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| Project #1 |
| Exploring Weather Trends |
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**Evaluation Rubric**

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| --- | --- |
| **Criteria** | **Meets Specifications** |
| Student is able to extract data from a database using SQL. | * The SQL query used to extract the data is included. * The query runs without error and pulls the intended data. |
| Student is able to manipulate data in a spreadsheet or similar tool. | Moving averages are calculated to be used in the line chart. |
| Student is able to create a clear data visualization. | * A line chart is included in the submission. * The chart and its axes have titles, and there's a clear legend (if applicable). |
| Student is able to interpret a data visualization. | * The student includes four observations about their provided data visualization. * The four observations are accurate. |

**Suggestions to Make Your Project Stand Out!**

Think about other ways to compare and find insights from this data beyond interpreting the chart. Hear are a few ideas:

* What's the correlation coefficient?
* Can you estimate the average temperature in your city based on the average global temperature?
* Multiple cities - Add your favorite cities from around the globe to your visualization. What do you learn about them?

**Data Gathering Outline/Sampling Method**

I sampled 251 rows (years) of data each from the city\_data and global\_data tables for years 1763 to 2013 for my local city of Virginia Beach, Virginia. I also sampled data for the cities of Qingdao, China (1841 to 2013) and Moscow, Russia (1750 to 2013) and compared them to corresponding global temperature ranges. The moving average for all data sets was calculated based on five year intervals in the data via the AVERAGE() function in Microsoft Excel.

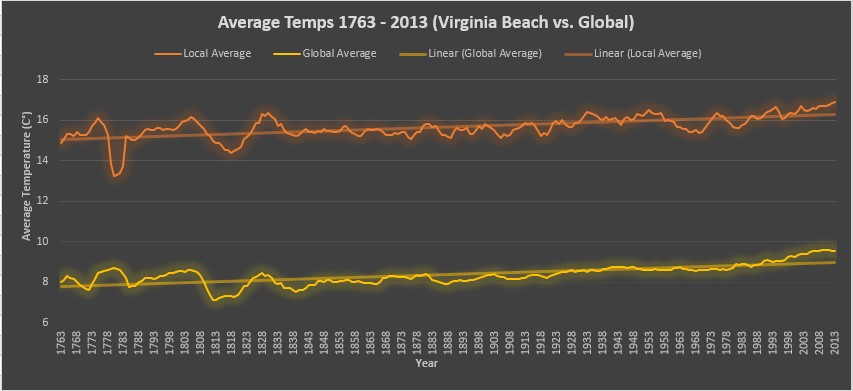
SQL Queries used to pull data:

SELECT \* FROM city\_data; - Pull all data from the city\_data table within the database.

SELECT \* FROM global\_data; - Pull all data from the global\_data table within the database.

Queries were run one at a time, as running them together caused the workspace to ignore the first one.

**Charts and Observations**



**Questions**

* 1. **Is your city hotter or cooler on average compared to the global average? Has the difference been consistent over time?**

The local temperatures in Virginia Beach are consistently higher on average when compared to the global temperatures over the 250 year period in question. This is likely due to the fact that the global average has to take multiple climate types into account, including those that are overall cooler than Virginia Beach’s humid subtropical one.

* 1. **How do the changes in the local city’s temperatures over time compare to the changes in the global average?**

Both local and global temperatures generally rose and fell around the same times, with the exception of one very noticeable period. As seen in the above chart, from 1776 to 1780 the local average dropped every year, while the global average increased.

* 1. **What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?**

As the local and global trend lines within the chart depict, both local and global average temps have been trending slightly upward over the period in question. This shows that the world has been getting hotter over the last 250 years.

* 1. **What is the correlation coefficient of the dataset?**

As seen in the table above, **0.65721** was the calculated correlation coefficient. When compared to the valid coefficient range (-1.0 to 1.0), this number indicates a positive statistical correlation between the average local and global temperatures of moderate strength. In other words, when the average global temperature increases in any given year, the local average temperature will do the same - and vice versa.

**5a. In a city with the same climate type as Virginia Beach (humid subtropical), will a difference in geographical location yield a different type of correlation?**

One such city would be Qingdao, located in China’s northeastern Shandong province. As seen in the chart above, the linear trend lines again indicate a slight positive correlation between Qingdao’s averages and the global averages.

**5b. What about a city with a different climate type?**

Even Moscow, Russia – with a cooler climate type of humid continental – still has a positive correlation with global averages, although it has lower average temperatures than most of the world.

* 1. **Can the average temperature in the local city be estimated based on the average global temperature?**

According to the linear regression scatterplot above for the dataset in question, the equation **y = 0.7636x + 9.2767** can best be used to estimate the correlation between the global and local temperatures, where ‘Y’ is the local (Virginia Beach) average temperature and ‘X’ is the global average temperature.

**Summary**

The observations and findings presented above indicate a rise in average global temperatures. This global increase is causing individual cities around the globe to experienced increased averages as well. Neither geographical location nor local climate type change the upward trend in temperature. Overall, these findings indicate that the Earth as a whole is getting warmer.

**Additional statistical information**

The MAX(), MIN(), AVERAGE(), MEDIAN(), and CORREL() excel functions were used on the dataset to calculate the Max value, Min value, Mean value, Median value and correlation coefficient respectively.

|  |  |  |
| --- | --- | --- |
|  | Local Moving Average Stats | Global Moving Average Stats |
| Max Value | 16.93 | 9.58 |
| Min Value | 13.235 | 7.108 |
| Mean Value | 15.66361 | 8.36451 |
| Median Value | 15.578 | 8.334 |
| Total Increase in Average (Max - Min) | 3.695 | 2.472 |
| Correlation Coefficient | 0.65721 | |

**Dataset used for Virginia Beach**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Local avg\_temp (Celsius)** | **Local 5 year moving average** | **Global avg\_temp (Celsius)** | **Global 5 year moving average** |
| 1763 | 13.62 | 14.908 | 7.5 | 8.012 |
| 1764 | 16.02 | 15.076 | 8.4 | 8.094 |
| 1765 | 15.39 | 15.35 | 8.25 | 8.306 |
| 1766 | 16.17 | 15.35 | 8.41 | 8.234 |
| 1767 | 14.99 | 15.238 | 8.22 | 8.156 |
| 1768 | 14.63 | 15.44 | 6.78 | 8.012 |
| 1769 | 15.3 | 15.296 | 7.69 | 7.87 |
| 1770 | 15.19 | 15.256 | 7.69 | 7.758 |
| 1771 | 16.29 | 15.28 | 7.85 | 7.646 |
| 1772 | 15.84 | 15.45 | 8.19 | 7.64 |
| 1773 | 16.12 | 15.748 | 8.22 | 7.928 |
| 1774 | 15.83 | 15.854 | 8.77 | 8.144 |
| 1775 | 16.41 | 16.098 | 9.18 | 8.442 |
| 1776 | 15.52 | 15.944 | 8.3 | 8.532 |
| 1777 | 15.03 | 15.782 | 8.26 | 8.546 |
| 1778 | 13.63 | 15.284 | 8.54 | 8.61 |
| 1779 | 8.76 | 13.87 | 8.98 | 8.652 |
| 1780 |  | 13.235 | 9.43 | 8.702 |
| 1781 | 15.85 | 13.3175 | 8.1 | 8.662 |
| 1782 | 15.31 | 13.3875 | 7.9 | 8.59 |
| 1783 | 15.01 | 13.7325 | 7.68 | 8.418 |
| 1784 | 14.79 | 15.24 | 7.86 | 8.194 |
| 1785 | 14.73 | 15.138 | 7.36 | 7.78 |
| 1786 | 15.25 | 15.018 | 8.26 | 7.812 |
| 1787 | 15.26 | 15.008 | 8.03 | 7.838 |
| 1788 | 15.91 | 15.188 | 8.45 | 7.992 |
| 1789 | 15.61 | 15.352 | 8.33 | 8.086 |
| 1790 | 15.54 | 15.514 | 7.98 | 8.21 |
| 1791 | 15.63 | 15.59 | 8.23 | 8.204 |
| 1792 | 15.05 | 15.548 | 8.09 | 8.216 |
| 1793 | 15.92 | 15.55 | 8.23 | 8.172 |
| 1794 | 15.95 | 15.618 | 8.53 | 8.212 |
| 1795 | 15.5 | 15.61 | 8.35 | 8.286 |
| 1796 | 15.25 | 15.534 | 8.27 | 8.294 |
| 1797 | 15.22 | 15.568 | 8.51 | 8.378 |
| 1798 | 16.06 | 15.596 | 8.67 | 8.466 |
| 1799 | 15.62 | 15.53 | 8.51 | 8.462 |
| 1800 | 15.65 | 15.56 | 8.48 | 8.488 |
| 1801 | 16.04 | 15.718 | 8.59 | 8.552 |
| 1802 | 16.32 | 15.938 | 8.58 | 8.566 |
| 1803 | 16.18 | 15.962 | 8.5 | 8.532 |
| 1804 | 15.95 | 16.028 | 8.84 | 8.598 |
| 1805 | 16.4 | 16.178 | 8.56 | 8.614 |
| 1806 | 15.61 | 16.092 | 8.43 | 8.582 |
| 1807 | 15.4 | 15.908 | 8.28 | 8.522 |
| 1808 | 15.57 | 15.786 | 7.63 | 8.348 |
| 1809 | 14.82 | 15.56 | 7.08 | 7.996 |
| 1810 | 15.16 | 15.312 | 6.92 | 7.668 |
| 1811 | 15.28 | 15.246 | 6.86 | 7.354 |
| 1812 | 14.06 | 14.978 | 7.05 | 7.108 |
| 1813 | 15.07 | 14.878 | 7.74 | 7.13 |
| 1814 | 14.81 | 14.876 | 7.59 | 7.232 |
| 1815 | 14.51 | 14.746 | 7.24 | 7.296 |
| 1816 | 14.16 | 14.522 | 6.94 | 7.312 |
| 1817 | 14.07 | 14.524 | 6.98 | 7.298 |
| 1818 | 14.5 | 14.41 | 7.83 | 7.316 |
| 1819 | 15.09 | 14.466 | 7.37 | 7.272 |
| 1820 | 15.12 | 14.588 | 7.62 | 7.348 |
| 1821 | 14.66 | 14.688 | 8.09 | 7.578 |
| 1822 | 15.99 | 15.072 | 8.19 | 7.82 |
| 1823 | 15.11 | 15.194 | 7.72 | 7.798 |
| 1824 | 15.81 | 15.338 | 8.55 | 8.034 |
| 1825 | 16.25 | 15.564 | 8.39 | 8.188 |
| 1826 | 16.1 | 15.852 | 8.36 | 8.242 |
| 1827 | 16.02 | 15.858 | 8.81 | 8.366 |
| 1828 | 17.38 | 16.312 | 8.17 | 8.456 |
| 1829 | 15.4 | 16.23 | 7.94 | 8.334 |
| 1830 | 16.85 | 16.35 | 8.52 | 8.36 |
| 1831 | 15.13 | 16.156 | 7.64 | 8.216 |
| 1832 | 15.51 | 16.054 | 7.45 | 7.944 |
| 1833 | 15.62 | 15.702 | 8.01 | 7.912 |
| 1834 | 15.97 | 15.816 | 8.15 | 7.954 |
| 1835 | 15.36 | 15.518 | 7.39 | 7.728 |
| 1836 | 14.42 | 15.376 | 7.7 | 7.74 |
| 1837 | 15.2 | 15.314 | 7.38 | 7.726 |
| 1838 | 15.5 | 15.29 | 7.51 | 7.626 |
| 1839 | 15.59 | 15.214 | 7.63 | 7.522 |
| 1840 | 15.74 | 15.29 | 7.8 | 7.604 |
| 1841 | 15.27 | 15.46 | 7.69 | 7.602 |
| 1842 | 15.68 | 15.556 | 8.02 | 7.73 |
| 1843 | 14.88 | 15.432 | 8.17 | 7.862 |
| 1844 | 15.46 | 15.406 | 7.65 | 7.866 |
| 1845 | 15.59 | 15.376 | 7.85 | 7.876 |
| 1846 | 15.84 | 15.49 | 8.55 | 8.048 |
| 1847 | 15.45 | 15.444 | 8.09 | 8.062 |
| 1848 | 15.53 | 15.574 | 7.98 | 8.024 |
| 1849 | 15.07 | 15.496 | 7.98 | 8.09 |
| 1850 | 15.48 | 15.474 | 7.9 | 8.1 |
| 1851 | 15.62 | 15.43 | 8.18 | 8.026 |
| 1852 | 15.38 | 15.416 | 8.1 | 8.028 |
| 1853 | 15.9 | 15.49 | 8.04 | 8.04 |
| 1854 | 15.97 | 15.67 | 8.21 | 8.086 |
| 1855 | 15.66 | 15.706 | 8.11 | 8.128 |
| 1856 | 14.61 | 15.504 | 8 | 8.092 |
| 1857 | 14.83 | 15.394 | 7.76 | 8.024 |
| 1858 | 15.46 | 15.306 | 8.1 | 8.036 |
| 1859 | 15.55 | 15.222 | 8.25 | 8.044 |
| 1860 | 15.61 | 15.212 | 7.96 | 8.014 |
| 1861 | 15.7 | 15.43 | 7.85 | 7.984 |
| 1862 | 15.46 | 15.556 | 7.56 | 7.944 |
| 1863 | 15.41 | 15.546 | 8.11 | 7.946 |
| 1864 | 15.44 | 15.524 | 7.98 | 7.892 |
| 1865 | 15.88 | 15.578 | 8.18 | 7.936 |
| 1866 | 15.46 | 15.53 | 8.29 | 8.024 |
| 1867 | 14.95 | 15.428 | 8.44 | 8.2 |
| 1868 | 14.61 | 15.268 | 8.25 | 8.228 |
| 1869 | 15.43 | 15.266 | 8.43 | 8.318 |
| 1870 | 15.93 | 15.276 | 8.2 | 8.322 |
| 1871 | 15.85 | 15.354 | 8.12 | 8.288 |
| 1872 | 14.76 | 15.316 | 8.19 | 8.238 |
| 1873 | 15.06 | 15.406 | 8.35 | 8.258 |
| 1874 | 15.51 | 15.422 | 8.43 | 8.258 |
| 1875 | 14.75 | 15.186 | 7.86 | 8.19 |
| 1876 | 15.4 | 15.096 | 8.08 | 8.182 |
| 1877 | 15.65 | 15.274 | 8.54 | 8.252 |
| 1878 | 15.88 | 15.438 | 8.83 | 8.348 |
| 1879 | 15.48 | 15.432 | 8.17 | 8.296 |
| 1880 | 16.17 | 15.716 | 8.12 | 8.348 |
| 1881 | 15.94 | 15.824 | 8.27 | 8.386 |
| 1882 | 15.53 | 15.8 | 8.13 | 8.304 |
| 1883 | 15.33 | 15.69 | 7.98 | 8.134 |
| 1884 | 15.76 | 15.746 | 7.77 | 8.054 |
| 1885 | 14.88 | 15.488 | 7.92 | 8.014 |
| 1886 | 14.88 | 15.276 | 7.95 | 7.95 |
| 1887 | 15.46 | 15.262 | 7.91 | 7.906 |
| 1888 | 15.04 | 15.204 | 8.09 | 7.928 |
| 1889 | 15.5 | 15.152 | 8.32 | 8.038 |
| 1890 | 16.42 | 15.46 | 7.97 | 8.048 |
| 1891 | 15.64 | 15.612 | 8.02 | 8.062 |
| 1892 | 14.92 | 15.504 | 8.07 | 8.094 |
| 1893 | 15.06 | 15.508 | 8.06 | 8.088 |
| 1894 | 16.12 | 15.632 | 8.16 | 8.056 |
| 1895 | 14.98 | 15.344 | 8.15 | 8.092 |
| 1896 | 15.67 | 15.35 | 8.21 | 8.13 |
| 1897 | 15.77 | 15.52 | 8.29 | 8.174 |
| 1898 | 15.96 | 15.7 | 8.18 | 8.198 |
| 1899 | 15.45 | 15.566 | 8.4 | 8.246 |
| 1900 | 16.26 | 15.822 | 8.5 | 8.316 |
| 1901 | 15.06 | 15.7 | 8.54 | 8.382 |
| 1902 | 15.5 | 15.646 | 8.3 | 8.384 |
| 1903 | 15.45 | 15.544 | 8.22 | 8.392 |
| 1904 | 14.39 | 15.332 | 8.09 | 8.33 |
| 1905 | 15.26 | 15.132 | 8.23 | 8.276 |
| 1906 | 15.98 | 15.316 | 8.38 | 8.244 |
| 1907 | 15.03 | 15.222 | 7.95 | 8.174 |
| 1908 | 15.85 | 15.302 | 8.19 | 8.168 |
| 1909 | 15.57 | 15.538 | 8.18 | 8.186 |
| 1910 | 15.42 | 15.57 | 8.22 | 8.184 |
| 1911 | 16.26 | 15.626 | 8.18 | 8.144 |
| 1912 | 15.63 | 15.746 | 8.17 | 8.188 |
| 1913 | 16.51 | 15.878 | 8.3 | 8.21 |
| 1914 | 15.31 | 15.826 | 8.59 | 8.292 |
| 1915 | 15.56 | 15.854 | 8.59 | 8.366 |
| 1916 | 15.55 | 15.712 | 8.23 | 8.376 |
| 1917 | 14.38 | 15.462 | 8.02 | 8.346 |
| 1918 | 15.45 | 15.25 | 8.13 | 8.312 |
| 1919 | 15.92 | 15.372 | 8.38 | 8.27 |
| 1920 | 15.12 | 15.284 | 8.36 | 8.224 |
| 1921 | 16.81 | 15.536 | 8.57 | 8.292 |
| 1922 | 16.16 | 15.892 | 8.41 | 8.37 |
| 1923 | 15.79 | 15.96 | 8.42 | 8.428 |
| 1924 | 15.13 | 15.802 | 8.51 | 8.454 |
| 1925 | 16.13 | 16.004 | 8.53 | 8.488 |
| 1926 | 15.54 | 15.75 | 8.73 | 8.52 |
| 1927 | 15.85 | 15.688 | 8.52 | 8.542 |
| 1928 | 15.7 | 15.67 | 8.63 | 8.584 |
| 1929 | 16.12 | 15.868 | 8.24 | 8.53 |
| 1930 | 16.07 | 15.856 | 8.63 | 8.55 |
| 1931 | 16.4 | 16.028 | 8.72 | 8.548 |
| 1932 | 16.69 | 16.196 | 8.71 | 8.586 |
| 1933 | 16.87 | 16.43 | 8.34 | 8.528 |
| 1934 | 15.91 | 16.388 | 8.63 | 8.606 |
| 1935 | 15.71 | 16.316 | 8.52 | 8.584 |
| 1936 | 15.88 | 16.212 | 8.55 | 8.55 |
| 1937 | 15.94 | 16.062 | 8.7 | 8.548 |
| 1938 | 16.55 | 15.998 | 8.86 | 8.652 |
| 1939 | 16.74 | 16.164 | 8.76 | 8.678 |
| 1940 | 14.96 | 16.014 | 8.76 | 8.726 |
| 1941 | 16.05 | 16.048 | 8.77 | 8.77 |
| 1942 | 16.23 | 16.106 | 8.73 | 8.776 |
| 1943 | 15.84 | 15.964 | 8.76 | 8.756 |
| 1944 | 15.88 | 15.792 | 8.85 | 8.774 |
| 1945 | 16.31 | 16.062 | 8.58 | 8.738 |
| 1946 | 16.48 | 16.148 | 8.68 | 8.72 |
| 1947 | 15.63 | 16.028 | 8.8 | 8.734 |
| 1948 | 16.06 | 16.072 | 8.75 | 8.732 |
| 1949 | 17.06 | 16.308 | 8.59 | 8.68 |
| 1950 | 16.06 | 16.258 | 8.37 | 8.638 |
| 1951 | 16.17 | 16.196 | 8.63 | 8.628 |
| 1952 | 16.39 | 16.348 | 8.64 | 8.596 |
| 1953 | 16.84 | 16.504 | 8.87 | 8.62 |
| 1954 | 16.27 | 16.346 | 8.56 | 8.614 |
| 1955 | 15.91 | 16.316 | 8.63 | 8.666 |
| 1956 | 16.22 | 16.326 | 8.28 | 8.596 |
| 1957 | 16.51 | 16.35 | 8.73 | 8.614 |
| 1958 | 14.99 | 15.98 | 8.77 | 8.594 |
| 1959 | 16.54 | 16.034 | 8.73 | 8.628 |
| 1960 | 15.6 | 15.972 | 8.58 | 8.618 |
| 1961 | 15.86 | 15.9 | 8.8 | 8.722 |
| 1962 | 15.38 | 15.674 | 8.75 | 8.726 |
| 1963 | 14.95 | 15.666 | 8.86 | 8.744 |
| 1964 | 15.98 | 15.554 | 8.41 | 8.68 |
| 1965 | 15.62 | 15.558 | 8.53 | 8.67 |
| 1966 | 15.28 | 15.442 | 8.6 | 8.63 |
| 1967 | 15.2 | 15.406 | 8.7 | 8.62 |
| 1968 | 15.56 | 15.528 | 8.52 | 8.552 |
| 1969 | 15.35 | 15.402 | 8.6 | 8.59 |
| 1970 | 15.84 | 15.446 | 8.7 | 8.624 |
| 1971 | 16.26 | 15.642 | 8.6 | 8.624 |
| 1972 | 16.09 | 15.82 | 8.5 | 8.584 |
| 1973 | 16.5 | 16.008 | 8.95 | 8.67 |
| 1974 | 16.45 | 16.228 | 8.47 | 8.644 |
| 1975 | 16.56 | 16.372 | 8.74 | 8.652 |
| 1976 | 15.55 | 16.23 | 8.35 | 8.602 |
| 1977 | 16.06 | 16.224 | 8.85 | 8.672 |
| 1978 | 15.41 | 16.006 | 8.69 | 8.62 |
| 1979 | 15.74 | 15.864 | 8.73 | 8.672 |
| 1980 | 15.72 | 15.696 | 8.98 | 8.72 |
| 1981 | 15.32 | 15.65 | 9.17 | 8.884 |
| 1982 | 15.94 | 15.626 | 8.64 | 8.842 |
| 1983 | 16.06 | 15.756 | 9.03 | 8.91 |
| 1984 | 16.04 | 15.816 | 8.69 | 8.902 |
| 1985 | 16.63 | 15.998 | 8.66 | 8.838 |
| 1986 | 16.5 | 16.234 | 8.83 | 8.77 |
| 1987 | 15.8 | 16.206 | 8.99 | 8.84 |
| 1988 | 15.45 | 16.084 | 9.2 | 8.874 |
| 1989 | 16.14 | 16.104 | 8.92 | 8.92 |
| 1990 | 17.49 | 16.276 | 9.23 | 9.034 |
| 1991 | 17.22 | 16.42 | 9.18 | 9.104 |
| 1992 | 15.93 | 16.446 | 8.84 | 9.074 |
| 1993 | 16.12 | 16.58 | 8.87 | 9.008 |
| 1994 | 16.58 | 16.668 | 9.04 | 9.032 |
| 1995 | 16.17 | 16.404 | 9.35 | 9.056 |
| 1996 | 15.61 | 16.082 | 9.04 | 9.028 |
| 1997 | 16.09 | 16.114 | 9.2 | 9.1 |
| 1998 | 17.2 | 16.33 | 9.52 | 9.23 |
| 1999 | 16.7 | 16.354 | 9.29 | 9.28 |
| 2000 | 15.97 | 16.314 | 9.2 | 9.25 |
| 2001 | 16.47 | 16.486 | 9.41 | 9.324 |
| 2002 | 17.25 | 16.718 | 9.57 | 9.398 |
| 2003 | 16.2 | 16.518 | 9.53 | 9.4 |
| 2004 | 16.48 | 16.474 | 9.32 | 9.406 |
| 2005 | 16.28 | 16.536 | 9.7 | 9.506 |
| 2006 | 16.91 | 16.624 | 9.53 | 9.53 |
| 2007 | 16.95 | 16.564 | 9.73 | 9.562 |
| 2008 | 16.93 | 16.71 | 9.43 | 9.542 |
| 2009 | 16.47 | 16.708 | 9.51 | 9.58 |
| 2010 | 16.3 | 16.712 | 9.7 | 9.58 |
| 2011 | 17.22 | 16.774 | 9.52 | 9.578 |
| 2012 | 17.37 | 16.858 | 9.51 | 9.534 |
| 2013 | 17.29 | 16.93 | 9.61 | 9.57 |

**Dataset used for Qingdao**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Local avg\_temp (Celsius)** | **Local 5 year moving average** | **Global avg\_temp (Celsius)** | **Global 5 year moving average** |
| 1841 | 10.87 | 19.72 | 7.69 | 7.602 |
| 1842 | 11.65 | 17.62 | 8.02 | 7.73 |
| 1843 | 11.8 | 15.78 | 8.17 | 7.862 |
| 1844 | 11.72 | 13.808 | 7.65 | 7.866 |
| 1845 | 11.76 | 11.56 | 7.85 | 7.876 |
| 1846 | 12.15 | 11.816 | 8.55 | 8.048 |
| 1847 | 12.16 | 11.918 | 8.09 | 8.062 |
| 1848 | 11.7 | 11.898 | 7.98 | 8.024 |
| 1849 | 11.83 | 11.92 | 7.98 | 8.09 |
| 1850 | 11.34 | 11.836 | 7.9 | 8.1 |
| 1851 | 10.99 | 11.604 | 8.18 | 8.026 |
| 1852 | 11.2 | 11.412 | 8.1 | 8.028 |
| 1853 | 11.56 | 11.384 | 8.04 | 8.04 |
| 1854 | 12.08 | 11.434 | 8.21 | 8.086 |
| 1855 | 12.21 | 11.608 | 8.11 | 8.128 |
| 1856 | 11.81 | 11.772 | 8 | 8.092 |
| 1857 | 11.89 | 11.91 | 7.76 | 8.024 |
| 1858 | 11.9 | 11.978 | 8.1 | 8.036 |
| 1859 | 11.98 | 11.958 | 8.25 | 8.044 |
| 1860 | 10.99 | 11.714 | 7.96 | 8.014 |
| 1861 | 11.32 | 11.616 | 7.85 | 7.984 |
| 1862 | 10.98 | 11.434 | 7.56 | 7.944 |
| 1863 | 11.89 | 11.432 | 8.11 | 7.946 |
| 1864 | 11.31 | 11.298 | 7.98 | 7.892 |
| 1865 | 11.77 | 11.454 | 8.18 | 7.936 |
| 1866 | 11.74 | 11.538 | 8.29 | 8.024 |
| 1867 | 12.2 | 11.782 | 8.44 | 8.2 |
| 1868 | 12.03 | 11.81 | 8.25 | 8.228 |
| 1869 | 12.37 | 12.022 | 8.43 | 8.318 |
| 1870 | 11.98 | 12.064 | 8.2 | 8.322 |
| 1871 | 12.18 | 12.152 | 8.12 | 8.288 |
| 1872 | 12 | 12.112 | 8.19 | 8.238 |
| 1873 | 11.78 | 12.062 | 8.35 | 8.258 |
| 1874 | 12 | 11.988 | 8.43 | 8.258 |
| 1875 | 11.92 | 11.976 | 7.86 | 8.19 |
| 1876 | 12.26 | 11.992 | 8.08 | 8.182 |
| 1877 | 11.75 | 11.942 | 8.54 | 8.252 |
| 1878 | 11.75 | 11.936 | 8.83 | 8.348 |
| 1879 | 12.14 | 11.964 | 8.17 | 8.296 |
| 1880 | 11.59 | 11.898 | 8.12 | 8.348 |
| 1881 | 11.8 | 11.806 | 8.27 | 8.386 |
| 1882 | 11.93 | 11.842 | 8.13 | 8.304 |
| 1883 | 11.67 | 11.826 | 7.98 | 8.134 |
| 1884 | 11.04 | 11.606 | 7.77 | 8.054 |
| 1885 | 11.27 | 11.542 | 7.92 | 8.014 |
| 1886 | 11.59 | 11.5 | 7.95 | 7.95 |
| 1887 | 11.77 | 11.468 | 7.91 | 7.906 |
| 1888 | 11.81 | 11.496 | 8.09 | 7.928 |
| 1889 | 11.34 | 11.556 | 8.32 | 8.038 |
| 1890 | 12.56 | 11.814 | 7.97 | 8.048 |
| 1891 | 11.97 | 11.89 | 8.02 | 8.062 |
| 1892 | 11.45 | 11.826 | 8.07 | 8.094 |
| 1893 | 11.24 | 11.712 | 8.06 | 8.088 |
| 1894 | 12.74 | 11.992 | 8.16 | 8.056 |
| 1895 | 11.38 | 11.756 | 8.15 | 8.092 |
| 1896 | 11.83 | 11.728 | 8.21 | 8.13 |
| 1897 | 11.84 | 11.806 | 8.29 | 8.174 |
| 1898 | 12.93 | 12.144 | 8.18 | 8.198 |
| 1899 | 12.74 | 12.144 | 8.4 | 8.246 |
| 1900 | 12 | 12.268 | 8.5 | 8.316 |
| 1901 | 11.68 | 12.238 | 8.54 | 8.382 |
| 1902 | 12.55 | 12.38 | 8.3 | 8.384 |
| 1903 | 12.28 | 12.25 | 8.22 | 8.392 |
| 1904 | 12.11 | 12.124 | 8.09 | 8.33 |
| 1905 | 11.93 | 12.11 | 8.23 | 8.276 |
| 1906 | 11.62 | 12.098 | 8.38 | 8.244 |
| 1907 | 12.02 | 11.992 | 7.95 | 8.174 |
| 1908 | 11.77 | 11.89 | 8.19 | 8.168 |
| 1909 | 11.85 | 11.838 | 8.18 | 8.186 |
| 1910 | 11.4 | 11.732 | 8.22 | 8.184 |
| 1911 | 11.45 | 11.698 | 8.18 | 8.144 |
| 1912 | 11.57 | 11.608 | 8.17 | 8.188 |
| 1913 | 11.41 | 11.536 | 8.3 | 8.21 |
| 1914 | 12.68 | 11.702 | 8.59 | 8.292 |
| 1915 | 11.81 | 11.784 | 8.59 | 8.366 |
| 1916 | 11.83 | 11.86 | 8.23 | 8.376 |
| 1917 | 11.13 | 11.772 | 8.02 | 8.346 |
| 1918 | 11.79 | 11.848 | 8.13 | 8.312 |
| 1919 | 12.26 | 11.764 | 8.38 | 8.27 |
| 1920 | 12.46 | 11.894 | 8.36 | 8.224 |
| 1921 | 11.71 | 11.87 | 8.57 | 8.292 |
| 1922 | 12.21 | 12.086 | 8.41 | 8.37 |
| 1923 | 11.67 | 12.062 | 8.42 | 8.428 |
| 1924 | 12.01 | 12.012 | 8.51 | 8.454 |
| 1925 | 11.9 | 11.9 | 8.53 | 8.488 |
| 1926 | 12.11 | 11.98 | 8.73 | 8.52 |
| 1927 | 12.3 | 11.998 | 8.52 | 8.542 |
| 1928 | 12.16 | 12.096 | 8.63 | 8.584 |
| 1929 | 12.22 | 12.138 | 8.24 | 8.53 |
| 1930 | 12.29 | 12.216 | 8.63 | 8.55 |
| 1931 | 11.75 | 12.144 | 8.72 | 8.548 |
| 1932 | 12.44 | 12.172 | 8.71 | 8.586 |
| 1933 | 11.94 | 12.128 | 8.34 | 8.528 |
| 1934 | 11.91 | 12.066 | 8.63 | 8.606 |
| 1935 | 12.83 | 12.174 | 8.52 | 8.584 |
| 1936 | 11.23 | 12.07 | 8.55 | 8.55 |
| 1937 | 12.43 | 12.068 | 8.7 | 8.548 |
| 1938 | 12.48 | 12.176 | 8.86 | 8.652 |
| 1939 | 12.77 | 12.348 | 8.76 | 8.678 |
| 1940 | 12.43 | 12.268 | 8.76 | 8.726 |
| 1941 | 12.77 | 12.576 | 8.77 | 8.77 |
| 1942 | 12.32 | 12.554 | 8.73 | 8.776 |
| 1943 | 12.55 | 12.568 | 8.76 | 8.756 |
| 1944 | 12.22 | 12.458 | 8.85 | 8.774 |
| 1945 | 11.95 | 12.362 | 8.58 | 8.738 |
| 1946 | 12.95 | 12.398 | 8.68 | 8.72 |
| 1947 | 11.29 | 12.192 | 8.8 | 8.734 |
| 1948 | 12.79 | 12.24 | 8.75 | 8.732 |
| 1949 | 13.14 | 12.424 | 8.59 | 8.68 |
| 1950 | 12.79 | 12.592 | 8.37 | 8.638 |
| 1951 | 12.53 | 12.508 | 8.63 | 8.628 |
| 1952 | 12.27 | 12.704 | 8.64 | 8.596 |
| 1953 | 12.74 | 12.694 | 8.87 | 8.62 |
| 1954 | 12.06 | 12.478 | 8.56 | 8.614 |
| 1955 | 12.57 | 12.434 | 8.63 | 8.666 |
| 1956 | 11.56 | 12.24 | 8.28 | 8.596 |
| 1957 | 11.68 | 12.122 | 8.73 | 8.614 |
| 1958 | 12.43 | 12.06 | 8.77 | 8.594 |
| 1959 | 13 | 12.248 | 8.73 | 8.628 |
| 1960 | 12.7 | 12.274 | 8.58 | 8.618 |
| 1961 | 13.26 | 12.614 | 8.8 | 8.722 |
| 1962 | 12.57 | 12.792 | 8.75 | 8.726 |
| 1963 | 12.13 | 12.732 | 8.86 | 8.744 |
| 1964 | 12.62 | 12.656 | 8.41 | 8.68 |
| 1965 | 12.55 | 12.626 | 8.53 | 8.67 |
| 1966 | 12.59 | 12.492 | 8.6 | 8.63 |
| 1967 | 12.33 | 12.444 | 8.7 | 8.62 |
| 1968 | 12.33 | 12.484 | 8.52 | 8.552 |
| 1969 | 11.43 | 12.246 | 8.6 | 8.59 |
| 1970 | 12.06 | 12.148 | 8.7 | 8.624 |
| 1971 | 12.25 | 12.08 | 8.6 | 8.624 |
| 1972 | 11.99 | 12.012 | 8.5 | 8.584 |
| 1973 | 12.72 | 12.09 | 8.95 | 8.67 |
| 1974 | 12.07 | 12.218 | 8.47 | 8.644 |
| 1975 | 12.99 | 12.404 | 8.74 | 8.652 |
| 1976 | 11.85 | 12.324 | 8.35 | 8.602 |
| 1977 | 12.59 | 12.444 | 8.85 | 8.672 |
| 1978 | 13.07 | 12.514 | 8.69 | 8.62 |
| 1979 | 12.84 | 12.668 | 8.73 | 8.672 |
| 1980 | 11.76 | 12.422 | 8.98 | 8.72 |
| 1981 | 12.35 | 12.522 | 9.17 | 8.884 |
| 1982 | 12.94 | 12.592 | 8.64 | 8.842 |
| 1983 | 12.96 | 12.57 | 9.03 | 8.91 |
| 1984 | 12.13 | 12.428 | 8.69 | 8.902 |
| 1985 | 12.1 | 12.496 | 8.66 | 8.838 |
| 1986 | 12.18 | 12.462 | 8.83 | 8.77 |
| 1987 | 12.44 | 12.362 | 8.99 | 8.84 |
| 1988 | 12.73 | 12.316 | 9.2 | 8.874 |
| 1989 | 13.21 | 12.532 | 8.92 | 8.92 |
| 1990 | 13.26 | 12.764 | 9.23 | 9.034 |
| 1991 | 12.71 | 12.87 | 9.18 | 9.104 |
| 1992 | 12.82 | 12.946 | 8.84 | 9.074 |
| 1993 | 12.54 | 12.908 | 8.87 | 9.008 |
| 1994 | 13.69 | 13.004 | 9.04 | 9.032 |
| 1995 | 12.92 | 12.936 | 9.35 | 9.056 |
| 1996 | 12.54 | 12.902 | 9.04 | 9.028 |
| 1997 | 13.34 | 13.006 | 9.2 | 9.1 |
| 1998 | 13.69 | 13.236 | 9.52 | 9.23 |
| 1999 | 13.54 | 13.206 | 9.29 | 9.28 |
| 2000 | 13.16 | 13.254 | 9.2 | 9.25 |
| 2001 | 13.26 | 13.398 | 9.41 | 9.324 |
| 2002 | 13.52 | 13.434 | 9.57 | 9.398 |
| 2003 | 12.89 | 13.274 | 9.53 | 9.4 |
| 2004 | 13.66 | 13.298 | 9.32 | 9.406 |
| 2005 | 12.87 | 13.24 | 9.7 | 9.506 |
| 2006 | 13.58 | 13.304 | 9.53 | 9.53 |
| 2007 | 13.88 | 13.376 | 9.73 | 9.562 |
| 2008 | 13.08 | 13.414 | 9.43 | 9.542 |
| 2009 | 13.31 | 13.344 | 9.51 | 9.58 |
| 2010 | 12.75 | 13.32 | 9.7 | 9.58 |
| 2011 | 12.66 | 13.136 | 9.52 | 9.578 |
| 2012 | 12.7 | 12.9 | 9.51 | 9.534 |
| 2013 | 13.01 | 12.886 | 9.61 | 9.57 |

**Dataset used for Moscow**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Local avg\_temp (Celsius)** | **Local 5 year moving average** | **Global avg\_temp (Celsius)** | **Global 5 year moving average** |
| 1750 | 4.84 | 4.84 | #REF! | 8.618 |
| 1751 | 5.07 | 4.955 | #REF! | 8.288 |
| 1752 | -2.08 | 2.61 | #REF! | 8.192 |
| 1753 | 3.87 | 2.925 | 7.7175 | 7.958 |
| 1754 | 4.07 | 3.154 | 7.868 | 7.942 |
| 1755 | 3.99 | 2.984 | 7.796 | 7.86 |
| 1756 | 4.51 | 2.872 | 7.97 | 8.012 |
| 1757 | 4.66 | 4.22 | 8.618 | 8.094 |
| 1758 | 2.22 | 3.89 | 8.288 | 8.306 |
| 1759 | 3.45 | 3.766 | 8.192 | 8.234 |
| 1760 | 2.41 | 3.45 | 7.958 | 8.156 |
| 1761 | 4.14 | 3.376 | 7.942 | 8.012 |
| 1762 | 4.1 | 3.264 | 7.86 | 7.87 |
| 1763 | 2.91 | 3.402 | 8.012 | 7.758 |
| 1764 | 4.35 | 3.582 | 8.094 | 7.646 |
| 1765 | 4.3 | 3.96 | 8.306 | 7.64 |
| 1766 | 4.23 | 3.978 | 8.234 | 7.928 |
| 1767 | 4.05 | 3.968 | 8.156 | 8.144 |
| 1768 | 2.72 | 3.93 | 8.012 | 8.442 |
| 1769 | 3.85 | 3.83 | 7.87 | 8.532 |
| 1770 | 3.97 | 3.764 | 7.758 | 8.546 |
| 1771 | 3.23 | 3.564 | 7.646 | 8.61 |
| 1772 | 3.93 | 3.54 | 7.64 | 8.652 |
| 1773 | 4.79 | 3.954 | 7.928 | 8.702 |
| 1774 | 4.47 | 4.078 | 8.144 | 8.662 |
| 1775 | 5.29 | 4.342 | 8.442 | 8.59 |
| 1776 | 4.16 | 4.528 | 8.532 | 8.418 |
| 1777 | 3.78 | 4.498 | 8.546 | 8.194 |
| 1778 | 4.26 | 4.392 | 8.61 | 7.78 |
| 1779 | 4.99 | 4.496 | 8.652 | 7.812 |
| 1780 | 3.9 | 4.218 | 8.702 | 7.838 |
| 1781 | 3.92 | 4.17 | 8.662 | 7.992 |
| 1782 | 3.33 | 4.08 | 8.59 | 8.086 |
| 1783 | 3.89 | 4.006 | 8.418 | 8.21 |
| 1784 | 3.85 | 3.778 | 8.194 | 8.204 |
| 1785 | 2.65 | 3.528 | 7.78 | 8.216 |
| 1786 | 3.38 | 3.42 | 7.812 | 8.172 |
| 1787 | 4.14 | 3.582 | 7.838 | 8.212 |
| 1788 | 3.31 | 3.466 | 7.992 | 8.286 |
| 1789 | 4.6 | 3.616 | 8.086 | 8.294 |
| 1790 | 3.78 | 3.842 | 8.21 | 8.378 |
| 1791 | 4.8 | 4.126 | 8.204 | 8.466 |
| 1792 | 3.85 | 4.068 | 8.216 | 8.462 |
| 1793 | 4.32 | 4.27 | 8.172 | 8.488 |
| 1794 | 4.99 | 4.348 | 8.212 | 8.552 |
| 1795 | 4.05 | 4.402 | 8.286 | 8.566 |
| 1796 | 4.11 | 4.264 | 8.294 | 8.532 |
| 1797 | 5.19 | 4.532 | 8.378 | 8.598 |
| 1798 | 4.59 | 4.586 | 8.466 | 8.614 |
| 1799 | 3.35 | 4.258 | 8.462 | 8.582 |
| 1800 | 3.8 | 4.208 | 8.488 | 8.522 |
| 1801 | 4.74 | 4.334 | 8.552 | 8.348 |
| 1802 | 4.48 | 4.192 | 8.566 | 7.996 |
| 1803 | 3.35 | 3.944 | 8.532 | 7.668 |
| 1804 | 3.92 | 4.058 | 8.598 | 7.354 |
| 1805 | 3.65 | 4.028 | 8.614 | 7.108 |
| 1806 | 4.18 | 3.916 | 8.582 | 7.13 |
| 1807 | 4.15 | 3.85 | 8.522 | 7.232 |
| 1808 | 3.21 | 3.822 | 8.348 | 7.296 |
| 1809 | 1.9 | 3.418 | 7.996 | 7.312 |
| 1810 | 2.09 | 3.106 | 7.668 | 7.298 |
| 1811 | 3.21 | 2.912 | 7.354 | 7.316 |
| 1812 | 2.4 | 2.562 | 7.108 | 7.272 |
| 1813 | 3.45 | 2.61 | 7.13 | 7.348 |
| 1814 | 2.79 | 2.788 | 7.232 | 7.578 |
| 1815 | 2.82 | 2.934 | 7.296 | 7.82 |
| 1816 | 3.23 | 2.938 | 7.312 | 7.798 |
| 1817 | 3.17 | 3.092 | 7.298 | 8.034 |
| 1818 | 4.11 | 3.224 | 7.316 | 8.188 |
| 1819 | 3.39 | 3.344 | 7.272 | 8.242 |
| 1820 | 3.12 | 3.404 | 7.348 | 8.366 |
| 1821 | 3.88 | 3.534 | 7.578 | 8.456 |
| 1822 | 5.01 | 3.902 | 7.82 | 8.334 |
| 1823 | 3.99 | 3.878 | 7.798 | 8.36 |
| 1824 | 4.98 | 4.196 | 8.034 | 8.216 |
| 1825 | 3.6 | 4.292 | 8.188 | 7.944 |
| 1826 | 4.84 | 4.484 | 8.242 | 7.912 |
| 1827 | 4.37 | 4.356 | 8.366 | 7.954 |
| 1828 | 2.78 | 4.114 | 8.456 | 7.728 |
| 1829 | 2.45 | 3.608 | 8.334 | 7.74 |
| 1830 | 3.64 | 3.616 | 8.36 | 7.726 |
| 1831 | 3.5 | 3.348 | 8.216 | 7.626 |
| 1832 | 2.62 | 2.998 | 7.944 | 7.522 |
| 1833 | 3.93 | 3.228 | 7.912 | 7.604 |
| 1834 | 3.86 | 3.51 | 7.954 | 7.602 |
| 1835 | 2.89 | 3.36 | 7.728 | 7.73 |
| 1836 | 4.03 | 3.466 | 7.74 | 7.862 |
| 1837 | 2.97 | 3.536 | 7.726 | 7.866 |
| 1838 | 2.85 | 3.32 | 7.626 | 7.876 |
| 1839 | 3.49 | 3.246 | 7.522 | 8.048 |
| 1840 | 2.46 | 3.16 | 7.604 | 8.062 |
| 1841 | 4.46 | 3.246 | 7.602 | 8.024 |
| 1842 | 3.51 | 3.354 | 7.73 | 8.09 |
| 1843 | 4.81 | 3.746 | 7.862 | 8.1 |
| 1844 | 3 | 3.648 | 7.866 | 8.026 |
| 1845 | 2.93 | 3.742 | 7.876 | 8.028 |
| 1846 | 3.76 | 3.602 | 8.048 | 8.04 |
| 1847 | 4.02 | 3.704 | 8.062 | 8.086 |
| 1848 | 4.44 | 3.63 | 8.024 | 8.128 |
| 1849 | 3.18 | 3.666 | 8.09 | 8.092 |
| 1850 | 3.53 | 3.786 | 8.1 | 8.024 |
| 1851 | 4.52 | 3.938 | 8.026 | 8.036 |
| 1852 | 3.05 | 3.744 | 8.028 | 8.044 |
| 1853 | 3.87 | 3.63 | 8.04 | 8.014 |
| 1854 | 4.36 | 3.866 | 8.086 | 7.984 |
| 1855 | 3.44 | 3.848 | 8.128 | 7.944 |
| 1856 | 3.08 | 3.56 | 8.092 | 7.946 |
| 1857 | 3.81 | 3.712 | 8.024 | 7.892 |
| 1858 | 3.88 | 3.714 | 8.036 | 7.936 |
| 1859 | 4.99 | 3.84 | 8.044 | 8.024 |
| 1860 | 3.66 | 3.884 | 8.014 | 8.2 |
| 1861 | 3.25 | 3.918 | 7.984 | 8.228 |
| 1862 | 1.58 | 3.472 | 7.944 | 8.318 |
| 1863 | 5.41 | 3.778 | 7.946 | 8.322 |
| 1864 | 3.21 | 3.422 | 7.892 | 8.288 |
| 1865 | 3.27 | 3.344 | 7.936 | 8.238 |
| 1866 | 4.31 | 3.556 | 8.024 | 8.258 |
| 1867 | 2.29 | 3.698 | 8.2 | 8.258 |
| 1868 | 3.78 | 3.372 | 8.228 | 8.19 |
| 1869 | 5.04 | 3.738 | 8.318 | 8.182 |
| 1870 | 2.67 | 3.618 | 8.322 | 8.252 |
| 1871 | 2.25 | 3.206 | 8.288 | 8.348 |
| 1872 | 5.08 | 3.764 | 8.238 | 8.296 |
| 1873 | 4.13 | 3.834 | 8.258 | 8.348 |
| 1874 | 4.36 | 3.698 | 8.258 | 8.386 |
| 1875 | 1.5 | 3.464 | 8.19 | 8.304 |
| 1876 | 3.02 | 3.618 | 8.182 | 8.134 |
| 1877 | 3.13 | 3.228 | 8.252 | 8.054 |
| 1878 | 5.13 | 3.428 | 8.348 | 8.014 |
| 1879 | 3.56 | 3.268 | 8.296 | 7.95 |
| 1880 | 3.24 | 3.616 | 8.348 | 7.906 |
| 1881 | 2.84 | 3.58 | 8.386 | 7.928 |
| 1882 | 4.96 | 3.946 | 8.304 | 8.038 |
| 1883 | 4.03 | 3.726 | 8.134 | 8.048 |
| 1884 | 3.34 | 3.682 | 8.054 | 8.062 |
| 1885 | 4 | 3.834 | 8.014 | 8.094 |
| 1886 | 3.99 | 4.064 | 7.95 | 8.088 |
| 1887 | 4.43 | 3.958 | 7.906 | 8.056 |
| 1888 | 2.26 | 3.604 | 7.928 | 8.092 |
| 1889 | 3.57 | 3.65 | 8.038 | 8.13 |
| 1890 | 4.63 | 3.776 | 8.048 | 8.174 |
| 1891 | 3.97 | 3.772 | 8.062 | 8.198 |
| 1892 | 3.31 | 3.548 | 8.094 | 8.246 |
| 1893 | 2.6 | 3.616 | 8.088 | 8.316 |
| 1894 | 4.01 | 3.704 | 8.056 | 8.382 |
| 1895 | 3.66 | 3.51 | 8.092 | 8.384 |
| 1896 | 3.44 | 3.404 | 8.13 | 8.392 |
| 1897 | 4.49 | 3.64 | 8.174 | 8.33 |
| 1898 | 4.04 | 3.928 | 8.198 | 8.276 |
| 1899 | 3.76 | 3.878 | 8.246 | 8.244 |
| 1900 | 3.27 | 3.8 | 8.316 | 8.174 |
| 1901 | 4.57 | 4.026 | 8.382 | 8.168 |
| 1902 | 2.67 | 3.662 | 8.384 | 8.186 |
| 1903 | 5.24 | 3.902 | 8.392 | 8.184 |
| 1904 | 3.31 | 3.812 | 8.33 | 8.144 |
| 1905 | 4.54 | 4.066 | 8.276 | 8.188 |
| 1906 | 5.06 | 4.164 | 8.244 | 8.21 |
| 1907 | 2.39 | 4.108 | 8.174 | 8.292 |
| 1908 | 2.56 | 3.572 | 8.168 | 8.366 |
| 1909 | 3.76 | 3.662 | 8.186 | 8.376 |
| 1910 | 5.03 | 3.76 | 8.184 | 8.346 |
| 1911 | 3.39 | 3.426 | 8.144 | 8.312 |
| 1912 | 3.14 | 3.576 | 8.188 | 8.27 |
| 1913 | 4.82 | 4.028 | 8.21 | 8.224 |
| 1914 | 4.57 | 4.19 | 8.292 | 8.292 |
| 1915 | 3.52 | 3.888 | 8.366 | 8.37 |
| 1916 | 4.07 | 4.024 | 8.376 | 8.428 |
| 1917 | 3.28 | 4.052 | 8.346 | 8.454 |
| 1918 | 4.05 | 3.898 | 8.312 | 8.488 |
| 1919 | 3.19 | 3.622 | 8.27 | 8.52 |
| 1920 | 4.64 | 3.846 | 8.224 | 8.542 |
| 1921 | 4.33 | 3.898 | 8.292 | 8.584 |
| 1922 | 4.01 | 4.044 | 8.37 | 8.53 |
| 1923 | 3.94 | 4.022 | 8.428 | 8.55 |
| 1924 | 3.67 | 4.118 | 8.454 | 8.548 |
| 1925 | 5.39 | 4.268 | 8.488 | 8.586 |
| 1926 | 3.37 | 4.076 | 8.52 | 8.528 |
| 1927 | 3.5 | 3.974 | 8.542 | 8.606 |
| 1928 | 3.3 | 3.846 | 8.584 | 8.584 |
| 1929 | 3.01 | 3.714 | 8.53 | 8.55 |
| 1930 | 4.55 | 3.546 | 8.55 | 8.548 |
| 1931 | 3.28 | 3.528 | 8.548 | 8.652 |
| 1932 | 5.1 | 3.848 | 8.586 | 8.678 |
| 1933 | 2.72 | 3.732 | 8.528 | 8.726 |
| 1934 | 5.26 | 4.182 | 8.606 | 8.77 |
| 1935 | 4.56 | 4.184 | 8.584 | 8.776 |
| 1936 | 5.36 | 4.6 | 8.55 | 8.756 |
| 1937 | 5.16 | 4.612 | 8.548 | 8.774 |
| 1938 | 5.92 | 5.252 | 8.652 | 8.738 |
| 1939 | 4.63 | 5.126 | 8.678 | 8.72 |
| 1940 | 3.16 | 4.846 | 8.726 | 8.734 |
| 1941 | 1.67 | 4.108 | 8.77 | 8.732 |
| 1942 | 2.09 | 3.494 | 8.776 | 8.68 |
| 1943 | 4.63 | 3.236 | 8.756 | 8.638 |
| 1944 | 4.76 | 3.262 | 8.774 | 8.628 |
| 1945 | 2.94 | 3.218 | 8.738 | 8.596 |
| 1946 | 4.09 | 3.702 | 8.72 | 8.62 |
| 1947 | 3.77 | 4.038 | 8.734 | 8.614 |
| 1948 | 4.78 | 4.068 | 8.732 | 8.666 |
| 1949 | 5.27 | 4.17 | 8.68 | 8.596 |
| 1950 | 3.93 | 4.368 | 8.638 | 8.614 |
| 1951 | 3.99 | 4.348 | 8.628 | 8.594 |
| 1952 | 4.21 | 4.436 | 8.596 | 8.628 |
| 1953 | 4 | 4.28 | 8.62 | 8.618 |
| 1954 | 4.04 | 4.034 | 8.614 | 8.722 |
| 1955 | 3.71 | 3.99 | 8.666 | 8.726 |
| 1956 | 2.45 | 3.682 | 8.596 | 8.744 |
| 1957 | 5.38 | 3.916 | 8.614 | 8.68 |
| 1958 | 3.89 | 3.894 | 8.594 | 8.67 |
| 1959 | 4.3 | 3.946 | 8.628 | 8.63 |
| 1960 | 4.5 | 4.104 | 8.618 | 8.62 |
| 1961 | 5.28 | 4.67 | 8.722 | 8.552 |
| 1962 | 4.54 | 4.502 | 8.726 | 8.59 |
| 1963 | 3.17 | 4.358 | 8.744 | 8.624 |
| 1964 | 4.42 | 4.382 | 8.68 | 8.624 |
| 1965 | 3.35 | 4.152 | 8.67 | 8.584 |
| 1966 | 4.81 | 4.058 | 8.63 | 8.67 |
| 1967 | 4.55 | 4.06 | 8.62 | 8.644 |
| 1968 | 3.58 | 4.142 | 8.552 | 8.652 |
| 1969 | 2.47 | 3.752 | 8.59 | 8.602 |
| 1970 | 4.27 | 3.936 | 8.624 | 8.672 |
| 1971 | 4.37 | 3.848 | 8.624 | 8.62 |
| 1972 | 5.27 | 3.992 | 8.584 | 8.672 |
| 1973 | 4.48 | 4.172 | 8.67 | 8.72 |
| 1974 | 5.45 | 4.768 | 8.644 | 8.884 |
| 1975 | 6.01 | 5.116 | 8.652 | 8.842 |
| 1976 | 2.65 | 4.772 | 8.602 | 8.91 |
| 1977 | 4.43 | 4.604 | 8.672 | 8.902 |
| 1978 | 3.21 | 4.35 | 8.62 | 8.838 |
| 1979 | 4.37 | 4.134 | 8.672 | 8.77 |
| 1980 | 3.41 | 3.614 | 8.72 | 8.84 |
| 1981 | 5.67 | 4.218 | 8.884 | 8.874 |
| 1982 | 4.75 | 4.282 | 8.842 | 8.92 |
| 1983 | 5.65 | 4.77 | 8.91 | 9.034 |
| 1984 | 4.42 | 4.78 | 8.902 | 9.104 |
| 1985 | 3.3 | 4.758 | 8.838 | 9.074 |
| 1986 | 4.19 | 4.462 | 8.77 | 9.008 |
| 1987 | 2.49 | 4.01 | 8.84 | 9.032 |
| 1988 | 4.89 | 3.858 | 8.874 | 9.056 |
| 1989 | 6.63 | 4.3 | 8.92 | 9.028 |
| 1990 | 5.81 | 4.802 | 9.034 | 9.1 |
| 1991 | 5.62 | 5.088 | 9.104 | 9.23 |
| 1992 | 5.36 | 5.662 | 9.074 | 9.28 |
| 1993 | 4.15 | 5.514 | 9.008 | 9.25 |
| 1994 | 4.13 | 5.014 | 9.032 | 9.324 |
| 1995 | 5.88 | 5.028 | 9.056 | 9.398 |
| 1996 | 4.55 | 4.814 | 9.028 | 9.4 |
| 1997 | 4.56 | 4.654 | 9.1 | 9.406 |
| 1998 | 4.47 | 4.718 | 9.23 | 9.506 |
| 1999 | 5.94 | 5.08 | 9.28 | 9.53 |
| 2000 | 5.96 | 5.096 | 9.25 | 9.562 |
| 2001 | 5.32 | 5.25 | 9.324 | 9.542 |
| 2002 | 5.63 | 5.464 | 9.398 | 9.58 |
| 2003 | 4.99 | 5.568 | 9.4 | 9.58 |
| 2004 | 5.32 | 5.444 | 9.406 | 9.578 |
| 2005 | 5.54 | 5.36 | 9.506 | 9.534 |
| 2006 | 4.91 | 5.278 | 9.53 | 9.57 |
| 2007 | 6.43 | 5.438 | 9.562 |  |
| 2008 | 6.76 | 5.792 | 9.542 |  |
| 2009 | 5.69 | 5.866 | 9.58 |  |
| 2010 | 5.91 | 5.94 | 9.58 |  |
| 2011 | 6.01 | 6.16 | 9.578 |  |
| 2012 | 5.2 | 5.914 | 9.534 |  |
| 2013 | 6.8 | 5.922 | 9.57 |  |