Chapter J

Land, Water, and Climate

Land and Water Utilization (Series J 1-109)

J 1–2. Territorial expansion and land and water area **of** the United States, **1790–1970.**

Source: U.S. Bureau of the Census, Reports of Fourteenth, Fifteenth, Sixteenth, Seventeenth, Eighteenth, and Nineteenth Censuses, *Population,* vol. I, and unpublished data.

Boundaries of territories listed under United States were indefinite, at least in part, at the time of acquisition. Area figures shown here represent precise determinations of specific territories which have been marked upon maps, based upon interpretations of the several treaties of cession, which are necessarily debatable. These determinations were made by a committee consisting of representatives of various governmental agencies in 1912. Subsequently, these figures were adjusted to bring them into agreement with remeasurements made in 1960.

Area measurements within the United States began with the country as a whole and developed, as mapping progressed, to measurements for the States. The annual report of the U.S. General Land Office for 1850 contained the first reference to the areas of the States and Territories, although there was no indication of the method used in obtaining the measurements. In 1881, as part of the 1880 Census of Population, the Bureau of the Census laid the foundation for accurate and detailed area measurement in the United States. For the first time an account was given of the method and maps employed, the water bodies included, and the outer limits of the United States used as a basis for measurement. As part of the 1940 census, the Bureau published *Areas of the United States: 1940,* presenting data on the total land and water areas of the States, counties, cities, and minor civil divisions. For reports of the 1950 and 1960 censuses, adjustments in selected area figures were made for reasons of changes in boundaries, development of water reservoirs, or improvement in maps from which measurements are made.

"All other" (series J 1) includes the following islands with gross areas as indicated: Midway (2), Wake (3), Palmyra (4), Canton and Enderbury (combined area, 27), Swan (1), Navassa (2), Baker, Howland, and Jarvis (combined area, 3), Johnston and Sand (combined area, less than 0.5), Kingman Reef, Quita Sueno Bank, Roncador Cay, and Serrana Bank (each less than 0.5). Other possessions include the following islands for which area figures are not available: Caroline, Christmas, Danger (Pukapuka), Flint, Funafuti, Malden, Manahiki, Nukufetau, Nukulailai, Nurakita, Penrhyn, Raliahanga, Starbuck, Vostok, Phoenix Group (except Canton and Enderbury), and Union (Tokelau) Group, not enumerated in decennial censuses.

See also data and text for series A 1–5.

J 3–7. General note.

The U.S. Government acquired sovereignty over its present area through a series of international agreements and treaties. However, the Federal Government did not gain title to all of the lands covered by such agreements; title to much of the land was retained by individual States and their political subdivisions or by private owners.

"Original public-domain land" embraces all of the area to which title was vested in the U.S. Government by virtue of its sovereignty. Any of such lands which the Government has not disposed of under the public-land laws are generally referred to as "public-domain lands."

In addition to public-domain lands, the Federal Government has acquired by purchase, condemnation, and gift, tracts of land needed for various public purposes, such as sites for public buildings, defense installations, and natural resources conservation activities. Such lands are referred to as "acquired lands."

J 3. Public domain plus acquired land, 1802–1970.

Source: 1802–1950, U.S. Bureau of Land Management; 1955–1970, U.S. General Services Administration, *Inventory Report on Real Property Owned by the United States Throughout the World,* annual.

Series J 3 presents the total of public domain and acquired lands owned by the United States from 1802 through 1970, exclusive of any federally owned lands outside the United States. About 55 million acres of acquired lands are included in the 1970 estimate.

J 4–7. Acquisition **of** the public domain, **1781–1867.**

Source: US. Bureau of Land Management, *Public Land Statistics, 1970,* p. 4.

Series J 5 presents the original public-domain lands acquired from 1781 through 1867. During the period from 1781 through 1802, seven of the original 13 States relinquished to the Federal Government, by acts of cession, their claims to what was then described as "western lands." Roughly, the western lands covered the area north of the Ohio River and east of the Mississippi River and the area embraced by the present States of Alabama and Mississippi. The State of Maryland ceded the present area of the District of Columbia in 1788. In 1850, the State of Texas sold its land outside its present boundaries to the United States. During the period from 1803 through 1867, title to the remaining area west of the Mississippi River (except the State of Texas) and to Florida passed to the Federal Government. With the exception of land in the District of Columbia, the total of 1,808 million acres of land is vested in the United States Government as original public-domain land.

Series J 6 presents the areas of inland waters which were acquired with the original public-domain lands.

Series J 7, cost for State cessions, 1781–1802, is only for the purchase of the Georgia cession (56,689,920 acres) in 1802; see Thomas Donaldson, *The Public Domain, Its History, with Statistics, 1884.* Other cost data were obtained from U.S. Geological Survey, *Boundaries, Areas, Geographic Centers,* 1939.

J 8–15. General note.

Data shown are for fiscal years. For definition of public-domain lands and acquired lands, see text for series J 3–7. The laws which govern the management, use, and sale or other disposal of public-domain lands are known as the *public-land laws.* The policy of the Federal Government in the early years was to pass the public lands into private ownership as rapidly as possible. Congress passed thousands of laws providing for the disposal of the original public domain to States and their subdivisions and to private owners. Initially this was done to raise revenue and later to hasten the settlement and development of the country. Special laws provide for the disposal of surplus *acquired lands,* as, for example, the Surplus Property Act of 1944. By 1970, approximately 287 million acres of public lands had been patented to homesteaders, 328 million acres had been granted to States for various public purposes, 94 million acres had been granted to railroad corporations to aid in financing the construction of railroads, and about 434 million acres had been sold or otherwise disposed of.

J 8. Vacant public lands, **1904–1970.**

Source: U.S. Bureau of Land Management, *Public Land Statistics (Annual Report of the Director* prior to 1962), various issues, and unpublished data.

Data are estimates as of June 30 of each year.

The vacant public lands of the United States are public-domain lands (see text for series J *3–7)* which are not reserved for any purpose other than for reclassification and which are not covered by any non-Federal right or claim other than permits, leases, right-of-ways, or unreported mining claims. They are subject to acquisition by applicants under appropriate laws, such as the laws governing homesteads or grants to States. It is upon these laws for the most part that entries and selections (see text for series J 10–12) are made. The Bureau of Land Management administers the public-land laws relating to such entries and selections, a function transferred to it from the General Land Office as a part of Reorganization Plan No. 3 of 1946 (U.S. Congress).

Data prior to 1959 exclude Alaska. Unreserved lands in Alaska were withdrawn from any form of disposition under the public land laws by Public Land Order 4582 (January 17, 1969) which reserved the lands and resources until December 31, 1970, for the rights of native Aleuts, Eskimos, and Indians in Alaska.

J 9. Land granted by the United States to the several States, **1802–1959.**

Source: U.S. Bureau of Land Management, *Annual Report* of *the Commissioner of the General Land Office, 1946, Statistical Appendix,* pp. 108–119, and *Public Land Statistics, 1970,* p. 7.

See also *General Land Office Information Bulletin No. 1, 1939 series.*

Includes grants for such public purposes as the following: Educational, penal, and other public institutions and buildings; bridges, reservoirs, and other internal improvements; reclamation of swamp and arid lands; experiment stations; recreational areas; wildlife and forestry areas; military camps; and payment of bonds issued by local governments. Excludes 46,600,000 acres granted to States for aid in construction of railroads, wagon roads, canals, etc. (see series J 21–25). Does not include acreage of swamplands lost to the States, for which the States received indemnity in cash.

The data on land grants to the States for various public purposes are presented according to the calendar year in which the granting legislation was passed by the Congress. Some variation in the series is possible since the language of some of the statutes, including that of amendatory legislation, offers alternatives in the selection of the year to which individual grants could be assigned. As with the land grants for the construction of canals and other transportation improvements (series J 21–26), many of these grants were satisfied through delivery of evidence of legal title throughout the years.

J 10–12. Original entries and selections, final entries, and patents and certifications, **1869–1970.**

Source: 1869–1919, U.S. Department of Commerce, *Statistical Abstract of the United States,* various issues, 1879–1919; 1920–1970, U.S. Bureau of Land Management, *Public Land Statistics (Annual Report* of *the Director* prior to 1962), various issues.

The data on entries, selections, patents, and certifications refer to transactions which involve the disposal, under the public-land laws (including the homestead laws), of Federal public-domain lands to non-Federal owners. In general terms, *original entries* and *selections* are applications to secure title to public-domain lands which have been accepted as properly filed. Some types of applications, however, are not reported until the final certificate is issued and are, therefore, not included in series J 10.

Applications become *final entries* upon issuance of a *final certificate* which is given to the applicant after he has complied fully with the requirements of the laws relating to his application. These requirements may include, in particular cases, settlement upon and improvement of the lands entered, or payment of statutory fees or purchase money. A *final certificate* passes equitable title to the land to the applicant. With respect to certain State selections, no final certificate is issued. Such selections are, therefore, not included in series J 11 (final entries). *Patents* are instruments which pass legal title to the lands to the applicant. *Certifications* are issued in lieu of patents in connection with certain State selections.

The data do not include the area of certain lands which have been granted to the States to aid in the support of common schools. Title to such lands usually passes to the States upon survey of the lands by the Federal Government. Owing to legal complexities, detailed statistical records were not kept of these lands. Figures published here have been subjected to minor adjustments to improve comparability. They have not been checked, however, for internal accuracy or for strict comparability which would require analysis of supporting records. Data include disposals of lands in Alaska for all years.

J 13–15. Homestead entries, except on ceded Indian lands, **1863–1970.**

Source: Series **J 13,** 1863–1883, Thomas Donaldson, *The Public Domain, Its History, with Statistics,* 1884, pp. 351–355 (reprinted, Johnson Reprint Corporation); 1884–1970, U.S. Bureau of Land Management, *Public Land Statistics (Annual Report* of *the Director* prior to 1962), various issues. Series **J 14,** 1881–1945, U.S. Department of Commerce, *Statistical Abstract* of *the United States,* various issues; 1946–1970, U.S. Bureau of Land Management, *Public Land Statistics (Annual Report* of *the Director* prior to 1962), various issues. Series J 15, U.S. Department of the Interior, 1868–1940, *Annual Report of the Commissioner of the General Land Office, 1946;* 1941–1960, *Annual Report* of *the Director, 1961 Statistical Appendix;* 1961–1970, *Public Land Statistics, 1969* and *1970.*

For definitions of the terms *original entries* and *final entries,* see text for series J 10–12.

Figures for original homestead entries exclude applications which were accepted for lands ceded by the Indians to the United States with the provision that proceeds from their disposal would be covered into the Treasury to the credit of the Indians. Detailed statistics on such homestead entries were not published in the reports of the Commissioner of the General Land Office prior to 1924. Such reports contain general information as to the disposal of ceded Indian lands. The records upon which the reports were based are for the most part on file in the National Archives.

Acreage figures of final entries (series J **15)** do not include commuted homesteads. **A** *commuted homestead entry* is a homestead entry not exceeding 160 acres in connection with which the entryman pays the minimum statutory price for the land in consideration for reduction in residence and other requirements. Only certain classes of homestead entries can be commuted.

J 16–19. Lands under jurisdiction of Bureau of Indian Affairs, **1881–1970.**

Source: U.S. Department of the Interior: 1881–1897, 1900, 1903, 1910–1920, 1953–1958, *Annual Report* of *the Secretary* of *the Interior,* various issues; 1901, 1902, 1904–1909, 1939, 1940, 1942–1946, 1949, *Annual Report* of *the Commissioner* of *Indian Affairs* and *Statistical Supplements,* various issues; 1921–1930, 1932–1937, 1941, compiled by the Commissioner of Indian Affairs; 1959–1970, *Annual Real Property Management Report,* various issues.

Indian lands are the private landholdings of individual Indians or Indian tribes that are subject to special restrictive provisions of Federal law administered by the Bureau of Indian Affairs. They have been set aside for Indian use by treaties, congressional acts, and executive orders. Although most of these lands are in reservations for specific tribes, there are groups of scattered off-reservation allotments in individual ownership and other small tracts of land occupied by Indian groups.

J 20. Public land sales, **1800–1860.**

Source: Walter B. Smith and Arthur H. Cole, *Fluctuations in American Business, 1790–1860,* Harvard University Press, Cambridge, 1935 (copyright).

Data were derived from Hibbard, *A History of the Public Land Policies,* 1924, pp. 100, 103, 106, and from *Annual Report of the Commissioner of the General Land Office,* various issues. The data differ from those presented by Hibbard (p. 106) for the years after 1850, when Hibbard's data shift from calendar years to fiscal years ending June 30.

J 21–25. Public land grants by United States to aid in construction **of** railroads, wagon roads, canals, etc., **1823–1871.**

Source: U.S. Bureau of Land Management, *Annual Report of the Commissioner of the General Land Office, 19.46, Statistical Appendix,* pp. 100–107.

Figures include only the area of lands for which title passed to the grantee States and corporations. The exact extent of practically all of these grants was, owing to their terms, indeterminate at the time the granting acts were passed by the Congress. The procedures for the satisfaction of the grants generally required the grantees to submit lists of lands to which they requested evidence of legal title on the basis of the provisions of the authorizing legislation. This process of issuance of instruments of title has not been fully completed by the Department of the Interior; a relatively small area remains to be adjudicated.

For the series presented, the areas shown in the instruments of title which were issued for each grant over the years were totaled and shown as of the fiscal year in which the grant was *originally enacted,* even though in certain instances grants were revived at a later date after the expiration of statutory time limits while others were enlarged by subsequent legislation. Because the tabulation is based on instruments of title, the data do not reflect the area of those portions of grants which could not be satisfied under the law for various reasons or of those grants or portions of grants which were forfeited.

J 26–32. Revenues from public-domain, revested, and acquired land, **1785–1970.**

Source: U.S. General Land Office, 1785–1939, *Annual Report of the Commissioner, 1946, Statistical Appendix,* table 90. U.S. Bureau of Land Management, 1940–1946, *Annual Report of the Director, 1968, Statistical Appendix,* table 116; 1947–1960, *Public Land Statistics, 1962,* table 111; 1961–1970, *Public Land Statistics, 1970,* table 112.

Data for 1785 to 1956 are also available in a publication by Marion Clawson and Burnell Held, *The Federal Lands: Their Use and Management,* The Johns Hopkins Press, Baltimore, 1957, text table 8 and appendix tables 25 and 27.

Original data for 1785–1880 are from J. R. Mahoney, *Natural Resources Activity of the Federal Government,* Public Affairs Bulletin No. 76, Library of Congress, 1950.

Figures are for fiscal years and represent the total receipts of the General Land Office and Bureau of Land Management transferred to the Treasury for 1785–1970 and include the relatively small receipts from land and resources in Alaska. They do not include the receipts which other Government agencies realized from their operations on Federal lands, although they do include some receipts from lands under the administration of such agencies. For example, mineral leases for public-domain lands within areas administered by the National Forest Service were issued by the General Land Office, which also collected the mineral rentals, royalties, and bonuses from such lands. Also, for 1935 through part of 1940, the General Land Office collected grazing fees for lands within grazing districts; and, for 1908 through the first half of 1913, it collected water-right charges in connection with the Bureau of Reclamation irrigation projects. Other examples of multiple jurisdiction exist.

O & C lands are those areas granted to the Oregon and California Railroad Company in 1866. Later the Federal Government repossessed this land because the terms of the grant were not carried out. Sale of timber from the O & C lands amounted to $58.8 million in 1970.

J 33–34. Livestock permitted to graze **on** National Forest System lands, **1905–1970.**

Source: US. Forest Service, 1905–1965, annual reports and unpublished data; 1966–1970, *Annual Grazing Statistical Report,* annual issues.

Data are for the number of animals under paid permit (excluding "exempt provision" and "other paid permit" shown in the second source cited) and not necessarily the actual number grazed. Includes data for some Title III (Bankhead–Jones Act) lands transferred to the Forest Service for administration in 1954. In 1960, most of these lands were incorporated into the National Forest System.

J 35–40. Grazing on public-domain lands, **1935–1970.**

Source: U.S. Bureau of Land Management, *Public Land Statistics (Annual Report of the Director,* prior to 1962), various issues.

Data on grazing exclude grazing on reclamation land, land utilization projects where not part of a grazing district, O & C Iands (see text for series J 26–32 for definition of O & C lands), and Alaskan grazing; they include lands rented and sublet under the Pierce Act (43 U.S.C. 315M). Amount of grazing in districts (series J 38–40) includes free-use, crossing, and trailing permits in addition to regular paid use. Beginning 1964, it does not include nonuse permits or exchange-of-use permits for grazing district lands.

Grazing receipts are credited to the year received even though part of the period covered extends into the Pollowingyear. An animal-unit month represents the forage required to maintain five sheep or goats or one horse or one cow for a month.

J 41–49. Oil and gas leases **of** public-domain land — acreage, receipts, and output, **1920** to **1970.**

Source: Series J **41-43,** U.S. Bureau of Land Management, *Public Land Statistics,* annual issues. Series **J 44,** U.S. Geological Survey estimates derived by subtracting series J 45 from J 43. Series **J 45** and J **47-49,** U.S. Geological Survey, 1920–1944, unpublished data; 1945–1970, *Federal and Indian Lands Oil and Gas Production, Royalty Income,* and *Related Statistics,* June 1972. Series **J 46,** U.S. Geological Survey estimates based on computations of gasoline and butane on an equal basis with petroleum (42 gallons per barrel), and 6,000 cubic feet of natural gas equal to 1 barrel of petroleum.

Of the total public-domain acreage owned by the Federal Government in 1970 (706 million acres) about 9 percent was leased for oil and gas operations under the Mineral Leasing Act of February 25, 1920, as amended. Of the total number of leases under the supervision of the U.S. Geological Survey about 8 percent were in a producible status, producing oil, gas, and associated liquid products.

30 U.S.C. 226 specifies a minimum royalty rate of 12½ percent of the value of production removed or sold from oil and gas leases. Rates vary upward as high as 25 percent depending upon the royalty rate specified in the lease issued. Royalty on liquid products is net after an allowance for the cost of manufacture. The rental for nonproducing oil and gas leases varies from 50 cents per acre or fraction thereof for each lease year to **$2** per acre. The minimum royalty which is paid in lieu of rental at the expiration of each lease year after discovery is $1 per acre or fraction thereof.

J 50–80. General note.

Area measurements in the United States are performed in connection with the decennial censuses of population. They began with measurements for the country as a whole; and, as mapping progressed, included measurements for the States and later for counties and minor

civil divisions. Differences in the land area figures over time are due primarily to the more accurate determination of the outer limits of the United States, improvements in mapping and map measuring techniques, omission of certain bodies of water included in the earlier measurements, and increases in the area of artificial reservoirs. For total figures (land, water, and gross area) in square miles, 1790–1970, and sources of data, see series J 2.

Collection of land utilization statistics began with the census of 1850, when farmland was enumerated as "improved land" or "unimproved land." In 1890 and later census years, these inquiries were expanded and revised. After the turn of the century, collection of various land utilization statistics was begun by branches of the Department of Agriculture, while other contributions to the literature on this subject were made by numerous agencies, State universities, and individuals.

The census of agriculture is the primary source of data concerning land in farms in census years. Statistics concerning land not in farms are less complete, except for forest land, and have been collected by various interested agencies for individual items and for local areas by Federal, State, and private agencies and individuals. During the 1930's, studies by the National Resources Planning Board and assisting agencies contributed greatly to the available statistics on total land utilization. Since 1920, the Department of Agriculture's Economic Research Service and its predecessor agencies have prepared periodic inventories of land use.

Data on the utilization of farmland refer to the land use in preceding years except for 1954, 1959, 1964, and 1969. For 1850–1925, the data are chiefly estimates made by the former Bureau of Agricultural Economics based on the censuses of agriculture conducted by the Bureau of the Census. The estimates for 1930–1969 are from the census of agriculture, except for an adjustment made by the Economic Research Service in cropland harvested and other land in farms for 1950 through 1969. This adjustment was made to compensate for normal underenumeration of cropland and to obtain greater conformity with the total acreage of crops harvested as reported by the Department of Agriculture's Statistical Reporting Service and its predecessor agencies.

Acreages of nonfarm uses of land were estimated by the Economic Research Service and predecessor agencies from records and reports of State and Federal agencies concerned with management of public land, conservation of land, public services, and assessment of land for taxation.

Changes in total farmland for 1850–1969 represent in part changes in agricultural activity and in part more complete census enumeration and changes in census definition of *land in farms*. Land uses not reported by the Bureau of the Census and additions to census data for 1930–1969 are based largely on agricultural statistics assembled by the Department of Agriculture. Forest land inventories and grazing land studies during this period are believed to have improved the reliability of the estimates of these items for this period as contrasted with earlier years. Estimates for 1925 and prior census years for land not in farms are based on more limited evidence, such as available charts, maps, records, and reports on land areas and uses.

J 50–65. Land utilization, by type, **1850–1969.**

Source: U.S. Department of Agriculture, 1850–1900, *Major Uses of Land in the United States: Summary for 1954,* Agriculture Information Bulletin No. 168, 1957, pp. 36 and 37; 1910–1968, *Agricultural Statistics, 1972,* p. 506; 1969, *Major Uses of Land in the United States, Summary for 1969,* Agricultural Economics Report No. 247.

These data are based on estimates from Department of Agriculture publications as follows: *Major Uses of Land and Water in the United States, Summary for 1964,* Agricultural Economics Report 149, 1968; *Major Uses of Land and Water in the United States: Summary for 1959,* Agricultural Economics Report No. 13, 1962; *Major Uses of Land in the United States,* Technical Bulletin No. 1082, and Supplement, *Basic Land Use Statistics, 1950; Inventory of Major Land Uses, United States, 1945,* Miscellaneous publication *663,* 1948; *Pasture Land on Farms in the United States,* Bulletin No. 626, 1918; *Agricultural Yearbook, 1923,* 1924; and National Resources Board, *A Report on National Planning and Public Works ..., 1934.*

Total land area, as defined by the Census Bureau in 1940 and subsequent years includes "dry land and land temporarily or partially covered by water, such as marshland, swamps and river flood plains, .. (except tidal flats) ... streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds having less than 40 acres of area."

See also U.S. Bureau of the Census reports, *U.S. Census of Population,* vol. I, for 1920, 1930, 1940, 1950, and 1960; *Areas of the United States, 1940;* and *Area Measurement Reports* (for individual States, 1960 area), Series GE-20, 1964–1967.

Cropland used for crops includes cropland harvested, crop failure, and cultivated summer fallow. *Cropland idle or in cover crops* includes temporarily idle land as well as some poorer cropland abandoned for crop purposes and soil-improvement crops not harvested and not pastured. *Grassland pasture* includes cropland used only for pasture in the year indicated and all other nonforested pasture in farms. *Farm woodland* includes grazed or ungrazed farm wood lots or timber tracts, natural or planted, and cutover land with young growth, which has or will have value as wood or timber. Chaparral and woody shrubs are omitted. *Special uses in farms* includes farmsteads, farm roads, and farm lanes. *Other land in farms* includes miscellaneous unclassified uses and wasteland.

Nonfarm grazing land comprises the open grassland and shrub grazing lands and the woodland and forest area grazed. *Nonfarm forest land not used for grazing* excludes forested areas in parks, wildlife refuges, military areas, recreation sites, and arid woodland, brushland, and forest land used for grazing. *Special uses not in farms* includes urban areas, highways and roads, railroads, airports, parks and related recreational areas, wildlife refuges, and military reservations. *Other nonfarm land* includes various unclassified uses and unused areas such as desert, rock, swamp, and tundra.

J 66–80. Private and public land ownership, **by** major uses, **1920–1969.**

Source: U.S. Department of Agriculture, Economic Research Service. 1920, unpublished data; 1930–1954, *Major Uses of Land in the United States: Summary for 1954,* Agricultural Information Bulletin 168, 1957; 1959, *Major Uses of Land and Water in the United States: Summary for* 1959, Agricultural Economics Report 13, 1962; 1964, *Major Uses of Land and Water in the United States: Summary for 1964,* Agricultural Economics Report 149, 1968; 1969, see source for series J 50–65.

The figures were compiled from a number of Federal and State reports and records which reflect varying degrees of reliability. The figures used are applicable for different dates. All of them were assembled for some other purpose than that for which they are used here. The areas of all unsurveyed lands are estimated, and the areas of many lands based on surveys are subject to correction. Some of the data are not complete and are used merely for comparison. Therefore, although they are the best available, the figures given here are not strictly accurate, often not complete, and are not comparable among themselves. Nevertheless, they give some idea of the major features of land use and control for the country as a whole.

Private land is land held or owned by private individuals, groups, and corporations, and is generally used for private purposes. Indian lands held in trust and administered by the Federal Government for the benefit and use of groups or tribes of the Indian people are included in private land, as more than three-fourths of this land is used directly for farming and grazing by Indian farmers and stockmen. Much of the rest is leased for farming and grazing to other farmers and ranchers and the proceeds are received by the Indian owners.

Public land as used here is land owned or administered by Federal, State, county, municipal, or other governments for common or public purposes (e.g., highways, airports, national defense, flood control, water supply, forests, and parks). Public land frequently is used

for farming and grazing by private parties under a system of permits or leases. However, most of it is dry, rough, rocky, swampy, or otherwise unsuited for farming. When used by individuals, public land is sometimes included in reporting statistics on acreages in farms. More often, when public land is used in common by several persons, it is not reported as in farms.

See also text for series J 50–65.

J 81–91. Agricultural land drainage and irrigation, 1890–1969.

Source: U.S. Bureau of the Census. Series J **81–84,** 1920–1969, 1969 Census of Agriculture, vol. VI, *Drainage of Agricultural Lands,* 1969, p. X. Series J 85–91, 1890–1954, *Irrigation of Agricultural Lands, 1950,* and 1959; 1959–1969, 1969 Census of Agriculture, vol. IV, *Irrigation,* p. 2.

Drainage and irrigation are the two major reclamation means by which additional land can be brought under cultivation. Land that is drained greatly exceeds land that is irrigated in terms of acreage already developed. Drainage activities are concentrated in the North Central States and lower Mississippi Valley. Other highly drained areas are the Gulf Coast area of Texas, Southern Florida, and the Sacramento and San Joaquin River areas of California. Irrigation is practiced predominantly in the arid and semi-arid areas of the West. In recent years the acreage of irrigated land has stabilized in the Southwest and California because of the full utilization of existing water supplies whereas rapid expansion has occurred in Nebraska, Kansas, Oklahoma, Texas, and Florida. In irrigated areas, particularly areas where water is applied by flooding or by furrows and ditches, drainage is necessary to carry away excess water.

The Bureau of the Census has collected drainage and irrigation statistics by means of three censuses: (1) The censuses of agriculture which represent a direct enumeration of farms; (2) the special censuses of drainage projects; and (3) the special censuses of irrigation organizations. The censuses of agriculture have collected statistics on drainage on farms for 1920, 1930, and 1969, and statistics on irrigation on farms since 1890. The special censuses of drainage projects were taken decennially from 1920 to 1960 and collected information in only those States where projects existed. Changes in the method for collecting drainage statistics shifted the census year from 1970 to 1972 for the most recent census of drainage projects. The special censuses of irrigation organizations have been taken decennially since 1910 and collect information from irrigation organizations in those States where organizations exist. In addition, a special census of irrigation was taken in 1902; the statistics were published in 1904 in *Bulletin* 16 of the Census Bureau.

Drainage on farms. Statistics were collected from all farms in the 48 States and the District of Columbia in the censuses of agriculture for 1920 and 1930. For 1969, statistics were collected from all 50 States for farms with sales of $2,500 and over.

Drainage projects. The date of each special census of drainage projects was January 1, of the census year. The number of States covered in the five censuses of drainage projects taken between 1920 and 1960 has varied from census to census. The New England States, Pennsylvania, and West Virginia have never been included. The number of States included in each census are: 1920, 34 States; 1930, 35 States; 1940, 38 States; 1950, 40 States; and 1960, 39 States.

The special census of drainage projects has always been primarily a census of community or public drainage undertakings and of the larger private drainage undertakings. Variation in the methods employed and the scope of the census have had most effect on the number of projects covered but have not greatly affected the comparability of other items. The major changes have been, beginning with 1950, (1) the exclusion of projects of under 500 acres, (2) elimination in the enumeration of numerous projects which had been taken over by a later project, and (3) the consolidation into a single report of undertakings under common management; **and** in 1960, the elimination of drainage undertakings required solely because of the irrigation of the land.

Irrigation. For reasons of comparability, the irrigation data presented here are from the censuses of agriculture.

The States included for series J 87–89 are: Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.

For series J 90–91, the 31 States included prior to 1959 are: Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

J 92–103. Estimated water use, 1900–1960.

Source: U.S. Department of Commerce, Business and Defense Services Administration, *Water Use in the United States,* 1900–1980, March 1960, and Bureau of Domestic Commerce, unpublished data.

These estimates of water use are based on estimates developed initially in 1948 but revised on the basis of information available from Federal surveys and censuses in 1954 and later years. The source publication (cited above) includes estimates of future requirements for 1965, 1970, 1975, and 1980.

The year 1954 was used as a benchmark because of the availability of detailed data on water use during that year, such as the 1954 censuses of manufactures and mineral industries; Inventory of Major Public Water Utilities; Survey of Water Use in Steam Generation of Electric Power by Public Electric Utilities; and Survey of Water Use by the Department of Defense. Adjustments were also made after comparison with surveys of water use by the U.S. Geological Survey in 1950 and 1955, and studies of projections of water requirements by several river basin committees and State water survey commissions.

Related data resulting from later studies have been published by the U.S. Water Resources Council in *The Nation's Water Resources,* 1968, and by the U.S. Geological Survey in a series of quinquennial reports, *Estimated Use of Water in the United States* (circulars 115, 398, 456, 556, and 676) covering the years 1950 through 1970.

J 104–109. Water wells in use, 1900–1962.

Source: U.S. Bureau of Domestic Commerce (formerly Business and Defense Services Administration), unpublished data. (Estimates for 1900–1955 are shown in chart form in Walter L. Picton, "The Water Picture Today," *Water Well Journal,* April 1956.)

In the formulation of these estimates, due consideration has been given to growth in population, the population served by public water supplies, the rural-farm and nonfarm self-served population, and the relative essential water facility requirements to serve them. In addition to population growth, the increase in per capita domestic water use, irrigation requirements, and industrial demands have been considered.

In the absence of measurable data, the level of activity in the field has been gauged by the process of deduction, utilizing the populations of rural and other areas not serviced by public water supplies.

Series J 1-2. Territorial Expansion and Land and Water Area of the United States: 1790 to 1970

[In square miles]

Accession	Territorial expansion: Date	Territorial expansion: Gross area (land and water)	Year	Area: Gross area	Area: Land	Area: Water
		1		2	2a	2b
Total	1970	3,628,066	UNITED STATES			
United States		3,615,122	1970 (Apr. 1)	3,615,122	3,536,855	78,267
Territory in 1790[1]		888.685	1960 (Apr. 1)		3,540,911	74,212
Louisiana Purchase	1803	827.192	1950 (Apr. 1)	3,615,211	3,552,206	63,005
By treaty with Spain:						
Florida	1819	58,560	CONTERMINOUS U.S.[6]			
Other areas	1819	13,443				
			1960 (Apr. 1)	3,002,261	2,968,054	54,207
Texas	1845	390,143	1950 (Apr. 1)	3,022,387	2,974,726	47,661
Oregon	1846	285,680	1940 (Apr. 1)	3,022,387		45,259
Mexican Cession	1848	529,017	1930 (Apr. 1)	3,022,387	2,969,128	45,259
Gadsden Purchase	1853	29,640	1920 (Jan. 1)	3,022,387		52,936
Alaska	1867	586,412	1910 (Apr. 15)	3,022,387	2,969,566	52,822
Hawaii	1898	6,450				
			1900 (June 1)	3,002,387	2,969,834	52,553
Other areas:			1890 (June 1)	3,022,387		52,747
The Philippines[2]	1898	115,600	1880 (June 1)	3,022,387	2,969,640	52,747
Puerto Rico	1899	3,435	1870 (June 1)	3,022,387	2,969,640	52,747
Guam	1899	212	1860 (June 1)	3,022,387	2,969,640	52,747
American Samoa	1900	76	1850 (June 1)	2,992,747	2,940,042	52,706
Canal Zone[3]	1904	663				
Corn Islands[4]	1914	4	1840 (June 1)	1,788,006	1,749,462	38,544
Virgin Islands of the U.S	1917	133	1830 (June 1)	1,788,006	1,749,462	38,544
Trust Territory of the Pacific Islands[5]	1947	8,489	1820 (Aug. 7)	1,788,006	1,749,462	38,544
All other		42	1810 (Aug. 6)	1,716,003	1,681,828	84,175
			1800 (Aug. 4)	888,811	864.746	24,065
			1790 (Aug. 2)	888,811	864.746	24,065

parallel, sometimes considered part of Louisiana Purchase. Not included in t al. Ceded by Spain in 1898 the Philippines constituted a terri rial possession o: he United States until 1946.' Granted independence July 4, 1946. [3] Under jurisdi on of United States in accordance with treaty of Nov. 18, 1903, with Republic of Panama. but returned April 25, 1971. [5] Under trusteeship with the United States as administering authority. ' See *Trusteeship* ***Agreement*** for *the Former Japanese Mandated Islands (Documentary Supplement No. 1)* of the Security Council of the United Nations which became effective on July 18, 1947. [6] Excludes Alaska and Hawaii.

Series J 3–7. Area and Acquisition of the Public Domain, United States: 1781 to 1970

[Area in thousands of acres. All areas except Alaska are as computed in 1912 and have not been adjusted for subsequent recomputation of the area of the United States]

Year	Public domain plus acquired land	Year	Public domain plus acquired land	Year and acquisition	Area: Total	Area: Land	Area: Inland water	Cost ($1,000)
	3		3		4	5	6	7
1970	761,301	1960[1]	771,512	Aggregate	1,837,763	1,807,682	30,081	85,079
1969	762,514	1959[2]	768,640					
1968	155,345	1958	408,563	1867, Alaska Purchase	375,296	365,482	9,814	7,200
1967	760,364	1955	407,896	1858, Gadsden Purchase	18.989	18,962	27	10,000
1966	764,762	1950	[3] 412,000	1850, Purchase from Texas	78,927	78,848	84	16,496
				1848, Mexican Cession [4]	838,681	384,479	4.202	16,295
1965	165,797	1946	[3] 413,000	1846, Oregon Compromise	183,386	180 644	2,742	
1964	710,514	1912	[3] 600,000	1819, Cession from Spain	46,145	43: 343	[5] 2,802	6,674
1963	769,903	1880	3900,000	Red River Basin [6]	29,602	29,067	535	
1962	770,797	1850	[3] 1,200,000	1803, Louisiana Purchase [4]	529,912	523,446		
1961	167.766	1802	[3] 200,000	1781–1802 State cessions	236,826	233,416	3,466	[7] 15,200

[1] Beginning 1960, includes acquired land in Hawaii. [2] Beginning 1959, includes Alaska. [3] Estimated from limited data available. [4] Data for Louisiana Purchase exclude areas eliminated by Treaty of 1819 with Spain. Such areas are included in figures for Mexican Cession. [5] Includes 33,920 acres subsequently recognized as part of State of Texas which is not a public-domain State. [6] Represents drainage basin of Red River of the North, south of 49th parallel. Authorities differ as to method and exact date of its acquisition. Some hold it as part of Louisiana Purchase; others maintain it was acquired from Great Britain. [7] See text.

Series J 8–15. Vacant Lands and Disposal of Public Lands: 1802 to 1970

Year	Vacant public lands	Land granted to States	All entries, selections, patents, etc.[1]: All original entries and selections[2]	All entries, selections, patents, etc.[1]: All final entries	All entries, selections, patents, etc.[1]: Patents and certifications	Homestead entries[3]: Original entries: Number	Homestead entries[3]: Original entries: Acreage	Homestead entries[3]: Final entries[4]
	8	9	10	11	12	13	14	15
	Million acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Number*	*1,000 acres*	*1,000 acres*
1970	159		124	298	682	13	2	6
1969	417		319	264	821	26		8
1968	425		1,171	405	906	33		10
1967	426		474	942	1,622	51		23
1966	427		1,787	214	3,407	115	16	33
1965	428		2,403	220	768	182	22	80
1964	434		5,696	507	1,224	291	31	63
1963	437		880	254	835	383	46	57
1962	439		2,453	622	756	674	83	51
1961	441		2,211	451	482	615	77	57
1960	438		1,295	270	512	1,077	148	46
1959	438	104,569	803	280	850	1,181	147	42
1958	168		146	257	915	524	70	43
1957	169		180	279	561	662	79	66
1956	170		151	267	629	455	57	42

See footnotes at end of table.

Series J 8–15. Vacant Lands and Disposal of Public Lands: 1802 to 1970—Con.

Year	Vacant public lands	Land granted to States	All original entries and selections[1]	All final entries	Patents and certifications	Homestead entries[3] Original entries Number	Original entries Acreage	Homestead entries[3] Final entries[4]
	8	9	10	11	12	13	14	15
	Million acres	1,000 acres	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Number*	*1,000 acres*	*1,000 acres*
1955	170		251	250	539	482	60	37
1954	171		306	239	416	474	60	43
1953	171		310	177	364	482	61	39
1952	172		113	165	374	458	59	38
1951	174		121	198	388	363	49	63
1950	170		142	150	492	523	73	46
1949	170		134	116	390	681	82	40
1948	171		117	56	287	635	78	18
1947	170		76	58	403	474	55	26
1946	170		27	61	154	143	18	29
1945	170		40	61	217	182	22	35
1944	168		91	85	402	157	20	51
1943	169		63	168	637	211	29	102
1942	174		135	252	1,055	233	37	188
1941	172		76	491	1,039	400	51	390
1940	(NA)		54	756	1,904	349	46	652
1939	(NA)		302	1,198	1,982	378	66	1,089
1938	(NA)	2	131	1,478	1,944	447	78	1,362
1937	(NA)	1	125	2,026	2,184	561	111	1,915
1936	(NA)	200	426	1,988	1,359	1,209	357	1,765
1935	(NA)	(Z)	1,759	1,772	1,610	3,297	1,166	1,640
1934	166	3	3,535	1,225	1,362	7,507	2,737	1,124
1933	172	198	3,118	980	1,866	7,527	2,642	907
1932	173	77	4,552	1,333	2,013	10,639	8,914	1,210
1931	177	2	5,219	1,537	2,126	12,640	4,757	1,353
1930	179	1	5,435	1,577	2,253	12,708	4,723	1,371
1929	190	100	4,613	2,080	2,648	11,598	4,173	1,701
1928	194	252	3,726	2,168	2,519	10,429	3,367	1,816
1927	194	55	3,595	3,011	4,586	10,500	3,237	2,584
1926	[5] 196		3,243	3,962	4,600	10,354	2,375	3,451
1925	185	1	3,641	4,489	5,627	11,010	3,041	4,049
1924	187	(Z)	4,564	5,229	9,082	13,886	3,873	4,791
1923	186		6,415	6,201	10,362	18,942	5,524	5,594
1922	183		10,367	8,074	13,761	29,263	8,980	7,307
1921	190	(Z)	15,632	8,772	10,930	43,813	13,662	7,727
1920	200		16,437	9,778	13,327	48,532	13,511	8,373
1919	218		11,871			39,841	10,204	6,525
1918	222		10,147			35,875	7,420	8,236
1917	231	(Z)	16,202			58,896	12,021	8,497
1916	255	4	18,708			65,282	13,628	7,278
1915	280	2	16,861			62,360	12,440	7,181
1914	291		16,523			62,229	12,117	9,291
1913	298		15,867			57,800	11,222	10,009
1912	315	(6)	14,575			52,991	13,624	4,306
1911	327		19,211			70,720	17,639	4,620
1910	344	17,150	26,391			98,598	13,329	3,796
1909	368	(Z)	19,893			75,445	12,302	3,699
1908	387	16	19,090			87,057	13,536	4,243
1907	406	(Z)	20,998			93,957	14,755	3,741
1906	424	3,114	19,431			89,600	13,975	3,527
1905	449	(Z)	17,057			70,344	12,896	3,419
1904	474	20	16,332			69,175	10,171	3,233
1903			22,824			80,188	11,193	3,57:
1902		(Z)	19,372			98,829	14,033	4,343
1901			15,453			68,648	9,497	5,241
1900		8	13,391			61,270	8,478	3,478
1899		50	9,091			45,776	6,178	3,134
1898		5,600	8,422			44,980	6,207	3,098
1897		(Z)	7,754			33,250	4,452	2,778
1896			13,174			36,548	4,831	2,790
1895		69	8,364			37,388	5,009	2,981
1894		8,470	10,377			56,632	8,047	2,930
1893			11,302			48,436	6,809	3,477
1892		8	13,567			55,111	7,716	3,260
1891		(Z)	10,357			37,602	5,040	3,958
1890		7,678	12,666			40,244	5,532	4,061
1889		15,367	17,026			42,188	6,029	3,682
1888		(Z)	24,161			46,238	6,677	3,178
1887			25,111			52,028	7,594	2,745
1886			20,992			61,838	9,145	2,664
1885			20,114			60,877	7,416	3,088
1884		46	26,834			54,988	7,332	2,948
1883			19,031			58,561	3,172	2,504
1882			13,991			45,33:	6,343	2,218
1881		276	10,76:			36,990	5,028	1,925

Year	Land granted to States	All original entries and selections[1,2]	Homestead entries[3] Original entries	Homestead entries[3] Final entries[4]
		10	13	15
	1,000 acres	*1,000 acres*	*Number*	*1,000 acres*
880	(Z)	9,162	47,293	1,938
879		8,724	41,005	2,071
878		7,210	36,630	2,663
877		3,495	18,675	2,408
876		4,292	25,104	2,591
875	3,842	3,792	20,668	2,069
874		4,784	29,126	1,586
873		6,386	31,561	1,225
872		7,248	38,742	707
871		7,119	39,768	629
870		6,663	33,972	520
869		6,678	25,628	504
868			23,746	355
867	4		16,957	
866	226		15,355	
865			8,924	
864	4,955		9,405	
863			8,223	
862	9,420			
861	3,052			
859	3,498			
857	2,974			
855	46			
853	5,537			
850	55,401			
849	9,491			
846	1,081			
845	2,076			
841	7,807			
836	2,146			
832	24			
831	6			
827	46			
826	25			
823	92			
820	1,317			
819	986			
818	1,186			
817	324			
816	740			
812	307			
803	793			
802	24			

NA Not available. Z Less than 1,000 acres. [1] Includes homesteads. [2] Previous to 1911 the data included, in addition to original entries and selections, some classes of final entries and patents. [3] Except on ceded Indian lands. [4] Exclusive of commuted homesteads. [5] The increase in area over 1925 was reported as the result of a "special check" of field office records which was "used as a basis for a complete revision of the vacant land statistics." [6] Grants of unsurveyed lands to Wisconsin for forestry purposes; area not determined.

Series J 16–19. Lands Under Jurisdiction of Bureau of Indian Affairs: 1881 to 1970

[In thousands of acres]

Year	Total	Indian		Government owned
		Trust allotted	Tribal	
	16	17	18	19
1970	55,408	10,698	39,642	5,068
1969	55,351	10,757	39,641	4,952
1968	55,427	10,894	39,586	4,947
1967	55,413	11,019	39,443	4,951
1966	55,294	11,121	39,251	4,922
1965	55,319	11,287	39,097	4,935
1964	55,134	11,450	38,975	4,709
1963	55,196	11,607	33,877	4,713
1962	55,247	11,763	38,814	4,669
1961	57,107	11,958	40,538	4,612
1960	58,080	12,235	41,226	4,618
1959	56,870	12,560	39,676	4,634
1958	57,023	12,896	42,304	1,823
1957	53,331	13,223	39,549	558
1956	53,376	13,328	39,465	583
1955	53,771	13,662	39,487	622
1954	54,108	13,652	39,882	574
1953	55,406	14,251	40,178	977
1949	56,005	16,534	33,608	863
1946	56,567	17,143	37,524	1,901
1945	55,363	16,796	37,251	1,317
1944	56,577	17,474	37,233	1,869
1943	55,657	17,441	36,957	1,253
1942	55,410	17,503	36,602	1,305
1941	55,392	17,762	36,276	1,354
1940	55,406	17,574	36,047	1,786
1939	54,839	17,594	35,402	1,842
1937	34,620		34,620	
1936	51,057		51,057	
1935	50,696		50,696	
1934	49,388		49,388	
1933	52,651		47,398	
1932	46,795		46,795	
1930	32,097		32,097	
1929	32,015		32,015	
1928	30,262		30,262	
1927	31,420		31,420	
1926	31,791		31,791	
1925	31,582		31,582	
1924	34,948		34,948	
1923	34,988		34,988	
1922	34,979		34,979	
1921	35,502		35,502	
1920	72,661	37,159	35,502	
1919	72,546	36,986	35,560	
1918	71,094	36,861	34,233	
1917	71,806	35,740	36,566	
1916	71,978	36,565	36,413	
1915	68,103	34,763	83,334	
1914	69,900	34,072	35,828	
1913	72,147	33,571	33,576	
1912	71,917	32,414	39,503	
1911	72,535	32,272	40,263	
1910	72,146	31,094	41,052	
1909	49,566		49,566	
1908	52,013		52,013	
1907	53,549		53,549	
1906	55,831		55,831	
1905	68,202		58,202	
1904	72,392		72,392	
1903	83,426	3,823	74,603	
1902	75,149		75,149	
1901	76,117			
1900	84,602	6,737	77,865	
1897	82,770		82,770	
1896	83,405		83,405	
1895	84,571		84,571	
1894	85,581		85,581	
1893	85,873		85,873	
1892	92,478		92,478	
1891	91,146		91,146	
1890	104,814		104,314	
1889	116,386		116,386	
1888	118,484		113,484	
1887	136,395		136,395	
1886	135,978		135,978	
1885	137,725		137,725	
1884	137,767		137,767	
1882	143,526		143,526	
1881	155,632		155,632	

Series J 20. Public Land Sales: 1800 to 1860

[In thousands]

Year	Acres	Year	Acres	Year	Acres	Year	Acres	Year	Acres
	20		20		20		20		20
1860	2,543.4	1847	2,521.3	1835	12,564.5	1822	710.0	1810	285.8
1859	4,011.7	1846	2,263.7	1834	4,658.2	1821	782.5	1809	275.0
1858	3,668.6			1833	3,856.2			1808	209.2
1857	4,220.1	1845	1,843.5	1832	2,462.3	1820	814.0	1807	320.9
1856	5,247.0	1844	1,754.8	1831	2,777.9	1819	2,968.4	1806	506.0
		1843	1,605.3			1818	3,491.0		
1855	11,959.8	1842	1,129.2	1830	1,929.7	1817	1,886.2	1805	582.0
1854	12,823.0	1841	1,164.8	1829	1,244.9	1816	1,742.5	1804	398.2
1853	8,787.1			1828	965.6			1803	174.2
1852	894.8	1840	2,236.9	1827	926.7	1815	1,806.4	1802	271.1
1851	2,055.9	1839	4,976.4	1826	848.1	1814	1,176.1	1801	497.9
		1838	3,414.9			1813	505.6		
1850	1,405.8	1837	5,601.1	1825	999.0	1812	386.1	1800	67.8
1849	1,329.9	1836	20,074.9	1824	737.0	1811	575.1		
1848	1,887.6			1823	652.1				

Series J 21–25. Public Land Grants by United States to Aid in Construction of Railroads, Wagon Roads, Canals, etc. 1823 to 1871

[In thousands of acres]

Year	Total grants	Purpose				Year	Total grants	Purpose			
		Railroads	Wagon roads	Canals	River improvements			Railroads	Wagon roads	Canals	River improvements
	21	22	23	24	25		21	22	23	24	25
1871	3,253	3,253				1858	3,379	2,629		750	
1870	129	129				1852	1,773	1,773			
1869	105		105			1851	3,752	3,752			
1867	25,173	23,535	1,538	100							
1866	200			200		1847	1,845	840			1,005
1865	42,794	41,452	941	401		1838	139			139	
1864	2,349	2,349									
1863	31,401	30,877	524			1828	1,338			938	400
1857	6,689	6,689				1827	2,273		202	2,071	
1856	14,085	14,085				1823	49		49		

Series J 26–32. Revenues From Public-Domain, Revested, and Acquired Land: 1785 to 1970

[In millions of dollars. For years ending June 30]

Period	Total	Sales of public domain	Fees and commissions	Timber sales [1] (O & C, and public domain)	Mineral leases [2]	Outer Continental Shelf leases	Miscellaneous [3]
	26	27	28	29	30	31	32
Total	7,033.2	253.5	109.1	703.1	1,976.6	3,352.5	638.5
1970	407.4	2.1	4.5	65.4	127.1	186.9	21.4
1969	651.1	1.8	4.9	69.7	123.3	428.3	23.1
1968	1,158.9	2.5	3.9	56.2	113.8	961.3	21.3
1967	821.5	2.6	3.3	47.1	110.2	637.3	21.1
1966	433.7	2.3	3.9	47.6	108.0	248.3	23.6
1965	234.4	3.1	3.8	44.9	107.3	53.5	21.9
1964	199.1	3.2	3.7	47.2	107.1	16.5	21.4
1963	530.7	3.4	3.0	33.6	102.6	366.8	21.3
1962	173.5	3.6	2.8	34.7	105.2	11.6	15.6
1961	159.2	4.3	2.5	32.1	89.2	7.3	23.9
1960	371.1	5.1	1.8	36.4	84.1	229.6	14.3
1959	136.7	4.2	1.3	31.8	33.5	3.4	12.5
1958	127.4	3.0	1.2	24.6	81.4	3.5	13.7
1957	112.1	3.4	1.0	21.4	72.3	2.2	11.7
1956	154.8	2.3	.8	24.9	61.6	53.8	11.4
1955	266.8	1.9	.7	25.0	60.0	142.4	9.6
1954	64.5	1.2	.6	13.4	52.5	----------	9.8
1953	49.1	1.0	.4	13.8	43.5	----------	8.0
1952		.7	.8	9.6	41.9	----------	11.6
1951		.5	.4	7.8	35.0	----------	5.5
1950	36.2	.5	.4	4.3	27.0	----------	4.1
1949	37.1	.5	.3	3.9	29.0	----------	3.5
1948	33.3	.3	.2	4.7	24.4	----------	3.9
1947	21.0	.1	.1	3.0	15.1	----------	2.6
1946	13.8	.1	.1		10.0	----------	3.6
1945	14.1	.2	.1	-------	10.1	----------	3.9
1944	15.2	.1	.1	-------	10.9	----------	4.2
1943	10.5	.1	(Z)	-------	7.2	----------	3.2
1942	9.9	.1	(Z)	-------	6.9	----------	2.3
1941	8.7	.2	.1	-------	5.7	----------	2.8
1940	7.5	.1	.1	-------	5.2	----------	2.2
1939	7.8	.2	.1	-------	5.7	----------	1.7
1938	8.4	.1	.1	-------	6.5	----------	1.7
1937	7.4	.1	.1	-------	5.6	----------	1.6
1936	5.2	.1	.1	-------	4.4	----------	.6
1935	4.8	.1	.2	-------	3.9	----------	.6
1934	4.0	.1	.3	-------	3.2	----------	.5
1933	3.9	.1	.3	-------	3.3	----------	.2
1932	4.1	.2	.3	-------	3.2	----------	.4
1931	4.8	.3	.4	-------	3.5		.6
1930	6.3	.4	.4	-------	4.7	----------	1.2
1929	6.2	.3	.5	-------	3.9	----------	1.5
1928	6.7	.4	.4	-------	4.7	----------	1.2
1927	9.2	.6	.5	-------	6.7	----------	1.4
1926	11.4	.7	.4	-------	8.4	----------	1.9
1925	10.8	0.6	0.6	----------	8.3	---------	1.3
1924	16.4	.6	.7	----------	13.6	---------	1.5
1923	10.7	.6	.8	----------	7.6	---------	1.6
1922	11.8	.9	1.1	----------	8.8	---------	1.0
1921	14.5	2.0	1.7	----------	9.7	---------	1.5
1920	6.1	2.0	1.6	----------	----------	---------	2.6
1919	4.3	1.5	1.2	----------	----------	---------	1.6
1918	5.4	2.1	1.2	----------	----------	---------	2.2
1917	6.1	1.9	1.6	----------	----------	---------	2.6
1916	5.4	1.8	1.7	----------	----------	---------	2.0
1915	5.4	2.2	1.6	----------	----------	---------	1.6
1914	6.1	2.6	1.7	----------	----------	---------	1.9
1913	7.0	2.7	1.5	----------	----------	---------	2.7
1912	10.0	5.4	1.2	----------	----------	---------	3.3
1911	11.1	5.8	1.5	----------	----------	---------	3.8
1910	11.5	6.3	2.0	----------	----------	---------	3.1
1909	12.2	7.7					3.0
1908	12.7	9.8					1.2
1907	11.6	7.7					2.0
1906	7.6	4.9	1.6	----------	----------	---------	1.1
1905	7.0	4.8					.9
1904	9.3	7.4					.5
1903	11.0	9.0					.5
1902	6.3	4.1					.4
1901	5.0	3.0					.7
1900	4.4	2.9	1.2	----------	----------	---------	
1899	3.1	1.7	.9	----------	----------	---------	
1898	2.3	1.3	.9	----------	----------	---------	
1897	2.1	.9	.7	----------	----------	---------	
1896	2.1	1.1	.8	----------	----------	---------	
1895	2.0	1.1	.8	----------	----------	---------	.2
1894	2.3	1.7	1.0	----------	----------	---------	.1
1893	4.5	3.2	1.0	----------	----------	---------	.3
1892	4.9	3.3	1.1	----------	----------	---------	.3
1891	5.4	4.2	.9	----------	----------	---------	.3
1890	7.8	6.3	1.1	----------	----------	---------	.3
1889	9.7	8.0	1.3	----------	----------	---------	.4
1888	13.5	11.2	1.5	----------	----------	---------	.8
1887	12.3	9.2	1.5	----------	----------	---------	1.5
1886	9.0	5.8	1.7	----------	----------	---------	1.6
1885	8.6	6.2	1.5	----------	----------	---------	.9
1884	12.8	10.3	1.5	----------	----------	---------	.3
1883	11.7	9.7	1.4	----------	----------	---------	.6
1882	8.4	6.6	1.1	----------	----------	---------	.6
1831	5.4	3.5	.9	----------	----------	---------	1.0
May 20, 1785 to June 30, 1880	208.1	--------	-----	----------	----------	---------	208.1

Z Less than $50,000.

[1] Excludes revenues of earlier years totaling $21.4 million, which are included under "Miscellaneous." Annual data for years prior to 1947 are not available separately; cumulative totals are as follows (in millions): 1941-46, $8.8; 1931-40, $4.3; 1921-80, $7.5; and 1911-20, $0.8.

[2] Act of Feb. 25, 1920.

[3] Represents sales of Indian lands, grazing revenues, rental of land, mineral leasing under special laws, and other miscellaneous revenues. Also includes sales of timber for years prior to 1947 (see note 1).

Series J 33–34. Livestock Permitted to Graze on National Forest System Lands: 1905–1970

[In thousands. Excludes animals under 6 months of age. Data are for fiscal years prior to 1921, calendar years thereafter]

Year	Cattle, horses, and swine	Sheep and goats	Year	Cattle, horses, and swine	Sheep and goats	Year	Cattle, horses, and swine	Sheep and goats	Year	Cattle, horses, and swine	Sheep and goats	Year	Cattle, horses, and swine	Sheep and goats
	33	34		33	34		33	34		33	34		33	34
1970	1,340	1,775	1956	1,340	2,821	1943	1,212	4,539	1930	1,358	6,714	1916	2,061	7,636
1969	1,338	1,361				1942	1,191	4,758	1929	1,399	6,964			7,886
1968	1,330	1,904	1955	1,350	2,916	1941	1,176	4,787	1928	1,415	6,784			
1967	1,313	1,969	1954	1,356	3,011				1927	1,486	6,704	1915	1,727	7,234
1966	1,301	2,061	1953	1,108	2,964	1940	1,177	4,949	1926	1,559	6,503	1914	1,620	7,619
			1952	1,096	3,000	1939	1,209	5,132						7,868
1965	1,280	2,102	1951	1,088	3,013	1938	1,250	5,307	1925	1,621	6,432	1912	1,667	7,562
1964	1,268	2,196				1937	1,284	5,485	1924	1,753	6,597	1911	1,448	7,449
1963	1,243	2,270	1950	1,092	3,006	1936	1,311	5,645	1923	1,864	6,712			
1962	1,239	2,357	1949	1,126	3,092				1922	1,987	6,892	1910	1,498	7,649
1961	1,219	2,479	1948	1,158	3,322	1935	1,345	5,691	1921	2,080	6,980	1909	1,586	7,820
			1947	1,162	3,403	1934	1,419	6,161				1908	1,382	7,087
1960	1,241	2,567	1946	1,203	3,713	1933	1,399	6,162	1920	2,217	7,881	1907	1,200	6,857
1959	1,238	2,614				1932	1,397	6,321	1919	2,284	7,996	1906	1,015	5,762
1958	1,298	2,689	1945	1,206	3,639	1931	1,376	6,608	1918	2,243	6,512			
1957	1,304	2,703	1944	1,225	4,280							1905	692	1,710

Series J 35–40. Grazing on Public-Domain Lands: 1935 to 1970

[In thousands. Data are for fiscal years except as noted]

Year	Receipts			Animal-unit-months of use [2]			Year	Receipts			Animal-unit-months of use		
	Total [1]	In grazing districts	Outside grazing districts	Total	Cattle and horses	Sheep and goats		Total [1]	In grazing districts	Outside grazing districts	Total	Cattle and horses	Sheep and goats
	35	36	37	38	39	40		35	36	37	38	39	40
1970	$5,380	$4,647	$733	10,981	8,626	2,354	1952	$1,985	$1,658	$322	15,403	10,157	5,246
1969	5,257	4,663	594	11,238	8,821	2,416	1951	1,694	1,382	306	14,331	9,211	5,120
1968	4,326	3.788	538	11,665	9,060	2,605							
1967	4,287	3,718	569	11,635	8,948	2,636	1950	1,534	1,146	383	14,461	9,205	5,256
1966	4,371	3,817	554	11,801	9,064	2,738	1949	1,239	1,060	173	14,522	9,117	5,405
							1943	1,415	1,165	244	14,726	9,078	5,648
1965	3,990	3,467	523	11,773	8,830	2,943	1947	1,046	819	221	14,993	9,195	5,798
1964	4,142	3,611	531	11,861	8,713	3,148	1946	964	736	228	15.254		
1963	3,772	3,355	418	12,051	8,710	3,341							
1962	2,780	2,190	590	12,000	8,557	3,443	1945	996	765	231	15,572		
1961	2,982	2,311	671	12,097	8,478	3,619	1944	1,015	813	202	15,745		
							1943	979	785	194	15,061		
1960	3 488	2,729	759	12,454	8,738	3,716	1942	1,095	900	195	15,271		
1959	3,228	2,713	515	14,750	9,898	4,852	1941	1,113	922	191	15,369		
1958	2,763	2,388	376	14,797	9,919	4,878							
1957	2,286	1,902	334	14,661	9,725	4,936	1940	747	595	152	13,832		
1956	2,386	2,050	355	15,301	10,223	5,078	1939	1,038	886	152	13,789		
							1938	850	300	49	13,376		
1955	2,219	1,879	339	15,367	10,136	5,181	1937	488	415	73	14,383		
1954	2,039	1,678	359	15,686	10,371	5,315	1936	43	48		11,106		
1953	2,095	1,764	328	15,780	10,483	5,297	1935	1	1		6,507		

[1] Includes minor receipts from grazing on privately owned lands within grazing districts (Pierce Act) which were administered by Bureau of Land Management.

[2] Beginning 1960, data are for calendar years.

Series J 41–49. Oil and Gas Leases of Public-Domain Lands—Acreage, Receipts, and Output: 1920 to 1970

[Excludes acquired lands, military and naval oil reserves, and submerged lands. Data are for fiscal years, except as noted]

Year or period	Number in effect	Acreage under lease	Receipts			Volume of output [2]			
			Total	Rentals [1]	Royalties [2]	Total petroleum equivalent [3]	Petroleum	Natural gas	Gasoline and butane
	41	42	43	44	45	46	47	48	49
	1,000	*Mil.* acres	*Mil. dol.*	*Mil. dol.*	*Mil. dol.*	*Mil. bbl.*	*Mil. bbl.*	*Bil. cu. ft.*	*Mil.* gal.
1970	99.0	63.0	124.5	34.0	90.5	364.6	196	934	542
1969	97.4	61.8	122.3	32.9	89.4	363.7	201	903	513
1968	93.0	56.4	111.5	25.7	85.8	369.2	201	942	470
1967	91.3	53.9	109.8	26.8	83.0	372.6	198	976	712
1966	98.2	61.3	108.2	30.4	77.8	333.3	187	807	493
1965	100.3	64.1	109.3	34.9	74.4	310.0	181	711	438
1964	104.5	67.4	109.8	36.6	73.2	301.7	180	665	457
1963	114.0	75.5	107.4	35.9	71.5	285.9	178	588	414
1962	129.9	93.3	107.2	39.8	67.4	267.7	171	518	436
1961	132.8	101.7	101.5	32.9	68.6	268.4	169	539	401
1960	139.5	113.7	85.9	25.4	60.5	249.7	156	513	344
1959 [4]	132.0	107.1	84.3	26.5	57.8	231.0	147	460	304
1958	110.0	73.7	78.9	24.3	54.6	218.3	137	418	280
1957	104.1	72.0	72.5	17.6	54.9	209.9	135	418	218
1956	98.5	70.3	62.3	15.9	46.4	184.2	127	313	211
1955	95.9	71.7	59.7	18.2	41.5	168.5	118	274	203
1954	86.6	64.2	53.4	14.2	39.2	159.5	111	261	211
1953	78.0	58.5	43.4	8.3	35.1	146.9	105	223	197
1952	63.0	48.4	46.7	18.0	28.7	127.2	94	173	184
1951	42.5	32.9	34.3	6.8	27.5	121.6	92	152	179
1950	28.9	23.6	26.7	2.8	23.9	107.6	84	121	142
1949	21.3	19.0	28.4	5.8	22.6	98.2	74	125	141
1948	13.4	10.7	24.1	-.5	24.6	102.5	78	125	156
1947	12.5	7.9	14.5	-1.4	15.9	89.2	70	95	142
1946	8.8	6.0	9.3	-.6	9.9	78.4	62	81	120
1945	7.0	4.6	9.4	1.8	7.6	75.7	58	88	126
1944	5.3	3.1	10.3	3.3	7.0	71.4	54	92	85
1943	4.5	2.8	6.6	----	6.6	69.7	53	88	87
1942	4.3	3.3	6.3	.8	5.5	62.1	45	91	32
1941	5.3	5.5	5.3	-.1	5.4	62.0	46	87	61
1931–1940	----	----	----	----	44.4	462.4	328	698	759
1920–1930	----	----	----	----	61.1	302.3	260	198	390

[1] Includes bonuses. Rentals are estimates derived by deducting royalties from total receipts.

[2] Calendar year data.

[3] Includes gasoline and butane on an equal basis with petroleum (42 gallons per barrel), and 6,000 cubic feet of natural gas equal to 1 barrel of petroleum.

[4] Beginning 1959, includes Alaska.

Series J 50–65. Land Utilization, by Type: 1850 to 1969

[In millions of acres]

Year	Total land area	Land in farms: Total	Cropland: Total	Cropland: Used for crops	Cropland: Idle or in cover crops	Grassland pasture	Farmwoodland: Total	Farmwoodland: Pastured	Farmwoodland: Not pastured	Special uses	Other	Land not in farms: Total	Grazing land	Forest land not usec for grazing	Special uses	Other
	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1969	2,264	1.064	384	333	51	540	112	62	50	9	19	1,200	283	475	169	268
1964	2,266	1,110	387	335	52	547	146	82	64	9	21	1,156	293	443	158	262
1959 *	2,271	1,124	392	359	33	532	163	93	70	10	27	1,147	319	438	141	249
1954	1,904	1,158	399	380	19	526	197	121	76	13	23	746	353	238	87	68
1950	1,904	1,159	409	387			220	135	85	21	24	745	400	201	81	63
1945	1,905	1,142	403	379			166	95	71	20	24	763	428	186	76	73
1940	1,905	1,061	399	363			157	100	57	44		844	504	203	137	
1935	1,903	1,055	416	375			185	108	77	44		848	533	184	131	
1930	1,903	987	413	379			150	85	65	21	24	916	578	208	53	77
1925	1,903	924	391	365			144	77	67	58		979	646	203	130	
1920	1,903	956	402	374			168	77	91	58		947	661	160	126	
1910	1,903	879	347	324			191	98	93	57		1,024	739	162	123	
1900	1,903	839	319				191	87	103	54		1,064	768	175	121	
1890	1,903	623	248			144	190			41		,280	818	344	118	
1880	1,903	536	188			122	190			36		,387	883	368	116	
1370	1,903	403	189				219					,495				
1860	1,903	407	163				244					,496				
1850	1.884	294	113				181					,590				

* Denotes first year for which figures lude Alaska and awaii.

Series J 66–80. Private and Public Land Ownership, by Major Uses: 1920 to 1969

[In millions of acres]

Year	Total land area: All land	Total land area: Cropland	Total land area: Pasture and grazing land	Total land area: Forest and woodland not grazed	Total land area: Other land	Private land: Total	Private land: Cropland	Private land: Pasture and grazing land	Private land: Forest and woodland not grazed	Private land: Other land	Public land [1]: Total	Public land [1]: %	Public land [1]: Pasture and grazing land	Public land [1]: Forest and woodland not grazed	Public land [1]: Other land
	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
1969	2,264	384	890	525	465	1,367	381	621	271	94	897	3	269	254	371
1964	2,266	387	922	507	450	1,378	384	660	253	81	888	8	262	254	369
1959*	2,271	392	944	501	434	1,335	389	659	255	82	886	8	285	246	352
1954	1,904	399	1,000	314	191	1,399	396	704	211	88	505	8	296	103	103
1950	1,904	409	1,020	286	189	1 399	405	724	184	86	505	4	296	102	103
1945	1,905	403	1,052	265	185	1,396	401	748	156	91	509	2	304	109	94
1940	1,905	399	1,065	260	181	1,404	398	766	150	90	501	1	299	110	91
1930	1,903	413	1,042	273	175	1,409	411	745	168	85	494	?	297	105	90
1920	1,903	402	1,068	251	184	1,404	401	766	145	92	499	1	300	106	92

*Denotes first year for which figures include Alaska and Hawaii.

[1] Includes land owned by State, county, municipal, or other local governments as well as Federal lands.

Series J 81–91. Agricultural Land Drainage and Irrigation: 1890 to 1969

[In thousands of acres, except number of farms and projects]

Year	Drainage: Drainage on farms [1]: Number of farms with artificial drainage	Drainage: Drainage on farms [1]: Acreage drained	Drainage: Drainage projects [2]: Number of projects	Drainage: Drainage projects [2]: Acreage in drainage projects	Irrigation: Total: Number of farms with irrigated land	Irrigation: Total: Acreage imgated	Irrigation: 17 Western States: Number of farms with irrigated land	Irrigation: 17 Western States: Land in irrigated farms	Irrigation: 17 Western States: Total acreage irrigated	Irrigation: All other States [3]: Number of farms with irrigated land	Irrigation: All other States [3]: Total acreage irrigated
	81	82	83	84	85	86	87	88	89	90	91
1969	[4] 338,696	59,551	([5])	([5])	257,147	39,122	205,848	216,189	34,786	51,299	4,336
1964					297,387	37,056	233,040	226,334	33,208	64,347	8,848
1959			[6] 8,461	[6] 101,870	307,783	33,163	262,614	211,564	30,738	45,169	2.425
1954					320,236	29,552	279,896	188.898	26,971	40,340	2,581
1950			14,533	[7] 102,688	305,061	25,787	281,476	166,074	24,271	23,585	1,516
1945					288,195	20,539	270,629		19,431	17,566	1,108
1940			39,597	86,967	299,604	17,983	283,089	110,942	17,243	16,515	740
1930	651,172	44,524	67,927	84,408		14,689	258,463	77,083	14.086		603
1920	924,810	53,025	56,949	65,495		14,482	215,152		813,883		599
1910						11,667	159,801		[8] 11,259		408
1900						7,789	109,298		7.543		246
1890						3.717	54.136		3,632		85

[1] Data are from the censuses of agriculture, which represent direct enumeration of farms. Acreage drained figures in series J 82 are largely duplicated in series J 84.

[2] Data are from the special censuses of drainage projects.

[3] For 1910, 1920, and 1930, Arkansas and Louisiana only. For 1940, 1945, and 1950, 31 States and D.C. For 1954, 31 States. For 1959, 32 States including Hawaii. For 1964 and 1969, 33 States including Alaska and Hawaii.

[4] Data are for farms with sales of $2,600 and over (Classes 1-5).

[5] Recent changes in census procedures for collecting drainage project statistics have shifted the census year from 1969 to 1971 and limited the projects enumerated to publicly organized projects.

[6] Census date for Census of Drainage Projects is January 1, 1960.

[7] Includes 4,110,000 acres reported drained by irrigation organizations.

[8] Data interpolated from the special censuses of irrigation organizations for 1910 and 1920.

Series J 92–103. Estimated Water Use: 1900 to 1970

[In **billions of** gallons, daily average]

Year	Total water use		Irrigation [1]		Public water utilities		Self-supplied use					
							Rural domestic [2]		Industrial and miscellaneous [3]		Steam electric utilities	
	Total	Ground	Total	Ground	Total	Ground	Total	Ground	Total	Ground	Total	Ground
	92	93	94	95	96	97	98	99	100	101	102	103
1970	327.30	54.27	119.18	33.13	27.03	6.65	4.34	4.13	55.95	10.24	120.80	0.12
1969	403.30	71.87	156.82	43.39	26.60	6.66	6.82	6.47	83.44	15.32	129.62	.18
1968	895.40	70.48	154.64	42.57	26.20	6.49	6.74	6.39	80.88	14.90	126.94	.13
1967	387.50	69.08	152.46	41.76	25.80	6.42	6.66	6.31	78.32	14.47	124.26	.12
1966	379.60	67.68	150.28	40.95	25.40	6.35	6.58	6.22	75.76	14.04	121.58	.12
1965	269.62	48.57	110.85	30.04	23.74	5.96	4.08	3.86	46.41	8.63	84.54	.08
1964	361.94	64.67	146.48	39.16	24.40	6.16	6.40	6.03	70.80	13.21	114.86	.11
1963	352.18	63.04	142.86	38.18	23.80	6.04	6.30	5.91	63.40	12.80	110.82	.11
1962	344.48	62.09	141.16	37.58	23.31	6.00	6.22	5.81	66.62	12.55	107.17	.15
1961	334.72	60.46	138.54	36.60	22.71	5.88	6.12	5.70	64.22	12.14	103.13	.14
1960*	322.90	58.17	135.00	35.24	22.00	5.68	6.00	5.58	61.20	11.57	98.70	.10
1958	299.26	54.02	127.52	32.78	19.72	5.12	5.76	5.31	56.40	10.72	89.86	.09
1955	263.80	47.79	116.30	29.08	16.30	4.27	5.40	4.91	49.20	9.45	76.60	.08
1950	202.70	35.19	100.00	19.80	14.10	3.78	4.60	4.09	38.10	7.47	45.90	.05
1946	165.74	27.88	86.44	15.04	12.00	3.25	3.50	3.06	33.00	6.50	30.80	.03
1945	170.46	28.33	83.06	14.12	12.00	3.28	3.20	2.78	41.00	8.12	31.20	.03
1944	178.43	29.19	80.65	13.55	12.00	3.30	3.18	2.76	48.00	9.55	34.60	.03
1940	136.43	22.56	71.03	11.22	10.10	2.82	3.10	2.64	29.00	5.86	23.20	.02
1930	110.50	18.18	60.20	9.09	8.00	2.30	2.90	2.40	21.00	4.37	18.40	.02
1920	91.54	15.78	55.94	8.17	6.00	1.79	2.40	1.94	18.00	3.87	9.20	.01
1910	66.44	11.68	39.04	5.27	4.70	1.49	2.20	1.76	14.00	3.15	6.50	.01
1900	40.19	7.28	20.19	2.22	3.00	1.05	2.00	1.60	10.00	2.40	5.00	.01

* Denotes first year for which figures include Alaska and Hawaii.
[1] Total take, including delivery losses but not including reservoir evaporation.
[2] Rural farm and nonfarm household and garden use, and water for farm stock and dairies.
[3] For 1900-1960, includes manufacturing industries, mineral industries, rural commercial industries, air conditioning, resorts, hotels, motels, military and other State and Federal agencies, and other miscellaneous uses: thereafter, includes manufacturing, mining and mineral processing, ordnance, and construction.

Series J 104–109. Water Wells in Use: 1900 to 1962

[In thousands]

Year	Total	Domestic wells		Public water supplies	Industrial and miscellaneous	Irrigation	Year	Total	Domestic wells		Public water supplies	Industrial and miscellaneous	Irrigation
		Farm	Non-farm						Farm	Non-farm			
	104	105	106	107	108	109		104	105	106	107	108	109
1962	14 751	5 354	8 831	36	347	183	1940	10 362	5,935	4,200	18	144	65
1961	143651	5'336	8'770	85	334	176	1935	9'843	5 457	4,195	16	115	60
1960	14,554	5'317	8,709	34	323	171	1930	9'601	5'220	4,200	15	110	56
1959*	14,395	5,307	8,674	33	315	166	1925	9,265	5'139	3,952	13	105	55
1958	14,216	5,290	8,433	32	301	160	1920	8,844	5,080	3,600	12	100	53
1957	14 059	5 280	8 300	31	293	155	1915	8 104	4,712	3 244	10	92	45
1956	13'915	5'260	8'190	30	285	150	1910	7'336	4 305	2'900	9	84	38
1955	13'730	5'248	8,035	28	278	142	1905	7 046	4,038	2'898	9	75	26
1950	12,768	5,620	6,800	23	216	107	1900	63866	3,975	2,800	7	67	17
1945	11,273	6,063	4,943	22	170	75							

* Denotes first year far which figures include Alaska and Hawaii.

Chapter J

Climate (Series J 110-278)

J 110–267. General note.

Climate may be defined as the statistical summary of the state of the atmosphere at a given place for a given period of time. The "state" of the atmosphere properly includes many weather elements in addition to such influential ones as temperature, precipitation, and wind. Not all of them are given much attention, nor have they been adequately measured throughout the United States.

In view of the significance of ranges of climatic elements, mere arithmetic averages are usually unsatisfactory in specifying the state of the atmosphere, although the description of climate in much of the Nation has had to be so limited. Fully as significant, if less convenient to summarize, are the probability distribution and extreme values of individual weather elements, the joint frequency distributions of two or more elements, and certain specialized indices involving many elements. Such detailed information is available at cost from the U.S. Environmental Data Service, National Climate Center, Asheville, North Carolina, 28801.

Monthly and annual values of average temperature and total precipitation can be found in the following official Weather Service publications of the U.S. Weather Service (formerly the Weather Bureau):

Local Climatological Data, annual summary. This is issued annually for each of approximately 300 stations. With few exceptions, these are first-ordered Weather Service city and/or airport stations. The contents partially include normal values of temperature and precipitation, and comparative data for each month and year back to 1900 or the beginning of record, whichever is later. They also include a station history giving the various station locations and elevations of instruments.

Climatological Data, annual summary. This bulletin is issued annually by climatological sections. In most instances, a section is a State. Nearly all cooperative climatological stations as well as first-order Weather Service stations are included. This publication was founded in the 1880's, but was included as part of the Weather Bureau *Monthly Weather Review* from 1911 to 1913, inclusive.

Climatic Summary of the United States (Bulletin "W"). Monthly and annual series of total precipitation at all stations and mean temperature at selected (first-order) stations are also contained in this publication. Values from the beginning of record up through 1930 are given by geographical sections in the earlier Bulletin, published in the early 1930's. Values for later years are given in *Climatic Summary of the United States — Supplement* for *1931 through 1952,* by States, and in the *Supplement for 1951 through 1960.*

Length-of-record series of monthly and annual temperature, pressure, and precipitation up to 1940 may also be found in H. H. Clayton (ed.), *World Weather Records,* Smithsonian Miscellaneous Collections, vol. 79 (1944), vol. 90 (1944), and vol. 105 (1947). This series has been extended and published by the Weather Bureau in *World Weather Records, 1941 to 1950 (1959)* and *World Weather Records, 1951 to 1960* (1965). Temperature data are corrected for differences in daily observation time, and, being reduced to 24-hour means, differ somewhat in value from the same data appearing in Weather Service publications.

For daily data on extreme values, or on elements other than temperature and precipitation, see monthly editions of *Climatological Data* and, since 1948, *Local Climatological Data.*

"Reference climatological network." Since less than one percent of the total reporting network, suitably distributed, would be sufficient for sampling historical variations of climate in the Nation, it is potentially possible to select a network in which each station not only (1) possesses fairly long and unbroken records, but also (2) has suffered few if any relocations of instruments, (3) has a good ground exposure little influenced by environmental changes such as city growth or sheltering trees, and (4) is preferably operated by a public or private agency which, by reason of its own interest in the data, will ensure future perpetuation of the station.

A network which comes as nearly as possible to meeting these requirements is the "Reference climatological network." The latitude, longitude, and altitude of the climatological stations are given in table I.

Table I. Reference Climatological Stations

[Abbreviations: A. C.—Agricultural College; E. F.—Experiment Farm; E. S.—Experiment Station; N. P.—National Park; and Obs.—Observatory]

Station	Latitude	Longitude	Altitude
Northeast:			
Blue Hill Obs., Mass.	42° 13'	71° 07'	640
Geneva E. S., N. Y.	42° 53'	77° 00'	615
Presque Isle E. S., Maine	46° 39'	68° 00'	606
North Central:			
Chatham E. F., Mich.	46° 21'	85° 56'	876
Cottonwood E. F., S. Dak.	43° 58'	101° 52'	2,414
Crete (Doane College), Nebr.	40° 37'	96° 57'	1,368
Dickinson E. F., N. Dak.	46° 53'	102° 48'	2,460
Itasca State Park School, Minn.	47° 13'	95° 13'	1,500
Urbana (U. of Ill.), Ill.	40° 06'	88° 14'	743
	40° 47'	81° 56'	1,030
The South:			
Beeville E. S., Tex.	28° 27'	97° 42'	225
Calhoun E. S., La.	32° 31'	92° 20'	180
Fayetteville E. S., Ark.	36° 05'	94° 10'	1,270
Goodwell A. C., Okla.	36° 36'	101° 39'	3,300
Lewisburg E. S., Tenn.	35° 27'	86° 48'	787
St. Leo's Abbey, Fla.	28° 29'	82° 15'	178
Winthrop College, S. C.	34° 57'	81° 03'	690
Woodstock, Md.	39° 20'	76° 52'	415
The West:			
Agricultural College, N. Mex.	32° 17'	106° 45'	3,909
Bozeman A. C., Mont.	45° 40'	111° 00'	4,856
Davis A. C., Calif.	38° 32'	121° 45'	51
Grand Canyon N. P. Hdq., Ariz.	36° 03'	112° 08'	6,890
Indio U.S. Date Garden, Calif.	33° 43'	116° 15'	11
Logan (Utah State A. C.), Utah	41° 44'	111° 49'	4,775
Medford E. S., Oreg.	42° 18'	122° 52'	1,457
Montrose No. 2, Colo.	38° 29'	107° 53'	5,830
Union E. S., Oreg.	45° 13'	117° 53'	2,765

J 110–136. Reference climatological stations — normal monthly, seasonal, and annual temperature.

Source: U.S. National Weather Service, unpublished data (figures computed from monthly temperature data in *Climatological Data).* (Data for series J 111 appear in *Local Climatological Data,* but the temperatures there have been adjusted to values based on 24 daily observations and so are incompatible with other temperature data for that station given here.)

Nearly all weather stations have been moved several times in their history. Consequently, the Weather Service has adopted the practice of using "normal" values of temperature and precipitation for comparative purposes rather than long-term means which are derived from records taken at the several different locations the stations may have had over the years.

Normal values of temperature and precipitation are based on records for the 30-year period 1941 to 1970, inclusive. Where a station had a record for the entire 30 years from the same instrument site, monthly precipitation normals are the mean of the monthly values for the 30 years. For such stations, the temperature normals were obtained in a similar manner, using normal maximum and

normal minimum values to obtain monthly normals. The annual normal temperature is obtained by dividing the sum of the annual normal maximum value and the annual normal minimum value for temperature by 2.

For stations that did not have continuous records from the same instrument site for the entire 30 years, 1941 to 1970, the means have been adjusted to the record at the present site. In these adjustments, a "difference factor" was used for temperature and a "ratio factor" for precipitation. These factors were determined by parallel comparison, either between records at the actual station sites or through a second station that had a continuous record to compare against both sites for obtaining the resultant adjusting factors. Normals were thereafter obtained as outlined above.

This system of normals has three characteristics: **(1)** The 30-year period (1941 to 1970) adopted for the computations is consistent with the term of years accepted by the World Meteorological Organization for climatic normals; (2) where the station and exposure for records in a given locality have been changed, the whole record has been carefully studied and adjusted to the latest source of records and reports; (3) the normals for maximum and minimum temperatures are separately tabulated.

See also general note for series J 110–267.

J 137–163. Reference climatological stations—normal monthly, seasonal, and annual precipitation.

Source: See source for series J 110–136.

See also text for series J 110–136.

J 164–247. Reference climatological stations—temperature, precipitation, and description **of** year, 1884–1970.

Source: U.S. National Weather Service, *Climatological Data*, annual summaries.

The description of the year is given by three digits; the first digit applies to the year as a whole, the second applies to the summer season (June, July, and August), and the third applies to the winter season (December of the previous year, January, and February). The following code defines the meaning of each digit:

Code	Temperature	Precipitation
1	In warmest quartile	In wettest quartile
2	Near normal	In wettest quartile
3	In coldest quartile	In wettest quartile
4	In warmest quartile	Near normal
5	Near normal	Near normal
6	In coldest quartile	Near normal
7	In warmest quartile	In driest quartile
8	Near normal	In driest quartile
9	In coldest quartile	In driest quartile

For example, a code 5–1–9 indicates that, for a particular year and station, the annual mean temperature and annual total precipitation were both near normal (i.e., not within either extreme quartile of their distributions in the normal 1941–1970 period); but that the summer season was unusually warm and wet, while the winter season was unusually cold and dry.

Smoothed ogives of the distribution of average values in the 30-year normal period were used to obtain the upper and lower quartile limits of temperature and precipitation for each season and for the year as a whole. Any given quartile therefore separates approximately one-quarter of the number of years in the normal period, but probably more or less than one-quarter of the total years in any full length-of-record series owing to the presence of climatic trends or variations.

J 248–267. Long-record city stations—annual mean temperature and annual total precipitation, 1780–1970.

Source: Series **J** 248, **J** 249, **J** 252–257, **J** 259–267, 1780–1940, H. H. Clayton (ed.), *World Weather Records*, Smithsonian Miscellaneous Collections, vol. 79 (1944), vol. 90 (1944), vol. 105 (1947); 1941–1960, U.S. National Weather Service, *World Weather Records*, 1941 to 1950 (1959) and 1951 to 1960 (1965; 1961–1970, U.S. Environmental Data Service, *Local Climatological Data* (corrected to 24-hour means), annual editions. Series **J** 250, **J** 251, and **J** 258, *Local Climatological Data* and *Climatic Summary of the United States*, annual editions.

The series for city stations selected for presentation here are among the longest existing climatological series for the United States. They were selected with the realization that they are not homogeneous, but have comparative value in the earlier years and have been less frequently affected by changes of station location. The series, however, are not adjusted for known station changes, and coming as they do from growing cities, they contain climatic trends which in part are typical only of major metropolitan centers.

Each long-record station has suffered several changes of location and exposure of instruments. The following station history notes are extracted from the annual editions of *Local Climatological Data*, and indicate all known changes likely to have affected the temperature and/or precipitation records. The history of each station prior to the date of establishment by the Federal weather service is essentially unknown; occasional exposure changes in earlier years undoubtedly occurred whose effects, although significant, may never be discovered.

Records for two of the 10 stations shown refer in recent years to airport locations; the observation program in New Haven city terminated in 1943, and that in St. Paul-Minneapolis terminated in 1937. With one exception, all other records are continuously available from city locations although the major part of National Weather Service activities in each case has been transferred to airport stations. The exception is Santa Fe, where interpolations have been required to complete the city record in recent years.

In the following notes, "temperature means" indicate the combination of hourly temperature readings each day which were averaged together to form means. For example, 1/3 (7, 15, 21) indicates an average of readings at 7 a.m., 3 p.m., and 9 p.m. local standard time. The formula 1/3 (7:35, 16:35, 23) was in general use for 1870–1879 (Nov.), and the formula 1/3 (7, 15, 23) for 1879–1888, the times referring to the 75th meridian (Washington). Since about 1888, however, daily maximum and minimum temperatures, observed with special registering thermometers, have been averaged to obtain means.

Numbers in parentheses refer to elevations of the thermometers and rain gauge, respectively; the example (51/70) indicates the thermometers were 51 feet above ground, and the rain gauge funnel was 70 feet above ground (roof exposures). Asterisks (*) indicate that heights are estimated from circumstantial information; a question mark (?) indicates unknown.

Albany, N.Y. Temperature means: 1795–1796, unknown; 1813–1814, 1/3 (7, 15, 21); 1820–1870, 1/3 (7, 14, 21). Station established by Army Signal Service in Dudley Heights December 1873 (11/?); instruments moved July 1874 (17/1). Station moved 1.3 miles W March 1880 (51/70), 400 feet E October 1884 (80/100). Exposure changed July 1888 (84/99), October 1901 (102/100), October 1928 (107/100). Station moved 100 feet N April 1935 (97/88).

Baltimore, Md. Temperature means: 1817–1870, unknown. Station established December 1870 (34/69); thermometers relocated October 1885 (76/69). Station moved 0.1 mile January 1859 (86/78), 0.8 mile June 1891 (87/80), 0.7 mile September 1895 (120/116), 0.6 mile August 1896 (69/73), 0.8 mile January 1908 (100/91). Recording instruments only after July 1949 (100/90).

Charleston, S.C. 1788–1861, discontinuous records by various doctors. Temperature means: 1823–1872, unknown. Station established January 1871 (40/57); thermometers moved January 1886 (60/55). Station moved 0.2 mile N February 1897 (11/76); rain gauge moved July 1932 (11/8); thermometers moved August 1949 (6/8).

New Haven, Conn. Temperature means: 1780–1865, unknown but corrected to 24 hours; 1866–1872, unknown, monthly temperatures available to whole degrees only. Station established December 1872 (85/109); instruments moved February 1881 (118/110). Station moved 600 feet E March 1919 (74/68). City station closed and observations taken over by airport station 4 miles SE July 1943 (4/3).

New York, N.Y. (Central Park). 1822–1864, records from Jamaica, N.Y.; 1865–1868, records from 86th St. Reservoir, N.Y. Temperature means: 1822–1842, 1/3 (7, 14, 21); 1843–1870, 1/4 (Sunrise, 9, 15, **21).** Station established December 1868 (61/64); moved 1 mile N January 1920 (6/22).

Philadelphia, Pa. Temperature means: 1825–1870, unknown. Station established December 1870 (?/?); moved 0.3 mile E September 1871 (100*/91), 0.7 mile W February 1882 (54*/106*), 0.1 mile E April 1884 (169/167). Instruments moved February 1904 (117/114); thermometers moved January 1914 (124/114). Station moved 0.6 mile E December 1934 (175/166), and 0.7 mile W May 15, 1959 (155/166).

San Francisco, Calif. Temperature means: 1851–1853, 1/4 (Sunrise, 9, 15, **21);** 1854, 1/3 (9, 12, 21); 1857–1859, 1/3 (7, 14, 21); 1861–1868, 1/4 *(7,* 14, 21 weighted twice). Station established February 1871 (48/75); moved 0.5 mile SW September 1890 (109/101), 0.3 mile NE November 1892 (161/154), 3.1 miles W May 1906 (29/40), 3.0 miles E October 1906 (200/191). Instruments moved October 1914 (209/200). Station moved 1.0 mile SW May 1936 (112/104). Temperature probably affected at times by nearby ventilators April 1919–May 1936.

Santa Fe, N. Mex. Temperature means: 1849–1854, 1/4 (Sunrise, 9, 15, 21); 1855–1872, 1/3 (7, 14, 21). Station established November 1871 (30*/27*); moved March 1878 (5*/2*), March 1882 (50*/50*), November 1884 (35*/32*), January 1892 (53*/50*), March 1893 (42*/39*), July 1907 (5*/2*), April 1912 (52*/49*) March 1922 (34*/31*). Continued as cooperative station 0.5 mile NE September 1941 (39*/36*). Instruments moved May 1942 (5*/2*), October 1942 (23*/20*). Station moved about 1 mile SE May 1944, few hundred feet NW July 1947, 1 mile SE October 1950, about 0.3 mile NW October 1981, few hundred feet March 1954, 1.5 miles SE May 1955, and 2 miles SSE July 1960. Ground exposures, approximately (5/3), at last seven locations.

St. Louis, Mo. Temperature means: 1836–1870, unknown but corrected to 24 hours. Station established October 1870 (70/93). Several suspected changes of thermometer exposure; station then moved 0.2 mile WNW March 1873 (105/100), 250 feet E August 1903 (208/199), 300 feet E September 1913 (264/258), 0.4 mile SW November 1935 (179/172), and 1 mile SE July 1968 (6/4).

St. Paul, Minn. Records from Fort Snelling 1820–1855, from Minneapolis 1856–1858. Temperature means: 1820–1858, unknown; 1859–1870, 1/4 (7, 14, 21 weighted twice). Station established November 1870 (30/36); moved 0.2 mile WSW December 1871 (34/44), 0.2 mile ENE April 1878 (33/58), 0.2 mile NE April 1883 (45/61), 0.2 mile NNW July 1885 (103/92), 0.1 mile SE July 1904 (171/162). Instruments moved January 1911 (201/195), July 1918 (237/227). Station moved 0.3 mile W April 1931 (114/106). Record July 1933–April 1937 8.8 miles WNW at Minneapolis city (102/91); April 1937–December 1959 7.5 miles SSE at Minneapolis-St. Paul International Airport (43/41), January 1960–October 1962 (5/41), and November 1962–December 1970 (5/4).

J 268–278. Tornadoes, floods, and tropical cyclones, **1886** to **1970.**

Source: U.S. National Oceanic and Atmospheric Administration, *Climatological Data National Summary, Annual 1970,* pp. 55, 68, 94, and *Annual 1971,* **pp.** 740, *752,* 789.

The National Weather Service (formerly the Weather Bureau) issues warnings of tornadoes, floods, and tropical cyclones that threaten the United States mainland. "Tropical cyclone" is a general term for storms that form in the tropics. If the winds of a tropical cyclone are known to be 39 miles per hour or more, the circulation is called a tropical storm; when its winds reach 74 miles per hour, the storm is considered a hurricane. These winds are accompanied by heavy rains, high waves, and tides, and sometimes tornadoes, which are local storms of short duration formed of winds rotating at very high speeds, usually in a counter-clockwise direction. These storms are visible as a vortex, a whirlpool structure of winds rotating about a hollow cavity in which centrifugal forces produce a partial vacuum.

Whenever an area is likely to experience severe thunderstorms or tornadoes, the National Weather Service issues a *watch* bulletin. A severe thunderstorm or tornado *warning* bulletin is issued only when a severe thunderstorm or tornado has actually been sighted in the area or indicated by radar.

From 1916 to 1952, fewer than 300 tornadoes were reported in any one year. In 1953, however, when the U.S. Department of Commerce initiated its tornado forecasting effort, 437 tornadoes were observed and reported, beginning the first period of reliable statistical history. Since 1953, essentially complete tornado records have been available.

Through its special river and rainfall reporting network, the National Weather Service also issues flood warnings which provide time to evacuate low-lying areas, to move property and livestock to higher ground, and to take necessary emergency action. River forecasts based on atmosphere and hydrologic data are prepared by River Forecast Centers from reports of river stages and precipitation provided by a network of observing stations in each district.

More Recent Data for *Historical Statistics* Series

Statistics for more recent years in continuation of many of the still-active series shown here appear in annual issues of the *Statistical Abstract of the United States,* beginning with the **1975** edition. For direct linkage of the historical series to the tables in the *Abstract,* see Appendix I in the *Abstract.*

Series J 110–136. Reference Climatological Stations—Normal Monthly, Seasonal, and Annual Temperatures

[In Fahrenheit degrees. Figures are "normal" values based on records for the 30-year period 1941–1970; see text]

Series No.	Station	January	February	March	April	May	June	July	August	September	October	November	December	Summer	Winter	Annual
	NORTHEAST															
110	Blue Hill Observatory, Mass.	25.8	27.0	34.6	45.5	55.8	64.9	70.4	68.6	61.7	52.6	41.7	29.4	68.0	27.4	48.2
111	Geneva Experiment Station, N.Y.	24.3	25.1	33.7	46.5	56.5	66.7	71.4	69.5	62.6	52.3	41.0	28.4	69.2	26.0	48.2
112	Presque Isle Experiment Station, Maine	12.6	14.7	25.3	38.2	51.1	61.0	66.1	63.6	55.7	45.2	32.8	17.5	63.6	14.9	40.3
	NORTH CENTRAL															
113	Chatham Experiment Farm, Mich.	16.8	18.1	25.6	39.6	50.0	59.8	65.1	64.2	56.3	47.4	33.4	21.9	63.0	18.9	41.5
114	Cottonwood Experiment Farm, S. Dak.	19.4	24.5	31.4	46.4	56.9	66.1	74.3	73.5	61.9	50.3	34.7	24.1	71.3	22.8	46.9
115	Crete (Daane College), Nebr.	23.7	29.5	37.8	62.4	62.8	72.0	77.4	76.0	66.3	56.1	40.0	28.5	75.2	27.2	51.9
116	Dickinson Experiment Farm, N. Dak.	10.4	15.1	24.2	40.8	52.2	61.1	68.5	67.6	55.8	45.2	23.4	17.1	65.7	14.3	40.5
117	Itasca State Park School, Minn.	5.7	10.6	22.8	39.6	51.4	61.6	67.1	66.2	55.1	45.4	27.5	12.3	64.6	9.5	38.7
118	Urbana (U. of Ill.), Ill.	26.9	30.3	39.3	52.4	62.6	72.1	75.3	73.5	66.8	56.3	41.6	30.3	73.6	29.2	52.3
119	Wooster Experiment Farm, Ohio	26.3	27.9	36.6	48.3	58.1	67.6	71.0	69.4	62.8	52.3	40.2	29.0	69.3	27.7	49.1
	THE SOUTH															
120	Beeville Experiment Station, Tex.	53.9	57.3	63.1	71.5	76.8	81.8	84.3	87.8	80.1	72.3	63.0	56.6	83.6	55.9	70.7
121	Calhoun Experiment Station, La.	46.9	50.1	56.4	65.9	72.9	79.7	82.3	82.0	76.2	66.2	55.7	48.8	81.3	48.6	65.3
122	Fayetteville Experiment Station, Ark.	37.0	41.1	47.3	59.4	66.5	74.4	78.6	77.6	70.5	60.5	48.2	39.9	76.9	39.3	58.4
123	Goodwell Agricultural College, Okla.	35.3	39.4	44.4	56.1	65.3	74.6	79.0	78.0	70.2	59.2	45.1	37.2	77.2	37.3	57.0
124	Lewisburg Experiment Station, Tenn.	38.0	40.5	47.6	58.8	66.9	74.8	77.8	76.9	70.7	59.7	47.9	40.0	76.5	39.5	58.3
125	St. Leo's Abbey, Fla.	60.5	62.0	66.5	72.2	77.3	80.8	81.7	82.0	80.4	74.2	66.6	61.7	81.5	61.4	72.2
126	Winthrop College, S.C.	43.3	45.4	52.1	62.3	70.1	76.6	78.9	77.8	72.3	62.7	52.5	43.9	77.8	44.2	61.5
127	Woodstock, Md.	32.3	34.0	41.9	53.0	62.8	70.7	74.8	73.1	66.3	55.6	44.5	34.1	(NA)	(NA)	53.6
	THE WEST															
128	Agricultural College, N. Mex.	41.7	46.0	51.3	60.0	68.0	76.9	80.0	78.1	71.7	61.2	48.9	42.4	78.3	43.4	60.5
129	Bozeman Agricultural College, Mont.	20.8	26.5	29.9	41.9	50.8	57.6	66.4	65.0	55.3	45.5	32.5	25.1	63.0	24.1	43.1
130	Davis Agricultural College, Calif.	45.0	49.6	52.8	58.2	64.3	70.6	74.6	73.1	71.0	63.1	53.2	46.0	72.8	46.9	60.1
131	Grand Canyon National Park Headquarters, Ariz.	30.5	33.3	37.6	45.8	54.5	63.3	69.4	67.1	61.7	51.0	39.2	32.2	66.6	33.8	48.8
132	Indio U.S. Date Garden, Calif.	54.4	58.9	63.6	71.4	78.4	85.7	91.8	90.8	36.0	75.7	63.3	55.5	89.4	56.3	73.0
133	Logan (Utah State Agricultural College), Utah	24.0	28.9	36.1	46.9	56.2	63.1	72.9	71.4	62.0	50.7	36.7	27.5	69.1	26.9	48.0
134	Medford Experiment Station, Oreg.	37.3	41.9	45.3	50.6	57.0	63.2	69.6	68.4	63.0	52.9	43.6	38.2	67.0	39.2	52.6
135	Montrose No. 2, Colo.	26.4	31.6	38.1	48.0	57.5	66.1	72.5	69.9	62.3	51.1	37.4	28.5	69.5	28.8	49.1
136	Union Experiment Station, Oreg.	30.0	35.2	39.5	46.4	53.1	59.0	66.3	64.9	58.0	48.8	39.4	33.2	63.4	32.9	47.8

NA Not available.

Series J 137–163. Reference Climatological Stations — Normal Monthly, Seasonal, and Annual Precipitation

[In inches. T = trace. Figures are "normal" values baaed on records for the 30-year period 1941–1970; see text]

Series No.	Station	January	February	March	April	May	June	July	August	September	October	November	December	Summer	Winter	Annual
	NORTHEAST															
137	Blue Hill Observatory, Mass.	4.12	3.97	4.51	3.64	3.62	3.16	2.95	3.83	3.65	3.62	5.06	4.70	9.93	12.79	46.82
138	Geneva Experiment Station, N.Y.	2.02	2.09	2.64	2.88	3.02	3.10	3.06	2.82	2.59	2.97	2.78	2.35	8.98	6.43	32.32
139	Presque Isle Experiment Station, Maine	2.16	2.15	2.15	2.26	2.93	3.29	3.89	3.59	3.38	3.27	3.47	2.59	10.77	6.85	35.11
	NORTH CENTRAL															
140	Chatham Experiment Farm, Mich.	1.75	1.63	1.71	2.45	3.11	3.65	3.22	3.35	4.14	3.18	3.29	2.21	10.22	5.59	33.69
141	Cottonwood Experiment Farm, S. Dak.	.45	.45	.79	1.79	2.97	3.62	1.71	1.38	1.24	.91	.40	.35	6.71	1.24	16.06
142	Crete (Doane College), Nebr.	.74	1.11	1.70	2.72	4.04	5.76	3.31	3.87	3.41	1.71	1.06	.a7	12.94	2.72	30.30
143	Dickinson Experiment Farm, N. Dak.	.41	.41	.66	1.51	2.51	4.01	2.29	1.86	1.37	.72	.51	.30	8.17	1.12	16.56
144	Itasca State Park School, Minn.	.82	.60	1.33	2.63	3.35	4.48	3.69	3.67	2.68	1.65	1.20	1.08	11.84	2.50	27.18
145	Urbana (U. of Ill.), Ill.	2.13	2.02	3.13	4.06	4.15	4.38	3.89	2.97	2.98	2.93	2.56	2.22	11.24	6.87	37.42
146	Wooster Experiment Farm, Ohio	2.61	1.95	2.99	3.28	4.18	3.78	4.07	3.16	2.73	2.04	2.39	2.19	11.00	6.66	35.27
	THE SOUTH															
147	Beeville Experiment Station, Tex.	1.67	2.01	1.40	2.57	3.53	2.76	2.33	2.27	4.14	3.03	1.85	1.66	7.36	5.47	29.22
148	Calhoun Experiment Station, La.	4.73	4.65	4.75	5.00	5.31	3.58	4.00	2.69	3.12	2.97	4.15	4.73	10.27	14.11	49.68
149	Fayetteville Experiment Station, Ark.	2.13	2.89	3.16	4.76	6.22	4.90	3.65	3.85	3.72	3.66	2.87	2.60	12.40	7.62	44.41
150	Goodwell Agricultural College, Okla.	.31	.49	.67	1.14	2.50	2.70	3.45	2.76	1.53	1.48	.54	.40	8.91	1.21	17.97
151	Lewisburg Experiment Station, Tenn.	5.32	5.62	5.62	4.86	4.36	3.42	4.65	3.30	3.50	2.62	4.10	4.76	11.37	15.68	52.13
152	St. Leo's Abbey, Fla.	2.55	3.13	4.53	3.10	3.79	3.02	8.68	8.86	7.08	2.93	1.87	2.36	25.56	8.04	56.90
153	Winthrop College, S.C.	3.98	4.10	4.62	3.50	3.13	3.49	5.76	4.86	3.79	2.80	2.92	3.73	14.11	11.86	46.68
154	Woodstock, Md.	2.85	2.70	3.62	3.27	3.83	3.65	4.01	3.87	3.67	2.93	3.31	3.27	10.53	8.82	40.98
	THE WEST															
155	Agricultural College, N. Mex.	.44	.48	.38	.15	.28	.62	1.34	1.65	1.18	.68	.31	.48	3.61	1.40	7.89
156	Bozeman Agricultural College, Mont.	.92	.65	1.44	1.78	2.67	3.22	1.30	1.37	1.76	1.46	1.26	.83	5.89	2.40	18.66
157	Davis Agricultural College, Calif.	3.88	2.79	1.95	1.50	.51	.16	.01	.03	.16	1.04	2.04	3.21	.20	9.88	17.28
158	Grand Canyon National Park Headquarters, Ariz.	1.35	1.28	1.47	1.00	.54	.48	1.50	2.16	1.22	1.07	8.2	1.59	4.13	4.22	14.47
159	Indio U.S. Date Garden, Calif.	.46	.21	.29	--	.02	T	.14	.40	.23	.21	.41	.52	.54	1.19	3.00
160	Logan (Utah State Agricultural College), Utah	1.63	1.45	1.74	2.12	1.86	1.78	.84	.87	.94	1.43	1.79	1.64	2.99	4.69	17.59
161	Medford Experiment Station, Oreg.	3.43	2.16	1.74	1.14	1.53	1.09	.26	.36	.65	2.09	3.04	3.77	1.71	9.26	21.27
162	Montrose No. 2 Colo.	.63	.57	.63	1.03	.74	.64	.82	1.36	.99	1.07	.60	.59	2.82	1.79	9.67
163	Union Experiment Station, Oreg.	1.05	.94	1.14	1.30	2.04	1.90	.48	.74	.87	1.24	1.31	1.32	3.15	3.80	14.33

Series J 164–247. Reference Climatological Stations—Temperature, Precipitation, and Description of Year: 1884 to 1970

[*Italicized* figures are based on interpolated monthly values. Standard error of interpolated figures: For temperature, less than 1° F.; for precipitation, less than 0.5 inch]

Year	Northeast									North Central					
	Blue Hill Observatory, Mass.			Geneva Experiment Station, N. Y.			Presque Isle Experiment Station, Maine			Chatham Experiment Farm, Mich.			Cottonwood Experiment Farm, S. Dak.		
	Annual mean temperature	Annual total precipitation	Description[1] of year	Annual mean temperature	Annual total precipitation	Description[1] of year	Annual mean temperature	Annual total, precipitation	Description[1] of year	Annual mean temperature	Annual total, precipitation	Description[1] of year	Annual mean temperature	Annual total, precipitation	Description[1] of year
	164	165	166	167	**168**	169	**170**	171	**172**	173	174	175	176	177	178
	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*inches*	
1970	48	48.3	5–1–3	47	64.6	5–2–5	40	35.6	5–4–5	41	36.5	5–5–3	46	15.8	6–4–5
1969	49	58.4	1–7–2	47	81.4	5–5–5	41	42.4	2–2–1	42	35.5	5–5–2	47	20.1	2–2–3
1968	48	49.9	5–5–5	47	37.9	2–8–9	40	29.8	8–9–4	42	42.9	2–5–2	47	15.9	5–2–5
1967	48	54.1	2–1–8	47	29.7	5–5–8	39	37.7	3–4–5	41	*32.0*	5–5–2	47	20.2	2–2–5
1966	49	41.1	4–4–5	47	28.7	8–8–5	41	30.0	8–8–1	42	35.5	5–4–5	46	15.3	6–5–6
1965	48	27.0	8–7–5	47	25.8	8–9–5	39	28.5	9–5–5	41	31.6	5–9–6	47	17.4	5–5–5
1964	49	40.2	7–8–5	48	26.7	8–8–5	40	31.1	5–5–8	43	40.3	1–2–2	47	15.4	6–5–8
1963	48	41.6	5–7–6	46	31.1	6–6–9	39	40.0	3–2–5	41	27.0	8–5–6	*49*	17.4	4–4–5
1962	47	51.6	8–6–2	47	29.8	9–6–9	39	35.4	5–3–5	41	27.4	8–8–6	*47*	14.9	5–5–5
1961	49	50.7	2–7–5	48	33.1	6–6–6	40	44.4	2–2–3	42	31.8	5–8–8	48	14.1	5–5–7
1960	49	46.7	4–8–4	47	27.1	9–9–2	41	37.9	2–9–1	41	44.4	2–2–7	*47*	15.2	5–5–2
1959	49	48.3	5–2–9	49	40.2	2–2–9	40	35.5	5–5–9	41	40.2	2–1–9	47	15.5	5–7–2
1958	46	59.9	3–6–2	46	37.7	3–3–5	39	37.7	2–3–1	41	27.5	8–6–4	48	16.4	5–2–4
1957	50	35.5	7–7–5	48	26.1	8–8–8	40	31.3	5–9–5	41	30.2	8–8–8	47	22.5	2–2–5
1956	48	59.2	2–8–2	47	34.2	6–6–6	39	30.8	5–6–4	41	25.2	8–5–7	48	14.6	5–4–2
1955	49	64.4	1–1–5	49	42.4	2–4–6	40	34.2	5–4–1	43	26.5	7–7–8	48	12.9	4–7–5
1954	49	57.4	2–6–4	48	29.2	8–8–7	40	52.4	2–3–1	42	32.2	5–8–4	49	13.0	4–8–4
1953	51	59.6	1–7–1	50	26.3	7–5–4	42	35.4	4–8–4	44	36.0	1–4–1	49	18.6	1–5–1
1952	50	39.8	7–7–1	49	31.6	5–8–4	41	36.4	4–4–1	43	31.7	4–1–7	47	16.7	5–5–3
1951	50	50.9	1–5–4	48	31.3	6–6–5	*41*	40.2	2–2–1	40	39.8	2–3–5	48	20.9	3–3–2
1950	49	42.0	8–8–4	47	36.9	6–6–1	41	37.4	2–2–4	38	33.3	6–6–5	44	11.9	6–9–6
1949	51	33.7	7–7–7	50	22.8	7–4–7	42	*38.5*	4–4–4	43	37.7	*1*–1–4	46	14.8	5–7–3
1948	48	47.8	5–5–3	49	32.9	5–5–9	40	31.0	5–8–9	40	27.3	8–8–9	46	17.0	5–3–8
1947	49	44.9	5–5–7	49	35.7	5–2–5	*41*	34.1	4–4–1	41	34.5	5–5–5	47	13.0	5–5–5
1946	50	42.0	7–3–3	50	29.6	7–6–8	41	31.2	4–8–5	42	29.0	8–6–*5*	49	17.8	1–5–7
1945	49	54.4	1–5–6	49	40.4	2–8–6	41	37.1	1–4–5	40	32.4	6–9–6	47	11.4	5–6–7
1944	49	45.6	4–4–8	50	32.1	5–4–8	41	30.4	7–7–8	42	33.1	5–5–7	*45*	12.9	6–6–5
1943	48	34.9	8–7–5	48	37.1	6–4–3	39	33.8	5–2–5	40	33.6	6–1–5	46	11.0	8–5–8
1942	48	46.3	5–6–5	50	38.9	2–8–5	41	28.0	7–5–4	42	32.8	4–8–7	47	19.3	2–6–8
1941	49	32.6	8–5–8	50	30.2	7–5–5	40	33.0	5–5–2	44	40.9	1–4–1	49	18.6	1–2–4
1940	46	45.0	6–9–6	47	36.9	6–5–3	39	36.9	3–2–5	41	38.4	2–5–1	47	9.8	8–5–2
1939	48	*37.8*	a–7–5	50	28.9	8–8–2	39	36.6	6–1–5	41	36.5	2–5–2	50	8.4	7–7–5
1938	49	58 5	1–1–5	50	35.2	4–1–5	*38*	33.4	6–2–9	42	34.1	4–5–2	48	14.9	4–8–5
1937	49	46.1	5–7–1	49	38.2	2–4–1	41	31.8	4–4–4	41	32.7	5–4–5	46	14.6	5–1–6
1936	47	59.1	3–6–3	49	80.1	8–8–6	39	44.0	2–6–2	40	25.5	9–8–3	47	7.1	8–7–3
1935	47	43.7	6–5–3	48	35.5	6–2–6	39	28.4	6–4–6	40	31.8	6–5–5	48	15.7	5–5–4
1934	47	41.2	9–9–6	48	23.4	9–8–6	38	36.4	6–3–3	39	32.6	6–9–6	51	12.0	4–4–4
1933	48	52.8	2–6–7	50	26.9	7–4–7	39	*32.5*	5–8–7	40	29.8	8–7–2	49	14.5	4–7–5
1932	49	48.9	4–5–4	50	40.5	1–5–1	40	34.0	5–5–7	41	40.9	2–2–4	46	17.3	5–5–2
1931	50	49.3	4–2–5	52	31.7	4–7–5	42	37.1	1–5–8	45	32.0	4–4–7	50	9.6	7–7–7
1930	49	41.3	7–4–5	50	26.8	8–5–5	41	*29.1*	8–1–5	*41*	26.9	8–5–6	48	23.0	2–2–2
1929	48	47.0	9–8–5	48	35.5	5–9–8	39	29.7	8–6–7	39	32.7	6–6–6	44	18.2	3–5–6
1928	48	46.8	5–2–5	49	33.5	5–2–2	*39*	36.7	2–6–2	40	36.1	2–6–5	*47*	14.0	5–3–5
1927	49	51.6	1–3–5	49	42.8	2–6–5	*39*	36.8	2–6–3	40	31.0	8–9–8	44	21.0	3–3–8
1926	46	48.9	6–6–5	46	36.2	6–3–5	*37*	*35.4*	6–9–2	38	37.8	3–6–5	47	13.5	5–5–1
1925	49	50.4	1–4–8	48	36.8	6–5–5	*38*	*48.6*	7–8–6	40	21.7	8–8–9	47	10.4	8–5–2
1924	47	42.8	9–5–2	46	32.2	6–6–8	38	24.6	9–9–5	*42*	*35.6*	1–3–2	44	11.2	9–6–5
1923	47	44.9	6–9–3	47	31.2	6–6–3	*37*	29.5	9–9–6	40	30.8	9–2–9	46	22.3	3–3–6
1922	48	54.0	2–1–9	49	39.8	2–2–5	39	33.7	5–2–5	*42*	34.7	4–5–2	44	22.4	3–2–3
1921	49	51.8	2–2–5	52	29.4	7–7–4	40	31.1	5–5–2	43	*32.0*	4–4–8	49	10.9	7–4–7
1920	46	63.8	3–3–3	48	37.2	6–2–5	39	43.6	2–2–6	39	32.6	6–5–9	46	19.4	3–5–5
1919	47	56.2	3–3–5	49	35.4	5–5–7	*38*	29.2	9–9–5	40	*27.8*	9–8–4	45	16.0	6–5–5
1918	47	44.9	6–6–6	48	34.4	6–6–6	*37*	*35.9*	6–3–3	39	36.4	3–6–9	46	15.0	5–5–6
1917	45	48.8	6–5–5	45	35.4	6–2–6	36	41–3	3–1–.	34	60.3	9–6–9	44	13.2	6–8–3
1916	46	45.5	6–3–5	48	*42.0*	5–5–2	-------	-------	-------	88	41.9	*8–5–3*	44	12.3	6–5–6
1915	48	44.0	5–3–2	48	*29.0*	5–6–5	-------	-------	-------	40	42.2	3–3–2	44	27.6	3–3–3
1914	46	40.3	9–6–5	48	*38.4*	5–5–9	-------	-------	-------	38	33.0	6–3–5	48	15.0	5–8–2
1913	49	45.1	4–8–4	*51*	*33.5*	4–8–4	-------	-------	-------	*39*	26.7	9–9–9	48	10.5	8–7–8
1912	47	40.4	9–9–9	------	------	------	-------	-------	-------	36	27.0	9–9–6	*46*	14.1	6–5–2
1911	48	44.6	5–2–9	------	------	------	-------	-------	-------	40	37.2	3–2–5	49	12.3	4–8–5
1910	48	34.3	8–8–5	------	------	------	-------	-------	-------	40	27.9	9–8–3	*48*	10.0	8–8–3
1909	48	43.6	6–9–5	------	------	------	-------	-------	-------	39	30.2	9–2–5	*47*	6.6	------
1908	49	37.7	8–4–2	------	------	------	-------	-------	-------	41	27.6	8–8–5	-------	-------	-------
1907	46	47.6	6–9–6	------	------	------	-------	-------	-------	37	29.3	9–9–3	-------	-------	-------
1906	48	45.5	5–6–4	------	------	------	-------	-------	-------	40	30.7	9–5–2	-------	-------	-------
1905	46	39.4	9–6–6	------	------	------	-------	-------	-------	88	33.4	6–6–3	-------	-------	-------
1904	45	46.2	6–9–6	------	------	------	-------	-------	-------	37	32.5	6–6–6	-------	-------	-------
1903	47	46.8	6–6–2	------	------	------	-------	-------	-------	40	39.1	2–6–2	-------	-------	-------
1902	48	42.7	6–9–2	------	------	------	-------	-------	-------	40	34.8	5–6–2	-------	-------	-------
1901	47	54.0	3–4–9	------	------	------	-------	-------	-------	41	42.0	2–5–8	-------	-------	-------
1900	49	48.1	5–7–5	------	------	------	-------	-------	-------	41	*33.4*	5–.–.	-------	-------	-------
1899	48	40.6	8–8–5	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1898	48	58.7	2–2–2	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1897	47	45.4	6–6–8	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1896	47	47.4	6–6–5	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1895	47	46.2	6–9–9	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1894	48	35.8	*8–8–5*	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1893	46	45.1	6–6–8	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1892	47	39.7	9–5–4	------	36.7	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1891	48	50.3	5–6–3	------	33.8	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1890	47	50.8	3–9–7	------	44.3	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1889	48	54.6	2–3–2	------	40.0	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1888	45	55.8	3–6–6	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1887	46	43.7	6–6–3	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1886	47	*47.0*	6–9–.	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------

See footnotes at end of table.

Series J 164–247. Reference Climatological Stations—Temperature, Precipitation, and Description of Year: 1884 to 1970—Con.

[Italicized figures are based on interpolated monthly values. Standard error of interpolated figures: For temperature, less than 1° F.; for precipitation, less than 0.5 inch]

North Central—Con.

Year	Crete (Doane College), Nebr.			Dickinson Experiment Farm, N. Dak.			Itasca State Park School, Minn.			Urbana (U. of Ill.), Ill.			Wooster Experiment Farm, Ohio		
	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year
	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193
	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*	
1970	53	28.7	4-4-4	39	20.2	3-4-2	38	22.7	9-7-5	52	36.E	5-5-9	49	38.4	5-5-9
1969	51	29.1	6-8-2	40	16.4	5-2-3	39	23.2	5-5-2	51	37.1	5-8-5	48	41.4	3-2-5
1968	52	36.4	2-5-9	40	15.7	5-6-5	40	32.6	1-5-5	51	39.5	5-2-3	48	36.3	6-5-6
1967	52	35.8	2-34	40	14.2	5-8-5	37	23.8	6-8-2	51	34.E	9-9-2	49	29.1	2-8-8
1966	52	20.4	8-5-5	39	16.7	6-2-5	36	29.7	6-5-1	51	35.E	9-8-5	48	30.1	9-8-5
1965	52	36.1	2-6-1	39	21.6	3-5-6	37	33.4	3-5-4	53	44.4	2-3-2	49	34.1	5-6-2
1964	53	21.1	7-5-5	41	18.7	5-2-7	38	31.3	3-6-5	53	35.E	3-5-6	49	39.1	5-6-9
1963	53	28.7	4-4-9	43	13.9	4-4-5	40	22.6	7-4-9	51	26.9	9-8-9	46	24.2	5-6-9
1962	52	29.9	2-3-3	42	13.3	1-5-8	39	31.3	2-2-2	51	38.C	5-2-3	48	27.9	9-9-6
1961	51	31.8	3-6-8	43	13.9	4-4-7	41	23.8	4-4-7	52	42.1	5-5-9	48	35.1	6-3-6
1960	50	33.3	3-3-3	41	10.2	8-5-8	39	27.3	2-2-7	51	32.9	9-5-5	48	27.4	9-6-5
1959	51	37.1	3-5-6	40	13.5	8-7-5	39	26.4	5-1-9	53	36.6	5-7-6	50	44.3	2-5-3
1958	51	30.9	3-6-2	42	12.2	7-6-4	40	20.3	7-6-7	51	36.6	6-3-6	47	36.4	6-3-6
1957	51	33.0	3-2-8	41	22.2	2-2-8	39	33.9	2-2-5	52	41.6	5-5-5	50	44.1	2-3-5
1956	53	24.4	5-5-9	42	12.7	7-4-8	39	20.7	3-5-5	53	27.3	8-5-8	49	48.0	3-3-5
1955	53	15.9	8-8-5	42	14.6	44-5	40	20.4	7-74	54	38.5	4-5-5	50	38.2	5-5-6
1954	54	33.7	1-1-1	42	16.3	4-24	40	25.4	4-5-1	55	29.7	7-44	50	32.0	5-9-4
1953	54	21.5	7-7-4	44	19.4	1-5-7	41	31.7	1-2-7	55	26.1	7-7-4	51	25.9	8-8-4
1952	51	35.1	3-3-2	42	12.0	7-5-2	40	21.8	4-2-2	54	33.9	84-4	50	32.0	5-7-1
1951	49	44.4	3-3-2	37	16.7	6-6-5	36	30.9	3-6-5	51	38.4	6-6-3	49	41.0	6-8-3
1950	50	30.7	3-6-5	36	15.1	6-9-6	35	29.9	3-6-3	51	43.0	3-6-1	48	49.1	2-3-1
1949	51	38.8	3-3-3	40	10.8	8-7-3	39	35.5	2-1-2	54	45.5	1-4-1	52	32.1	4-1-4
1948	52	28.6	5-5-3	40	16.1	5-5-5	38	23.5	5-5-5	53	41.4	5-2-6	50	35.1	5-5-9
1947	53	27.6	5-2-8	40	17.2	5-3-5	38	24.2	5-2-5	52	36.9	5-2-8	50	45.4	2-2-5
1946	55	27.8	4-5-4	42	14.5	4-5-8	39	27.7	2-5-5	54	35.5	4-5-6	51	34.f	4-6-9
1945	51	25.4	6-6-5	39	12.2	9-9-8	37	22.3	5-6-5	51	48.0	3-5-8	50	89.1	5-5-9
1944	52	38.5	2-3-4	40	20.6	2-3-7	40	32.6	1-2-7	53	40.7	5-4-5	49	30.2	9-8-8
1943	52	24.2	5-1-5	39	15.0	6-5-6	38	23.5	5-4-6	52	35.5	5-7-9	48	30.2	9-5-6
1942	52	29.5	2-5-2	40	19.8	2-3-4	40	29.5	1-2-3	52	42.4	5-5-5	49	29.8	9-9-5
1941	52	30.9	2-8-5	42	31.2	1-2-7	41	27.4	1-4-3	54	42.9	1-5-8	51	29.9	8-1-8
1940	50	21.2	9-8-6	41	17.1	5-5-8	38	21.9	5-8-3	51	30.6	8-5-9	47	39.7	6-2-6
1939	54	18.3	7-5-5	42	15.8	4-5-5	40	20.7	3-5-2	54	38.0	4-2-1	51	30.5	5-5-5
1938	54	28.3	4-5-5	42	16.6	4-5-2	40	25.4	44-5	54	42.8	1-2-5	51	36.7	4-5-5
1937	51	21.7	9-4-6	39	16.3	6-2-6	36	24.6	6-4-3	51	37.6	6-5-2	50	42.3	2-5-1
1936	53	12.4	8-7-6	40	6.7	8-7-6	36	17.6	9-7-6	52	35.1	8-7-6	50	36.1	5-1-6
1935	53	26.8	5-7-7	40	15.0	5-5-7	38	28.7	2-2-5	52	37.2	5-5-5	50	46.8	2-2-8
1934	56	17.2	7-7-1	44	7.9	7-5-7	39	18.6	8-6-5	53	35.2	3-4-8	50	29.5	8-4-8
1933	55	26.8	4-4-8	42	11.5	7-7-5	38	22.6	5-7-5	54	34.5	7-7-4	52	33.E	4-7-4
1932	51	27.3	6-2-2	40	17.2	5-4-5	38	20.8	8-8-7	53	30.5	8-5-4	51	34.6	4-8-1
1931	55	36.3	1-4-7	44	16.2	4-4-4	43	20.4	7-5-7	55	36.5	4-4-7	53	35.7	4-4-7
1930	54	22.5	7-4-5	41	13.8	8-4-2	39	21.4	5-8-2	53	25.1	8-8-2	51	28.8	7-8-1
1929	50	24.4	6-9-6	37	17.2	6-3-3	36	13.9	9-8-6	50	44.1	3-3-6	49	44.4	2-5-2
1928	52	28.2	5-6-8	41	15.3	5-3-3	38	27.0	2-3-2	51	33.0	6-6-2	49	33.E	6-2-2
1927	52	26.4	5-6-5	33	19.6	3-6-5	36	21.4	6-6-5	52	55.6	2-3-8	51	43.3	2-6-5
1926	58	26.4	5-8-4	41	13.1	8-84	38	21.0	8-9-4	50	43.5	3-5-5	48	39.1	6-5-6
1925	52	26.9	5-2-3	41	12.2	8-5-6	38	28.8	2-3-6	52	29.4	8-8-3	50	30.4	5-8-5
1924	50	22.5	9-6-8	37	15.1	6-5-8	36	22.2	6-9-5	49	40.4	6-3-2	48	38.S	6-3-2
1923	52	31.2	2-3-7	41	19.7	5-2-5	38	19.7	8-5-3	52	40.4	5-5-5	50	36.f	5-8-2
1922	53	23.0	8-5-6	39	18.2	2-5-3	39	24.9	5-5-2	53	36.7	5-8-5	51	34.4	4-5-5
1921	54	20.3	4-%-7	42	15.8	1-4-7	41	24.5	4-4-4	55	41.7	4-7-4	53	41.9	1-7-4
1920	51	29.0	9-6-9	41	15.8	2-2-5	38	29.6	5-2-6	51	29.3	9-9-9	49	39.3	6-3-9
1919	51	69.4	3-5-4	41	8.4	8-7-4	37	27.5	2-1-1	52	35.2	5-5-4	51	43.1	1-14
1918	53	26.2	5-7-6	41	12.4	8-5-6	39	18.9	8-8-9	51	43.2	3-5-9	50	33.8	5-8-6
1917	49	24.8	6-6-8	38	9.2	6-5-7	35	16.3	9-8-6	48	32.2	9-5-9	46	31.9	9-5-6
1916	50	85.9	6-6-3	38	18.4	3-5-5	35	26.5	6-2-3	51	29.7	9-8-3	49	34.9	6-5-2
1915	50	36.0	3-3-3	40	20.0	2-3-8	38	29.6	5-3-5	51	34.2	9-3-6	49	42.1	3-3-6
1914	52	29.6	2-5-2	42	22.7	1-2-7	38	28.0	2-2-8	52	24.7	8-7-5	49	37.4	6-2-5
1913	47	27.0	6-7-6	42	14.9	4-5-8	39	22.4	5-5-9	53	38.2	5-3-5	51	51.2	2-5-2
1912	50	23.8	6-9-3	39	19.1	3-6-8	38	17.8	8-8-9	50	31.5	9-9-6	48	46.6	3-3-6
1911	59	25.4	5-7-6	40	15.6	5-5-5	-------	24.2	-1-	53	32.3	8-8-5	51	47.2	2-5-5
1910	52	25.8	5-6-3	42	13.3	7-5-3	-------	-------	-------	51	28.0	9-9-6	49	35.4	6-9-3
1909	51	33.6	3-3-5	40	21.3	2-2-5	-------	-------	-------	50	47.0	3-3-2	50	44.2	2-2-1
1908	52	38.1	2-3-4	42	19.5	1-54	-------	-------	-------	52	33.3	8-9-2	51	33.9	5-5-2
1907	51	29.6	3-3-5	39	13.7	9-6-3	-------	-------	-------	50	40.2	6-3-2	48	40.0	6-6-2
1906	52	29.7	2-6-7	41	20.5	2-5-4	-------	-------	-------	52	34.2	8-5-5	51	42.8	2-1-7
1905	50	33.0	3-6-6	42	16.6	4-5-5	-------	-------	-------	50	29.6	9-5-6	49	42.9	3-2-6
1904	50	30.2	3-6-6	40	15.2	5-5-2	-------	-------	-------	49	29.8	9-9-6	47	41.8	3-9-3
1903	50	33.5	3-6-3	42	16.9	4-5-6	-------	-------	-------	50	32.5	9-6-6	49	40.4	3-3-3
1902	50	42.9	3-3-6	44	16.1	4-9-2	-------	-------	-------	-------	-------	-------	50	33.0	5-3-9
1901	52	24.0	5-4-5	44	12.9	7-4-7	-------	-------	-------	-------	-------	-------	49	35.9	6-4-9
1900	53	34.0	2-3-6	45	11.8	7-4-4	-------	-------	-------	-------	-------	-------	51	36.6	5-1-5
1899	50	30.3	3-3-6	38	17.2	6-5-6	-------	-------	-------	-------		-------	50	32.9	5-8-6
1898	51	22.8	9-6-5	40	11.9	8-8-7	-------	-------	-------	-------	-------		50	47.8	2-1-5
1897	51	30.3	3-6-4	40	19.5	8-8-2	-------	-------		-------	-------	-------	49	36.8	5-6-5
1896	52	41.0	2-3-7	38	18.5	3-8-2	-------	-------	-------	-------	-------	-------	50	39.1	5-3-5
1895	51	20.7	9-9-4	98	11.8	9-6-8	-------	-------	-------	-------	-------	-------	48	30.9	9-8-6
1894	52	22.4	8-6-6	40	15.5	5-7-5	-------	-------	-------	-------	-------	-------	51	80.6	8-8-5
1893	-------	22.1	-------	38	11.6	9-7--	-------	-------	-------	-------	-------	-------	48	40.6	3-8-3

See footnotes at end of table.

Series J 164–247. Reference Climatological Stations—Temperature, Precipitation, and Description of Year: 1884 to 1970—Con.

[Italicized figure .re based on interpolated monthly values. Standard error **of** interpolated figures: For temperature, less than 1° F.; for precipitation, less than 0.5 inch]

Year	The South																	
	Beeville Experiment Station, Tex.			Calhoun Experiment Station, La.			'ayetteville Experiment Station, Ark.			Goodwell Agricultural College, Okla.			Lewisburg Experiment Station, Tenn.			St. Leo's Abbey, Fla.		
	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual nean temperature	Annual total precipitation	Description [1] of year	Annual nean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual nean temperature	Annual total precipitation	Description [1] of year
	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211
	°F.	riches		°F.	*nches*		°F.	*nches*		°F.	*riches*		°F.	*'nches*		°F.	*Inches*	
1970	69	28.0	3–8–5	64	44.6	5–6–6	59	41.6	5–7–6	57	12.9	3–5–8	57	47.5	5–6–6	71	52.9	6–8–3
1969	70	29.5	5–5–5	64	39.2	9–8–5	59	44.4	5–7–2	57	20.1	5–5–5	56	54.6	6–5–6	71	65.8	3–5–9
1968	68	31.5	3–6–6	62	74.0	3–3–3	58	48.7	5–5–6	57	17.6	5–8–5	56	47.9	6–8–5	70	46.3	6–6–5
1967	71	42.1	2–5–5	64	37.1	9–6–5	59	38.4	5–9–8	58	16.5	4–3–8	57	57.1	6–3–5	72	43.5	8–3–5
1966	69	26.2	3–5–3	63	49.2	3–5–3	58	37.1	3–5–2	56	14.0	3–2–3	56	47.8	6–5–9	71	53.5	8–6–2
1965	71	32.8	5–8–2	65	41.4	5–5–5	60	39.8	6–5–4	57	16.4	5–5–5	58	51.6	5–3–8	72	57.8	5–3–4
1964	70	21.9	5–5–6	64	40.3	5–8–9	59	36.5	7–5–9	57	11.5	7–7–6	58	63.2	2–2–6	79	59.7	5–4–3
1963	71	17.8	8–5–6	64	36.9	3–2–9	60	21.6	7–7–9	59	12.8	7–4–5	57	45.3	9–2–9	72	61.0	5–4–3
1962	70	27.2	5–2–8	65	45.5	3–2–3	58	48.2	5–2–5	57	21.5	5–3–8	58	57.7	6–6–2	72	45.9	8–4–4
1961	67	36.7	9–6–3	63	72.4	3–3–6	57	56.7	3–3–6	56	16.7	5–6–5	58	56.4	6–6–6	73	36.6	8–7–6
1960	68	43.4	3–3–6	64	41.5	3–5–9	57	42.3	6–2–9	56	21.7	3–5–3	56	42.1	9–6–6	71	75.3	2–5–6
1959	68	30.9	6–6–6	66	45.5	3–2–9	57	58.9	9–6–9	56	20.6	5–2–5	59	54.8	6–6–9	73	70.4	1–5–2
1958	69	33.1	6–7–3	64	53.5	5–2–9	57	45.8	6–2–9	56	21.0	5–5–4	57	45.0	6–5–9	71	56.2	5–7–3
1957	70	40.1	3–8–4	66	69.1	2–6–4	57	62.5	3–6–4	56	15.4	5–5–8	60	65.3	2–8–1	73	58.8	4–5–4
1956	71	19.3	8–7–8	66	43.3	3–8–5	59	38.7	8–5–9	59	10.3	1–4–8	60	52.3	5–5–5	72	45.4	8–8–5
1955	72	19.4	7–5–8	66	50.1	5–6–8	59	*42.6*	5–6–2	57	14.5	5–8–8	59	59.8	2–9–6	72	43.1	8–8–6
1954	72	15.4	7–7–8	68	30.9	7–7–7	60	35.3	7–7–8	60	10.1	7–4–4	60	47.3	4–7–5	72	45.0	8–4–5
1953	72	19.3	7–7–8	67	54.6	4–7–5	60	35.6	8–7–8	60	12.2	7–4–7	60	48.1	5–5–5	73	81.1	1–4–5
1952	71	32.2	5–7–4	64	34.0	9–7–1	59	34.8	8–4–7	58	9.2	7–7–7	60	48.9	5–4–1	72	42.6	8–7–1
1951	73	25.5	7–7–8	66	48.4	5–4–5	57	48.1	6–5–6	56	16.2	5–5–5	59	52.9	5–8–6	72	50.1	8–7–6
1950	73	13.9	7–5–4	*67*	67.2	*1–3–1*	57	50.7	6–3–2	57	26.9	2–2–7	53	66.6	3–6–1	72	57.4	4–4–7
1949	72	95.5	4–2–4	68	53.0	4–5–1	58	47.0	6–6–2	56	22.2	5–2–2	60	49.8	5–5–4	74	50.8	7–8–4
1948	71	19.9	8–7–6	66	39.2	8–7–6	58	48.3	5–3–6	56	24.0	2–2–3	59	63.7	3–8–6	74	51.3	7–4–5
1947	70	19.3	*8–8–9*	68	57.1	4–4–6	58	40.0	9–5–9	56	23.0	2–2–7	58	41.4	9–6–5	72	68.5	2–3–5
1946	72	37.1	5–5–5	68	71.5	1–2–2	60	52.6	2–5–5	58	26.0	2–5–5	60	54.7	5–9–3	74	51.8	4–5–2
1945	72	25.7	7–5–8	68	61.9	1–3–3	58	64.7	3–3–2	57	15.5	5–6–2	59	52.6	3–9–3	72	81.9	1–2–5
1944	71	27.4	5–4–5	66	56.6	5–5–5	59	48.0	6–2–5	56	21.6	6–5–3	60	58.1	5–7–5	72	54.3	5–4–5
1943	71	33.6	5–5–7	66	32.2	8–4–8	59	40.7	5–7–5	57	15.0	5–4–4	59	42.1	8–4–3	72	63.3	2–1–5
1942	70	40.0	2–2–5	65	44.5	8–5–9	59	56.9	2–2–6	57	27.0	2–2–4	59	44–8	6–2–6	72	60.1	5–1–3
1941	70	47.5	2–3–2	66	54.6	5–8–5	60	50.5	5–5–2	56	26.2	2–3–5	60	38.6	8–2–8	72	60.0	5–4–2
1940	70	33.0	5–2–8	64	62.2	3–3–6	57	40.5	5–6–9	56	16.2	5–8–5	57	43.8	6–6–*8*	70	43.9	9–5–6
1939	73	16.7	7–4–5	67	45.0	7–4–5	61	36.4	7–7–4	58	13.6	7–5–2	59	59.4	2–2–2	73	50.1	7–2–7
1938	73	21.1	7–7–1	67	47.1	4–5–7	61	48.3	4–5–1	59	14.9	4–7–7	61	46.8	4–5–5	72	49.2	8–8–8
1937	71	23.3	8–7–8	65	*62.1*	2–5–2	58	42.4	5–4–5	57	11.3	8–7–5	59	64.4	8–2–1	72	60.7	5–5–1
1936	68	34.9	6–3–6	65	32.9	8–8–9	60	29.3	7–7–9	57	9.7	5–7–6	59	51.1	5–4–9	72	55.8	5–8–3
1935	70	33.2	6–6–5	66	48.4	5–8–5	59	48.5	2–2–8	58	11.7	7–7–7	59	46.8	5–5–5	70	57.6	6–3–9
1934	71	32.1	5–8–1	67	54.8	4–4–4	61	40.0	7–7–7	60	14.3	4–7–1	60	41.3	8–4–5	71	69.8	3–3–5
1933	72	29.7	4–3–5	68	62.8	*1–2–2*	61	54.2	2–4–2	58	12.6	7–4–6	61	49.6	4–5–5	72	65.0	2–3–4
1932	70	42.7	3–5–1	66	51.8	5–7–1	60	45.1	5–5–1	55	14.7	6–8–2	60	61.8	1–4–1	73	40.5	7–7–7
1931	70	37.3	3–3–2	66	58.6	5–6–6	60	41.9	4–5–5	57	16.2	5–8–5	61	41.3	7–8–8	70	45.2	9–3–3
1930	70	26.9	6–8–3	66	44.9	8–8–8	59	40.2	5–8–5	52	18.5	6–5–9	60	41.7	*8–7–4*	69	51.9	6–9–6
1929	70	38.4	3–6–3	65	43.1	9–5–6	58	52.8	3–5–3	50	18.4	6–3–6	59	58.0	5–5–8	72	52.3	5–6–4
1928	70	36.8	5–4–5	65	49.8	6–5–9	59	52.9	2–6–5	55	24.3	3–6–5	59	43.0	9–2–8	70	64.3	3–2–6
1927	73	20.6	7–4–4	67	49.8	0–9–1	60	66.6	2–3–4	57	16.3	5–3–5	61	54.5	4–6–4	71	48.5	8–5–8
1926	69	31.6	6–6–6	64	49.8	6–2–8	58	42.5	5–6–3	56	17.3	5–5–3	59	63.5	2–2–8	71	55.4	6–5–3
1925	70	31.2	5–5–5	67	54.6	*4–4–6*	60	27.0	8–7–5	57	15.9	5–5–6	61	42.4	7–7–5	73	53.8	4–4–4
1924	70	21.8	*9–8–8*	64	29.5	9–7–5	57	38.8	8–5–8	55	12.1	9–8–5	57	45.8	6–8–5	72	62.2	2–7–5
1923	71	46.4	2–5–1	65	*72.8*	3–6–4	60	46.3	5–7–4	56	*24.1*	*2–5–7*	59	59.2	3–3–2	71	53.9	6–6–8
1922	71	37.7	2–2–8	65	60.8	*3–6–2*	60	35.6	7–5–4	58	14.8	4–5–5	61	55.8	4–8–5	71	61.8	2–6–5
1921	72	*27.5*	*4–7–8*	66	49.5	5–3–5	62	39.8	7–5–4	59	16.9	4–6–1	62	50.1	4–4–5	71	58.1	5–9–5
1920	70	22.3	9–5–6	63	71.1	3–3–9	58	*44.0*	5–5–9	56	14.8	5–9–5	59	57.8	6–6–5	69	50.8	9–6–6
1919	69	47.4	3–3–3	*64*	59.6	6–6–9	59	45.5	5–2–4	*54*	14.9	6–9–3	60	55.1	5–5–5	71	68.3	3–3–3
1918	70	29.6	6–8–9	64	44.0	9–2–9	60	39.5	8–7–8	56	20.1	5–4–9	60	49.1	5–5–6	71	54.4	6–6–6
1917	70	12.1	*8-1-8*	63	39.0	8–6–8	57	40.0	8–6–5	55	16.6	6–6–5	57	52.8	6–5–5	70	54.0	6–3–2
1916	72	28.4	7–1–7	65	36.4	9–6–8	60	43.0	4–7–2	58	11.7	4–5–8	59	57.6	5–8–4	71	50.6	3–6–8
1915	72	13.1	8–7–9	64	48.8	6–6–6	59	58.2	2–3–6	50	26.8	3–2–5	59	57.4	6–3–6	70	53.5	6–8–3
1914	70	46.6	3–1–8	65	48.2	6–2–9	60	38.8	8–4–2	58	22.5	1–2–2	59	46.8	5–1–8	71	51.9	6–8–2
1913	69	32.8	6–6–9	64	62.7	*3–6–2*	59	47.3	5–4–6	51	19.0	6–5–6	60	53.1	4–5–2	72	50.6	8–6–4
1912	70	30.0	6–8–3	64	50.6	6–6–3	57	40.4	6–5–6	47	17.5	6–5–3	58	61.0	3–3–6	72	64.1	2–9–3
1911	73	23.5	7–7–7	67	54.4	4–5–7	61	38.9	7–5–7	59	15.5	4–4–4	62	60.3	1–2–5	73	54.9	4–2–9
1910	71	29.8	5–5–5	65	41.7	8–6–6	59	33.4	8–6–6	59	*11.4*	7–4–2	59	46.7	6–6–6	70	53.8	6–3–6
1909	72	30.8	4–2–7	66	44.7	8–5–4	61	34.0	7–7–7	-----	-----	-----	60	50.5	5–5–4	72	53.3	5–2–8
1908	72	35.7	4–1–8	65	64.0	2–3–5	60	50.5	5–8–5	-----	-----	-----	60	50.4	4–5–6	72	41.7	8–8–3
1907	72	19.1	7–7–7	65	*47.5*	6–8–7	60	40.7	4–5–4	-----	-----	-----	60	51.5	5–2–4	72	46.6	8–8–8
1906	70	31.2	5–5–6	64	57.8	6–3–9	58	51.6	6–34	-----	-----	-----	60	57.1	5–2–5	71	60.0	5–2–3
1905	69	39.6	3–5–6	63	65.3	*2–8–3*	56	54.7	3–6–5	-----	-----	-----	60	62.8	2–2–6	71	62.8	2–2–5
1904	-----	-----	-----	*65*	49.1	*6–3–9*	58	49.5	6–34	-----	-----	-----	60	37.4	8–8–9	71	50.7	6–3–2
1903	-----	-----		63	50.3	*6–3–6*	56	45.3	*6–6–3*	-----	-----	-----	59	51.1	6–6–5	70	54.9	6–9–2
1902	-----	-----	-----	64	52.1	6–5–9	58	48.2	5–54	-----	-----	-----	60	52.3	5–4–6	72	45.5	8–7–6
1901	-----	-----	-----	*62*	36.7	9–5–9	58	28.9	8–7–8	-----	-----	-----	58	45.0	6–1–8	-----	-----	
1900	-----	-----	-----	*64*	57.7	6–3–6	59	37.7	8–54	-----	-----	-----	60	53.6	4–2–6	-----	-----	-----
1899	-----	-----	-----	64	30.7	9–8–9	58	40.2	5–54	-----	-----	-----	59	47.4	5–7–6	-----	-----	-----
1898	-----	-----	-----	67	53.6	4–3–5	58	66.1	2–3–8	-----	-----	-----	-----	*49.8*	–5––	-----	-----	-----
1897	-----	-----	-----	*65*	45.5	8–5–9	59	37.2	8–54	-----	-----	-----	-----	-----	-----	-----	-----	-----
1896	-----	-----	-----	66	37.3	8–7–9	61	38.5	7–7–8	-----	-----	-----	-----	-----	-----	-----	-----	-----
1895	-----	-----	-----	62	48.4	6–3–9	57	41.6	5–2–8	-----	-----	-----	-----	-----	-----	-----	-----	-----
1894	-----	-----	-----	64	55.2	6–6–6	59	47.1	6–5–8	-----	-----	-----	-----	-----	-----	-----	-----	-----
1893	-----	-----	-----	64	43.5	9–6–6	58	58.5	3–3–E	-----	-----	-----	-----	-----	-----	-----	-----	-----
1892	-----	-----	-----	-----	65.5	-----	57	51.3	6–64	-----	-----	-----	-----	-----	-----	-----	-----	-----
1891	-----	-----	-----	-----	52.5	-----	56	34.6	9–6–8	-----	-----	-----	-----	-----	–5––	-----	-----	-----
1890	-----	-----	-----	-----	-----	-----	-----	-----		-----	-----	-----	60	53.0	5–6––	-----	-----	-----
1889	-----	-----	-----	-----		-----	-----	-----		-----	-----	-----	*58*	*48.6*	6–3––	-----	-----	-----
1888	-----	-----	-----	-----	-----	-----	-----	-----		-----	-----	-----	-----	*53.3*	-----	-----	-----	-----
1884	-----	-----	-----	-----	-----	-----	-----	51.9		-----	-----	-----	-----	-----	-----	-----	-----	-----

See footnotes at end of ta:

Series J 164–247. Reference Climatological Stations—Temperature, Precipitation, and Description of Year: 1884 to 1970—Con.

[Italicized figures are based on interpolated monthly values. Standard error of interpolated figures: For temperature, less than 1° F.; for precipitation, less than 0.5 inch]

Year	The South—Con.						The West											
	Winthrop College, S.C.			Woodstock, Md. [2]			Agricultural College, N. Mex.			Bozeman Agricultural College, Mont.			Davis Agricultural College, Calif.			Grand Canyon National Park Headquarters, Ariz.		
	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year
	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229
	°F.	Inches		°F.	Inches		°F.	Inches		°F.	Inches		°F.	Inches		°F.	Inches	
1970	62	46.4	5–7–9	.....	41.1	.....	61	3.4	8–8–4	44	19.6	4–4–4	61	22.4	1–2–3	48	14.0	6–6–7
1969	60	41.9	6–5–6	.....	*36.8*	.....	62	11.9	1–1–4	43	23.4	2–1–6	61	25.1	2–6–3	47	16.8	6–6–2
1968	60	40.0	9–5–6	.....	*40.0*	.....	61	13.2	2–2–5	43	23.6	2–3–2	60	15.6	5–5–5	47	19.5	6–3–5
1967	61	50.8	2–4–8	.....	*36.3*	.....	62	8.4	4–2–8	44	22.9	1–4–4	60	19.7	5–1–2	49	12.6	5–5–2
1966	60	43.0	6–5–5	.....	*37.0*	.....	60	9.8	2–2–6	45	14.6	7–4–8	60	15.0	5–5–9	49	17.5	2–4–6
1965	62	40.2	8–5–4	58	31.1	.....	61	8.3	5–5–5	43	19.2	5–5–4	55	15.6	6–3–5	47	20.7	3–9–5
1964	61	60.4	2–2–3	54	32.1	.....	60	3.6	8–7–8	43	19.9	5–2–5	59	15.4	6–3–9	48	11.5	9–8–9
1963	60	41.0	6–9–9	52	34.7	.....	62	6.1	5–5–5	45	17.9	4–4–5	58	21.8	3–5–5	50	13.9	4–2–5
1962	61	47.4	6–9–3	52	38.8	6–9–6	62	6.4	4–8–1	44	20.0	1–2–5	59	20.7	3–6–6	49	11.4	8–9–5
1961	60	53.2	3–3–6	54	37.6	5–5–6	61	10.1	1–1–2	45	16.1	4–7–7	59	13.1	5–4–8	48	14.4	6–2–8
1960	60	48.6	6–5–2	52	46.5	3–2–4	61	7.7	4–4–5	43	14.6	8–7–5	61	14.1	5–4–4	49	16.2	5–7–3
1959	62	69.5	2–2–5	58	41.0	4–4–9	61	5.9	7–4–7	43	19.6	5–4–4	63	12.9	4–4–4	49	13.8	5–8–8
1958	61	50.4	6–2–6	52	43.4	6–3–3	61	14.0	1–1–1	45	18.1	4–2–4	63	24.7	1–4–1	49	16.7	5–5–4
1957	*63*	50.0	5–8–4	54	41.1	5–3–4	61	9.3	4–4–1	43	16.5	5–1–8	61	15.3	4–7–8	48	*20.9*	3–3–4
1956	63	36.7	8–8–8	54	44.1	6–2–8	60	4.8	7–4–4	43	11.3	7–7–5	60	13.0	5–8–1	50	7.6	7–8–7
1955	63	43.9	5–5–5	54	46.8	2–1–8	61	7.3	4–6–9	41	17.2	5–8–5	60	13.6	5–5–6	48	11.9	9–2–6
1954	63	35.7	4–7–2	54	30.5	8–8–7	62	5.8	7–8–8	44	12.7	5–5–4	60	18.8	6–5–4	51	12.5	4–5–7
1953	61	42.1	5–5–5	55	47.2	1–9–1	60	3.8	7–7–5	46	16.4	6–4–4	61	10.0	7–2–1	50	10.9	8–2–8
1952	62	49.5	6–2–5	54	60.3	*3–1–1*	60	6.2	5–4–4	43	19.6	5–5–2	60	21.5	2–5–2	48	17.3	3–5–3
1951	62	37.2	5–5–9	54	41.4	5–5–5	61	5.0	7–7–8	40	20.2	5–6–5	60	12.9	5–5–4	49	17.2	5–5–7
1950	62	44.5	5–3–7	53	48.8	2–3–4	62	5.3	7–5–4	42	13.2	5–3–5	61	20.0	1–8–6	50	10.3	7–6–5
1949	62	58.9	*2–3–4*	56	39.0	4–4–1	61	9.0	4–7–3	43	17.1	5–4–3	59	10.6	9–5–6	47	17.9	3–6–3
1948	62	49.8	5–8–9	54	53.5	2–5–3	58	5.2	9–7–3	42	19.5	5–2–5	58	16.0	6–2–8	49	13.5	6–2–5
1947	61	51.1	6–6–5	54	36.5	8–5–8	59	6.1	6–6–5	44	23.6	1–2–4	60	11.8	8–2–9	49	11.3	8–6–7
1946	63	41.3	4–9–6	54	38.5	4–3–5	60	7.1	4–7–6	43	18.6	4–8–2	59	10.8	9–5–6	49	18.7	2–2–5
1945	63	45.2	5–5–5	54	53.9	2–3–3	59	5.8	9–5–8	42	19.5	5–8–8	60	19.9	2–4–5	49	12.6	5–5–7
1944	62	47.0	5–8–2	53	41.1	5–4–8	58	9.8	8–3–2	42	20.9	2–3–8	60	19.5	2–6–5	48	10.9	9–8–5
1943	62	39.9	8–4–5	54	35.4	3–7–5	61	7.6	4–4–4	42	17.2	6–6–3	61	15.6	4–6–1	51	12.3	4–5–4
1942	62	58.1	2–2–6	54	47.2	2–2–5	60	9.8	2–2–5	41	17.2	6–9–3	60	18.4	5–7–1	50	9.7	7–4–5
1941	62	45.2	5–2–9	54	29.9	8–5–5	60	19.6	2–3–1	43	22.9	2–5–4	61	28.8	1–5–1	48	24.6	2–5–1
1940	60	41.1	6–5–6	51	41.4	6–9–9	60	9.2	5–6–5	44	18.6	4–4–2	62	29.4	1–8–1	50	22.7	1–4–4
1939	63	46.9	4–1–1	54	38.8	5–5–2	59	5.8	8–8–6	44	14.0	7–5–8	60	5.9	8–6–8	50	17.7	2–7–6
1938	63	40.1	7–5–4	54	33.2	7–7–8	59	9.8	6–3–4	43	20.4	1–8–4	59	20.6	3–5–2	49	17.2	5–5–2
1937	62	55.3	2–4–1	53	48.7	2–4–1	60	7.0	5–8–5	41	18.0	6–5–3	60	21.6	2–5–3	49	19.3	2–8–3
1936	61	63.3	3–5–3	53	39.1	6–5–3	60	9.5	4–5–2	43	12.8	5–7–6	61	18.2	4–2–1	50	15.8	5–5–5
1935	61	39.3	9–8–3	52	39.5	6–3–3	60	12.7	2–1–7	42	15.5	8–8–4	59	16.6	5–5–5	49	14.1	5–1–5
1934	61	45.1	6–7–3	53	46.2	3–7–6	61	4.6	7–7–8	47	10.5	4–7–4	62	11.2	7–2–4	52	10.5	7–5–7
1933	63	32.6	7–5–4	55	50.1	1–1–4	59	4.7	9–5–6	44	15.9	4–4–6	60	12.5	5–4–9	51	10.6	7–4–6
1932	63	51.4	4–4–1	55	45.6	4–5–4	59	8.8	6–5–3	42	17.3	6–2–5	60	8.4	8–5–5	50	12.7	5–7–3
1931	63	50.0	5–2–9	56	35.6	7–1–8	60	13.3	2–2–2	44	16.8	7–7–5	61	16.1	4–1–7	49	15.0	5–4–8
1930	62	36.2	3–8–8	55	20.1	7–7–7	60	6.9	5–5–8	42	14.2	8–4–3	59	12.1	6–6–4	48	14.7	6–2–7
1929	61	60.3	3–6–5	54	40.3	5–9–5	59	9.2	6–6–8	41	15.8	6–4–6	59	8.6	8–3–9	49	10.8	8–2–6
1928	61	48.8	6–2–5	56	*41.0*	6–8–5	60	9.4	5–6–5	42	16.2	5–6–6	60	13.9	5–8–8	50	13.1	4–4–5
1927	63	43.8	4–6–4	54	33.1	5–9–5	60	9.5	5–3–4	41	21.8	3–6–2	59	18.1	6–2–5	50	22.9	2–8–2
1926	62	38.4	3–4–5	52	43.2	6–6–6	59	14.4	3–9–6	43	19.8	2–5–1	61	23.0	1–4–5	50	17.4	5–5–8
1925	63	32.6	7–7–2	54	35.0	8–5–5	60	7.8	5–2–8	44	19.4	4–5–8	60	15.4	5–4–5	49	17.6	3–3–6
1924	60	58.4	3–8–5	52	52.4	3–6–1	59	4.8	9–4–5	40	20.9	8–9–2	59	13.3	6–8–8	49	15.6	5–8–5
1923	62	48.0	5–6–5	54	39.1	5–5–5	60	10.4	2–5–1	42	15.3	8–5–8	60	7.3	8–5–5	48	18.6	*3–3–4*
1922	*62*	52.9	2–5–2	55	38.9	4–2–5	60	5.6	7–7–7	40	17.7	6–2–6	59	22.6	2–7–3	48	16.4	6–5–3
1921	*63*	40.1	7–4–5	56	38.3	4–5–4	62	7.6	4–5–8	42	15.2	8–4–4	60	13.4	5–7–5	43	15.8	6–3–9
1920	61	51.6	5–2–3	53	49.9	3–2–6	60	8.2	5–2–4	40	19.2	8–6–5	60	15.4	5–4–3	47	*12.6*	6–9–1
1919	63	54.2	2–2–2	55	42.3	4–5–1	60	3.0	5–8–6	42	11.0	9–7–8	59	14.6	5–5–3	48	18.4	9–5–6
1918	62	47.8	5–5–9	54	40.9	5–5–6	60	7.2	5–4–8	42	18.9	6–5–2	60	16.7	5–7–7	48	19.9	3–3–8
1917	58	40.6	9–6–3	52	38.2	6–2–6	60	5.6	8–5–8	41	15.7	6–8–3	61	9.5	7–7–2	47	10.7	9–8–6
1916	61	43.8	*6–3–8*	54	39.9	5–2–5	61	7.8	4–8–7	38	21.2	3–6–6	60	20.1	2–5–1	46	14.5	6–6–2
1915	62	48.0	5–5–2	54	47.6	2–3–2	59	7.4	6–8–2	42	25.0	2–3–8	60	21.0	2–7–2	46	13.9	6–9–6
1914	61	45.8	6–1–5	54	36.1	*8–4–2*	61	11.8	1–2–5	43	16.5	5–6–3	59	22.2	6–3–2	48	IS.O	*6–6–2*
1913	62	52.4	2–5–4	56	39.0	*4–4–4*	58	11.7	3–2–6	40	18.7	5–6–6	59	17.9	5–6–9	47	15.8	5–6–3
1912	61	47.4	6–3–6	5s	40.8	6–5–6	53	9.2	6–2–9	40	21.6	3–6–5	58	11.0	9–3–8	43	9.6	9–9–9
1911	63	40.0	7–4–8	55	44.7	*4–2–9*	60	5.8	7–8–4	40	18.1	3–6–5	57	22.4	3–6–2	46	81.7	*3–3–1*
1910	61	42.5	6–3–5	53	*29.6*	*8–3–6*	63	4.0	7–4–8	43	18.7	5–8–6		7.0	.....	48	12.0	5–3–8
1909	62	40.9	8–2–7	*53*	66.7	*9–4–4*	61	4.9	7–7–7	40	22.3	3–5–8		25.8	.....	45	86.1	3–3–2
1908	62	55.0	2–2–3	54	95.7	*5–2–3*	60	6.0	7–5–4	41	25.3	3–6–5			.....	45	22.6	3–3–5
1907	61	49.3	6–3–7	*58*	47.5	*6–3–6*	63	6.4	4–4–4	41	17.2	3–3–5			.....	49	36.7	13–1
1906	62	55.6	2–2–3	54	59.1	*2–1–3*	61	8.3	4–8–2	*41*	16.9	3–6–5			.....	*48*	22.3	5–3–6
1905	61	45.5	6–2–6	52	*42.9*	*6–4–6*	60	17.1	1–5–1	*41*	*14.7*	7–6–5			.....	*48*	*29.6*	*1–3–2*
1904	60	35.4	9–3–9	50	94.4	*9–6–9*	60	10.1	1–5–8	42	16.2	3–9–2			.....	50	17.6	1–2–3
1903	61	43.6	6–5–6	53	*41.6*	*6–3–3*	59	10.3	3–2–2	41	17.6	3–6–5			.....	.....	.....	.....
1902	61	48.8	6–5–3	*53*	51.6	*3–6–3*	60	10.9	1–2–7	42	15.5	3–6–5			.....	.....	.....	.....
1901	59	64.1	3–3–6	*52*	39.7	*6–4–9*	61	12.0	1–1–4	*44*	15.5	7–8–5			.....	.....	.....	.....
1900	62	44.9	5–4–6	*53*	32.5	*8–4–8*	61	8.4	4–7–4	*44*	*14.2*	7–8–.			.....	.....	.....	.....
1899	.....	.....	.....	51	40.8	*6–5–3*	57	9.7	3–3–6	.....	.....	.....			.....	.....	.....	.....
1898	.....	.....	.....	58	36.8	*9–4–6*	53	14.4	3–3–9	.....	.....	.....			.....	.....	.....	.....
1897	.....	.....	.....	51	*49.9*	*3–3–6*	58	9.0	6–6–3	.....	.....	.....			.....	.....	.....	.....
1896	.....	.....	.....	51	*53.3*	*9–6–3*	59		–6–.	.....	.....	.....			.....	.....	.....	.....
1895	.....	.....	.....	50	*58.0*	*9–9–9*	.....	.....	.....	.....	.....	.....			.....	.....	.....	.....
1894	.....	.....	.....	52	*95.4*	*9–9–9*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1893	.....	.....	.....	50	*59.0*	*6–9–6*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

See footnotes at end of table.

Series J 164–247. Reference Climatological Stations—Temperature, Precipitation, and Description of Year: 1884 to 1970—Con.

[Italicized figures are based on interpolated monthly values. Standard error of interpolated figures: For temperature, less than 1° F.; for precipitation, less than 0.5 inch]

The West—Con.

Year	Indio U.S. Date Garden, Calif.			Logan (Utah State Agricultural College), Utah			Medford Experiment Station, Oreg.			Montrose No. 2, Colo.			Tatoosh Island (Weather Bureau Office), Wash.			Union Experiment Station, Oreg.		
	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year	Annual mean temperature	Annual total precipitation	Description [1] of year
	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247
	°F.	inches		°F.	inches		°F.	*Inches*		°F.	inches		°F.	inches		°F.	inches	
1970	78	4.7	2-2-4	48	20.9	2-4-4	54	24.2	4-4-1	47	10.1	6-6-8	(3)	(3)	(3)	48	19.2	4-1-1
1969	74	2.6	4-5-5	48	16.9	5-2-2	53	23.2	5-1-2	48	11.2	3-3-5	(3)	(3)	(3)	48	13.4	5-2-5
1968	74	2.2	5-2-5	47	22.5	3-3-3	54	18.0	7-4-5	46	7.7	9-6-3	(3)	(3)	(3)	48	13.7	5-5-5
1967	73	3.3	5-2-5	48	21.1	2-5-5	54	18.2	4-7-5	48	10.9	6-3-5	(3)	(3)	(3)	49	11.2	3-3-2
1966	74	2.1	5-5-5	48	10.6	8-7-9	54	18.8	4-5-5	49	6.8	8-5-8	(3)	(3)	(3)	49	12.3	3-5-6
1965	72	5.9	3-9-8	47	***19.8***	5-8-1	53	17.5	8-5-2	48	14.0	3-3-2	49	76.9	(NA)	48	13.4	5-4-4
1964	71	1.7	6-5-9	46	19.1	6-3-9	52	28.9	2-5-8	47	11.2	3-3-6	48	71.5	(NA)	46	12.7	8-7-6
1963	73	4.7	2-6-4	49	19.7	4-5-7	53	18.4	5-5-8	50	8.6	4-5-5	50	79.2	(NA)	48	13.1	5-5-5
1962	74	0.8	7-8-8	49	15.1	5-6-2	53	24.8	2-5-9	50	8.6	5-9-5	49	76.8	5-6-8	47	11.0	5-9-5
1961	74	1.4	4-1-7	50	14.8	4-4-7	54	21.7	4-4-7	48	11.3	8-8-2	49	92.8	2-4-1	49	11.7	4-7-7
1960	75	1.3	4-7-5	48	14.2	8-8-5	54	21.2	4-4-5	49	9.4	5-7-3	49	75.5	5-5-5	47	16.3	2-5-8
1959	75	2.7	4-4-7	49	16.4	5-2-4	53	11.7	8-5-4	50	8.7	5-4-7	49	77.5	6-5-5	47	14.2	5-5-1
1958	75	3.0	4-4-4	50	13.4	7-5-4	55	25.1	4-1-1	52	6.2	7-7-1	52	78.2	4-7-1	50	20.8	1-1-1
1957	74	3.0	4-4-5	48	17.8	5-5-5	52	23.2	5-8-6	50	15.4	2-2-2	50	71.6	5-1-6	47	15.6	2-8-6
1956	73	0.4	8-5-8	48	11.7	8-8-2	52	26.7	2-5-2	50	6.7	7-4-4	48	79.4	6-2-6	48	15.3	2-2-2
1955	72	1.7	6-6-6	46	17.0	5-5-6	52	15.8	5-8-8	48	7.8	6-5-6	47	80.8	6-8-8	46	11.8	6-3-8
1954	74	2.7	4-6-7	50	12.5	7-5-4	52	18.1	5-6-5	52	8.6	4-5-7	49	86.2	2-3-2	48	12.5	4-3-4
1953	73	0.8	8-5-5	50	14.0	7-5-7	52	28.7	2-6-1	50	10.8	2-4-5	50	92.2	1-8-1	49	18.3	1-6-1
1952	73	6.5	2-8-3	48	12.8	8-5-3	52	20.7	5-2-3	49	9.7	5-4-2	48	68.7	6-6-6	48	11.7	5-2-6
1951	72	3.2	6-2-8	47	18.9	6-6-4	53	20.9	5-8-4	49	5.8	8-8-4	48	80.0	6-9-2	48	13.9	5-5-4
1950	74	0.7	8-6-8	48	19.9	2-6-2	52	28.4	2-5-6	50	6.8	7-9-2	47	101.6	3-6-9	48	13.0	5-5-8
1949	72	2.3	6-8-6	47	19.8	2-5-3	51	11.5	9-8-6	49	8.4	5-6-2	*48*	***73.6***	*6-5-6*	47	10.0	8-8-6
1948	72	2.0	6-6-5	47	17.3	5-5-8	49	25.7	3-3-6	48	10.3	6-3-2	48	89.3	3-4-5	46	16.9	3-3-5
1947	73	1.0	8-5-4	48	18.8	5-2-4	52	16.2	8-3-8	50	12.5	2-3-7	50	77.3	4-4-5	48	14.6	4-3-4
1946	72	1.8	6-8-5	49	20.5	2-5-8	51	17.1	9-8-9	50	9.1	4-4-8	49	82.2	5-3-5	48	15.4	2-5-5
1945	72	5.0	6-3-8	47	24.6	2-3-5	52	23.0	5-8-5	49	8.2	5-5-5	49	83.7	2-6-4	48	14.4	5-6-4
1944	71	3.0	6-8-3	47	18.9	6-3-8	51	17.5	9-6-8	50	10.4	2-5-6	50	72.7	4-9-4	48	10.6	5-3-8
1943	73	8.1	2-2-5	50	18.1	4-2-5	52	19.3	5-3-2	51	9.7	4-2-5	49	58.6	8-5-5	47	12.4	5-3-2
1942	73	3.2	5-1-5	47	18.0	6-5-3	52	23.8	5-5-5	50	7.8	5-8-5	50	58.9	7-1-4	48	17.2	2-2-2
1941	72	8.3	3-3-2	48	19.6	2-2-4	53	24.7	5-2-5	49	16.9	2-2-2	52	64.7	7-4-7	50	21.3	1-2-4
1940	74	4.9	4-7-4	52	17.0	4-7-4	54	22.0	-------	50	10.1	4-7-5	52	78.1	4-4-7	50	18.8	1-7-1
1939	73	10.8	2-8-2	50	12.4	7-5-5	53	17.9	-------	50	6.4	8-4-6	50	75.0	5-5-5	49	6.1	8-8-8
1938	73	4.1	6-5-4	50	17.8	4-5-4	53	19.3	-------	48	13.3	2-8-2	49	60.9	8-9-2	49	11.8	5-4-1
1937	74	1.3	4-7-6	48	20.4	2-5-3	53	*26.6*	-------	47	7.0	8-9-6	49	75.8	5-2-6	47	12.8	5-5-6
1936	74	6.8	1-2-5	50	18.3	4-4-2	------	-------	-------	50	7.6	7-4-5	50	63.4	8-1-8	48	9.8	8-4-6
1935	73	3.5	6-4-2	49	13.5	8-7-5	------	-------	-------	50	7.2	7-4-4	49	80.4	5-5-8	47	8.0	8-5-7
1934	76	0.5	7-5-7	53	11.8	7-4-4	------	-------	-------	53	7.9	4-7-4	51	82.1	4-5-4	51	10.3	4-5-4
1933	73	0.8	9-7-6	49	11.9	8-7-6	------	-------	-------	49	7.5	8-7-6	43	88.4	3-6-3	46	12.7	6-5-6
1932	72	3.5	6-5-6	46	16.4	6-2-3	------	-------	-------	48	8.9	6-5-6	49	93.2	2-2-5	46	11.8	6-9-6
1931	73	4.6	5-5-5	*48*	***12.3***	8-7-9	------	-------	-------	49	7.6	8-4-8	50	89.5	2-2-4	*48*	***9.9***	*8-7-8*
1930	73	3.3	5-5-4	47	20.3	3-2-5	------	-------	-------	47	9.1	6-2-6	49	69.3	5-5-3	47	13.5	6-5-2
1929	73	1.5	5-4-8	48	16.0	5-5-6	------	-------	-------	46	10.4	6-5-9	48	49.6	9-5-6	46	11.0	6-1-9
1928	73	0.7	8-8-2	48	***10.8***	*8-6-8*	------	-------	-------	49	11.3	2-5-8	50	73.1	5-8-5	48	9.4	8-8-9
1927	72	7.9	3-3-2	49	18.4	5-5-5	------	-------	-------	49	12.7	2-2-2	49	82.7	2-5-6	46	16.5	3-5-2
1926	74	6.2	1-5-7	50	16.0	4-5-4	------	-------	-------	49	10.8	2-8-8	51	71.8	4-7-4	48	15.9	2-4-4
1925	73	3.6	5-5-8	50	16.3	4-3-5	------	-------	-------	49	10.0	5-2-3	49	71.4	5-5-5	49	11.6	4-4-5
1924	74	0.7	7-7-7	47	12.4	9-8-8	------	-------	-------	47	9.1	6-5-3	48	79.1	6-9-2	46	9.4	9-6-5
1923	73	0.5	8-5-7	46	16.9	6-6-2	------	-------	-------	48	9.0	6-5-4	49	71.1	5-7-3	48	17.5	2-2-2
1922	73	1.7	5-4-3	47	15.2	6-4-3	------	-------	-------	49	7.6	8-4-8	48	60.3	9-9-3	46	8.3	9-7-9
1921	74	*6.6*	2-2-9	49	18.3	5-8-5	------	-------	-------	51	10.6	1-2-5	48	100.4	3-3-5	48	13.8	5-7-2
1920	72	6.8	3-2-5	47	19.2	8-6-8	------	-------	-------	48	10.1	6-5-8	48	89.8	3-3-8	46	14.3	6-5-9
1919	73	3.1	5-1-9	48	15.7	5-7-7	------	-------	-------	48	9.9	6-8-3	48	73.9	6-9-2	46	9.5	9-4-5
1918	73	2.0	5-4-8	49	16.9	5-4-1	------	-------	-------	48	11.0	3-5-2	49	82.6	2-6-5	48	12.4	5-4-1
1917	73	2.1	5-4-6	46	18.1	6-8-3	------	-------	-------	47	7.8	6-5-6	48	82.4	6-4-6	46	15.0	6-5-3
1916	72	5.1	6-5-2	47	18.8	5-8-2	------	-------	-------	49	13.1	2-5-1	47	77.8	6-5-3	45	13.3	6-6-6
1915	72	5.2	6-5-3	50	15.2	4-9-8	------	-------	-------	48	9.0	6-5-3	50	72.2	4-7-5	48	16.9	1-5-8
1914	74	2.7	4-5-5	48	19.6	2-2-2	------	-------	-------	49	13.2	2-2-3	49	83.4	2-9-5	49	11.6	4-5-4
1913	72	2.0	6-6-6	47	17.8	5-3-8	------	-------	-------	47	8.1	6-9-6	48	78.3	6-1-9	46	17.3	3-3-9
1912	72	4.5	6-5-3	46	13.9	6-3-8	------	-------	-------	48	10.9	3-2-8	49	72.8	5-2-5	46	17.7	3-3-2
1911	72	2.5	6-5-5	46	19.1	3-9-2	------	-------	-------	49	11.8	2-5-1	47	52.6	9-9-6	-----	-----	-------
1910	75	1.0	7-4-6	50	11.7	7-8-3	------	-------	-------	47	4.7	9-9-6	48	67.1	9-9-6	-----	-----	-------
1909	72	4.1	6-2-5	*48*	***22.3***	S-4-2	------	-------	-------	45	11.2	3-3-2	47	74.9	6-6-9	-----	-----	-------
1908	73	3.6	6-5-5	46	18.8	6-3-8	------	-------	-------	*46*	***9.9***	*6-3-8*	48	72.4	6-9-8	-----	-----	-------
1907	73	3.9	5-8-2	4E	22.0	2-3-1	------	-------	-------	*48*	11.5	*3-8-7*	48	61.1	9-9-6	-----	-----	-------
1906	73	7.1	2-2-5	*48*	26.4	2-3-6	------	-------	-------	48	13.4	*3-6-5*	49	69.2	5-5-5	-----	-----	-------
1905	*78*	5.4	*3-7-1*	4E	12.5	8-5-8	------	-------	-------	45	***11.2***	3-6-2	50	63.7	8-8-5	-----	-----	-------
1904	------	-----	-------	4s	13.5	*8-5-5*	------	-------	-------	***45***	7.5	*9-6-8*	49	78.7	5-6-8	-----	-----	-------
1903	------	-----	-------	*46*	14.0	***9-8-6***	------	-------	-------	-----	8.1	------	49	68.9	5-5-5	-----	-----	-------
1902	------	-----	-------	4E	13.3	8-6-7	------	-------	-------	-----	6.5	------	48	91.6	*3-6-5*	-----	-----	-------
1901	------	-----	-------	5(	14.5	7-5-7	------	-------	-------	-----	6.2	------	49	*101.3*	*2-6-5*	-----	-----	-------
1900	------	-----		5(	15.1	4-8-8	------	-------	-------	-----	5.9	------	50	101.4	*1-1-2*	-----	-----	-------
1899	------	-----	-------	47	12.6	9-6-9	------	-------	-------	-----	***9.2***	------	50	114.0	*2-9-3*	-----	-----	-------
1898	------	-----	-------	4(	13.2	9-8-9	------	-------	-------	-----	7.8	------	19	8S.4	*2-4-2*	-----	-----	-------
1897	------	-----	-------	47	17.4	6-6-5	------	-------	-------	-----	15.6	-6-2	48	95.2	3-2-2	-----	-----	-------
1896	------	-----	-------	4E	16.2	5-2-8	------	-------	-------	-----	6.5	-7-2	48	100.8	3-4-2	-----	-----	-------
1895	------	-----	-------	41	13.5	9-9-6	------	-------	-------	-----	12.3	------	48	93.0	3-5-5	-----	-----	-------
1894	------	-----	-------	4f	14.4	*9-6-5*	------	-------	-------	-----	-----	------	47	114.3	3-5-3	-----	-----	-------
1893	------	-----	-------	*4(	14.E	*9-9-6*	------	-------	-------	*4E	9.5	6-5-2	47	104.2	3-2-6	-----	-----	-------
1892	------	-----	-------	-----	-----	------	------	-------	-------	4E	9.0	6-9-3	-----	-----	------	-----	-----	-------
1891	------	-----	-------	-----	-----	------	------	-------	-------	-----	11.4	-6--	-----	-----	------	-----	-----	-------
1890	------	-----	-------	-----	-----	------	------	-------	-------	-----	9.1	------	-----	-----	------	-----	-----	-------
1889	------	-----	-------	-----	-----	------	------	-------	-------	-----	7.2	----6	-----	-----	------	-----	-----	-------
1888	------	-----	-------	-----	-----	------	------	-------	-------	4E	8.5	6-6--	-----	-----	------	-----	-----	-------
1887	------	-----	-------	-----	-----	------	------	-------	-------	-----	9.6	------	-----	-----	------	-----	-----	-------
1886	------	-----	-------	-----	-----	------	------	-------	-------	-----	9.9	------	-----	-----	------	-----	-----	-------
1885	------	-----	-------	-----	-----	------	------	-------	-------	-----	10.9	------		-----	------	-----		-------

NA Not available.
[1] For definition of codes, see text.
[2] Figures corrected for station move about Jan. 1914.
[3] Tatoosh Island (WBO), **Wash.** closed July 1966.

Series J 248–267. Long-Record City Stations—Annual Mean Temperature and Annual Total Precipitation: 1780 to 1970

[Italicized figures are based on interpolated monthly values]

Year	Albany, N.Y.		Baltimore, Md.		Charleston, S.C.		New Haven, Conn.		New York, N.Y.		Philadelphia, Pa.		San Francisco, Calif.		Sante Fe, N. Mex.		St. Louis, Mo.		St. Paul, Minn.	
	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation
	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267
	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches
1970	49	30.5	58	35.4	**66**	43.0	51	29.4	54	35.3	55	39.1	57	24.3	49	11.6	[1] *58*	*'97.0*	44	30.5
1969	49	39.9	**58**	33.2	**65**	54.5	51	41.3	55	48.5	54	43.4	57	27.0	50	19.6	[1] *57*	[1] *39.2*	45	19.4
1968	49	35.3	59	40.1	**65**	45.5	51	40.1	54	43.6	54	35.5	57	18.0	48	15.2	[1] *57*	[1] *39.1*	45	37.9
1967	49	35.6	57	40.6	**66**	42.6	50	40.6	53	49.1	53	44.8	57	24.3	49	15.1	56	38.7	43	25.4
1966	49	34.4	58	39.8	**65**	48.1	50	32.1	55	39.9	53	40.0	57	16.5	49	12.6	56	30.2	43	24.3
1965	48	26.7	58	30.8	**66**	52.2	50	27.7	54	26.1	53	29.3	57	19.9	49	20.7	58	33.0	43	39.9
1964	50	20.7	58	37.2	66	73.4	50	33.5	55	33.0	54	29.9	57	17.7	48	13.4	58	**28.9**	46	26.0
1963	48	25.0	57	34.1	65	48.3	50	38.2	54	34.3	52	35.0	57	18.8	50	14.2	57	28.2	44	19.6
1962	48	28.8	56	38.1	65	49.7	49	36.6	53	37.2	52	42.6	56	20.0	50	11.3	57	40.4	42	**28.8**
1961	50	34.0	58	40.0	66	48.9	51	41.3	55	39.3	53	41.0	57	14.6	48	14.8	56	44.7	44	25.7
1960	50	47.9	57	43.9	65	46.5	50	41.6	54	46.4	53	41.2	56	17.8	49	17.6	56	28.2	44	21.5
1959	51	32.5	59	35.8	66	58.6	51	43.1	55	38.8	56	38.4	59	12.5	50	12.9	57	30.8	46	26.9
1958	48	38.0	56	50.4	65	44.4	49	51.9	52	40.9	53	47.9	59	28.6	51	14.6	55	37.3	46	16.2
1957	51	29.1	59	37.7	66	51.8	51	38.1	56	36.5	[2] 56	[2] 35.0	56	22.8	49	17.6	57	52.7	46	27.8
1956	49	32.6	58	37.8	**66**	35.1	51	48.4	54	36.2	**55**	44.8	56	15.1	50	6.7	58	33.7	45	26.8
1955	50	41.5	57	47.9	**66**	40.5	52	51.3	55	39.9	56	33.7	54	21.0	49	10.8	58	33.0	46	21.1
1954	50	41.0	59	30.5	**66**	31.0	52	48.5	55	35.6	56	36.9	55	19.8	*52*	14.1	59	30.0	46	23.7
1953	52	41.0	59	49.3	**67**	44.0	54	56.7	57	45.2	58	50.5	56	12.6	50	12.8	60	23.0	47	27.9
1952	51	39.2	58	55.9	**66**	39.2	53	49.7	55	41.5	57	51.1	54	31.5	**49**	11.4	*58*	26.7	46	23.7
1951	50	43.6	57	46.9	**66**	38.2	53	50.5	55	44.4	56	42.0	54	22.9	50	9.3	55	38.6	42	34.6
1950	49	**37.8**	57	44.0	66	43.4	51	42.5	54	36.9	55	45.4	55	26.3	51	10.4	55	43.2	42	21.6
1949	52	28.5	59	37.7	67	46.0	54	39.9	57	36.2	58	43.3	54	16.2	49	17.7	57	46.3	46	25.1
1948	49	39.9	57	54.7	66	61.3	51	50.7	54	46.9	55	49.5	55	16.5	49	16.9	57	34.5	46	17.0
1947	**50**	37.6	57	46.2	65	**67.4**	51	47.6	54	40.8	55	52.1	56	14.4	49	11.0	56	37.1	45	21.1
1946	50	83.0	58	37.6	67	49.0	52	40.6	55	38.4	57	40.9	55	12.3	50	13.5	59	57.1	46	29.0
1945	49	47.3	57	46.6	66	74.3	52	50.4	54	45.0	56	47.0	56	25.0	49	11.5	55	49.8	44	27.2
1944	49	39.6	57	45.5	66	51.2	52	49.1	55	45.0	56	39.5	55	25.6	48	14.6	57	33.5	47	29.1
1943	48	36.1	57	36.8	65	36.2	51	37.2	54	36.7	55	86.8	56	17.7	50	9.6	56	33.6	44	22.7
1942	50	44.2	58	46.0	66	41.4	51	57.7	54	43.5	56	41.2	56	24.9	49	13.0	57	45.1	46	30.6
1941	50	28.0	58	34.7	66	62.6	52	36.7	55	39.0	56	32.2	58	35.2	49	17.7	58	32.1	48	27.0
1940	45	35.9	55	44.3	64	45.5	49	48.7	52	45.1	53	44.8	57	34.8	50	16.4	56	25.0	44	28.5
1939	47	31.2	58	40.9	67	49.0	51	46.4	55	38.6	56	45.4	56	11.2	49	13.4	58	40.2	46	24.5
1938	49	40.2	58	34.8	67	31.1	52	57.8	55	48.5	56	46.9	56	22.2	50	15.6	59	41.2	47	29.8
1937	50	38.5	57	50.8	66	48.8	52	53.2	54	53.0	55	37.4	56	25.8	50	15.7	55	35.9	44	22.6
1936	49	40.0	56	44.6	66	40.2	50	59.6	53	49.8	55	38.7	57	22.4	50	14.4	57	26.1	44	18.5
1935	48	33.7	56	51.5	66	54.1	50	37.0	53	33.8	54	46.4	56	20.6	49	12.9	56	**39.4**	45	27.5
1934	48	36.5	56	50.9	66	38.8	50	49.0	53	49.8	55	38.4	58	15.9	52	13.3	58	29.2	47	22.7
1933	50	38.2	68	53.0	68	52.8	51	45.4	54	53.5	56	51.4	55	17.0	49	13.1	59	34.8	47	23.5
1932	50	34.2	**58**	49.6	67	44.8	52	45.6	55	43.9	57	44.5	56	12.0	48	15.4	57	38.0	45	23.6
1931	51	33.2	59	39.6	66	28.8	53	44.2	56	86.1	58	89.3	57	22.9	49	15.9	60	37.4	51	22.6
1930	50	25.5	58	21.6	65	32.4	52	34.7	54	39.0	57	34.0	57	16.7	48	13.2	58	23.2	46	20.0
1929	49	31.7	57	42.5	66	45.0	51	43.1	54	40.4	56	41.6	56	10.0	48	21.5	55	46.3	42	24.4
1928	49	33.6	56	43.4	65	42.8	51	45.0	54	45.6	55	39.4	56	19.0	49	13.1	56	88.6	45	24.8
1927	49	39.9	57	36.2	67	29.9	51	52.0	53	56.1	56	43.2	56	24.3	50	14.2	57	50.8	43	26.4
1926	46	30.8	55	45.2	65	35.1	48	43.8	51	47.8	54	44.9	58	26.7	49	13.0	56	33.4	44	27.3
1925	48	31.4	56	32.7	66	33.4	51	44.4	53	41.4	56	32.4	57	23.1	49	12.6	57	32.2	45	20.9
1924	47	30.5	55	49.0	65	51.1	49	38.3	52	41.7	54	43.1	56	20.2	49	8.9	54	**36.5**	42	30.6
1923	41	34.9	57	36.7	66	46.6	50	44.6	53	40.6	55	39.2	56	11.0	48	14.2	56	41.7	45	20.2
1922	49	34.1	57	42.5	67	50.6	51	43.3	54	44.7	56	29.3	55	25.7	49	10.3	58	32.3	46	25.0
1921	51	29.7	58	37.7	67	45.6	52	41.8	55	37.8	57	35.4	56	19.7	50	**17.8**	60	41.1	48	24.8
1920	47	40.5	55	48.4	64	46.8	49	53.2	**52**	58.2	54	46.2	55	18.3	48	13.2	56	31.5	45	24.7
1919	49	35.5	57	47.2	67	36.7	51	52.6	**54**	50.8	56	49.1	55	19.0	48	20.8	57	40.8	44	30.4
1918	48	30.1	56	37.5	65	31.3	50	44.9	**53**	36.9	55	37.7	56	20.8	48	15.2	57	35.9	45	30.2
1917	46	**28.7**	53	37.9	64	33.6	48	39.3	**50**	39.6	53	39.4	55	9.0	49	5.0	54	25.0	**40**	24.9
1916	47	33.9	55	36.0	66	42.5	49	40.1	**52**	36.7	54	32.3	55	28.1	49	16.4	56	41.8	43	24.5
1915	45	37.6	56	46.4	65	46.6	**51**	45.5	**53**	43.1	55	44.8	56	28.3	48	17.9	56	49.3	45	30.8
1914	47	29.8	55	36.4	64	44.3	49	43.8	**52**	38.5	54	39.1	56	24.0	49	17.3	57	35.6	45	24.6
1913	50	26.4	**58**	36.1	*66*	41.5	52	46.3	**55**	56.1	57	47.4	56	19.0	47	15.0	58	38.7	46	24.0
1912	47	32.1	55	45.1	65	51.3	50	44.8	**52**	44.2	54	47.0	**56**	15.6	47	10.3	54	44.6	43	21.2
1911	49	32.1	57	48.6	67	31.7	50	46.9	**53**	46.6	55	51.4	54	26.0	48	17.1	57	36.1	45	40.4

See footnotes at end of table.

Series J 248–267. Long-Record City Stations—Annual Mean Temperature and Annual Total Precipitation: 1780 to 1970—Con.

[Italicized figures are based on interpoiated monthly values]

Year	Albany, N.Y.		Baltimore, Md.		Charleston, S.C.		New Haven, Conn.		New York, N.Y.		Philadelphia, Pa.		San Francisco, Calif.		Sante Fe, N. Mex.		St. Louis, Mo.		St. Paul, Minn.	
	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean ernperature	Annual total precipitation	Annual mean emperature	Annual total precipitation	Annual mean ernperature	Annual total precipitation	Annual mean emperature	Annual total precipitation	Annual mean emperature	Annual total precipitation	Annual mean emperature	Annual total precipitation	Annual mean emperature	hnnual total precipitation
	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267
	°F.	Inches	°F.	Inches	°F.	Inches	"F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches	°F.	Inches
1910	48	28.5	56	35.0	64	39.7	50	39.8	53	32.7	55	39.6	54	12.4	50	8.6	55	37.3	46	10.2
1909	48	28.0	56	34.7	65	38.7	50	43.7	53	39.9	55	37.4	54	31.4	47	12.3	56	47.5	44	31.8
1908	49	28.4	56	35.4	66	31.4	51	43.3	55	39.4	56	38.1	54	16.4	48	12.8	57	34.2	46	31.6
1907	47	33.6	54	49.1	66	31.7	48	46.2	52	43.8	53	48.7	55	22.5	49	15.2	55	41.4	42	23.1
1906	48	32.5	56	46.8	65	43.6	50	51.3	54	39.4	55	51.9	55	26.3	48	16.6	55	35.5	45	33.2
1905	47	27.0	55	46.6	65	34.8	49	43.3	53	35.5	54	41.6	55	16.2	47	17.2	55	38.5	44	30.8
1904	45	31.3	53	36.1	64	37.9	47	41.7	50	39.5	52	39.8	55	24.7	49	14.2	54	33.7	43	34.1
1903	48	34.1	55	46.3	64	42.9	49	41.2	52	55.5	54	41.5	54	18.3	48	9.8	56	33.8	44	37.9
1902	48	37.5	55	50.1	65	37.2	49	44.3	53	50.3	54	49.8	54	19.2	50	13.4	56	38.4	45	31.8
1901	48	40.5	54	43.0	64	32.7	49	52.6	52	47.0	54	45.5	54	19.8	50	17.4	57	24.8	46	25.8
1900	50	30.6	57	31.6	66	38.1	51	34.8	54	39.4	56	40.9	55	15.3	50	15.9	53	29.5	46	34.2
1899	49	28.9	55	40.6	66	44.3	49	35.3	53	36.8	54	40.0	54	23.2	49	10.0	56	34.6	44	27.5
1898	50	38.8	56	36.5	66	[2] 46.4	50	53.7	54	46.2	56	49.2	54	9.3	48	13.0	57	49.2	45	25.3
1897	49	40.8	55	47.5	66	50.6	49	57.9	53	42.4	55	42.0	54	16.4	48	20.4	57	40.2	44	30.5
1896	48	27.9	56	38.6	66	47.8	49	38.4	53	40.1	54	32.2	55	28.2	50	14.3	58	37.6	44	34.7
1895	48	29.8	54	40.5	64	55.2	49	36.0	52	33.7	54	31.0	55	17.1	47	20.2	65	31.2	44	24.3
1894	49	35.1	56	38.3	66	56.8	50	37.7	52	39.3	55	40.3	54	24.3	49	13.3	57	27.4	46	25.8
1893	47	35.4	54	32.2	65	71.0	48	46.7	50	46.6	53	37.6	53	17.9	49	14.9	55	39.3	41	26.0
1892	43	34.8	54	45.0	64	53.3	49	37.8	52	34.1	54	34.8	55	22.1	49	11.6	55	41.6	43	32.6
1891	49	41.7	56	54.2	65	45.5	50	44.7	54	37.6	55	38.2	56	21.1	47	16.8	56	30.5	44	21.8
1890	48	44.9	57	47.0	67	47.8	49	49.0	52	43.7	55	34.0	55	25.4	50	12.9	56	37.7	44	23.4
1889	50	39.5	56	62.4	65	52.2	50	59.8	52	54.4	55	50.6	57	36.9	50	7.9	56	33.2	45	17.0
1888	46	44.7	54	43.5	65	49.5	47	60.3	49	51.0	53	44.1	56	23.0	50	12.0	54	41.2	41	25.9
1887	48	39.7	55	43.6	65	44.7	49	44.1	51	41.7	54	42.2	55	19.0	50	13.4	58	35.3	42	25.8
1886	46	34.0	54	52.1	64	35.9	48	42.3	51	38.3	54	37.2	56	20.0	48	15.9	53	44.3	43	22.9
1885	44	34.4	54	46.0	64	[2] 67.9	47	38.3	51	33.5	52	33.4	56	24.9	48	14.9	55	45.6	42	25.3
1884	48	38.9	56	45.9	66	60.2	49	49.3	52	49.7	54	39.3	55	38.8	------	*19.7*	56	40.6	44	26.1
1883	48	39.4	55	40.5	66	[2] 51.3	48	39.5	50	34.4	54	39.2	54	15.4	------	*14.8*	54	40.1	41	26.7
1882	50	33.8	56	42.1	67	67.0	49	47.9	52	43.0	55	45.6	54	13.7	49	11.4	56	43.2	46	23.1
1881	50	36.3	57	49.1	66	243.2	50	51.3	52	35.0	54	30.2	55	23.7	49	*22.2*	56	37.4	45	39.2
1880	49	32.5	56	41.9	67	46.7	52	46.5	53	34.7	55	33.6	54	30.1	46	9.9	55	34.7	44	29.8
1879	46	38.7	55	36.0	66	50.3	51	55.5	52	37.1	54	36.8	56	30.8	51	11.4	56	25.7	46	32.4
1878	49	49.4	57	50.1	66	77.4	53	58.1	53	46.0	55	34.5	56	33.3	48	19.6	58	40.8	48	22.8
1877	48	36.1	56	43.1	66	78.1	52	51.4	52	38.7	54	37.3	57	11.9	48	13.2	57	41.4	47	28.8
1876	47	38.2	54	46.7	65	78.4	51	54.1	52	40.6	53	47.4	56	23.5	48	15.1	56	48.5	42	23.7
1875	44	38.2	53	45.3	64	51.0	48	43.5	49	38.6	50	40.2	55	22.6	49	19.0	53	43.0	39	30.7
1874	47	37.9	55	33.6	65	62.5	49	55.8	51	44.2	53	46.2	55	22.5	49	19.9	57	37.9	44	35.5
1873	50	39.4	55	49.4	64	62.2	48	57.3	51	45.5	52	55.3	55	18.6	50	9.7	54	45.5	42	33.7
1872	*50*	39.1	56	34.8	64	57.1	48	------	51	40.3	52	48.4	56	22.4	48	9.9	54	30.5	42	29.8
1871	*50*	56.8	56	32.7	66	[2] 63.4	48	------	51	49.2	55	47.3	------	27.5	56	[2] 11.2	58	23.4	44	30.6
1870	50	55.8	58	22.4	66	48.3	49	------	53	37.8	57	44.1	------	16.2	53	13.9	56	27.1	46	30.5
1869	47	44.2	56	27.3	67	43.1	47	------	52	43.6	55	48.9	------	22.6	48	12.1	54	47.0	42	31.8
1868	46	41.9	55	32.6	66	61.1	47	------	50	57.4	53	51.4	54	30.2	49	3.9	54	45.6	42	31.0
1867	47	38.0	56	32.9	66	61.1	48	45.4	51	53.4	54	61.2	------	230.6	------	*7.8*	55	37.8	40	33.3
1866	47	34.3	56	27.5	67	36.3	48	47.0	52	38.3	54	45.3	54	36.3	------	*11.5*	55	43.2	40	27.5
1865	43	36.4	58	33.2	67	57.2	49	41.9	54	45.0	56	56.3	54	14.1	49	23.2	56	46.9	44	38.0
1864	48	27.9	57	23.0	67	57.2	50	------	53	39.5	55	46.0	56	21.6	50	21.8	55	37.6	43	15.5
1863	46	43.2	54	43.0	66	33.1	50	------	52	43.4	55	49.2	54	15.1	51	7.8	54	40.4	43	15.8
1862	46	37.8	54	35.5	67	52.3	50	------	52	46.8	54	45.0	55	38.5	------	*11.3*	56	44.0	41	28.2
1861	50	36.0	55	43.6	66	44.5	50	------	53	37.2	55	46.3	56	25.5	52	*15.8*	57	38.0	42	30.1
1860	48	32.2	54	37.5	68	44.4	49	------	52	31.1	54	44.2	------	21.2	51	8.8	56	29.8	43	29.3
1859	51	32.0	56	55.6	66	50.2	48	------	52	59.7	54	58.1	55	21.4	48	9.5	54	61.4	41	29.4
1858	------	34.0	57	46.1	66	48.1	48	------	51	36.7	54	39.8	56	23.5	49	11.4	56	68.8	44	27.6
1857	47	41.9	55	38.4	65	38.1	48	------	50	38.7	53	48.3	51	21.0	50	8.5	53	39.0	42	32.1
1856	47	39.1	54	22.9	64	49.1	47	------	50	35.0	52	34.0		22.3	50	23.1	52	42.6	43	22.6
1855	50	42.5	57	29.3	66	34.8	49	------	51	43.2	54	44.1	------	26.4	51	24.2	54	50.4	44	24.8
1854	49	34.1	57	59.2	66	37.6	49	------	51	43.5	55	40.2	56	22.4	50	24.8	57	40.6	45	26.6
1853	49	45.8	56	36.0	67	43.5	50		52	46.4	55	40.7	55	21.2	50	21.8	55	30.9	42	20.5
1852	48	32.0	55	51.5	66	49.7	49		51	35.3	53	45.8	------	27.3	------	*21.7*	55	47.0	44	15.1
1851	47	34.6	57	38.1	66	33.1	49		52	38.8	54	35.5	56	15.6	------	*13.2*	55	46.8	47	23.4

See footnotes at end of table.

Series J 248–267. Long-Record City Stations—Annual Mean Temperature and Annual Total Precipitation: 1780 to 1970—Con.

[Italicized figures are based on interpolated monthly values]

Year	Albany, N.Y.		Baltimore, Md.		Charleston, S.C.		New Haven, Conn.		New York, N.Y.		Philadelphia, Pa.		San Francisco, Calif.		Sante Fe, N. Mex.		St. Louis, Mo.		St. Paul, Minn.	
	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	bnnual mean temperature	Annual total precipitation	bnnual mean temperature	Annual total precipitation	Annual mean temperature	Annual total, precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total precipitation	Annual mean temperature	Annual total. precipitation	Annual mean temperature	Annual total precipitation
	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267
	oF.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*
1850	48	51.8	58	44.8	66	23.7	49	-------	51	44.6	54	54.6	-------	17.4	-------	*9.1*	55	50.5	44	25.5
1849	48	36.7	56	30.6	66	30.7	48	-------	50	30.1	53	42.1	-------	-------	52	-------	54	45.7	42	49.7
1848	50	48.2	51	34.4	65	43.4	49	-------	52	32.8	55	35.0	-------	-------	-------	-------	54	65.4	42	23.2
1847	49	41.4	56	33.0	65	47.8	49	-------	52	44.5	54	45.1	-------	-------	-------	-------	54	52.7	42	21.8
1846	50	39.8	55	40.7	65	44.3	50	-------	52	35.9	54	44.4	-------	-------	-------	-------	57	45.4	48	26.1
1845	50	39.4	55	28.4	64	46.4	50	-------	53	33.7	54	40.2	-------	-------	-------	-------	56	38.0	46	25.3
1844	48	35.0	54	32.5	66	36.4	50	-------	52	39.8	53	40.2	-------	-------	-------	-------	51	45.8	43	30.2
1843	47	48.4	54	48.8	64	54.7	47	-------	51	35.7	52	46.9	-------	-------	-------	-------	54	34.8	40	23.8
1842	48	46.0	55	35.1	66	42.1	50	-------	53	41.6	53	48.5	-------	-------	-------	-------	56	32.3	43	25.2
1841	48	38.0	53	43.9	66	53.9	50	-------	51	44.6	52	55.5	-------	-------	-------	-------	56	42.7	44	21.7
1840	49	44.4	54	37.5	67	46.1	49	-------	51	35.5	53	41.4	-------	-------	-------	-------	56	41.6	45	23.2
1839	48	38.1	56	51.1	67	53.0	49	-------	51	33.4	52	43.7	-------	-------	-------	-------	55	47.4	47	21.2
1838	47	42.0	54	47.1	67	58.9	48	-------	50	33.7	51	45.3	-------	-------	-------	-------	53	31.5	42	27.7
1837	46	41.2	54	45.0	67	[2] 56.4	46	-------	49	32.1	51	39.0	-------	-------	-------	-------	55	27.0	44	24.0
1836	45	44.6	52	54.6	66	40.9	45	-------	47	36.6	50	42.7	-------	-------	-------	-------	53	-------	43	-------
1835	46	40.5	54	34.1	67	49.0	47	-------	50	28.8	54	39.3	-------	-------	-------	-------	-------	-------	43	-------
1834	48	32.4	51	29.5	68	68.6	49	-------	51	33.6	55	34.2	-------	-------	-------	-------	-------	-------	47	-------
1833	48	41.8	57	41.3	66	48.4	48	-------	52	37.7	54	48.6	-------	-------	-------	-------	-------	-------	48	-------
1832	48	44.4	57	34.3	67	45.0	48	-------	52	39.2	54	39.5	-------	-------	-------	-------	-------	-------	46	-------
1831	49	39.6	65	37.4	66	-------	49	-------	52	38.8	54	43.9	-------	-------	-------	-------	-------	-------	43	-------
1830	51	41.8	58	39.0	70	-------	51	-------	55	43.3	55	45.1	-------	-------	-------	-------	-------	-------	48	-------
1829	48	38.1	55	52.3	66	-------	49	-------	52	45.8	53	41.9	-------	-------	-------	-------	-------	-------	46	-------
1828	51	37.7	68	33.0	71	-------	52	-------	54	43.9	56	38.0	-------	-------	-------	-------	-------	-------	46	-------
1827	49	49.8	58	32.1	61	-------	49	51.4	52	51.1	52	38.5	-------	-------	-------	-------	-------	-------	46	-------
1826	51	33.1	58	30.7	66	-------	50	-------	52	55.1	54	35.2	-------	-------	-------	-------	-------	-------	45	-------
1825	50	-------	58	26.2	67	-------	51	-------	54	-------	54	29.7	-------	-------	-------	-------	-------	-------	48	-------
1824	48	-------	57	42.3	67	-------	50	-------	52	-------	-------	49.9	-------	-------	-------	-------	-------	-------	43	-------
1823	47	-------	56	44.6	65	-------	48	-------	51	-------	-------	44.5	-------	-------	-------	-------	-------	-------	44	-------
1822	49	-------	59	29.2	-------	-------	50	-------	54	-------	-------	30.6	-------	-------	-------	-------	-------	-------	44	-------
1821	48	-------	56	50.2	-------	-------	48	44.6	-------	-------	-------	36.2	-------	-------	-------	-------	-------	-------	43	-------
1820	49	-------	65	42.5	-------	-------	48	46.2	-------	-------	-------	49.4	-------	-------	-------	-------	-------	-------	43	-------
1819	-------	-------	51	28.8	-------	-------	49	33.9	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1818	-------	-------	55	32.6	-------	-------	47	38.0	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1817	-------	-------	55	49.0	-------	-------	46	43.4	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1816	-------	-------	-------	-------	-------	-------	47	38.0	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Year	Albany, N.Y., annual mean temperature	Charleston, S.C., annual total precipitation	New Haven, Conn.	
			Annual mean temperature	Annual total, precipitation
	248	253	254	255
	°F.	*Inches*	°F.	*Inches*
1815	-------	-------	47	50.6
1814	50	-------	49	56.1
1813	48	-------	49	53.4
1812	-------	-------	47	44.2
1811	-------	49.8	50	41.1
1810	-------	45.4	50	239.4
1809	-------	66.0	49	44.6
1808	-------	40.8	50	49.4
1807	-------	42.2	49	45.3
1806	-------	-------	50	38.6
1805	-------	-------	52	40.8
1804	-------	-------	50	43.3
1803	-------	-------	51	-------
1802	-------	-------	51	-------
1801	-------	-------	51	-------
1800	-------	-------	50	-------
1799	-------	-------	48	-------
1798	-------	-------	49	-------

Year	Albany, N.Y., annual mean temperature	New Haven, Conn., annual mean temperature
	248	254
	°F.	°F.
1797	-------	48
1796	47	48
1795	50	-------
1794	-------	50
1793	-------	50
1792	-------	48
1791	-------	50
1790	-------	50
1789	-------	60
1788	-------	50
1787	-------	48
1786	-------	48
1785	-------	48
1784	-------	47
1783	-------	48
1782	-------	49
1781	-------	50
1780	-------	50

[1] St. Louis City closed June 1968; data are for Gateway Arch.

[2] Value ected for typographical errors in World *Weather Record.*

Series J 268–278. Tornadoes, Floods, and Tropical Cyclones: 1886 to 1970

Year	Tornadoes						Floods		North Atlantic tropical cyclones (including hurricanes)		
	Number	Number of tornado days	Lives lost		Property loss		Lives lost	Property loss ($1,000)	Reaching U. S. coast		Lives lost in United States
			Total	Most in a single tornado	$50,000 to $500,000	$500,000 and over			Total	Hurricanes only	
	268	269	270	271	272	273	274	275	276	277	278
1970	648	171	73	26	97	30	135	225,453	4	1	11
1969	604	155	66	32	98	19	297	902,654	3	2	256
1968	661	171	131	34	82	32	31	339,399	3	2	9
1967	912	173	116	33	125	41	34	375,218	2	2	18
1966	57c	150	99	58	79	17	31	117,004	2	2	54
1965	899	181	298	44	126	41	119	788,046	2	1	75
1964	713	156	73	22	118	22	100	651,642	6	4	49
1963	461	141	81	5	77	16	39	177,946	1	1	11
1962	658	152	28	17	51	10	19	75,237	1		4
1961	682	169	51	16	103	22	52	154,033	3	2	46
1960	618	172	47	16	65	12	32	92,976	5	2	65
1959	589	156	58	21	70	5	25	141,255	7	3	24
1958	565	166	66	19	70	9	47	218,255	1		2
1957	864	154	191	44	129	29	82	360,303	5	1	395
1956	532	155	83	25	83	25	42	64,688	2	1	21
1955	593	153	125	80	74	14	302	995,491	5	3	218
1954	549	159	35	6	63	9	55	106,842	4	3	193
1953	437	136	516	116	63	25	40	122,204	6	2	2
1952	236	98	230	57	53	19	54	254,064	2	1	3
1951	272	113	34	6	35	13	51	1,028,741	1		
1950	199	88	70	18	47	9	93	176,050	4	3	19
1949	249	80	212	58	54	13	48	93,931	3	2	4
1948	183	68	140	33	62	13	82	229,959	4	3	3
1947	165	78	318	169	46	8	55	272,328	7	3	53
1946	106	65	78	15	29	7	28	70,813	4	1	
1945	121	66	210	69	21	11	91	165,798	5	3	7
1944	169	68	275	100	50	9	33	101,079	4	3	64
1943	152	61	58	5	28	8	107	199,732	4	1	16
1942	167	66	384	65	42	to	68	98,507	3	2	8
1941	118	57	53	25	24	1	47	39,524	4	2	10
1940	124	62	65	18	18	2	60	40,467	3	2	51
1939	152	75	87	27	21	3	83	13,834	3	1	8
1938	213	76	133	32	29	6	180	101,098	4	2	600
1937	147	75	29	5	24		142	440,733	4		
1936	151	71	552	216	17	6	142	282,549	7	3	9
1935	180	77	70	11	29		286	127,127	2	2	414
1934	147	77	47	6	10	3	88	10,362	5	3	17
1933	258	96	362	34	46	9	33	36,679	7	5	63
1932	151	67	394	37	23	2	11	10,295	5	2	
1931	94	57	36	6	14	1		2,808	2		
1930	192	72	179	41	38	6	14	15,850	1		
1929	197	74	274	40	48	4	89	68,098	2	2	3
1928	203	79	92	14	40	7	15	44,611	3	2	1,836
1927	163	62	540	92	42	10	423	347,656	1		
1926	111	57	144	23	28		16	23,468	4	4	269
1925	119	65	794	689	34	3	36	9,923	2	1	6
1924	130	57	376	85	26	12			3	2	2
1923	102	59	109	23	21	1			4	2	
1922	108	64	135	16	27	5			1		
1921	105	55	202	61	22	3			2	2	5
1920	87	50	498	87	14	10			3	2	2
1919	64	35	206	59	10	2			2	1	287
1918	81	45	135	36	20	5			2	1	34
1917	121	38	509	101	21	9			1	1	5
1916	90	36	150	30	7	1			8	6	107
1915									4	3	600
1914									1		[1]
1913									8	2	[1]
1912									4	2	
1911									2	2	
1910									2	2	18
1909									7	3	404
1908									2	1	[1]
1907									3		[1]
1906									6	4	285
1905									2		[1]
1904									3	2	[1]
1903									2	2	9
1902									3	1	[1]
1901									6	2	10
1900									3	1	
1899									4	3	
1898									6	3	
1897									4	1	
1896									4	4	
1895									4	1	
1894									3	2	
1893									7	6	
1892									3		
1891									4	2	
1890											
1889									4	2	
1888									6	3	
1887									4	3	
1886									7	6	

[1] Not reported, believed to be small number.