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Climatological bulletin August 2024

Switzerland experienced the second warmest August since measurements began in 1864. In the south and in the mountains, the August 2003 records were reached or even surpassed in places. Locally, the second sunniest August since measurements began was recorded. Some sites with long series of measurements reported the least rainy August since measurements began. Heavy rainstorms caused significant damage locally.

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The national average temperature for August reached 17.1°C, 2.7°C above the 1991-2020 norm. It ranks second in the list of the hottest Augusts nationally since measurements began in 1864. The record August in the historic scorching summer of 2003 had a significantly higher value of 17.9°C as the national average.

Nine sites with measurement series of more than 60 years recorded the warmest August since measurements began. These include the famous resorts of Jungfraujoch, Weissfluhjoch and Säntis. La Brévine in the Neuchâtel Jura, as well as Lugano and Piotta south of the Alps also experienced their warmest August. Furthermore, for Weissfluhjoch and Säntis, it was even the warmest month since

the start of the measures.

In Switzerland, August has warmed by 3.2°C between the pre-industrial reference period 1871–1900 and today (climate trend in red in Figure 1).

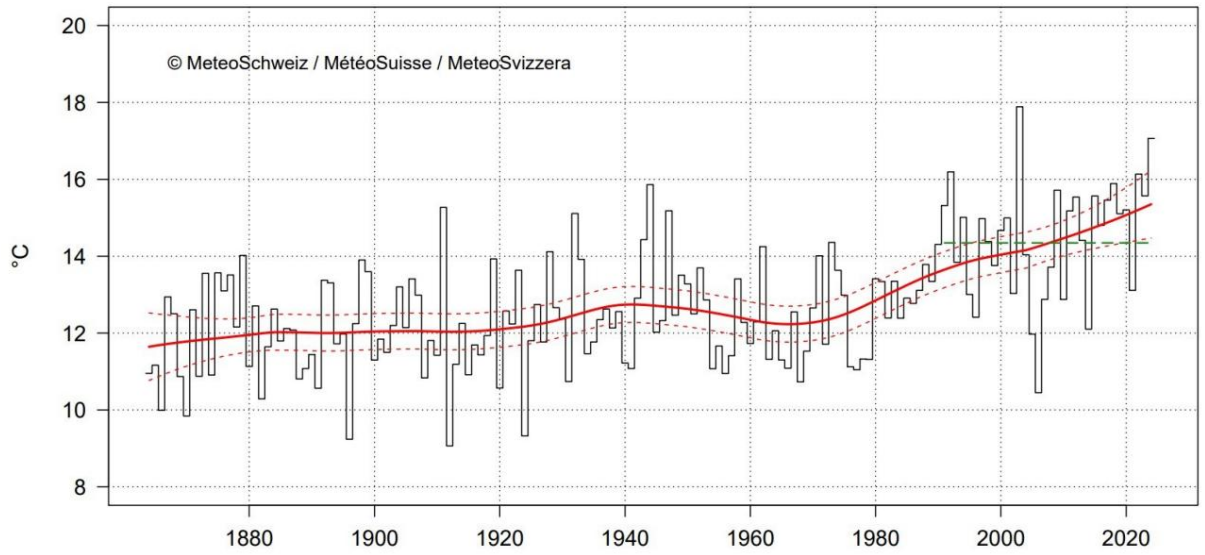

Figure 1. The August temperature in Switzerland since measurements began in 1864. It reached 17.1 °C, 2.7 °C higher than the 1991-2020 norm (dashed green line). The red line indicates the climate trend. The dashed red lines show the uncertainty in the climate trend.

Sunny and very hot periods

After two stormy and heavy days at the beginning of the month, with local temperatures over 30 °C in the west and northwest of Switzerland, the period from 3 to 6 August was generally sunny across the country. On the 6th, daily maximum temperatures exceeded 30 °C in many places in the north. South of the Alps, daily maximum temperatures exceeded 30 °C from 1 to 6 August.

The whole country then enjoyed sunny and very warm weather from 9 to 13 August. During this period, maximum temperatures reached 33 to almost 35 °C north of the Alps and 34 to over 36 °C south of the Alps. Biasca recorded 36.4 °C on 11 August, the highest daily maximum temperature in Switzerland.
This year.

The period from 22 to 24 August was also sunny throughout Switzerland. On the 24th, daily maximum temperatures often exceeded 30 °C north of the Alps. Basel recorded the highest value of the year for the north of the Alps with 35.4 °C. South of the Alps and in Valais, sunny conditions were

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started on August 20. Daily maximum temperatures generally exceeded 30°C in the South, and in Valais from the 23rd.

Finally, the weather was sunny and warm throughout the country from 28 August until the end of the month. On both sides of the Alps, daily maximum temperatures exceeded 30 °C. In Valais and south of the Alps, maximum temperatures reached or slightly exceeded 30 °C as early as 27 August. North of the Alps, with 33 °C, Basel recorded the highest value of this period on 29 August. South of the Alps, Biasca recorded the maximum value of 33.5 °C on 30 August.

Many tropical days and nights in the South

South of the Alps, August saw an unusual number of tropical days (days with a maximum temperature of 30°C or more) locally. In Locarno Monti, the number reached 23 tropical days, equaling the record set during the historic heatwave of 2003. Lugano recorded 17 tropical days. It was only in 2003 that Lugano recorded more tropical days in August with a number of 20.

It is striking to note that at these two measurement sites the number of hot days in August 2024 and August 2003 is significantly higher than the values for all other years in the measurement series.

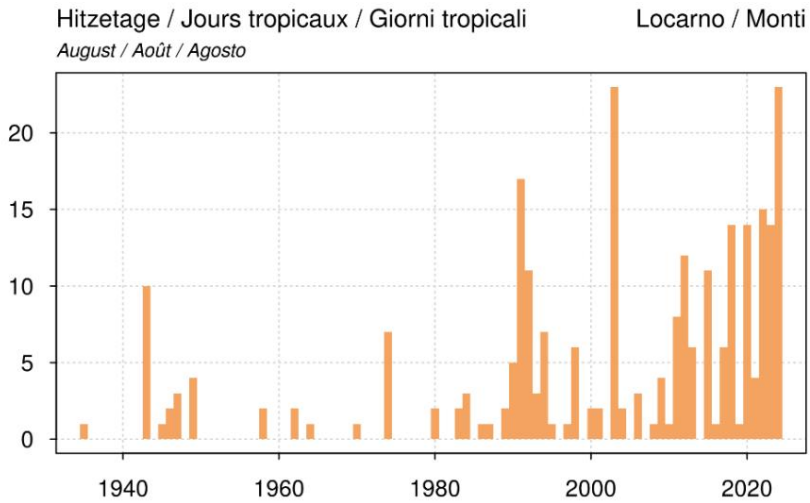

Figure 2.
Number of tropical days in August in Locarno Monti since measurements began in 1935.

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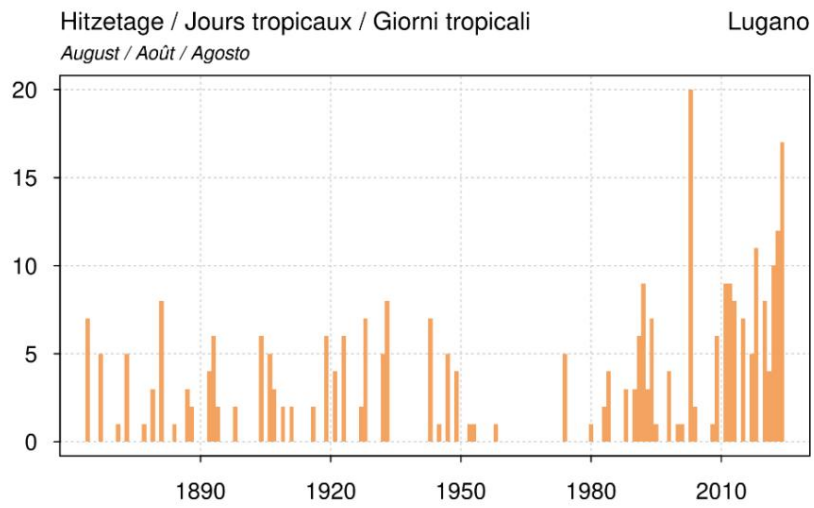

Figure 3.
Number of tropical days in August in Lugano since measurements began in 1864.

In addition to the unusually high number of tropical days, the southern Alps also experienced an unusually high number of tropical nights (days with a minimum temperature of 20°C or above) in August.
Lugano recorded 22 tropical nights, which is significantly higher than the values recorded so far in August. Locarno Monti recorded 16 tropical nights. The record for August 2003 was 18. In all other years, Locarno Monti has experienced significantly fewer tropical nights in August.

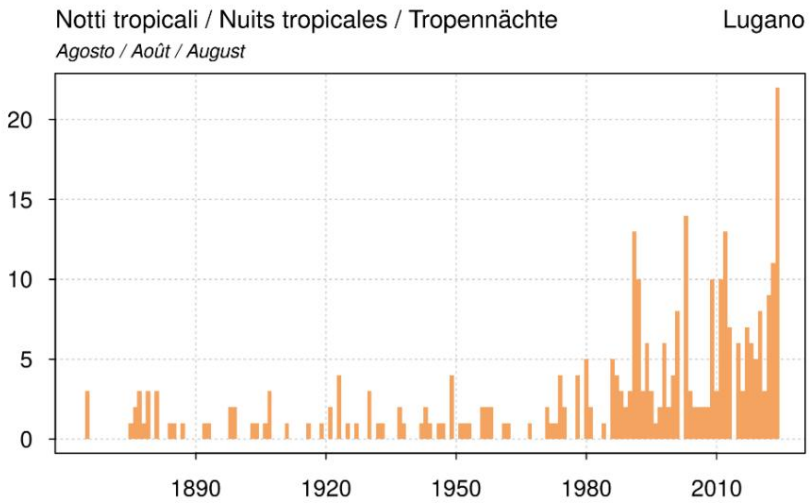

Figure 4.
Number of nights tropical in August in Lugano since measurements began in 1864.

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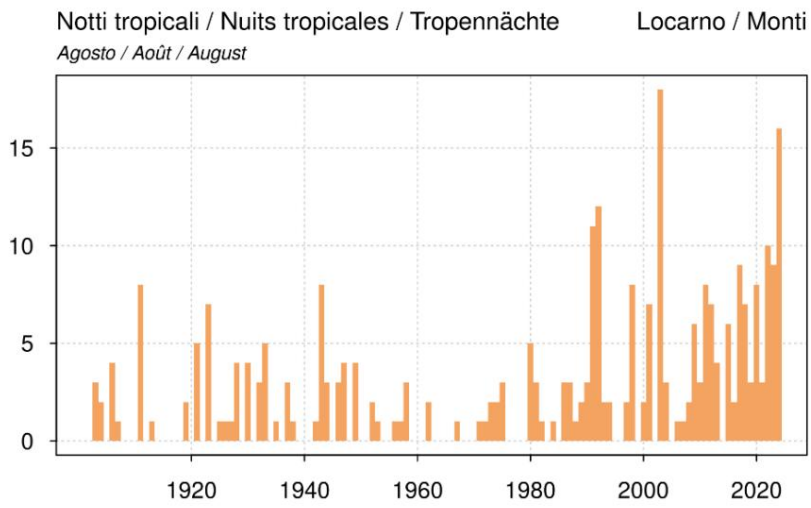

Figure 5.
Number of nights tropical in August at Locarno Monti since the start of measurements in 1901.

Weekly cooling

In the second half of the month, the northern Alps experienced two significant cooling events within a week. On 18 August, a cold front caused maximum temperatures to drop to only 21 to 23 °C north of the Alps. Two days earlier, maximum temperatures often reached 29 to 30 °C north of the Alps.

Exactly one week later, on 25 August, daily maximum temperatures north of the Alps reached only 20 to 22 °C after the passage of a cold front. The day before, maximum temperatures often reached 30 to 33 °C north of the Alps, or even higher locally.

Bad weather in the Bernese Oberland

On 12 August, very warm, humid and particularly unstable air covered Switzerland. The first thunderstorms broke out in the early afternoon over the Jura and the Black Forest, then in the middle of the afternoon over the Western Alps. Due to the rather low wind speeds at almost all altitudes, the short-lived thunderstorm cells hardly moved. The slow-moving thunderstorm cells produced locally large amounts of precipitation with a high potential for severe weather.

The Brienz region was hit hard. According to precipitation maps based on radar data, around 100 mm of rain fell in places on the mountainside above Brienz, most of it within about an hour. As a result, the Milibach burst its banks. The enormous masses of water and alluvium caused extensive damage to houses, roads and railway facilities in Brienz. 70 people had to be evacuated.

Heavy rainstorms also wreaked havoc in the Grindelwald area. In the evening, a mudslide buried the road and railway line leading to Grindelwald, temporarily cutting the village off from the outside world. More than 200 people were unable to leave Grindelwald and had to be housed overnight in emergency accommodation.

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Locally very little precipitation

Precipitation in August was often deficient. Many sites with measurement series of more than 60 years recorded one of the ten least rainy Augusts. At the sites of Sedrun (GR), Pigniu
(GR) and Campocologno (GR), this is the least rainy August since measurements began. While Sedrun and Pigniu received between 40 and 50 mm, Campocologno recorded only 16.4 mm. Campocologno experienced the least rainy summer month (June to August) since measurements began in 1961.

A locally very sunny month of August

Several sunny spells brought generous sunshine in August. Some sites with measurement series of more than 60 years recorded one of the ten sunniest Augusts. In Geneva, with 306 hours of sunshine, it was the second sunniest August since measurements began in 1897.
Locarno Monti also recorded the second sunniest August with almost 300 hours of sunshine. The homogenized data series has been available since 1959.

Early maturity of fruits of shrubs and trees

This summer, the fruits ripened earlier than the average for the 30-year comparison period 1991-2020. Ripe red elderberries could be observed in low-lying regions as early as mid-June. In August, they were mainly found in the Alps. Over the summer as a whole, the ripening of the red elderberries was about two weeks ahead of average. The black elderberries ripened from the beginning of August until the current period, mainly at altitudes of up to 800 metres. The observations averaged 17
days ahead of the multi-year average. Orange and ripe rowan trees could be observed from the beginning of July. In August, they ripened from the plain to the mountains, as for example already in the Engadine.
The lead of the observations currently available on the average date of the period 1991-2020 is 9 days.
A definitive assessment of the maturity of the black elderberry and rowan fruits will not be possible until September, however, as several stations have not yet reported their observations.

The narrow-leaved willow herb flowered from the last ten days of June in the plains and was in flower in July and August in the mountains, at a normal date in the majority of stations. The first autumn colchicums in flower were observed from mid-August. They will be observed more frequently from the end of August.

Figure 6.
The narrow-leaved willow herb bloomed in August, especially in the mountains. The flowers in the inflorescence open from bottom to top. We therefore finds both buds, flowers and fruits on the same plant. The plant is found throughout Switzerland and grows in sparsely wooded areas, on river banks and on rocky scree.
August 24

2024 in Gibel, Hasliberg (BE).

Photo: Regula Gehrig

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Monthly review

North of the Alps, the August temperature was often 2.2 to 2.5 °C higher than the 1991-2020 norm and 3 °C on the Jura ridges. In the Alps and south of the Alps, the values generally exceeded the norm by 2.5 to 3.5 °C. On a national average, the temperature in August exceeded the 1991-2020 norm by 2.7 °C.

The rainfall amounts for this month of August often remained in deficit. In large parts of Ticino and Grisons, the monthly amounts remained below 50% of the 1991-2020 norm. In some regions, the values reached only 20 to 30% of the norm, or even less locally. North of the Alps, the regional differences were significant. While Geneva or Basel recorded only 30% of the norm, Neuchâtel recorded 150% and Hallau almost 160%. In the other regions, the values were generally between 40 and 80% of the 1991-2020 norm.

In August, sunshine levels fluctuated between 120 and 130% of the 1991-2020 norm in most regions of Switzerland. South of the Alps and in the Engadine, values were between 110 and 120% of the norm.

Monthly values for a selection of MeteoSwiss stations in comparison with the 1991–2020 standard.

station	altitude	température (°C)			durée d'ensoleillement (h)			précipitations (mm)		
	m	moy.	norme	écart	somme	norme	%	somme	norme	%
Bern	553	20.7	18.4	2.3	273	228	120	89	112	80
Zürich	556	21.1	18.6	2.5	274	216	127	61	119	51
Genève	420	22.5	20.0	2.5	306	242	126	27	81	33
Basel	316	22.2	19.7	2.5	285	217	131	26	88	29
Engelberg	1036	17.8	15.2	2.6	191	157	122	117	196	60
Sion	482	22.1	19.9	2.2	307	253	121	28	60	47
Lugano	273	24.8	22.1	2.7	287	245	117	114	158	72
Samedan	1709	14.5	11.8	2.7	204	181	112	25	100	25

climatological average standard 1991–2020
deviation deviation from the standard
% report to the standard (standard = 100%)

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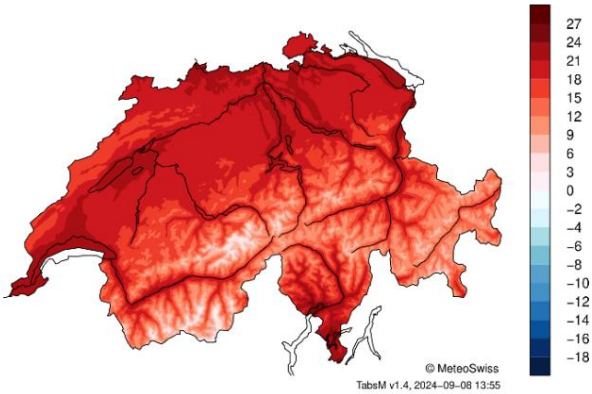
Temperature, precipitation and sunshine in August 2024

Absolute monthly values

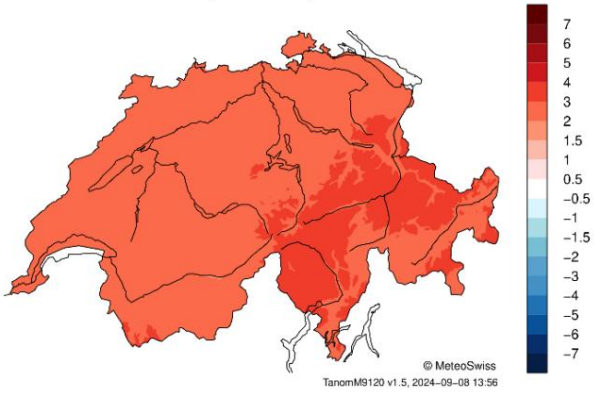
Deviation from the standard

Average monthly temperatures (°C)

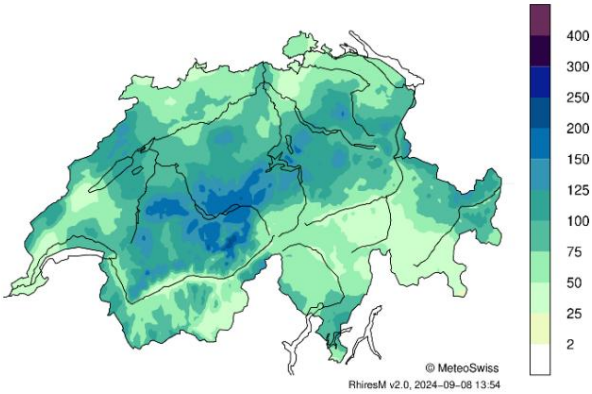


Deviation from the average temperature standard (°C)

(Ref. 1991−2020)

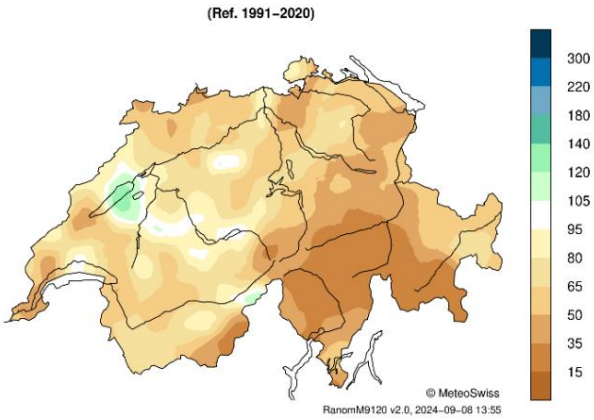


Monthly precipitation sum (mm)

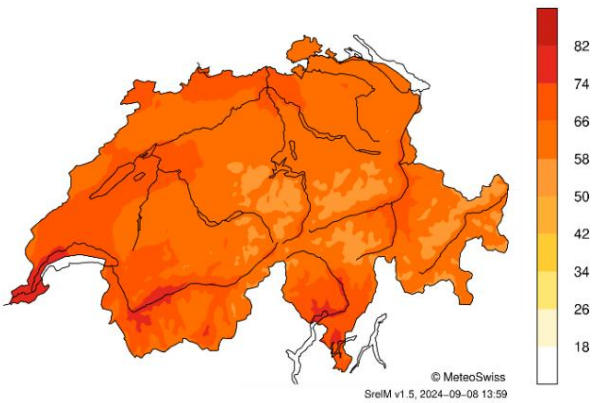


Ratio to the precipitation height standard (%)

(Ref. 1991−2020)

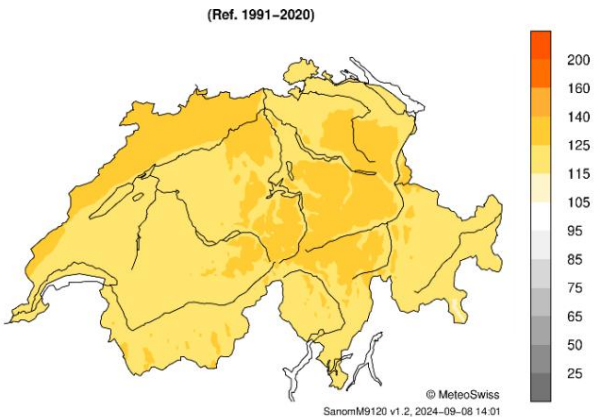


Report to maximum monthly sunshine



Ratio to the standard of sunshine duration (%)

(Ref. 1991−2020)



Spatial distribution of monthly temperatures, precipitation and sunshine duration. Absolute values are shown on the left, ratios to the climatological norm (1991ÿ2020) are shown on the right.

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Weather forecast for August 2024

Daily climatic evolution of temperature (mean and minimum/maximum), sunshine, precipitation, and wind (maximum gusts) at the Geneva-Cointrin and Sion measuring stations. The mean temperature is represented as a deviation from the 1991ÿ2020 climatological norm. In addition to daily values, records are also represented (depending on the parameter, the reference period may vary, see note on the right). A daily record is indicated by an empty circle (ÿ), a monthly record by a solid circle (ÿ).

Missing data are marked with a star (ÿ). Full explanations of these graphs can be found at the end of the document.

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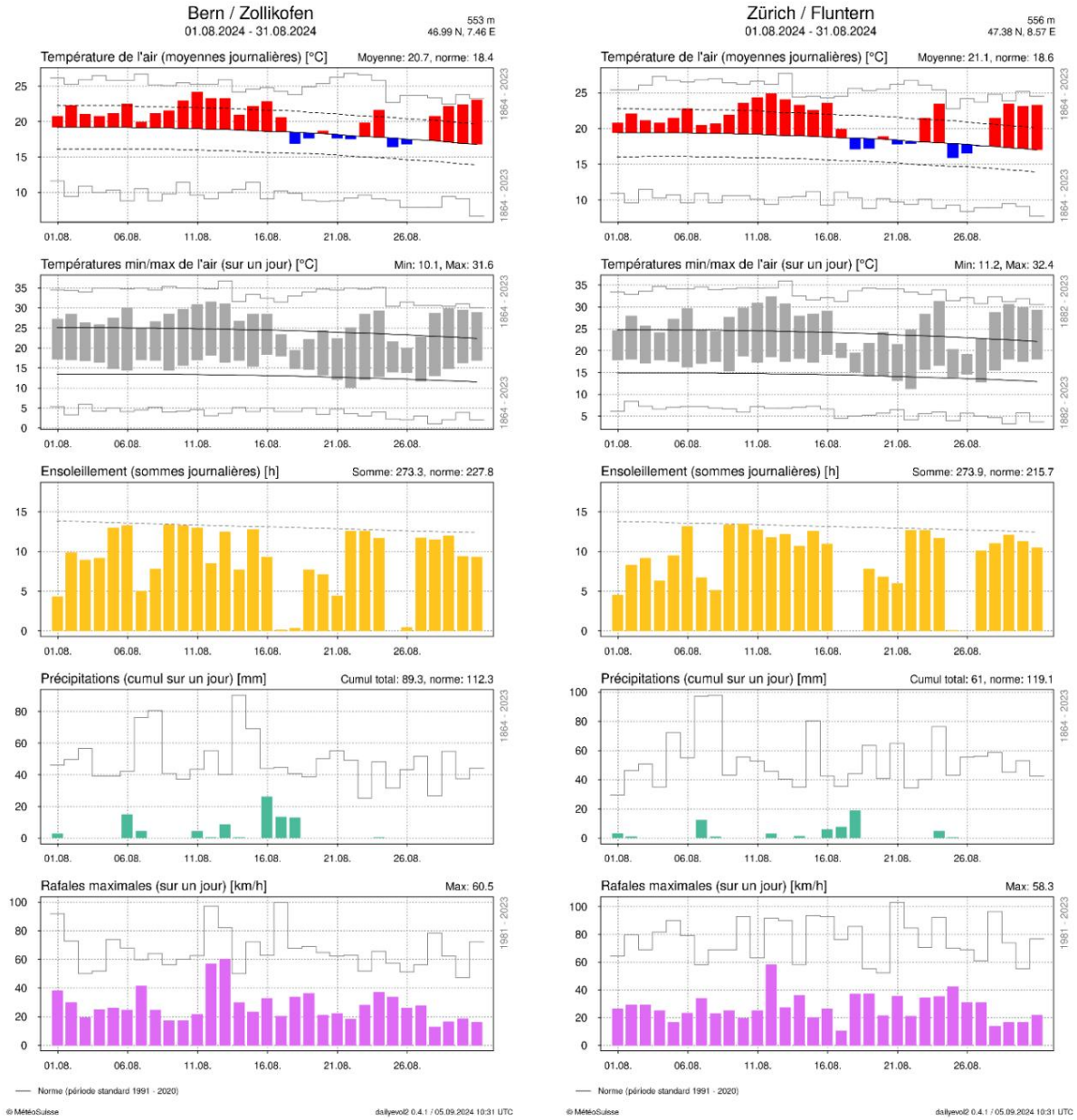

Daily climate evolution of temperature (average and minimum/maximum), sunshine, precipitation, and wind (maximum gusts) at the Bern-Zollikofen and Zurich-Fluntern measuring stations.
The average temperature is shown as a deviation from the climatological norm 1991ÿ2020. In addition to daily values, records are also shown (depending on the parameter, the reference period may vary, see note on the right). A daily record is indicated by an empty circle (ÿ), a monthly record by a filled circle (ÿ). Missing data are marked with a star (ÿ). Full explanations of these graphs can be found at the end of the document.

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Daily climatic development of temperature (mean and minimum/maximum), sunshine, precipitation, and wind (maximum gusts) at the Basel-Binningen and Engelberg measuring stations. The mean temperature is shown as a deviation from the 1991ÿ2020 climatological norm. In addition to daily values, records are also shown (depending on the parameter, the reference period may vary, see note on the right). A daily record is indicated by an empty circle (ÿ), a monthly record by a filled circle (ÿ).

Missing data are marked with a star (ÿ). Full explanations of these graphs can be found at the end of the document.

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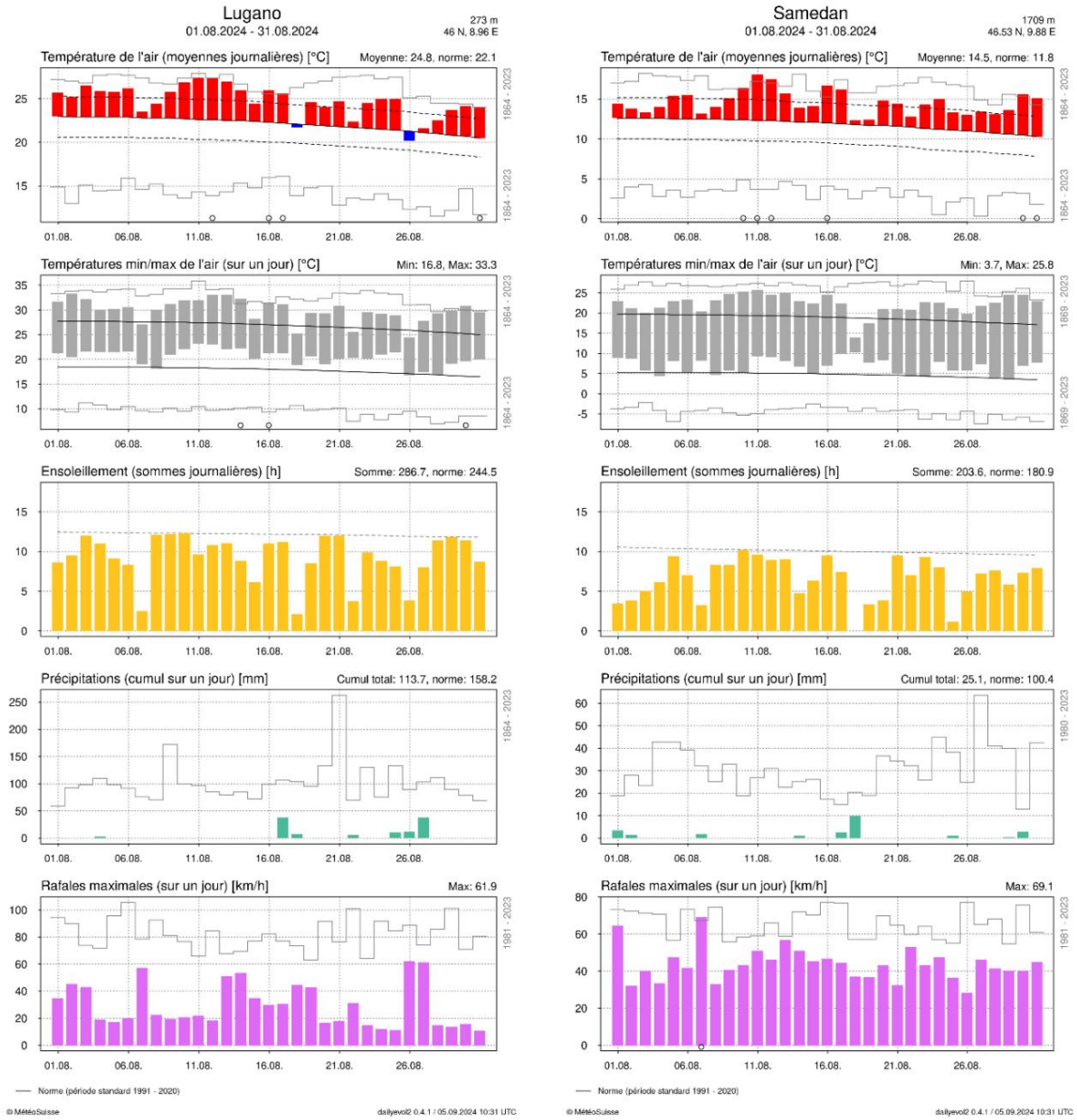

Daily climatic evolution of temperature (mean and minimum/maximum), sunshine, precipitation, and wind (maximum gusts) at the Lugano and Samedan measuring stations. The mean temperature is shown as a deviation from the 1991ÿ2020 climatological norm. In addition to daily values, records are also shown (depending on the parameter, the reference period may vary, see note on the right). A daily record is indicated by an empty circle (ÿ), a monthly record by a filled circle (ÿ).

Missing data are marked with a star (ÿ). Full explanations of these graphs can be found at the end of the document.

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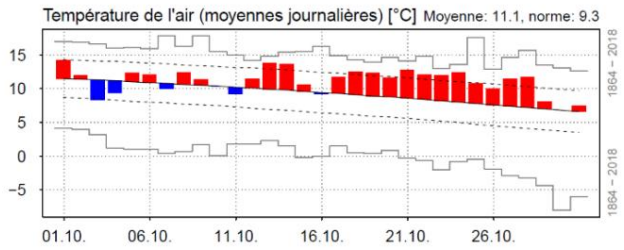
Explanations of the graphs of the selected stations



Red/blue columns: average daily temperature of the month represented above/ below the norm

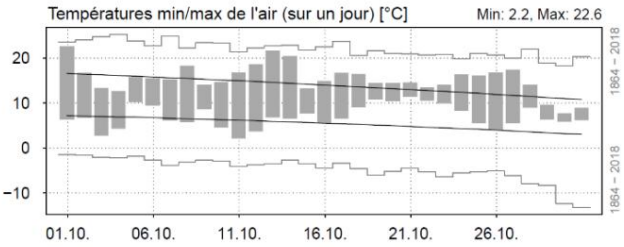
Upper gray line: highest daily average temperature for the day in question since the start of the measurement series

Black dotted lines (upper and lower): standard deviation (= standard deviation) of the daily mean temperature from the norm

Black line: normal daily average temperature

Lower gray line: lowest daily average temperature for the day in question since the start of the measurement series

Standard: monthly climatological average (1991ÿ2020) in degrees C



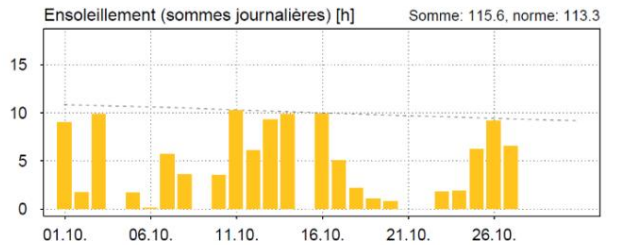
Gray columns: daily minimum and maximum temperatures (lower and upper limit of the column)

Upper gray line: absolute daily maximum temperature since the start of the measurement series

Black upper line: daily maximum average temperature of the standard period

Black lower line: average daily minimum temperature of the standard period

Lower gray line: absolute daily minimum temperature since the start of the measurement series

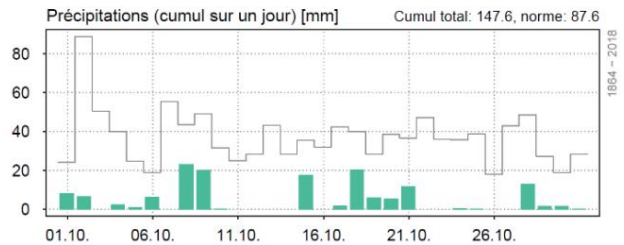


Yellow columns: daily sunshine

Black dotted lines: maximum possible daily sunshine

Sum: monthly cumulative sunshine in hours

Standard: monthly climatological average (1991ÿ2020) in h

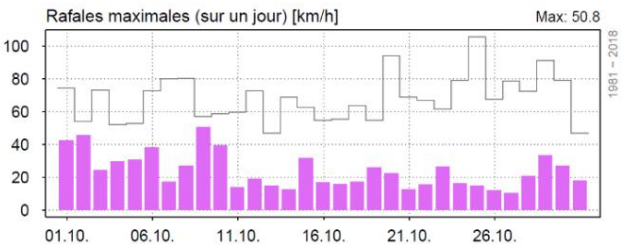


Green columns: sum of daily precipitation

Grey lines: maximum daily precipitation since the start of the measurement series

Sum: monthly sum of precipitation in mm

Standard: monthly climatological average (1991ÿ2020) in mm



Lilac columns: maximum daily gust

Grey lines: maximum daily gust recorded since the start of the measurement series

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MeteoSwiss, September 10, 2024

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https://www.meteosuisse.admin.ch/services-et-publications/publications.html#order=date-desc&page=1&pageGroup=publication

Quote

MeteoSwiss 2024: Climate bulletin August 2024. Geneva.

Cover photo

On or in the water, the hot periods of August were well tolerated. Lake Zurich, August 11, 2024. Photo: Stephan Bader.

MeteoSwiss
7bis, avenue de la
Paix CH-1211 Geneva 2

T +41 58 460 98 88
www.meteosuisse.ch

MeteoSwiss
Path of Aerology
CH-1530 Payerne

T +41 58 460 94 44
www.meteosuisse.ch

MeteoSwitzerland
Operation Center 1
CH-8058 Zurich Airport

T +41 58 460 91 11
www.meteoschweiz.ch

MeteoSvizzera
Via ai Monti 146
CH-6605 Locarno Monti

T +41 58 460 92 22
www.meteosvizzera.ch