631	14.52
1632	8.80
1633	17.77
1634	16.77
1635	19.13
1636	16.70
1637	16.00
1638	13.29
1639	7.79
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1642	17.02
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1647	19.90
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1656	25.47
1657	14.03
1658	14.46
1659	12.99
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1662	19.73
1663	13.25

1664	23.21
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1676	12.95
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1688	16.10
1689	18.56
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1691	9.62
1692	19.87
1693	27.25
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1696	26.79
1697	36.09
1698	13.90
1699	15.84
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1702	38.71
1703	10.71
1704	26.32
1705	21.83
1706	12.06
1707	16.84
1708	13.10
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1713	25.52
1714	12.80
1715	20.97
1716	21.15
1717	17.71
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1719	13.11
1720	20.15
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1722	13.50
1723	21.97
1724	16.39
1725	28.46

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1727	27.99
1728	15.91
1729	7.03
1730	37.31
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1737	10.99
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1739	13.98
1740	22.64
1741	17.22
1742	23.37
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1744	23.80
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1760	16.82
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1762	16.07
1763	20.67
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1765	8.74
1766	19.54
1767	19.44
1768	24.25
1769	21.70
1770	9.30
1771	19.32
1772	17.66
1773	18.80
1774	22.94
1775	21.52
1776	6.87
1777	6.05
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1779	19.39
1780	15.32
1781	16.71
1782	9.32
1783	7.79
1784	32.12
1785	30.00
1786	22.28
1787	21.72

1788	12.09
1789	34.49
1790	32.59
1791	21.87
1792	29.33
1793	12.68
1794	9.65
1795	6.40
1796	10.00
1797	24.18
1798	23.26
1799	26.48
1800	9.46
1801	32.71
1802	22.89
1803	17.70
1804	19.98
1805	15.86
1806	21.70
1807	16.12
1808	13.15
1809	16.26
1810	21.65
1811	24.36
1812	11.76
1813	19.51
1814	16.50
1815	15.35
1816	16.27
1817	16.56
1818	14.64
1819	21.74
1820	18.15
1821	17.66
1822	9.19
1823	14.47
1824	13.70
1825	38.83
1826	29.96
1827	15.74
1828	21.67
1829	5.83
1830	22.06
1831	18.35
1832	36.97
1833	16.27
1834	11.33
1835	21.85
1836	24.63
1837	15.35
1838	22.09
1839	11.10
1840	16.58
1841	6.74
1842	20.84
1843	8.34
1844	8.12
1845	18.08
1846	10.55
1847	21.08
1848	16.33
1849	14.05

1850	20.34
1851	12.04
1852	18.77
1853	29.22
1854	18.32
1855	16.43
1856	11.04
1857	14.83
1858	12.43
1859	14.88
1860	20.50
1861	23.98
1862	24.77
1863	16.04
1864	6.23
1865	17.50
1866	32.71
1867	23.42
1868	33.20
1869	15.14
1870	11.66
1871	11.83
1872	21.81
1873	21.85
1874	19.32
1875	15.49
1876	24.67
1877	10.15
1878	29.20
1879	15.46
1880	17.56
1881	26.96
1882	15.40
1883	14.15
1884	28.25
1885	17.17
1886	18.14
1887	14.47
1888	16.54
1889	14.37
1890	20.49
1891	23.60
1892	13.05
1893	25.44
1894	26.64
1895	17.94
1896	19.63
1897	20.73
1898	8.89
1899	15.45
1900	18.50
1901	24.28
1902	15.28
1903	17.47
1904	25.03
1905	21.14
1906	24.57
1907	34.97
1908	19.91
1909	21.94
1910	16.46
1911	19.69

1912	12.18
1913	11.87
1914	21.70
1915	18.03
1916	23.25
1917	16.82
1918	10.16
1919	19.35
1920	11.00
1921	22.12
1922	18.22
1923	19.29
1924	5.74
1925	19.77
1926	13.07
1927	17.79
1928	15.18
1929	8.76
1930	12.95
1931	6.70
1932	18.50
1933	10.73
1934	7.61
1935	20.13
1936	20.32
1937	17.16
1938	20.02
1939	9.47
1940	22.35
1941	24.63
1942	28.21
1943	21.69
1944	14.29
1945	17.06
1946	17.57
1947	10.52
1948	13.01
1949	10.95
1950	17.20
1951	21.84
1952	28.47
1953	22.28
1954	18.62
1955	10.29
1956	24.03
1957	19.52
1958	23.83
1959	9.39
1960	13.71
1961	11.33
1962	19.22
1963	29.34
1964	12.22
1965	23.64
1966	17.85
1967	21.50
1968	11.07
1969	36.44
1970	16.23
1971	18.31
1972	13.68
1973	15.78

1974	24.12
1975	18.66
1976	7.91
1977	6.32