

STUTTGART

The climate of Stuttgart

City of Stuttgart,
Office for Environmental Protection



TEMPERATURE

Stuttgart's climate is mild with an average annual temperature of about 50 °F (10 °C) in the basin of the city and about 47 °F (8.4 °C) in the more elevated outskirts. Stuttgart, capital of the state of Baden-Württemberg, and Greater Stuttgart are therefore one of the warmest regions of Germany. Even the Romans knew how to gain from Stuttgart's favourable climatic conditions and started growing wine in the area.

Generally, temperature in Stuttgart rises to above 86 °F (30 °C) on five days a year and to at least 77 °F (25 °C) on 35 days (summer days). On average temperature drops below 32 °F (0 °C) on 76 days of the year (frost days) and permanently stays below 32 °F (0 °C) on 19 days (ice days).

Table: Temperature in Stuttgart

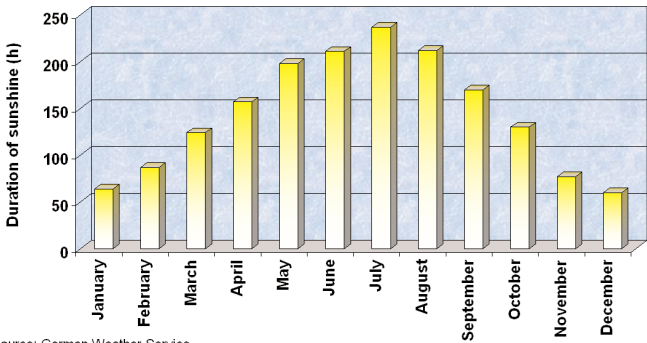
Month	Average temperature (°F / °C)	Maximum temperature (°F / °C)	Minimum temperature (°F / °C)	Summer days
January	32.9 / 0.5	60.2 / 15.7	-6.1 / -21.2	0
February	35.4 / 1.9	70.7 / 21.5	0.5 / -17.5	0
March	41.5 / 5.3	76.2 / 24.6	5.7 / -14.6	0
April	48 / 8.9	83.8 / 28.8	23.5 / -4.7	0
May	55.9 / 13.3	88.5 / 31.4	29.8 / -1.2	3
June	61.5 / 16.4	91.2 / 32.9	35.4 / 1.9	6
July	65.1 / 18.4	98.2 / 36.8	40.1 / 4.5	11
August	64.2 / 17.9	95.1 / 35.1	41.3 / 5.2	10
September	58.4 / 14.7	89.2 / 31.8	32.9 / 0.5	4
October	50 / 10.0	85.4 / 29.7	25.7 / -3.5	0
November	40.4 / 4.7	70.5 / 21.4	14.0 / -10.0	0
December	34.7 / 1.5	62.9 / 17.2	0.3 / -17.6	0
Year	49.1 / 9.5	98.2 / 36.8	-6.1 / -21.2	35

For further information (in German) on temperature in Stuttgart, see:
www.stadtklima-stuttgart.de/index.php?klima_kalender



Wetterhütte

SUNSHINE



Source: German Weather Service

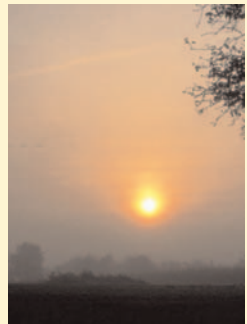
Sunshine in Stuttgart

The sun shines in Stuttgart about 1,720 hours a year and more than 200 hours each month from May to August. The month of July is the sunniest of all with a total of 237 hours. This means that the sun shines at an average of about eight hours each day of July. The month of December still has about 60 hours of sunshine and its daily average is about two hours. As the altitude differs to an important degree within the city of Stuttgart, with some areas being 960 feet (300 m) higher than others, sunshine conditions may vary significantly from one place to another. Southern slopes have more sunshine hours than northern slopes, for example.

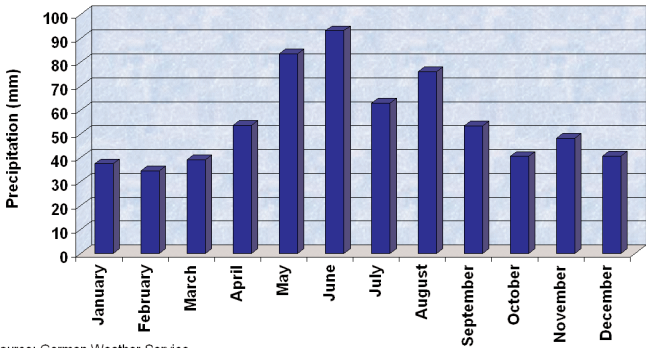
On 21st June the sun reaches its highest point over the horizon at 65 degrees. Due to the city's geographical latitude (9.2 degrees), there is a difference of 23 minutes between the average local time and the Middle European Time (MET). So the sun reaches its highest point at only 12:23 p.m. (13:23 p.m. summertime). On 21st December each year the sun reaches its lowest point (18 degrees).

Maximum irradiation with an average of 237 watt per square meter (W/m^2) is reached in June and July. On a sunny summer's day, peak irradiation can be registered with more than 1,100 W/m^2 . In January it drops to as low as 30. The annual average is about 135 W/m^2 .

For further information (in German) on sunshine in Stuttgart, see:
www.stadtklima-stuttgart.de/index.php?klima_sonnenstand



PRECIPITATION



Source: German Weather Service

Precipitation in Stuttgart

The region of Stuttgart has relatively little precipitation in comparison to other regions in Germany. This is due to the fact that the city is situated on what is called the lee side. As Stuttgart is surrounded by rather mountainous regions, like the Black Forest in the Southwest and the Swabian Alb in the South, clouds release their water there. So there is not much humidity left when the air reach Stuttgart, the consequence being relatively dry weather.

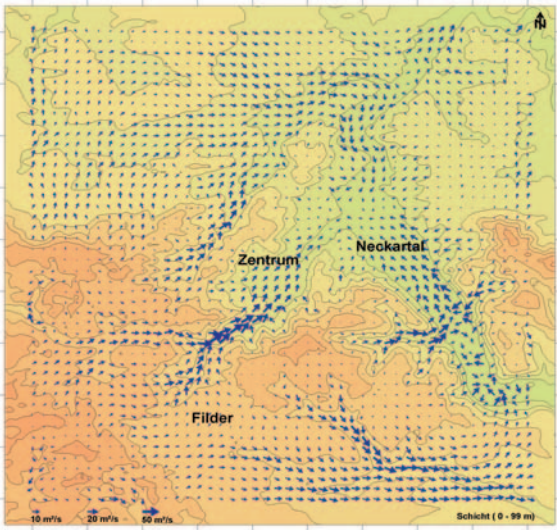
The average annual amount of precipitation for the city centre totals 26 inches (664 millimetres) or 664 litres per square metre (l/m^2). With an amount of more than 3.1 inches (80 mm) respectively 3.5 inches (90 mm), the majority of rain falls in May and June. In a thundery shower it is possible that more than 70 litres of water drop down to each square metre of ground. With about 1.4 inches (35 mm) of precipitation, February is the driest month of all. On 53 days of the year, snow falls in the higher regions of Stuttgart, but it usually does not stay for long.

In the beginning of the 20th century, the little amount of precipitation and the increasing population led to a water shortage in Stuttgart. Rainier regions were supposed to supply the city with fresh water. In 1917 the first water pipeline was opened and started providing water from the Swabian Alb. Since 1959 Stuttgart has additionally been supplied with water from Lake Constance.

For further information (in German) on precipitation in Stuttgart, see: www.stadtklima-stuttgart.de/index.php?klima_kalender



WIND CONDITIONS



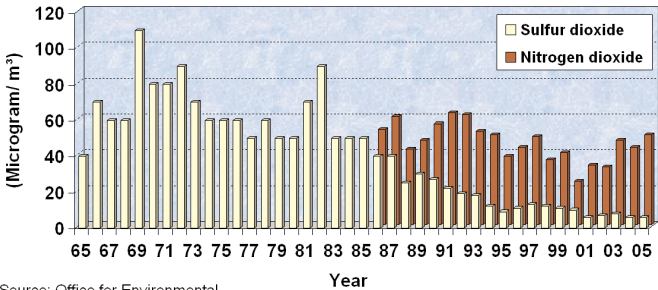
Local cold-air flows in Stuttgart

Wind blows only lightly in Stuttgart. This is due to the city centre's position in the basin and to the four mountainous regions (Black Forest, Swabian Alb, Schurwald and Swabian-Franconian Forest) which surround and shelter the whole of Greater Stuttgart. The light wind conditions are even intensified by the small air pressure differences common to the southwest of Germany. The average wind speed per year is about 3.4 miles per hour (1.5 metres per second) in the city centre and about 5.6 mph (2.5 m/s) in the higher regions. Compared to the speed of winter storm Lothar on 26th December 1999, which reached a maximum of almost 90 mph (40 m/s) at Stuttgart airport, you can see how lightly wind normally blows in this region.

Wind in Greater Stuttgart generally blows from the west or southwest. Due to the city's density of building and its position in the basin, there is a variety of local winds, differing widely from the main wind direction. Cold-air flows with relatively slow winds develop at the slopes and in the city valleys as a result of orographic conditions. These cold-air flows are essential for the fresh air supply of the city, air quality and good thermal conditions.

For further information (in German) on wind conditions in Stuttgart, see: www.stadtklima-stuttgart.de/index.php?klima_windfeld

AIR POLLUTION



Source: Office for Environmental Protection Stuttgart

The evolution of air pollution in Stuttgart

Many years of measures in air pollution control, like the use of flue gas desulphurization units and improved motor and heating fuels, have finally had the desired effect. Today air pollution in Stuttgart is on a low level. Sulphur dioxide concentration (SO₂) has been reduced by 80 % during the last ten to 15 years and measurements of sedimenting particulate matter and carbon monoxide indicate smaller amounts. But due to stable temperature inversions during the winter months, a higher concentration of air pollutants can be registered when there is cold air in the city basin and the valleys but warmer air spreading in higher altitudes of the atmosphere. This prevents air circulation, and the concentration of air pollutants in the planetary boundary layer rises. Elevated ozone values are possible in summer months and the limit value of 180 micrograms per cubic metre (µg/m³) is reached on average on five days a year.

Traffic is the most important source of air pollution today. Even if compounds emitted by traffic, like nitrogen dioxide (NO₂) and benzene, tend to be reduced by the increasing amount of low-emission cars, the new limit values for air pollutants like nitrogen dioxide and PM₁₀ (particulate matter with an aerodynamic diameter < 10 µm) fixed by the EU will be exceeded. This is why the municipality is going to do everything to reduce the amount of air pollutants by continually applying the clean air plan developed under the control of the state of Baden-Württemberg. So air pollutant values are expected to fall below the limit values everywhere in Stuttgart and the condition of the air will continue to improve.

For further information (in German) on air pollution in Stuttgart, see: www.stadtklima-stuttgart.de/index.php?luft_luftinstuttgart