Land, Water, and Climate

LAND AND WATER UTILIZATION (Series J 1–108)

J 1–2. Territorial expansion of the United States, 1790–1947.

Source: Bureau of the Census, reports and records.

Boundaries of territories listed under continental United States were indefinite, at least in part, at 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 1940.

"All other" (38 square miles) includes the following islands with gross areas as indicated: Midway (2), Wake (3), 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, Rakahanga, Starbuck, Vostok, Phoenix Group (except Canton and Enderbury), and Union (Tokelau) Group, not enumerated in decennial censuses.

J 3–5. Acquisition of the territory of the United States, 1783–1853.

Source: Department of the Interior, *Areas of Acquisitions to the Territory of the United States*, 1922.

All areas are given as computed in 1912 by a Federal Government committee representing the General Land Office, the Geological Survey, Bureau of Statistics, and the Bureau of the Census. Figures for 1957 have been adjusted for the new area measurements for the United States which were made for the 1940 Decennial Census. For the revised figures in square miles, see series J 1–2.

Recognition of its sovereignty over its present continental land area of 2,977,128 square miles, or about 1,905 million acres (as recomputed for the 1940 Decennial Census), was acquired by the Federal Government through a series of international agreements and treaties. The United States, however, did not gain title to all of these lands by such agreements. At the time of acquisition of sovereignty over the areas involved, title to about 463 million acres rested in individual States and their political subdivisions or in private owners, which title was not relinquished to the United States. Title to the remaining 1,442 million acres passed to the Federal Government during the period from 1781 to 1853.

J 6–8. Acquisition of the original public domain, 1781–1853.

Source: See source for series J 3–5.

For area by States, see Bureau of Land Management, *Annual Report of the Director*, Statistical Appendix, 1957.

By acts of cession, during the period 1781–1802, 7 of the original 13 States relinquished to the Federal Government for the common good their claims to the "western lands," roughly 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. Title to the remaining area west of the Mississippi River (except the State of Texas) and to Florida passed to the Federal Government as sovereign at the time of their addition to the Nation during the period 1803–1853. For detailed information, see E. M. Douglas, *Boundaries, Areas, Geographic Centers and Altitudes of the United States and the Several States . . .*, Geological Survey Bulletin No. 817, 1939 edition, and B. H. Hibbard, *History of the Public Land Policies*, Macmillan Co., New York, 1924.

With the exception of land in the District of Columbia, the total of 1,442 million acres of land area (see series J 7), title to which became vested in the Government, is known as the *original public domain*. 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 the public domain, the Federal Government has from time to time acquired by purchase, condemnation, and gift, tracts of land needed for various public purposes, such as sites for public buildings, defense installations, and natural-resource conservation activities. Such lands are often referred to as *acquired lands*, to distinguish them from public-domain lands. Complete statistics are not available as to the extent of such acquisitions.

J 9. Estimated area of the public domain, 1802–1957.

Source: 1802–1956, Bureau of Land Management; 1957, General Services Administration, *Inventory Report*, 1957.

For definition of public domain, see text for series J 6–8.

J 10–18. General note.

For definition of public-domain lands and acquired lands, see text for series J 6–8. 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. Under these laws, approximately 285 million acres have been patented to homesteaders, 225 million acres have been granted to States for various public purposes, 90 million acres have been granted to railroad corporations to aid in financing the construction of railroads, and about 430 million acres have been sold or otherwise disposed of. Disposals have reduced the original public domain to its present area of about 410 million acres (see series J 9). Special laws provide for the disposal of surplus *acquired lands*, as, for example, the Surplus Property Act of 1944.

J 10. Vacant public lands, 1904–1957.

Source: Bureau of Land Management (formerly the General Land Office), *Annual Report of the Director*, various issues, and records.

Data are estimates as of June 30 of each year; they do not include public lands in Alaska.

The vacant public lands of the United States are public-domain lands (see text for series J 6–8) 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-way, 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 13–15) 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).

J 11. Cash receipts of the Bureau of Land Management, 1881–1957.

Source: Bureau of Land Management, *Annual Report of the Commissioner of the General Land Office*, 1946, Statistical Appendix, pp. 120–121, and thereafter, annual reports of the Bureau of Land Management.

Figures are for fiscal years and include receipts from such sources as: Sales of public and ceded Indian lands; fees and commissions; mineral rentals, royalties, and bonuses; sales of timber; grazing fees and rentals; and land rentals. These data represent the total receipts of the General Land Office and Bureau of Land Management covered into the Treasury for 1881–1957 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.

For receipts from sales of public lands as reported by the Treasury Department, see series Y 263. The data representing receipts from sales of public lands which are included here, however, are not identical to those shown for series Y 263, since the General Land Office reports of receipts from sales did not cover the same period as the Treasury reports.

J 12. Land granted by the United States to the several States, 1802–1938.

Source: Bureau of Land Management, *Annual Report of the Commissioner of the General Land Office*, 1946, Statistical Appendix, pp. 108–119.

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

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 44–48), many of these grants were satisfied through delivery of evidence of legal title throughout the years.

J 13–15. Original entries and selections, final entries, and patents and certifications, 1869–1957.

Source: 1869–1919, Department of Commerce, *Statistical Abstract of the United States*, various issues, 1879–1919 (data for 1903–1908 are revised as shown in the *Statistical Abstract*, 1909); 1920–1957, Bureau of Land Management, *Annual Report of the Director*, 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 13.

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 14 (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.

J 16–18. Homestead entries, except on ceded Indian lands, 1863–1957.

Source: Series J 16, 1863–1883, Thomas Donaldson, *The Public Domain*, Government Printing Office, 1884, pp. 351–355; 1884–1957, Bureau of Land Management, *Annual Report of the Director*, various issues. Series J 17, Department of Commerce, *Statistical Abstract of the United States*, 1889–1957, various issues. Series J 18, 1868–1928, *Statistical Abstract*, 1929, p. 130; 1929–1957, *Statistical Abstract*, various issues.

For definitions of the terms *original entries* and *final entries*, see text for series J 13–15.

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 18) 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 19–24. Revenues from public-domain, revested, and acquired land, 1785–1956.

Source: 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.

The 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. Data for 1881–1956 are from annual reports of the Bureau of Land Management.

These are gross cash revenues, from which certain payments were made to States.

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.

J 25–31. Receipts from timber sales and grazing fees and use from public-domain lands, 1935–1956.

Source: See source for series J 19–24, appendix tables 12 and 14.

Data were compiled from annual reports of the Bureau of Land Management (formerly General Land Office and Grazing Service). Value of timber sold (series J 25) is the sum of amounts involved in timber sale contracts concluded during the fiscal year; actual cash receipts and volume of timber cut on each contract are spread over several months, often for 2 years or more, after the contract is signed. Data are for fiscal years; grazing receipts are credited to the year received even though part of the period covered extends into the following year.

An animal-unit-month represents the forage required to maintain 5 sheep or goats or ½ horse or 1 cow for a month. Data on grazing exclude grazing on reclamation land, land utilization projects where not part of a grazing district, O & C lands (see text for series J 19–24 for definition of O & C lands), and Alaskan grazing; include lands rented and sublet under the Pierce Act (43 USC 315M). Amount of grazing in districts (series J 29–31) includes free-use, crossing, and trailing permits in addition to regular paid use.

J 32–40. Oil and gas leases of public-domain lands—acreage, receipts, and output, 1920–1957.

Source: 1920–1955, see source for series J 19–24, appendix table 15; 1956 and 1957, records of Bureau of Land Management and the Geological Survey.

Original data for 1920–1955 are from annual reports of the Bureau of Land Management (formerly General Land Office) and the Geological Survey.

J 41–42. Livestock permitted to graze in National forests, 1905–1956.

Source: See source for series J 19–24.

Original data were obtained from Forest Service, annual reports and records.

Data are for the number of animals under paid permit, not necessarily the actual number grazed.

J 43. Public land sales, 1800–1860.

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

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. After 1850, Hibbard's data shifts from calendar years to fiscal years ending June 30.

J 44–48. Public land grants by United States to aid in construction of railroads, wagon roads, canals, etc., 1823–1871.

Source: Bureau of Land Management, *Annual Report of the Commissioner of the General Land Office*, 1946, 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 49–79. General note.

Area measurements in the United States 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. For total figures (gross, land, and water) in square miles, 1790–1950, see series A 17–19. In 1940, a remeasurement of the United States was made for the Sixteenth Census of the United States. The last previous measurement was that for the Census of 1880. Differences between the two measurements are due primarily to the more accurate determination of the outer limits of the United States, the improvement in mapping, and omission of certain bodies of water included in the previous measurements. See Bureau of the Census, *Areas of the United States, 1940*, Sixteenth Census of the United States, 1942, pp. 1–5.

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 (e.g., acreage of forest land by the Forest Service, public-domain lands by the Department of the Interior) 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 former Bureau of Agricultural Economics and the Agricultural Research Service have prepared periodic inventories of land use.

Data on the utilization of farmland for 1850–1925 are chiefly estimates made by the former Bureau of Agricultural Economics based on the Census of Agriculture conducted by the Bureau of the Census. The estimates for 1930–1954 are from the Census of Agriculture, except for an adjustment made by the Agricultural Research Service in cropland harvested and other land in farms for 1950 and 1954. This adjustment was made to compensate for some of the underenumeration of cropland indicated by the postenumeration surveys conducted by the Bureau of the Census and to obtain greater conformity with the total acreage of crops harvested as reported by the Agricultural Marketing Service.

Acreages of nonfarm uses of land were estimated by the former Bureau of Agricultural Economics and the Agricultural Research Service 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 1850–1954 represent in part increased agricultural activity and in part more complete census enumeration and changes in census definition of *land in farms*. Uses not reported by the Bureau of the Census and additions to census data for 1925–1954 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 49. Total land area, 1850–1954.

Source: Department of Agriculture, *Major Uses of Land in the United States: Summary for 1954*, Agriculture Information Bulletin No. 168, 1957, pp. 36 and 37.

See also *1940 Census of Agriculture*, vol. III, p. 33, for additional detail for 1850–1940. For total land area for 1950 and 1954, see *U. S. Census of Agriculture: 1950*, vol. II, p. 64, and *U.S. Census of Agriculture: 1954*, vol. II, p. 60.

Total land area, as defined by the Census for the 1940 remeasurement 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." The total land area reported by the Bureau of the Census for 1950 and 1954 is less than that reported for 1940 mainly because of the completion of additional reservoirs.

J 50–64. Land utilization, by type, 1850–1954.

Source: Department of Agriculture, *Major Uses of Land in the United States: Summary for 1954*, Agriculture Information Bulletin No. 168, 1957, pp. 36 and 37. (Data for series J 56–57 and J 61–62 for 1900 from records of Agricultural Research Service.)

These data are based on estimates from the following sources: Bureau of the Census, *U.S. Census of Agriculture: 1954*, vol. II, pp. 8 and 9; Department of Agriculture publications, as follows: *Pasture Land on Farms in the United States*, Bulletin No. 626, 1918; *Agriculture Yearbook, 1923*, 1924, pp. 415–506; *Inventory of Major Land Uses, United States, 1945*, Miscellaneous Publication 663, 1948; *Major Uses of Land in the United States*, Technical Bulletin No. 1082, and Supplement, *Basic Land Use Statistics, 1950;* and National Resources Board, *A Report on National Planning and Public Works. . .*, 1934, pp. 108–113.

Cropland used for crops includes cropland harvested, crop failure, and cultivated summer fallow. *Cropland idle or in cover crops* includes idle land left unplanted for a year or two only, 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 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. *Other land in farms* includes farmsteads, roads, lanes, wasteland, and so on.

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. *Other nonfarm land* includes urban, industrial, and residential areas outside farms; parks and wildlife refuges; military lands; roads; railroads; ungrazed desert, rock, swamp, and other unused wasteland.

J 65–79. Private and public land ownership, by major uses, 1920–1954.

Source: 1920, Bureau of Agricultural Economics and Agricultural Research Service, records; 1930–1954, see source for series J 50–64, pp. 90–92.

See also Department of Agriculture, *Federal and State Rural Lands, 1950, with Special Reference to Grazing*, Circular No. 909, 1952. For definitions and for longer series on total land area, see text for series J 49 and J 50–64.

The figures were compiled from a number of Federal and State reports and records and varying degrees of reliability attach to them. 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 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. These lands are subject to eventual private individual ownership by the Indians.

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.

J 80–90. Land drainage and irrigation, 1890–1954.

Source: Series J 80, Bureau of the Census, *Drainage of Agricultural Lands*, 1950, p. 2; series J 81–83, *Drainage of Agricultural Lands*, 1940, p. 1; series J 84–86, 1890–1950, *Irrigation of Agricultural Lands*, 1950, vol. III, pp. 34–37, 1954, Bureau of the Census, records; series J 87–90, *Irrigation of Agricultural Lands*, 1940 and 1950, and *U.S. Census of Agriculture: 1954*, vol. II, p. 9.

The date of each drainage census was January 1 of the census year. The data on condition and use of the land refer to the year preceding the date of the census. The number of States covered has varied from census to census. The New England States and West Virginia have never been included. The 1920 Census also excluded the Middle Atlantic States, Alabama, Delaware, Maryland, and Virginia. This was also true for 1930 except that Virginia was included. In addition, New Jersey, New York, and Pennsylvania were omitted in 1940 and Pennsylvania in 1950.

The Bureau of the Census has collected irrigation statistics by means of two censuses: (1) The Censuses of Agriculture, which have provided irrigation statistics since 1890 and represent a direct enumeration of farmers; and (2) the Special Censuses of Irrigation Enterprises, taken decennially since 1910, which collect information from irrigation enterprises and cover only the States where irrigation is very extensive. In addition, a special census of irrigation was taken in 1902 and the statistics were published in 1904 in *Bulletin 16* of the Census Bureau.

For reasons of comparability with the acreage series on cropland and pasture shown here, the irrigation data presented here are from the Censuses of Agriculture.

The States included for series J 86–88 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 89–90, the States included 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.

Although both types of reclamation are important, drainage development overshadows irrigation in acreage of land already converted to farming and in land that still may be developed. Drainage developments are concentrated mainly in the humid areas of the Eastern and Central States, whereas irrigation developments are located predominantly in the arid and semiarid areas of the West. However, in irrigated areas, drainage also must be provided to carry away any water not required by crops.

J 91–102. Water use, 1900–1955.

Source: Business and Defense Services Administration, *Water Use in the United States, 1900–1975*, July 1959. (The source also contains a detailed bibliography on water utilization.)

The figures are based on nationwide estimates of water uses as developed by various agencies whose primary interest lies within this field. The estimates shown here are considered conservative and are subject to revision as new information permits readjustment in the several categories of water use.

Public water supplies (series J 95 and J 96) include those basic systems furnishing water for domestic, commercial, and industrial purposes within their area of distribution. Self-supplied use applies to all water uses which are individually provided, and without assistance from a publicly owned supply. Domestic use (series J 97 and J 98) includes all water used primarily for household purposes, the watering of livestock, the irrigation of gardens, lawns, shrubbery, etc., surrounding a house or domicile. Industrial and miscellaneous use (series J 99 and J 100) includes manufacturing industries, mineral industries, air conditioning, resorts, motels, rural, commercial, military, and other miscellaneous uses not elsewhere included, all self-supplied. Steam electric power use (series J 101 and J 102) applies to all water used in the production of steam for the generation of electric energy. The increase in industrial production, accompanied by increasing mechanization and automation, has rapidly increased consumption of electric power, the major portion of which is produced by steam generation.

J 103–108. Water wells in use, 1900–1955.

Source: Business and Defense Services Administration, records. (Estimates 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.

Although the trend appears to be upward in all segments of the water well industry, the extent of increase cannot be firmly measured on a region-to-region basis. 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 of the United States: 1790 to 1947

Accession	Date	Gross area (land and water)	Accession	Date	Gross area (land and water)
	1	2		1	2
		Sq. mi.			*Sq. mi.*
Total		**3,628,130**	Alaska	1867	586,400
			Hawaii	1898	6,423
Continental United States		3,022,387	Puerto Rico	1899	3,435
Territory in 1790 [1]		888,811			
Louisiana Purchase	1803	827,192	Other areas:		
By treaty with Spain:			The Philippines	1898	[2] 115,600
Florida	1819	58,560	Guam	1899	206
Other areas	1819	13,443	American Samoa	1900	76
			Canal Zone [3]	1904	553
Texas	1845	390,144	Corn Islands [4]	1914	4
Oregon	1846	285,580	Virgin Islands of the U. S.	1917	133
Mexican Cession	1848	529,017	Trust Territory of the Pacific Islands [5]	1947	8,475
Gadsden Purchase	1853	29,640	All other		38

[1] Includes that part of drainage basin of Red River of the North, south of 49th parallel, sometimes considered part of Louisiana Purchase.
[2] Not included in total. Ceded by Spain in 1898, the Philippines constituted a territorial possession of the United States until 1946. Granted independence July 4, 1946.
[3] Under jurisdiction of United States in accordance with treaty of Nov. 18, 1903, with Republic of Panama.
[4] Leased (1914) from Republic of Nicaragua for 99 years.
[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.

Series J 3–9. Acquisition and Extent of Territory and Public Domain, Continental United States: 1781 to 1957

[Areas are as computed in 1912, hence do not agree with total figures (in square miles) shown in series J 2, or with figures (in acres) shown for 1940 and 1945 in series J 49 and J 65]

Year and how acquired	Acquisition of the territory of the United States			Acquisition of the original public domain			Estimated area of the public domain [1] (selected years)
	Total area	Land area	Water area	Total area	Land area	Water area	
	3	4	5	6	7	8	9
	Acres	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*	*Acres*
Aggregate	**1,934,327,680**	**1,903,824,640**	**30,503,040**	**1,462,466,560**	**1,442,200,320**	**20,266,240**	
1957, estimate of public domain							[2] *410,000,000*
1956, estimate of public domain							[2] *411,000,000*
1950, estimate of public domain							[2] *412,000,000*
1946, estimate of public domain							[2] *413,000,000*
1912, estimate of public domain							*600,000,000*
1880, estimate of public domain							*900,000,000*
1853, Gadsden Purchase	18,988,800	18,961,920	26,880	18,988,800	18,961,920	26,880	
1850, estimate of public domain							*1,200,000,000*
1850, Purchase from Texas				78,926,720	78,842,880	83,840	
1848, Mexican Cession [3]	338,680,960	334,479,360	4,201,600	338,680,960	334,479,360	4,201,600	
1846, Oregon Compromise	183,386,240	180,644,480	2,741,760	183,386,240	180,644,480	2,741,760	
1845, Annexation of Texas [3]	249,066,240	246,777,600	2,288,640				
1819, Cession from Spain	46,144,640	43,342,720	2,801,920	46,144,640	43,342,720	[4] 2,801,920	
Red River Basin [5]	29,601,920	29,066,880	535,040	29,601,920	29,066,880	535,040	
1803, Louisiana Purchase [3]	529,911,680	523,446,400	6,465,280	529,911,680	523,446,400	6,465,280	
1802, estimate of public domain							*200,000,000*
1783, Treaty with Great Britain	541,364,480	526,570,240	14,794,240				
1781–1802 (State Cessions)				236,825,600	233,415,680	3,409,920	

[1] Estimated from imperfect data available for indicated years.
[2] Includes Indian Trust properties.
[3] Data for Louisiana Purchase exclude area eliminated by the Treaty of 1819 with Spain. Such areas are included in figures for annexation of Texas and the Mexican Cession.
[4] Includes 33,920 acres subsequently recognized as part of the State of Texas which is not a public-domain State.
[5] Represents drainage basin of the Red River of the North, south of the 49th parallel. Authorities differ as to the method and exact date of its acquisition. Some hold it as a part of the Louisiana Purchase, others maintain it was acquired from Great Britain.

Series J 10–18. Vacant Lands, and Disposal of Public Lands: 1802 to 1957

[For Treasury receipts from sale of public land, see series Y 263]

Year	Vacant public lands	Cash receipts of Bureau of Land Management	Land granted to States, as of June 30, 1946 [1]	All entries, selections, patents, etc. [2]			Homestead entries, except on ceded Indian lands		
				All original entries and selections [3]	All final entries	Patents and certifications	Original entries		Final entries [4]
							Number	Acreage	
	10	11	12	13	14	15	16	17	18
	Million acres	*1,000 dollars*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Number*	*1,000 acres*	*1,000 acres*
1957	169	112,059		180	279	561	662	79	64
1956	170	212,217		151	267	629	455	57	40
1955	170	239,549		251	250	539	482	60	37
1954	171	77,487		306	239	416	474	60	43
1953	171	66,846		310	177	364	482	61	39
1952	172	64,518		113	165	374	458	59	38
1951	174	49,082		121	198	388	363	49	63
1950	170	36,177		142	150	492	523	73	46
1949	170	37,149		134	116	390	681	82	37
1948	171	33,286		117	56	287	635	78	18
1947	170	21,012		76	53	403	474	55	26
1946	170	13,840		27	61	154	143	18	29
1945	170	14,147		40	61	217	182	22	35
1944	168	15,169		91	85	402	157	20	51
1943	169	10,543		63	168	637	211	29	102
1942	174	9,914		135	252	1,055	283	37	188
1941	172	8,655		76	491	1,039	400	51	390

See footnotes at end of table.

Series J 10–18. Vacant Lands, and Disposal of Public Lands: 1802 to 1957—Con.

Year	Vacant public lands	Cash receipts of Bureau of Land Management	Land granted to States, as of June 30, 1946 [1]	All entries, selections, patents, etc. [2]			Homestead entries, except on ceded Indian lands			Year	Land granted to States, as of June 30, 1946 [1]	Homestead entries except on ceded Indian lands
				All original entries and selections [3]	All final entries	Patents and certifications	Original entries		Final entries [4]			
							Number	Acreage				
	10	11	12	13	14	15	16	17	18		12	16
	Million acres	*1,000 dollars*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*1,000 acres*	*Number*	*1,000 acres*	*1,000 acres*		*1,000 acres*	*Number*
1940	[5]	7,520	----------	54	756	1,904	349	46	652	1867	4	16,957
1939	[5]	7,804	----------	302	1,198	1,982	378	66	1,089	1866	226	15,355
1938	[5]	8,430	2	131	1,478	1,944	447	78	1,362			
1937	[5]	7,375	1	125	2,026	2,184	561	111	1,915	1865	----------	8,924
1936	[5]	5,194	200	426	1,938	1,359	1,209	357	1,765	1864	4,955	9,405
										1863	----------	8,223
1935	[5]	4,800	[6]	1,759	1,772	1,610	3,297	1,166	1,640	1862	9,420	----------
1934	166	4,035	3	3,585	1,225	1,362	7,507	2,787	1,124	1861	3,052	----------
1933	172	3,859	193	3,118	980	1,866	7,527	2,642	907			
1932	173	4,129	77	4,552	1,383	2,013	10,639	3,914	1,210	1859	3,498	----------
1931	177	4,836	2	5,219	1,537	2,126	12,640	4,757	1,358	1857	2,974	----------
1930	179	6,801	1	5,435	1,577	2,253	12,708	4,723	1,371	1855	46	----------
1929	190	6,194	100	4,613	2,030	2,648	11,598	4,178	1,701	1853	5,587	----------
1928	194	6,710	252	3,726	2,168	2,519	10,429	3,367	1,816	1850	55,401	----------
1927	194	9,202	55	3,595	3,011	4,586	10,500	3,237	2,584	1849	9,491	----------
1926	[7] 196	11,414	----------	3,243	3,962	4,600	10,354	2,875	3,451	1846	1,081	----------
1925	185	10,766	1	3,641	4,489	5,627	11,010	3,041	4,049	1845	2,076	----------
1924	187	16,378	[6]	4,564	5,229	9,082	13,886	3,873	4,791	1841	7,807	----------
1923	186	10,700	----------	6,415	6,201	10,352	18,942	5,524	5,594	1836	2,146	----------
1922	188	11,785	----------	10,367	8,074	13,761	29,263	8,980	7,307	1832	24	----------
1921	190	14,508	[6]	15,632	8,772	10,980	43,813	13,662	7,727	1831	6	----------
1920	200	6,132	----------	16,437	9,778	13,327	48,582	13,511	8,378	1827	46	----------
1919	213	4,304	----------	11,871	----------	----------	39,341	10,204	6,525	1826	25	----------
1918	222	5,432	----------	10,147	----------	----------	35,875	7,420	8,236			
1917	231	6,150	[6]	16,202	----------	----------	58,896	12,021	8,497	1823	92	----------
1916	255	5,445	4	18,708	----------	----------	65,282	13,628	7,278	1820	1,317	----------
1915	280	5,395	2	16,861	----------	----------	62,360	12,440	7,181	1819	986	----------
1914	291	6,148	----------	16,523	----------	----------	62,229	12,117	9,291	1818	1,186	----------
1913	298	6,956	----------	15,867	----------	----------	57,800	11,222	10,009	1817	824	----------
1912	315	9,973	[6]	14,575	----------	----------	52,991	13,624	4,306	1816	740	----------
1911	327	11,090	----------	19,211	----------	----------	70,720	17,639	4,620			
										1812	807	----------
1910	344	11,464	17,150	26,891	----------	----------	98,598	18,329	8,796	1808	798	----------
1909	363	12,216	[6]	19,898	----------	----------	75,445	12,302	8,699	1802	24	----------
1908	387	12,716	16	19,090	----------	----------	87,057	13,586	4,243			
1907	406	11,558	[6]	20,998	----------	----------	93,957	14,755	3,741			
1906	424	7,586	3,114	19,431	----------	----------	89,600	13,975	3,527			
1905	449	7,018	[6]	17,057	----------	----------	70,344	12,896	3,419			
1904	474	9,288	20	16,332	----------	----------	69,175	10,171	3,233			
1903	----------	11,025	----------	22,824	----------	----------	80,188	11,193	3,577			
1902	----------	6,262	[6]	19,872	----------	----------	98,829	14,033	4,343			
1901	----------	4,972	----------	15,453	----------	----------	68,648	9,497	5,241			
1900	----------	4,380	8	13,391	----------	----------	61,270	8,478	3,478			
1899	----------	3,070	50	9,091	----------	----------	45,776	6,178	3,134			
1898	----------	2,278	5,600	8,422	----------	----------	44,980	6,207	3,095			
1897	----------	2,088	[6]	7,754	----------	----------	33,250	4,452	2,778			
1896	----------	2,106	----------	13,174	----------	----------	36,548	4,881	2,790			
1895	----------	2,033	69	8,364	----------	----------	37,336	5,009	2,981			
1894	----------	2,768	8,470	10,377	----------	----------	56,632	8,047	2,980			
1893	----------	4,480	----------	11,802	----------	----------	48,436	6,809	3,477			
1892	----------	4,860	8	13,567	----------	----------	55,113	7,716	3,260			
1891	----------	5,429	[6]	10,357	----------	----------	37,602	5,040	3,955			
1890	----------	7,781	7,678	12,666	----------	----------	40,244	5,582	4,061			
1889	----------	9,686	15,367	17,026	----------	----------	42,188	6,029	3,682			
1888	----------	13,547	[6]	24,161	----------	----------	46,236	6,677	3,175			
1887	----------	12,289	----------	25,111	----------	----------	52,028	7,594	2,749			
1886	----------	9,031	----------	20,992	----------	----------	61,638	9,145	2,664			
1885	----------	8,628	----------	20,114	----------	----------	60,877	7,416	3,033			
1884	----------	12,789	46	26,834	----------	----------	54,982	7,832	2,946			
1883	----------	11,714	----------	19,031	----------	----------	56,565	8,172	2,504			
1882	----------	8,895	----------	13,999	----------	----------	45,331	6,348	2,219			
1881	----------	5,409	276	10,763	----------	----------	36,999	5,028	1,928			
1880	----------	----------	[6]	9,152	----------	----------	47,293	----------	1,938			
1879	----------	----------	----------	8,724	----------	----------	41,005	----------	2,071			
1878	----------	----------	----------	7,210	----------	----------	35,630	----------	2,663			
1877	----------	----------	----------	8,495	----------	----------	18,675	----------	2,408			
1876	----------	----------	----------	4,292	----------	----------	25,104	----------	2,591			
1875	----------	----------	3,842	8,792	----------	----------	20,668	----------	2,069			
1874	----------	----------	----------	4,784	----------	----------	29,126	----------	1,586			
1873	----------	----------	----------	6,886	----------	----------	31,561	----------	1,225			
1872	----------	----------	----------	7,248	----------	----------	38,742	----------	707			
1871	----------	----------	----------	7,119	----------	----------	39,768	----------	629			
1870	----------	----------	----------	6,663	----------	----------	33,972	----------	520			
1869	----------	----------	----------	6,678	----------	----------	25,628	----------	504			
1868	----------	----------	----------	----------	----------	----------	23,746	----------	355			

[1] 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. Does not include grants tabulated in series J 44–48. Does not include acreage of swamplands lost to the States, for which the States received indemnity in cash. [2] Includes homesteads.

[3] Previous to 1911 the data included, in addition to original entries and selections, some classes of final entries and patents.

[4] Exclusive of commuted homesteads.

[5] Not reported.

[6] Less than 1,000 acres.

[7] 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."

[8] Grants of unsurveyed lands to Wisconsin for forestry purposes; area not determined.

Series J 19–24. Revenues From Public-Domain, Revested, and Acquired Land: 1785 to 1956

[In millions of dollars]

Period	Total	Sales of public domain	Grazing fees and rentals [1]	Timber sales [1] (O & C, and public domain)	Mineral Leasing Act receipts—public-domain and acquired land [1]	Miscellaneous [2]
	19	20	21	22	23	24
Total	[3] 1,573.1	414.2	27.2	123.6	615.4	139.7
1951–1956	[3] 709.2	8.8	12.5	94.4	335.0	4.9
1941–1950	199.4	2.4	11.5	24.9	158.0	2.6
1931–1940	58.0	1.4	3.2	3.7	46.0	3.7
1921–1930	104.5	6.7	----	----	76.4	21.4
1911–1920	67.0	27.9	----	----	----	39.1
1901–1910	94.1	64.8	----	----	----	29.3
1891–1900	33.5	21.3	----	----	----	12.2
1881–1890	99.3	76.9	----	----	----	22.4
1785–1880	208.1	204.0	----	----	----	4.1

[1] Revenues of earlier years included under "Miscellaneous." (See text for definition of O & C lands.)

[2] Includes fees and commissions, sales of Indian lands, various rentals and permits, and a varied assortment of minor items. For the period roughly 1910–1920 contains relatively minor amounts from mineral leases of various kinds. For the period roughly 1910–1945, contains minor amounts from sale of dead, down, or damaged timber, including trespass damages for timber cutting; and for the period roughly 1910–1934, includes minor amounts for grazing, including grazing trespass damages. From 1916 through 1932, also includes receipts from sale of O & C timber.

[3] Includes $253.6 million of mineral leasing submerged areas of outer Continental Shelf not shown separately.

Series J 25–31. Receipts From Timber Sales and Grazing Fees and Use From Public-Domain Lands: 1935 to 1956

[In thousands]

Year	Value of timber sold	Grazing [1]						Year	Grazing [1]			
		Receipts			Animal-unit-months of use				Receipts			Total animal-unit-months of use
		Total [2]	In grazing districts	Outside grazing districts	Total	Cattle and horses	Sheep and goats		Total [2]	In grazing districts	Outside grazing districts	
	25	26	27	28	29	30	31		26	27	28	29
1956	$2,331	$2,386	$2,050	$335	15,301	10,223	5,078	1945	$996	$765	$231	15,572
1955	1,489	2,219	1,879	339	15,367	10,186	5,181	1944	1,015	813	202	15,745
1954	1,055	2,039	1,678	359	15,686	10,371	5,315	1943	979	785	194	15,061
1953	1,100	2,095	1,764	328	15,780	10,483	5,297	1942	1,095	900	195	15,271
1952	1,183	1,985	1,658	322	15,403	10,157	5,246	1941	1,113	922	191	15,369
1951	1,348	1,694	1,382	306	14,331	9,211	5,120	1940	747	595	152	13,332
1950	396	1,584	1,146	383	14,461	9,205	5,256	1939	1,038	886	152	13,789
1949	585	1,239	1,060	178	14,522	9,117	5,405	1938	850	800	49	13,376
1948	166	1,415	1,165	244	14,726	9,078	5,648	1937	488	415	73	14,383
1947	78	1,046	819	221	14,998	9,195	5,798	1936	48	48	----	11,106
1946	47	964	736	228	15,254	----	----	1935	1	1	----	6,507

[1] Includes free-use, crossing, and trailing permits in addition to regular paid use.

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

Series J 32–40. Oil and Gas Leases of Public-Domain Lands—Acreage, Receipts, and Output: 1920 to 1957

[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	Average under lease	Receipts			Volume of output			
			Total	Rentals [1]	Royalties	Total petroleum equivalent [2]	Petroleum	Natural gas	Gasoline and butane
	32	33	34	35	36	37	38	39	40
	1,000	*Mil. acres*	*Mil. dol.*	*Mil. dol.*	*Mil. dol.*	*Mil. bbl.*	*Mil. bbl.*	*Bil. cu. ft.*	*Mil. gal.*
1957	108.0	80.3	73.4	20.0	[3] 53.4	187.8	130	317	207
1956	100.9	75.4	62.8	16.4	[3] 46.4	168.1	118	272	203
1955	96.4	73.3	59.9	19.6	40.3	159.5	111	261	211
1954	87.7	66.0	58.6	15.5	38.1	146.9	105	223	197
1953	78.8	59.9	43.8	12.8	30.9	127.2	94	178	184
1952	63.2	48.6	46.8	19.2	27.5	121.6	92	152	179
1951	42.5	32.9	34.3	7.9	26.4	105.9	82	123	141
1950	28.9	23.6	26.7	4.3	22.4	100.5	76	126	145
1949	21.3	19.0	28.4	4.9	23.5	100.5	76	124	158
1948	13.4	10.7	24.1	2.9	21.2	98.3	74	124	152
1947	12.5	8.1	14.5	2.2	12.3	83.3	64	98	126
1946	8.8	6.0	9.3	1.0	8.3	78.9	60	96	121
1945	7.0	4.6	9.4	2.0	7.4	78.0	56	96	250
1944	5.3	3.1	10.3	3.4	6.9	69.2	54	80	73
1943	4.5	2.8	6.6	.5	6.1	66.6	50	87	90
1942	4.3	3.3	6.3	.7	5.7	61.4	45	83	71
1941	5.3	5.5	5.3	.4	4.9	57.9	43	82	52
1931–1940	----	----	----	----	43.7	462.4	328	698	750
1920–1930	----	----	----	----	59.4	302.3	260	198	390

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

[2] 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.

[3] Estimated from Geological Survey, calendar year data.

Series J 41–42. Livestock Permitted to Graze in National Forests: 1905 to 1956

[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
	41	42		41	42		41	42		41	42		41	42
1956	1,095	2,730	1945	1,206	3,889	1935	1,845	5,691	1925	1,621	6,432	1915	1,727	7,284
1955	1,106	2,822	1944	1,225	4,280	1934	1,419	6,161	1924	1,758	6,597	1914	1,620	7,619
1954	1,008	2,910	1943	1,212	4,539	1933	1,399	6,162	1923	1,864	6,712	1913	1,557	7,868
1953	1,108	2,964	1942	1,191	4,758	1932	1,397	6,321	1922	1,987	6,892	1912	1,503	7,552
1952	1,096	3,000	1941	1,176	4,787	1931	1,376	6,608	1921	2,080	6,980	1911	1,448	7,449
1951	1,088	3,013												
			1940	1,177	4,949	1930	1,358	6,714	1920	2,217	7,881	1910	1,498	7,649
1950	1,092	3,006	1939	1,209	5,132	1929	1,399	6,964	1919	2,284	7,996	1909	1,586	7,820
1949	1,126	3,092	1938	1,250	5,307	1928	1,415	6,784	1918	2,243	8,512	1908	1,382	7,087
1948	1,226	3,322	1937	1,284	5,485	1927	1,486	6,704	1917	2,054	7,636	1907	1,200	6,657
1947	1,247	3,403	1936	1,311	5,645	1926	1,559	6,503	1916	1,861	7,886	1906	1,015	5,762
1946	1,203	3,713										1905	692	1,710

Series J 43. Public Land Sales: 1800 to 1860

[In thousands]

Year	Acres	Year	Acres	Year	Acres	Year	Acres	Year	Acres
	43		43		43		43		43
1860	2,548.4	1847	2,521.8	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	2,462.8	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	1,605.8			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	3,787.1			1828	965.6			1803	174.2
1852	894.8	1840	2,236.9	1827	926.7	1815	1,306.4	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 44–48. 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
	44	45	46	47	48		44	45	46	47	48
1871	3,258	3,258				1853	3,379	2,629		750	
1870	129	129				1852	1,773	1,773			
1869	105		105			1851	3,752	3,752			
1867	25,178	23,585	1,588	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 49–64. Land Utilization, by Type: 1850 to 1954

[In millions of acres]

Year	Total land area	Land in farms									Land not in farms				
		Total	Cropland			Grass-land pasture	Farm woodland			Special uses	Other	Total	Grazing land	Forest land not used for grazing	Special uses	Other
			Total	Used for crops	Idle or in cover crops		Total	Pastured	Not pastured							
	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1954	1,904	1,158	399	380	19	526	197	121	76	23	13	746	353	238	87	68
1950	1,904	1,159	409	387	22	485	220	135	85	24	21	745	400	201	81	63
1945	1,905	1,142	403	379	24	529	166	95	71	24	20	763	428	186	76	73
1940	1,905	1,061	399	363	36	461	157	100	57	44		844	504	203	137	
1935	1,903	1,055	416	375	41	410	185	108	77	44		848	533	184	131	
1930	1,903	987	413	379	34	379	150	85	65	21	24	916	578	208	53	77
1925	1,903	924	391	365	26	331	144	77	67	58		979	646	203	130	
1920	1,903	956	402	374	28	328	168	77	91	58		947	661	160	126	
1910	1,903	879	347	324	23	284	191	98	93	57		1,024	739	162	123	
1900	1,903	839	319	[1]	[1]	276	191	87	103	54		1,064	768	175	121	
1890	1,903	623	248	[1]	[1]	144	190	[1]	[1]	41		1,280	818	344	118	
1880	1,903	536	188	[1]	[1]	122	190	[1]	[1]	36		1,367	883	368	116	
1870	1,903	408	189	[1]	[1]		219	[1]	[1]	[1]		1,495	[1]	[1]	[1]	
1860	1,903	407	163	[1]	[1]		244	[1]	[1]	[1]		1,496	[1]	[1]	[1]	
1850	1,884	294	113	[1]	[1]		181	[1]	[1]	[1]		1,590	[1]	[1]	[1]	

[1] Not available.

Series J 65–79. Private and Public Land Ownership, by Major Uses: 1920 to 1954

[In millions of acres]

Year	Total land area					Private land					Public land				
	All land	Cropland	Pasture and grazing land	Forest and woodland not grazed	Other land	Total	Cropland	Pasture and grazing land	Forest and woodland not grazed	Other land	Total	Cropland	Pasture and grazing land	Forest and woodland not grazed	Other land
	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
1954	1,904	399	1,000	314	191	1,399	396	704	211	88	505	3	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	278	175	1,409	411	745	168	85	494	2	297	105	90
1920	1,903	402	1,066	251	184	1,404	401	766	145	92	499	1	300	106	92

Series J 80–90. Land Drainage and Irrigation: 1890 to 1954

[In thousands of acres, except number of farms]

Year	Drainage, United States, acreage in drainage enterprises				Irrigation, United States		Irrigation, 17 Western States [2]			Irrigation, 31 Eastern States [2]	
	Total	Improved land	Unimproved land	Cropland planted	Total acreage irrigated [1]	Number of farms with irrigated land	Land in irrigated farms	Total acreage irrigated [1]	Number of farms with irrigated land	Total acreage irrigated [1]	Number of farms with irrigated land
	80	81	82	83	84	85	86	87	88	89	90
1954					29,552	320,236	188,898	26,971	279,896	2,581	40,340
1950	[3] 102,688	[4] 82,138	[4] 20,550		25,787	305,061	166,074	24,271	281,476	1,516	23,585
1945					20,539	288,195		19,431	270,629	1,108	17,566
1940	86,967	67,389	19,578	49,614	17,983	299,604	110,942	17,243	283,089	740	16,515
1935								12,441	281,910		
1930	84,408	63,514	20,894	54,428	14,689		77,083	14,086	258,463	[5] 603	
1920	65,495	44,288	21,207		14,482			[6] 13,883	215,152	[5] 599	
1910					11,667			[6] 11,259	159,801	[5] 408	
1900					7,789			7,543	109,298	246	
1890					3,717			3,632	54,186	85	

[1] Acreage irrigated as reported by the agricultural census for the year preceding the date of the census.
[2] Excludes data for 17 States prior to 1920 as some States had not yet been admitted to the Union.
[3] Includes 4,110,000 acres reported drained by irrigation enterprises.
[4] Estimate based on increase in acreage of improved land, 1930 to 1940, and increase in acreage of land in drainage enterprises, 1940 to 1950.
[5] Arkansas and Louisiana. Data for the other 29 Eastern States not available.
[6] Data for 1910 and 1920 for the 17 Western States are interpolated from censuses of irrigation for these years.

Series J 91–102. Water Use: 1900 to 1955

[In billions of gallons, daily average]

Year	Total water use		Irrigation [1]		Public water supplies		Self-supplied use					
							Domestic [2]		Industrial and miscellaneous [3]		Steam electric power	
	Total	Ground	Total	Ground	Total	Ground	Total	Ground	Total	Ground	Total	Ground
	91	92	93	94	95	96	97	98	99	100	101	102
1955	263.80	47.79	116.30	29.08	16.30	4.27	5.40	4.91	49.20	9.45	76.60	0.08
1950	202.70	35.19	100.00	19.80	14.10	3.78	4.60	4.09	38.10	7.47	45.90	0.05
1946	165.74	27.88	86.44	15.04	12.00	3.25	3.50	3.06	33.00	6.50	30.80	0.03
1945	170.46	28.83	83.06	14.12	12.00	3.28	3.20	2.78	41.00	8.12	31.20	0.03
1944	178.43	29.19	80.65	13.55	12.00	3.30	3.18	2.76	48.00	9.55	34.60	0.03
1940	136.43	22.56	71.03	11.22	10.10	2.82	3.10	2.64	29.00	5.86	23.20	0.02
1930	110.50	18.18	60.20	9.09	8.00	2.30	2.90	2.40	21.00	4.37	18.40	0.02
1920	91.54	15.78	55.94	8.17	6.00	1.79	2.40	1.94	18.00	3.87	9.20	0.01
1910	66.44	11.68	39.04	5.27	4.70	1.49	2.20	1.76	14.00	3.15	6.50	0.01
1900	40.19	7.28	20.19	2.22	3.00	1.05	2.00	1.60	10.00	2.40	5.00	0.01

[1] For agricultural purposes only. Includes delivery losses but not reservoir evaporation.
[2] Nonfarm domestic and farm domestic and farm stock wells.
[3] Manufacturing industry, mineral industry, commercial, air conditioning, resorts, motels, military, and miscellaneous.

Series J 103–108. Water Wells in Use: 1900 to 1955

[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	Nonfarm						Farm	Nonfarm			
	103	104	105	106	107	108		103	104	105	106	107	108
1955	13,730	5,248	8,035	28	278	142	1925	9,265	5,139	3,952	18	105	55
1950	12,766	5,620	6,800	23	216	107	1920	8,844	5,080	3,600	12	100	53
1945	11,273	6,068	4,943	22	170	75	1915	8,104	4,712	3,244	10	92	45
1940	10,362	5,935	4,200	18	144	65	1910	7,336	4,305	2,900	9	84	38
1935	9,843	5,457	4,195	16	115	60	1905	7,046	4,038	2,898	9	75	26
1930	9,601	5,220	4,200	15	110	56	1900	6,866	3,975	2,800	7	67	17

chapter J

CLIMATE (Series J 109–265)

J 109–265. 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. However, each element of this definition deserves comment.

The "state" of the atmosphere properly includes many weather elements in addition to the most influential ones like temperature, precipitation, and wind; not all of these are given much attention, nor have they been adequately measured throughout the United States. Virtually every human pursuit finds itself sensitive to one or more factors of its climatic environment, particularly when and where they range beyond critical limits as, for example, the freezing temperature of water.

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.

Climate often differs significantly in a surprisingly short distance through the air or along the ground and a rather careful definition of the "place" to which an observed climate refers is required. The collection of climatological statistics is, therefore, essentially a sampling process, and in many respects existing statistics should be taken as indicative rather than definitive.

Climate is known to be changing irregularly. The numerical description of climate thus depends somewhat on the period of history over which weather statistics are compiled. A standard climatological period has been defined by the World Meteorological Organization to consist of the 30 years ending with the most recent decade year. At present, the standard period includes 1921 to 1950. Averages over this period are defined as *normals;* averages over other periods should properly be called by other names.

The longest climatological series in the United States are not homogeneous, and no exact statistical methods exist for making them so. (A homogeneous series is one which refers to the same "place" or to equivalent places throughout the period of record, and whose sampling bias is randomly distributed in time around its average bias which, in turn, need not equal zero.) These long series, widely published in the past without qualifying notes, must therefore be used with discrimination.

The representativeness and hence utility of all climatological series is more or less constrained by a variety of sampling and data-processing uncertainties. (See Charles F. Brooks, *The Climatic Record: Its Content, Limitations, and Geographic Value,* Annals of the Association of American Geographers, vol. XXXVIII, No. 3, 1948, pp. 153-168.) Observed climate at a point is valuable merely as a sample of the climate of other points in the surrounding region. Typically, this region is nonuniform in geographical character, and the sample is complexly biased. Even today, with the best coverage by climatological stations in the history of the United States, the average temperature station must represent over 500 square miles of land surface. (Precipitation stations now average one in about 300 square miles; "first-order" Weather Bureau stations with observations of most other elements average one in about 10,000 square miles.) This sampling density is insufficient to interpolate the climate of every hamlet and bean patch; it is, however, more than sufficient to indicate relative *variations* of temperature, precipitation, and certain other elements from one year (or decade) to another because simultaneous departures of these from their normals are closely parallel over large areas. For this reason, homogeneous series for one station may reflect satisfactorily the historical variations of climate over 10,000 or even 100,000 square miles, while surely not the climate itself.

Many factors operate to compromise the homogeneity of typical climatic series. These chiefly derive from observational practice which, being flexibly geared to ever-changing requirements, has never been well adapted to the special application of historical comparison of climate. The longest series to which so much attention has traditionally been given have exclusively come from stations within slowly expanding cities. This fact has introduced warming trends in temperature and complex changes in precipitation which are not representative of their rural surroundings. Also, the occasional need to move stations to new locations with their slightly different climates has blemished their combined record with discontinuities.

Changes in daily observation time and in exposure of instruments have caused further discontinuities; this problem is especially acute in records prior to the establishment of standardized Weather Bureau practices in these respects in the 1880's. Other sources of inhomogeneity derive from neglect of occasionally missing daily records in forming monthly averages, and from familiar human errors in instrument reading, observation copying, editing, computing, and printing. These have been reduced since 1948 by better universal quality control methods but cannot be eliminated entirely.

Virtually all "first-order" Weather Bureau stations had been located (and relocated) in cities until recent years when (at various times since the 1930's) many were transferred to nearby airports. Resulting discontinuities in their records can rarely be corrected for; in some published versions of the records wherein corrections were attempted, insufficient details of the methods are given by which to judge their merits.

Only 2 or 3 percent of the city stations have remained in one location for their full history. (See station histories in Weather Bureau, *Local Climatological Data,* published annually for each station.) Many cooperative stations staffed by uncompensated cooperative Weather Bureau observers, on the other hand, are beyond range of major city influences on climate; some can be found which have not been significantly moved since their inception. Moreover, the *per se* climatological basis of their program has ensured against its repeated disruption for the convenience of other programs.

"Climatological benchmark 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

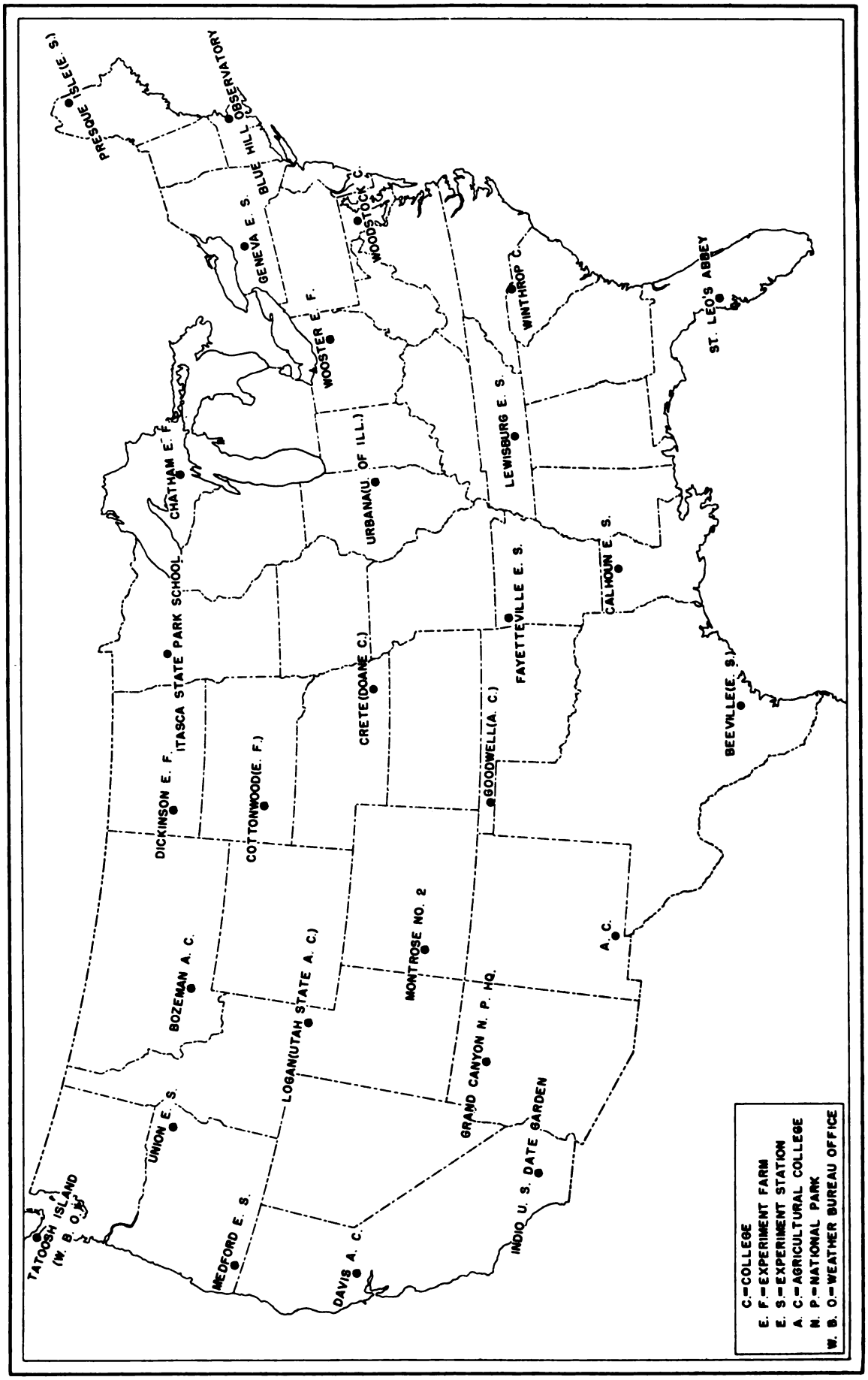

Fig. 1. Climatological Benchmark Station Network

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 "Climatological benchmark network." Twenty-eight continental stations in the network presented here have thus far been chosen on a tentative basis; others will be added in the future. The best qualified are among those maintained by Federal or State agencies (parks, forests, experiment stations, reclamation projects, etc.), colleges and universities, religious organizations, and public utility companies. Most of them are at agricultural colleges and agricultural experiment stations.

The program now in progress of checking benchmark station records should, in the future, minimize the drawback of relatively low quality control. While the drawback of limited variety of measured elements at cooperative stations generally remains, it is pertinent to add that the records of the larger variety of elements at first-order stations are irretrievably blemished by the effects of many station moves, changes in observational routine, and local city growth. Historical series based on such records must always be suspect.

The latitude, longitude, and altitude of the benchmark stations are given in table 1. The choice of stations to use in a particular data application may be facilitated by figure I.

Table I. Climatological Benchmark Stations

[Abbreviations: A. C.—Agricultural College; E. F.—Experiment Farm: E. S.—Experiment Station; N. P.—National Park; WBO—Weather Bureau Office; 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′	86° 56′	875
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
Wooster E. F., Ohio	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° 06′	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° 20′	82° 15′	178
Winthrop College, S. C	34° 57′	81° 03′	690
Woodstock College, 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
Tatoosh Island (W.B.O.), Wash	48° 23′	124° 44′	101
Union E. S., Oreg	45° 13′	117° 53′	2,765

It is anticipated that application of these data will be attempted in both correlation studies and trend analyses. The first kind of application, in which temporary deviations of climate are related to those of other statistical series, is a sound one to be encouraged where appropriate. The second application, to the extent that trends of general climate are derived with high quantitative precision and related to trends in other statistics, is not recommended, however.

Long-period trends in homogeneous climatic series are usually small and irregular. Because there are many opportunities for observational inhomogeneities to introduce trends and discontinuities into climatic series, which are not characteristic of the climate at large, real trends in the latter are easily distorted or obscured. Not even the "climatological benchmark" data are above all reproach in this respect.

Concerning climatic trends, it is important to realize that in many instances they could readily be duplicated fortuitously in random number series of equal variance. While this obviously means that statistically observed climatic trends cannot be extrapolated into past or future time reliably, they are nonetheless capable of inducing important trends in concurrent climate-dependent series.

Monthly and annual values of average temperature and total precipitation can most conveniently be found in the following official Weather Bureau publications:

Local Climatological Data, annual summary. This is issued annually for each of approximately 280 stations. With few exceptions, these are first-order Weather Bureau 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 Bureau 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, published variously since 1954.

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). A new volume by the Weather Bureau will bring the series up through 1950. Some station history information is included, and records are listed for nearly 50 Weather Bureau stations in the United States. 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 Bureau 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*.

J 109–135. Climatological benchmark stations—normal monthly, seasonal, and annual temperature.

Source: Series J 109–131, J 133–135, Weather Bureau, unpublished records (figures computed from monthly temperature data in *Climatological Data*). Series J 132, *Local Climatological Data*, annual editions. (Data for series J 110 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 (see general note, above). Consequently, the Weather Bureau 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 1921 to 1950, 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, 1921 to 1950, 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 (1921 to 1950) 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 and made available for the first time.

See also general note for series J 109–265.

J 136–162. Climatological benchmark stations—normal monthly, seasonal, and annual precipitation.

Source: See source for series J 109–135.

See also text for series J 109–135.

J 163–245. Climatological benchmark stations—temperature, precipitation, and description of year, 1884–1957.

Source: Weather Bureau, *Climatological Data*, annual summary.

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 1921–1950 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 246–265. Long-record city stations—annual mean temperature and annual total precipitation, 1780–1957.

Source: Series J 246, J 247, J 250–255, J 257–265, 1780–1940, H. H. Clayton (ed.), *World Weather Records*, Smithsonian Miscellaneous Collections, vol. 79 (1944), vol. 90 (1944), vol. 105 (1947); 1941-1950, Weather Bureau, *World Weather Records*, 1941–1950 (forthcoming); 1951–1957, Weather Bureau, *Local Climatological Data* (corrected to 24-hour means), annual editions. Series J 248, J 249, and J 256, *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 2 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 Weather Bureau 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 1889 (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. 1738–1861, 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 (11/3); thermometers moved August 1949 (6/3).

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).

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 1951, few hundred feet March 1954, and 1.5 miles SE May 1955. Ground exposures, approximately (5/2), at last six 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).

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 1955 7.5 miles SSE at Minneapolis–St. Paul International Airport (43/40).

Series J 109–135. Climatological Benchmark Stations—Normal Monthly, Seasonal, and Annual Temperatures

[In Fahrenheit degrees. Figures are "normal" values based on records for the 30-year period 1921–1950; see text. Record for Medford Experiment Station, Oreg., too short to obtain normals]

Series No.	Station	January	February	March	April	May	June	July	August	September	October	November	December	Summer	Winter	Annual
	NORTHEAST															
109	Blue Hill Observatory, Mass.	26.4	26.4	35.1	45.1	56.8	65.2	70.5	69.1	62.5	52.8	41.4	29.6	68.2	27.5	48.8
110	Geneva Experiment Station, N. Y.	26.5	26.2	34.9	46.1	57.7	67.6	72.8	70.8	63.8	52.2	40.9	29.5	70.1	27.4	49.0
111	Presque Isle Experiment Station, Maine	11.5	12.5	23.1	35.2	50.8	60.4	66.0	63.6	55.2	43.1	30.4	17.0	63.3	13.6	39.1
	NORTH CENTRAL															
112	Chatham Experiment Farm, Mich.	16.6	16.8	24.8	37.4	47.8	59.8	65.4	63.6	54.3	44.2	32.4	21.3	62.9	18.2	40.4
113	Cottonwood Experiment Farm, S. Dak.	18.8	23.0	33.1	46.6	56.8	66.7	75.1	73.2	62.5	49.9	34.3	23.3	71.7	21.7	46.9
114	Crete (Doane College), Nebr.	24.3	29.6	39.9	52.8	62.4	72.5	78.7	76.9	68.2	56.3	39.8	28.7	76.0	27.7	52.6
115	Dickinson Experiment Farm, N. Dak.	10.4	13.5	25.7	41.3	52.6	61.5	69.4	66.5	55.9	44.1	27.9	15.7	65.8	13.2	40.4
116	Itasca State Park School, Minn.	5.8	9.5	21.9	38.9	51.7	61.2	67.1	64.3	53.4	43.7	26.0	11.6	64.2	9.0	37.9
117	Urbana (U. of Ill.), Ill.	27.9	31.1	40.3	51.5	61.9	71.6	76.1	73.8	67.1	56.0	41.5	30.7	73.8	29.9	52.4
118	Wooster Experiment Farm, Ohio	28.2	29.3	37.7	48.1	58.6	68.4	72.8	70.4	64.4	52.9	40.7	30.5	70.3	29.3	50.1
	THE SOUTH															
119	Beeville Experiment Station, Tex.	55.1	58.9	64.5	71.3	77.0	81.7	83.8	84.3	80.3	73.4	63.5	57.3	83.3	57.1	70.9
120	Calhoun Experiment Station, La.	48.4	51.8	57.6	65.4	72.2	79.8	82.3	82.5	77.4	66.7	56.2	49.9	81.5	50.0	65.8
121	Fayetteville Experiment Station, Ark.	38.2	42.0	49.2	59.4	66.0	74.9	79.0	78.3	71.7	61.3	48.8	40.8	77.6	40.3	59.2
122	Goodwell Agricultural College, Okla.	34.5	39.1	42.2	55.4	64.3	74.6	79.2	78.2	68.1	56.9	43.3	36.6	77.3	36.7	56.0
123	Lewisburg Experiment Station, Tenn.	40.3	42.7	49.8	59.0	67.0	75.7	78.7	77.7	72.4	60.5	48.6	41.7	77.4	41.6	59.5
124	St. Leo's Abbey, Fla.	61.2	62.8	66.2	71.2	76.1	80.0	80.9	81.4	79.8	73.7	66.0	62.0	80.8	62.0	71.8
125	Winthrop College, S. C.	44.4	46.5	53.0	61.5	69.8	77.6	79.4	77.9	73.7	63.3	52.4	44.8	78.3	45.2	62.0
126	Woodstock College, Md.	33.4	34.2	43.0	52.2	62.5	71.0	74.8	73.0	66.9	55.3	44.9	34.9	72.9	34.2	53.8
	THE WEST															
127	Agricultural College, N. Mex.	40.3	45.7	51.1	58.9	67.1	76.0	79.1	77.2	71.3	60.8	47.7	41.6	77.4	42.5	59.7
128	Bozeman Agricultural College, Mont.	19.4	23.5	30.7	42.2	51.0	57.5	66.1	64.6	54.8	45.1	31.8	23.4	62.7	22.1	42.5
129	Davis Agricultural College, Calif.	44.4	49.2	53.4	58.1	64.4	70.8	75.0	73.1	70.1	62.4	52.8	45.6	73.0	46.4	59.9
130	Grand Canyon National Park Headquarters, Ariz.	29.5	32.8	38.6	46.8	55.6	64.7	70.2	67.7	62.2	51.0	39.7	32.5	67.5	31.6	49.8
131	Indio U. S. Date Garden, Calif.	54.1	58.8	64.8	71.9	79.2	86.3	92.0	90.6	85.3	74.7	63.0	55.6	89.6	56.2	73.0
132	Logan (Utah State Agricultural College), Utah	22.8	28.8	37.2	47.9	56.7	64.4	73.7	72.0	62.4	51.1	36.7	27.5	70.0	26.4	48.4
133	Montrose No. 2, Colo.	24.8	31.5	39.1	48.7	57.8	66.9	72.7	70.3	62.5	51.0	37.0	28.0	70.0	28.1	49.2
134	Tatoosh Island (Weather Bureau Office), Wash.	42.0	43.2	44.7	47.5	50.9	54.0	55.5	55.7	54.5	51.9	47.4	44.1	55.0	43.1	49.3
135	Union Experiment Station, Oreg.	28.5	33.9	40.4	47.3	53.9	59.3	66.6	64.9	56.9	43.8	39.2	32.5	63.6	31.6	47.7

Series J 136–162. Climatological Benchmark Stations—Normal Monthly, Seasonal, and Annual Precipitation

[In inches. Figures are "normal" values based on records for the 30-year period 1921–1950; see text. Record for Medford Experiment Station, Oreg., too short to obtain normals]

Series No.	Station	January	February	March	April	May	June	July	August	September	October	November	December	Summer	Winter	Annual
	NORTHEAST															
136	Blue Hill Observatory, Mass	4.09	3.53	3.86	3.99	3.49	4.17	3.71	4.05	3.77	3.44	4.20	3.92	11.98	11.54	46.22
137	Geneva Experiment Station, N. Y	2.37	2.30	2.69	2.89	3.10	3.51	3.18	2.76	2.80	2.75	2.89	2.36	9.45	7.03	33.60
138	Presque Isle Experiment Station, Maine	1.91	1.41	1.97	2.19	2.83	3.66	3.65	3.29	3.31	3.35	2.81	2.11	10.60	5.43	32.49
	NORTH CENTRAL															
139	Chatham Experiment Farm, Mich	2.28	1.65	1.71	1.90	2.89	3.61	3.23	2.98	3.98	2.94	3.05	2.09	9.82	6.02	32.31
140	Cottonwood Experiment Farm, S. Dak	0.43	0.24	0.77	1.72	2.43	2.92	1.91	1.49	0.92	0.96	0.45	0.32	6.32	0.99	14.61
141	Crete (Doane College), Nebr	0.69	0.86	1.41	2.30	3.72	4.38	3.09	3.32	2.97	1.64	1.35	0.74	10.79	2.29	26.47
142	Dickinson Experiment Farm, N. Dak	0.51	0.41	0.72	1.32	2.08	3.93	2.06	1.39	1.30	0.94	0.62	0.47	7.38	1.39	15.75
143	Itasca State Park School, Minn	0.70	0.71	1.10	2.24	3.19	3.94	3.14	3.22	2.21	1.64	1.21	0.78	10.30	2.19	24.08
144	Urbana (U. of Ill.), Ill	2.23	1.90	3.55	3.91	4.15	4.35	3.12	3.55	3.75	3.10	2.73	2.32	11.02	6.45	38.66
145	Wooster Experiment Farm, Ohio	2.84	2.20	3.23	3.07	3.82	4.13	3.68	3.40	2.98	2.17	2.52	2.42	11.21	7.46	36.46
	THE SOUTH															
146	Beeville Experiment Station, Tex	2.13	1.60	2.44	2.19	3.35	3.13	3.29	2.00	3.59	2.24	1.94	2.73	8.42	6.46	30.63
147	Calhoun Experiment Station, La	5.75	4.69	5.19	5.04	4.86	3.34	4.28	2.83	2.48	3.33	4.36	6.12	10.45	16.56	52.27
148	Fayetteville Experiment Station, Ark	2.84	2.74	3.30	5.09	5.54	5.25	3.22	3.54	4.46	3.78	3.28	2.85	12.01	8.43	45.89
149	Goodwell Agricultural College, Okla	0.39	0.60	0.82	1.31	2.63	2.57	2.86	2.31	1.72	1.54	0.74	0.45	7.74	1.44	17.94
150	Lewisburg Experiment Station, Tenn	5.21	5.49	5.81	4.30	4.15	4.12	4.18	3.63	2.69	2.90	4.19	4.75	11.98	15.45	51.42
151	St. Leo's Abbey, Fla	2.24	2.57	3.86	2.94	4.33	9.01	9.08	7.74	7.57	3.79	1.39	2.17	25.83	6.98	56.69
152	Winthrop College, S. C	4.17	3.95	4.39	3.61	3.44	3.43	5.25	4.60	3.73	3.06	2.98	4.11	13.23	12.23	46.72
153	Woodstock College, Md	3.44	2.78	3.30	3.44	3.93	3.65	4.07	3.78	3.64	3.21	2.98	2.74	11.50	8.96	40.96
	THE WEST															
154	Agricultural College, N. Mex	0.41	0.41	0.81	0.19	0.42	0.50	1.47	1.71	1.37	0.74	0.43	0.56	3.68	1.38	8.52
155	Bozeman Agricultural College, Mont	0.93	0.77	1.40	1.62	2.30	2.86	1.33	1.20	1.69	1.42	1.18	0.94	5.39	2.64	17.64
156	Davis Agricultural College, Calif	2.89	3.21	2.14	1.36	0.50	0.15	0.00	0.00	0.06	0.88	1.61	3.17	0.15	9.27	15.97
157	Grand Canyon National Park Headquarters, Ariz	1.23	1.71	1.38	0.94	0.62	0.41	1.66	2.24	1.74	1.06	0.76	1.60	4.31	4.54	15.35
158	Indio U. S. Date Garden, Calif	0.42	0.48	0.25	0.15	0.04	0.02	0.11	0.31	0.45	0.30	0.21	0.88	0.44	1.78	3.62
159	Logan (Utah State Agricultural College), Utah	1.40	1.36	1.88	2.14	1.84	1.23	0.53	0.72	1.15	1.65	1.35	1.54	2.43	4.30	16.79
160	Montrose No. 2, Colo	0.52	0.51	0.82	0.92	0.91	0.55	0.84	1.29	1.08	0.92	0.53	0.60	2.68	1.63	9.49
161	Tatoosh Island (Weather Bureau Office), Wash	10.19	8.70	7.82	5.23	3.31	2.53	1.99	2.01	3.64	8.72	9.52	12.04	6.53	30.93	75.75
162	Union Experiment Station, Oreg	0.96	1.00	1.21	1.40	1.87	1.74	0.38	0.49	0.85	1.17	1.21	1.09	2.61	3.05	12.87

Series J 163–245. Climatological Benchmark Stations—Temperature, Precipitation, and Description of Year: 1884 to 1957

[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
	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177
	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*	
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	18.0	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	43	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	*6-6-6*
1949	51	38.7	7-7-7	50	22.8	7-4-7	42	*38.5*	*4-4-4*	43	*27.7*	*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	27.8	8-8-9	46	17.0	5-3-3
1947	49	44.9	5-5-7	49	35.7	5-2-5	*41*	34.1	*4-4-1*	41	*24.5*	*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*	*37.3*	*8-7-5*	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	30.1	8-8-6	39	44.0	2-6-2	40	25.5	9-8-3	47	7.1	8-7-3
1935	47	48.7	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	28.4	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*	*3-1-5*	*41*	26.9	*3-5-6*	48	23.0	2-2-2
1929	48	47.0	9-3-5	48	35.5	5-9-3	39	29.7	3-6-7	39	32.7	6-6-6	44	18.2	3-5-6
1928	48	46.3	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	42.3	2-6-5	*39*	36.3	*2-6-3*	40	31.0	8-9-3	44	21.0	3-3-3
1926	46	48.9	6-6-5	46	36.2	6-3-5	*37*	*35.4*	*6-9-2*	38	37.3	3-6-5	47	13.5	5-5-1
1925	49	50.4	1-4-3	48	36.3	6-5-5	*38*	*43.6*	*7-3-6*	40	21.7	8-3-9	47	10.4	3-5-2
1924	47	42.3	9-5-2	46	32.2	6-6-3	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	30.3	9-2-9	46	22.3	3-3-6
1922	48	54.0	2-1-9	49	39.3	2-2-5	39	33.7	5-2-5	*42*	*34.7*	*4-5-2*	44	22.4	3-2-3
1921	49	51.3	2-2-5	52	29.4	7-7-4	40	31.1	5-5-2	*43*	*32.0*	*4-4-3*	49	10.9	7-4-7
1920	46	63.3	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	*27.3*	*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	48.3	6-5-5	45	35.4	6-2-6	36	41.3	3-1-_	34	*30.3*	*9-6-9*	44	13.2	6-3-3
1916	46	45.5	6-3-5	48	*42.0*	5-5-*2*	-------	-------	-------	*38*	*41.9*	*3-5-3*	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	*33.4*	5-5-*9*	-------	-------	-------	38	33.0	6-3-5	48	15.0	5-3-2
1913	49	45.1	4-3-4	*51*	*33.5*	4-3-4	-------	-------	-------	*39*	26.7	*9-9-9*	48	10.5	3-7-3
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	4-3-5
1910	48	34.3	3-3-5	-------	-------	-------	-------	-------	-------	40	27.9	9-3-3	*48*	*10.0*	*3-3-3*
1909	48	43.6	6-9-5	-------	-------	-------	-------	-------	-------	39	30.2	9-2-5	*47*	*6.6*	*3-1-_*
1908	49	37.7	3-4-2	-------	-------	-------	-------	-------	-------	41	27.6	3-3-5	-------	-------	-------
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	-------	-------	-------	-------	-------	-------	38	33.4	6-6-3	-------	-------	-------
1904	45	46.2	6-9-6	-------	-------	-------	-------	-------	-------	37	32.5	6-6-6	-------	-------	-------
1903	47	46.3	6-6-2	-------	-------	-------	-------	-------	-------	40	39.1	2-6-2	-------	-------	-------
1902	48	42.7	6-9-2	-------	-------	-------	-------	-------	-------	40	34.3	5-6-2	-------	-------	-------
1901	47	54.0	3-4-9	-------	-------	-------	-------	-------	-------	41	42.0	2-5-3	-------	-------	-------
1900	49	48.1	5-7-5	-------	-------	-------	-------	-------	-------	*41*	*33.4*	*5-_-_*	-------	-------	-------
1899	48	40.6	3-3-5	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1898	48	58.7	2-2-2	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1897	47	45.4	6-6-3	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1896	47	47.4	6-6-5	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1895	47	46.2	6-9-9	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1894	*48*	*35.3*	*3-3-5*	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1893	46	45.1	6-6-3	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1892	47	39.7	9-5-4	-------	36.7	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1891	48	50.3	5-6-3	-------	33.3	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1890	47	50.3	3-9-7	-------	44.3	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1889	48	54.6	2-3-2	-------	40.0	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1888	45	55.3	3-6-6	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1887	46	43.7	6-6-3	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1886	*47*	*47.0*	*6-9-_*	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

[1] For definition of codes, see text.

Series J 163–245. Climatological Benchmark Stations—Temperature, Precipitation, and Description of Year: 1884 to 1957—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	North Central—Con.														
	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
	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192
	°F.	Inches		°F.	Inches		°F.	Inches		°F.	Inches		°F.	Inches	
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	44.6	2-3-5
1956	53	24.4	5-5-9	42	12.7	7-4-8	39	20.7	8-5-5	53	27.3	8-5-8	49	*43.4*	*3-3-5*
1955	53	15.9	8-8-5	42	14.6	4-4-5	40	20.4	7-7-4	54	38.5	4-5-5	50	38.2	5-5-6
1954	54	33.7	1-1-1	42	16.3	4-2-4	40	25.4	4-5-1	55	29.7	7-4-4	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	8-4-4	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	32.8	4-1-4
1948	52	28.6	5-5-3	40	16.1	5-5-5	*38*	28.5	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	34.6	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	39.1	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	2-3-*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	30.7	5-5-5
1938	54	28.3	4-5-5	42	16.6	4-5-2	*40*	25.4	*4-4-5*	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	42.2	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	36.9	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	46.3	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	8-4-8	50	29.9	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	33.5	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	*53*	*23.2*	*5-6-3*	41	15.3	5-3-3	*38*	*27.0*	*2-3-2*	51	33.0	6-6-2	49	33.5	6-2-2
1927	52	26.4	5-6-5	38	19.6	3-6-5	36	21.4	6-6-5	52	55.6	2-3-8	51	43.3	2-6-5
1926	*52*	*26.4*	*5-3-4*	41	18.1	8-8-4	38	21.0	8-9-4	50	43.5	3-5-5	48	39.4	6-5-6
1925	*52*	*26.3*	*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*	*9-6-3*	37	15.1	6-5-8	*36*	22.2	*6-9-5*	49	40.4	6-3-2	48	38.9	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	36.3	5-8-2
1922	53	*23.0*	*3-5-6*	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*	*4-2-7*	42	15.8	1-4-7	*41*	*24.3*	*4-4-4*	55	41.7	4-7-4	53	41.9	1-7-4
1920	*51*	*23.0*	*9-6-9*	41	15.8	2-2-5	*38*	*23.6*	*5-2-6*	51	29.3	9-9-9	49	39.7	6-3-9
1919	*51*	*23.4*	*3-5-4*	41	8.4	8-7-4	*37*	*27.5*	*2-1-1*	52	35.2	5-5-4	51	43.1	1-1-4
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*	*6-6-3*	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*	*23.9*	*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	*23.6*	*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	5-8-5	51	51.2	2-5-2
1912	50	23.8	6-9-3	39	19.1	3-6-8	*38*	17.8	*3-8-9*	50	31.5	9-9-6	48	46.6	3-3-6
1911	*53*	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*	*25.3*	*5-6-3*	42	18.3	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	1-5-4	--------	--------	--------	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	41.3	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*	*13.5*	*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*	*38*	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	30.6	8-8-5
1893	--------	*22.1*	--------	38	*11.6*	*9-7-*	--------	--------	--------	--------	--------	--------	*48*	*40.6*	*3-8-3*

[1] For definition of codes, see text.

Series J 163–245. Climatological Benchmark Stations—Temperature, Precipitation, and Description of Year: 1884 to 1957—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																	
	Beeville Experiment Station, Tex.			Calhoun Experiment Station, La.			Fayetteville 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 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
	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*	
1957	70	40.1	3–3–4	66	69.1	2–6–4	57	62.5	3–6–4	56	15.4	5–5–8	60	65.3	2–3–1	73	58.8	4–5–4
1956	71	19.3	3–7–8	66	43.3	3–3–5	59	38.7	3–5–9	59	10.3	7–4–8	60	52.3	5–5–5	72	45.4	3–3–5
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	3–3–6
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	3–4–5
1953	72	19.3	7–7–8	67	54.6	4–7–5	60	35.6	3–7–8	*60*	12.2	7–4–7	60	48.1	5–5–5	73	31.1	1–4–5
1952	71	32.2	5–7–4	64	34.0	3–7–1	59	34.3	3–4–7	*58*	9.2	7–7–7	60	48.9	5–4–1	72	42.6	3–7–1
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	5–3–6	72	50.1	3–7–6
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	58	66.6	3–6–1	72	57.4	4–4–7
1949	72	*35.5*	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	7–3–4
1948	71	19.9	3–7–6	66	39.2	3–7–6	58	43.3	5–3–6	*56*	24.0	*2–2–3*	59	63.7	3–3–6	74	51.3	7–4–5
1947	*70*	*19.3*	*3–3–9*	68	57.1	4–4–6	58	40.0	3–5–9	*56*	28.0	*2–2–7*	58	41.4	3–6–5	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	*53*	26.0	*1–5–5*	60	54.7	5–3–3	74	51.3	4–5–2
1945	72	25.7	7–5–3	68	61.9	1–3–3	58	64.7	3–3–2	57	15.5	5–6–2	59	62.5	3–3–3	72	31.9	1–2–5
1944	71	27.4	5–4–5	66	56.6	5–5–5	59	48.0	5–2–5	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	3–4–3	59	40.7	5–7–5	*57*	15.0	*5–4–4*	59	42.1	3–4–3	72	63.3	2–1–5
1942	70	40.0	2–2–5	65	44.5	3–5–9	59	56.9	2–2–6	57	27.0	2–2–4	59	44.3	6–2–6	72	60.1	5–1–3
1941	70	47.5	2–3–2	66	54.6	5–5–5	60	50.5	5–5–2	56	26.2	2–3–5	60	33.6	3–2–3	72	60.0	5–4–2
1940	70	33.0	5–2–3	64	62.2	3–3–6	57	40.5	5–6–9	56	16.2	5–3–5	57	43.3	6–6–*3*	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	43.3	4–5–1	59	14.9	4–7–7	61	46.3	4–5–5	72	49.2	3–3–3
1937	71	23.3	3–7–3	65	*32.1*	*2–5–2*	58	42.4	5–4–5	57	11.3	3–7–5	59	64.4	3–2–1	72	60.7	5–5–1
1936	68	34.9	6–3–6	*65*	32.9	*3–3–9*	60	29.3	7–7–9	57	9.7	5–7–6	59	51.1	5–4–9	72	55.8	5–3–3
1935	70	33.2	6–6–5	66	48.4	5–3–5	59	58.5	2–2–3	58	11.7	7–7–7	59	46.3	5–5–5	70	57.6	6–3–9
1934	71	32.1	5–3–1	67	54.3	4–4–4	61	40.0	7–7–7	60	14.3	4–7–1	60	41.3	3–4–5	71	69.3	2–3–5
1933	72	29.7	4–3–5	*63*	62.3	*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	51.3	5–7–1	60	45.1	5–5–1	55	14.7	6–3–2	60	61.3	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	5–3–5	61	41.3	7–3–3	70	45.2	3–3–3
1930	70	26.9	6–3–3	66	44.9	3–3–3	59	40.2	5–3–5	52	18.5	6–5–9	*60*	*41.7*	*3–7–4*	69	51.9	6–3–6
1929	70	33.4	3–6–3	*65*	43.1	*3–5–6*	58	52.3	3–5–3	50	18.4	6–3–6	59	53.0	5–5–3	72	52.3	5–6–4
1928	70	36.3	5–4–5	65	49.3	6–5–9	59	52.9	2–6–5	55	24.3	3–6–5	59	43.0	3–2–3	70	64.3	3–2–6
1927	73	20.6	7–4–4	*67*	49.3	*4–3–1*	60	66.6	2–3–4	57	16.3	5–3–5	61	54.5	4–6–4	71	48.5	3–5–3
1926	69	31.6	6–6–6	64	49.3	6–2–3	58	42.5	5–6–3	56	17.3	5–5–3	59	63.5	2–2–3	71	55.4	6–5–3
1925	70	31.2	5–5–5	*67*	54.6	*4–4–5*	60	27.0	3–7–5	57	15.9	5–5–6	61	42.4	7–7–5	73	53.3	4–4–4
1924	*70*	*21.3*	*3–3–3*	*64*	*29.5*	*3–7–5*	57	33.3	3–5–3	55	12.1	3–3–5	57	45.3	6–3–5	72	62.2	2–7–5
1923	71	46.4	2–5–1	*65*	*73.3*	*3–6–4*	60	46.3	5–7–4	*56*	*24.1*	*2–5–7*	59	59.2	3–3–2	71	53.9	6–6–3
1922	71	37.7	2–2–3	65	60.3	3–6–2	60	*35.6*	*7–5–4*	*53*	*14.3*	*4–5–5*	61	55.3	4–3–5	71	61.3	2–6–5
1921	*72*	*27.5*	*4–7–3*	66	49.5	5–3–5	62	39.3	7–5–4	59	16.9	4–6–1	62	50.1	4–4–5	71	58.1	5–3–5
1920	70	22.3	3–5–6	63	71.1	3–3–3	58	*44.0*	*5–5–3*	56	14.3	5–3–5	59	57.3	6–6–5	69	50.3	3–6–6
1919	69	47.4	3–3–3	*64*	59.6	*6–6–3*	59	45.5	5–2–4	*54*	14.9	*6–3–3*	60	55.1	5–5–5	71	63.3	3–3–3
1918	70	29.6	6–3–3	64	44.0	3–2–3	60	39.5	3–7–3	56	20.1	*5–4–3*	60	49.1	5–5–6	71	54.4	6–6–6
1917	70	12.1	3–7–3	63	39.0	3–6–3	57	40.0	3–6–5	*55*	16.6	*6–6–5*	*57*	*52.3*	6–5–5	70	54.0	6–3–2
1916	72	23.4	7–1–7	65	36.4	3–6–3	60	43.0	4–7–2	58	11.7	4–5–3	59	57.6	5–3–4	71	50.6	3–6–3
1915	72	13.1	3–7–3	64	43.3	6–6–6	59	58.2	2–3–6	50	26.3	3–2–5	*59*	57.4	6–3–6	70	53.5	6–3–3
1914	70	46.6	3–1–3	65	43.2	6–2–3	60	33.3	3–4–2	58	22.5	1–2–2	59	46.3	5–1–3	71	51.9	6–3–2
1913	69	32.3	6–3–3	*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	3–6–4
1912	70	30.0	6–3–3	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	2–3–3
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	4–2–3
1910	71	29.3	5–5–6	65	41.7	3–6–6	59	33.4	3–6–6	*59*	*11.4*	*7–4–2*	59	46.7	6–6–6	70	53.3	6–3–6
1909	72	30.3	4–2–7	66	*44.7*	*3–5–4*	61	34.0	7–7–7	------	------	------	60	50.5	5–5–4	72	53.3	5–2–3
1908	72	35.7	4–1–3	*65*	*51.0*	*2–3–5*	60	50.5	5–3–5	------	------	------	60	50.4	4–5–6	72	41.7	3–3–3
1907	72	19.1	7–7–7	*65*	*47.5*	*6–3–7*	60	40.7	4–5–4	------	------	------	60	51.5	5–2–4	72	46.6	3–3–3
1906	70	31.2	5–5–6	*64*	*57.3*	*6–3–9*	58	51.6	6–3–6	------	------	------	60	57.1	5–2–5	71	60.0	5–2–3
1905	69	39.6	3–5–*6*	*63*	65.3	*2–3–3*	56	54.7	3–6–*9*	------	------	------	60	62.3	2–2–6	71	62.3	2–2–5
1904	------	------	------	*65*	*49.1*	*6–3–9*	*53*	*43.5*	*6–3–6*	------	------	------	60	37.4	3–3–9	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	6–3–2
1902	------	------	------	*64*	52.1	*6–5–9*	58	43.2	5–5–6	------	------	------	60	52.3	5–4–6	72	*45.5*	*3–7–6*
1901	------	------	------	*62*	36.7	*9–5–9*	58	28.9	3–7–3	------	------	------	58	45.0	6–1–3	------	------	------
1900	------	------	------	*64*	*57.7*	*6–3–6*	59	37.7	3–5–6	------	------	------	60	53.6	4–2–6	------	------	------
1899	------	------	------	64	30.7	9–3–9	58	40.2	5–5–9	------	------	------	*59*	*47.4*	*5–7–6*	------	------	------
1898	------	------	------	*67*	*53.6*	*4–3–5*	58	66.1	2–3–5	------	------	------	------	*49.3*	–5–-	------	------	------
1897	------	------	------	*65*	45.5	*3–5–9*	59	37.2	3–5–5	------	------	------	------	------	------	------	------	------
1896	------	------	------	66	37.3	3–7–9	61	33.5	7–7–5	------	------	------	------	------	------	------	------	------
1895	------	------	------	62	43.4	6–3–9	57	41.6	5–2–9	------	------	------	------	------	------	------	------	------
1894	------	------	------	64	55.2	6–6–6	59	47.1	5–5–5	------	------	------	------	------	------	------	------	------
1893	------	------	------	64	43.5	9–6–6	58	53.5	3–3–9	------	------	------	------	------	------	------	------	------
1892	------	------	------	------	*55.5*	------	*57*	51.3	*6–6–6*	------	------	------	------	------	------	------	------	------
1891	------	------	------	------	52.5	------	56	34.6	9–6–3	------	------	------	------	------	–5–-	------	------	------
1890	------	------	------	------	------	------	------	------	------	------	------	------	60	53.0	5–6–-	------	------	------
1889	------	------	------	------	------	------	------	------	------	------	------	------	*53*	*43.6*	6–3–-	------	------	------
1888	------	------	------	------	------	------	------	------	------	------	------	------	------	*53.3*	------	------	------	------
1887	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
1886	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
1884	------	------	------	------	------	------	------	51.9	------	------	------	------	------	------	------	------	------	------

[1] For definition of codes, see text.

Series J 163–245. Climatological Benchmark Stations—Temperature, Precipitation, and Description of Year: 1884 to 1957—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 College, [2] Md.			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
	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228
	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*		°F.	*Inches*	
1957	*63*	50.0	*5–8–4*	54	41.1	*5–8–4*	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	5–2–8	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	18.3	5–5–4	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	5–4–4	61	10.0	7–2–1	50	10.9	8–2–8
1952	62	49.5	5–2–5	*54*	60.8	*2–1–1*	60	6.2	5–4–4	43	19.6	5–5–2	60	21.5	2–5–2	48	17.8	3–5–8
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	5–8–7	53	48.8	2–3–4	62	5.3	7–5–4	42	18.2	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	5–4–8	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	6–5–5	44	23.6	1–2–4	60	11.3	8–2–9	49	11.8	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	5–3–8	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	3–3–2	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	8–7–5	61	7.6	4–4–4	42	17.2	6–6–8	61	15.6	4–6–1	51	12.3	4–5–4
1942	62	53.1	2–2–6	54	47.2	2–2–5	60	9.8	2–2–5	41	17.2	6–9–8	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	8–5–8	50	17.7	2–7–6
1938	63	40.1	7–5–4	54	33.2	7–7–8	59	9.3	6–3–4	43	20.4	1–3–4	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	2–3–3
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	9–8–8	52	39.5	6–8–3	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	6–7–8	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 7–8
1931	63	50.0	5–2–9	56	35.6	7–1–8	60	13.3	2–2–2	44	15.3	7–7–5	61	16.1	4–1–7	49	15.0	5–4–8
1930	62	36.2	8–8–8	55	20.1	7–7–7	60	6.9	5–5–8	42	14.2	8–4–8	59	12.1	6–6–4	48	14.7	6–2–7
1929	61	60.8	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	*53*	*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	38.1	5–9–5	60	9.5	5–3–4	41	21.8	3–6–2	59	18.1	6–2–5	50	22.9	2–3–2
1926	62	38.4	8–4–5	52	43.2	6–6–5	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	3–9–2	59	13.8	6–8–8	49	15.6	5–8–5
1923	62	48.0	5–5–5	54	39.1	5–5–5	60	10.4	2–5–1	42	15.3	8–5–8	60	7.8	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	2–7–8	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	48	15.8	6–3–9
1920	61	51.6	5–2–8	53	49.9	3–2–6	60	8.2	5–2–4	40	19.2	3–6–5	60	15.4	5–4–8	*47*	*12.6*	*6–9–1*
1919	63	54.2	2–2–2	55	42.3	4–5–1	60	8.0	5–8–6	42	11.0	9–7–8	59	14.6	5–5–3	48	*13.4*	*3–5–6*
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	9–6–8	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	9–3–6
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	*3–4–2*	61	11.8	1–2–5	43	16.5	5–6–8	59	22.2	6–3–2	48	*13.0*	*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	6–6–6	59	17.9	5–5–9	47	15.8	6–6–3
1912	61	47.4	6–3–6	*53*	40.8	*6–5–6*	58	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	6–6–5	57	22.4	3–6–2	*46*	*21.7*	*3–3–1*
1910	61	42.5	6–3–5	*53*	*29.6*	*3–9–6*	63	4.0	7–4–8	43	18.7	5–3–6	-------	7.0	-------	*48*	*12.0*	*6–3–3*
1909	62	40.9	8–2–7	*53*	*33.7*	*9–9–4*	61	4.9	7–7–7	40	22.3	3–5–8	-------	25.8	-------	*46*	*26.1*	*3–3–2*
1908	62	55.0	2–2–8	*54*	*35.7*	*5–2–9*	60	6.0	7–5–4	41	25.3	3–6–5	-------	-------	-------	45	22.5	3–3–5
1907	61	49.3	6–3–7	*52*	*47.5*	*6–3–6*	63	6.4	4–4–4	41	17.2	6–3–5	-------	-------	-------	49	36.7	2–3–1
1906	62	55.6	2–2–3	*54*	*53.1*	*2–1–8*	61	8.8	4–8–2	*41*	*16.9*	*6–6–5*	-------	-------	-------	*48*	*22.3*	*3–3–6*
1905	*61*	*45.5*	*6–2–6*	*52*	*43.9*	*6–4–6*	60	17.1	1–5–1	*41*	*14.7*	*9–6–5*	-------	-------	-------	*48*	*29.6*	*3–3–3*
1904	60	35.4	9–3–9	*50*	*34.4*	*9–6–9*	60	10.1	1–5–8	42	16.2	5–9–2	-------	-------	-------	*50*	17.6	*5–2–3*
1903	61	43.6	6–5–6	*53*	*41.6*	*6–3–3*	59	10.3	3–2–2	41	17.6	6–6–5	-------	-------	-------	-------	-------	-------
1902	61	48.8	6–5–3	*53*	51.6	*3–6–3*	60	10.9	1–2–7	42	15.5	8–6–5	-------	-------	-------	-------	-------	-------
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	*3–4–3*	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	-------	-------	-------	*53*	36.8	*9–4–6*	58	14.4	3–2–9	-------	-------	-------	-------	-------	-------	-------	-------	-------
1897	-------	-------	-------	*51*	*49.3*	*3–3–6*	58	9.0	6–6–8	-------	-------	-------	-------	-------	-------	-------	-------	-------
1896	-------	-------	-------	*51*	*33.3*	*9–6–3*	59	-------	–6–.	-------	-------	-------	-------	-------	-------	-------	-------	-------
1895	-------	-------	-------	*50*	*28.0*	*9–9–9*	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1894	-------	-------	-------	*52*	*35.4*	*9–9–9*	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------
1893	-------	-------	-------	*50*	*39.0*	*6–9–6*	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

[1] For definition of codes, see text.

[2] Figures corrected for station move about Jan. 1914.

Series J 163–245. Climatological Benchmark Stations—Temperature, Precipitation, and Description of Year: 1884 to 1957—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. Record for Medford Experiment Station, Oreg., too short to obtain normals; therefore description of year omitted]

Year	The West—Con.															
	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	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
	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245
	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*	°F.	*Inches*		°F.	*Inches*		°F.	*Inches*	
1957	74	3.0	4–4–5	48	17.8	5–5–5	52	23.2	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	50	6.7	7–4–4	48	79.4	6–2–6	48	15.8	2–2–2
1955	72	1.7	6–6–6	46	17.0	5–5–6	52	15.8	48	7.8	6–5–6	47	80.8	6–3–8	46	11.8	6–8–8
1954	74	2.7	4–6–7	*50*	12.5	7–5–4	52	18.1	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	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	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	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	50	6.8	7–9–2	47	101.6	3–6–9	48	13.0	5–5–8
1949	72	2.8	6–8–6	47	19.8	2–5–3	51	11.5	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	48	10.8	6–8–2	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	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	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	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	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	51	9.7	4–2–5	49	58.6	8–5–5	47	12.4	5–3–2
1942	73	8.2	5–1–5	47	18.0	6–5–3	52	23.8	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	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*	*11.3*	7–4–4	.....	.....	53	7.9	4–7–4	51	82.1	4–5–4	51	10.8	4–5–4
1933	73	0.8	9–7–6	49	11.9	8–7–6	.....	.....	49	7.5	8–7–6	48	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	98.2	2–2–5	46	11.3	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*	*8–7–3*
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	*10.3*	*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	14.8	5–7–2
1920	72	6.8	3–2–5	47	19.2	3–6–8	.....	.....	48	10.1	6–5–8	48	89.8	3–3–8	46	14.8	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	2–2–8	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	6–5–8	46	18.9	6–3–3	.....	.....	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*	*2–4–2*	.....	.....	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	48	22.0	2–3–1	.....	.....	*48*	*11.5*	*3–3–7*	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	*73*	*5.4*	*3–7–1*	49	12.5	8–5–8	.....	.....	45	*11.2*	3–6–2	50	63.7	8–8–5	.....	.....	.....
1904	.....	.....	.....	*49*	13.5	*8–5–5*	.....	.....	*45*	*7.5*	*9–6–3*	49	78.7	5–6–8	.....	.....	.....
1903	.....	.....	.....	*46*	14.0	*9–3–6*	.....	.....	.....	*8.1*	.....	49	68.9	5–5–5	.....	.....	.....
1902	.....	.....	.....	48	13.3	8–6–7	.....	.....	.....	6.5	.....	*48*	*91.6*	*3–6–5*	.....	.....	.....
1901	.....	.....	.....	50	14.5	7–5–7	.....	.....	.....	6.2	.....	*49*	*101.3*	*2–6–5*	.....	.....	.....
1900	.....	.....	.....	50	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	.....	.....	.....	46	13.2	9–8–9	.....	.....	.....	*7.8*	.....	*49*	*86.4*	*2–4–2*	.....	.....	.....
1897	.....	.....	.....	47	17.4	6–6–5	.....	.....	.....	*15.6*	.–6–2	48	95.2	3–2–2	.....	.....	.....
1896	.....	.....	.....	48	16.2	5–2–8	.....	.....	.....	*6.5*	.–7–2	48	100.8	3–4–2	.....	.....	.....
1895	.....	.....	.....	45	13.5	9–9–6	.....	.....	.....	*12.3*	.....	48	93.0	3–5–5	.....	.....	.....
1894	.....	.....	.....	46	*14.4*	*9–6–5*	.....	.....	.....	.....	.....	47	114.3	3–5–3	.....	.....	.....
1893	.....	.....	.....	*46*	14.5	*9–9–6*	.....	.....	*48*	9.5	6–5–2	47	104.2	3–2–6	.....	.....	.....
1892	.....	.....	.....	.....	.....	.....	.....	.....	48	9.0	6–9–3	.....	.....	.....	.....	.....	.....
1891	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.4	.–6–.	.....	.....	.....	.....	.....	.....
1890	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.1	.....	.....	.....	.....	.....	.....	.....
1889	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.2	.–.–6	.....	.....	.....	.....	.....	.....
1888	.....	.....	.....	.....	.....	.....	.....	.....	48	8.5	6–6–.	.....	.....	.....	.....	.....	.....
1887	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.6	.....	.....	.....	.....	.....	.....	.....
1886	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.9	.....	.....	.....	.....	.....	.....	.....
1885	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.9	.....	.....	.....	.....	.....	.....	.....

[1] For definition of codes, see text.

Series J 246–265. Long-Record City Stations—Annual Mean Temperature and Annual Total Precipitation: 1780 to 1957

[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.		Santa 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
	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265
	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*
1957	51	29.1	59	37.7	66	51.8	[1]53	[1]41.1	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	[1]51	[1]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	[1]52	[1]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	[1]52	[1]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	[1]54	[1]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	[1]53	[1]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	[1]53	[1]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	[1]51	[1]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	[1]54	[1]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	[1]51	[1]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	[1]51	[1]47.6	54	40.8	55	52.1	56	14.4	49	11.0	56	37.1	45	21.1
1946	50	33.0	58	37.6	67	49.0	[1]52	[1]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	74.9	[1]52	[1]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	[1]52	[1]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	[1]51	[1]37.2	54	36.7	55	36.8	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	48.5	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	58	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	36.1	58	39.3	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	38.6	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	47	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	53.2	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	49	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	46.8	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	46.5	55	51.4	54	26.0	48	17.1	57	36.1	45	40.4
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

[1] Values adjusted to city location from airport.
[2] Value corrected for typographical errors in *World Weather Record*.

Series J 246–265. Long-Record City Stations—Annual Mean Temperature and Annual Total Precipitation: 1780 to 1957—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.		Santa 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
	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265
	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*
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	58	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	[1]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	55	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	48	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	[1]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	[1]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	57.0	49	47.9	52	43.0	55	45.6	54	18.7	49	11.4	56	43.2	46	23.1
1881	50	36.3	57	49.1	66	[1]43.2	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	[1]63.4	48	--------	51	49.2	55	47.3	--------	27.5	56	[1]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	8.9	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	--------	[1]30.6	--------	*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	48	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	38.6	--------	*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	57	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
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	57	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

[1] Value corrected for typographical errors in *World Weather Record.*

Series J 246–265. Long-Record City Stations—Annual Mean Temperature and Annual Total Precipitation: 1780 to 1957—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.		Santa 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
	246	247	248	249	250	251	252	253	254	255	256	257	258	259	250	261	262	263	264	265
	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*	°F.	*Inches*
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					57	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	47.4					56	41.6	45	23.2
1839	48	38.1	56	51.7	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	57	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	39.5	55	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	58	33.0	71		52		54	48.9	56	38.0							46	
1827	49	49.8	58	32.7	67		49	51.4	52	51.1	52	38.5							46	
1826	51	33.1	58	30.7	66		50		52	55.7	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		55	42.5			48	46.2				49.4							43	
1819			57	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.		Year	Albany, N. Y., annual mean temperature	New Haven, Conn., annual mean temperature
			Annual mean temperature	Annual total precipitation			
	246	251	252	253		246	252
	°F.	*Inches*	°F.	*Inches*		°F.	°F.
1815			47	50.6	1797		48
1814	50		49	56.1	1796	*47*	48
1813	48		49	53.4			
1812			47	44.2	1795	*50*	
1811		49.3	50	47.7	1794		50
					1793		50
1810		45.4	50	[2]39.4	1792		48
1809		66.0	49	44.6	1791		50
1808		40.8	50	49.4			
1807		42.2	49	45.3	1790		50
1806			50	38.6	1789		50
					1788		50
1805			52	*40.8*	1787		48
1804			50	43.3	1786		48
1803			51				
1802			51		1785		48
1801			51		1784		47
					1783		48
1800			50		1782		49
1799			48		1781		50
1798			49		1780		50

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