

September 30, 2020

A monthly weather summary – September 2020

General

September was considerably warmer than average and in many regions in the country, it was the hottest September, since the beginning of measurements. In the Coastal plain and the Shfela, September 2015 was hotter or similar during daytime.

September has set new records not only for monthly average – in the first part of the month, a heat spell broke records both in terms of its temperatures as well as with its length.

September 2020 in comparison with the past

In the mountains and the internal parts of the country, the daytime temperatures were higher than average (1995 – 2009) by 3.0 to 4.5 degrees and in some places even by 5 degrees or more. In the coastal plain, the daytime temperatures were higher than the average by 2 to 3 degrees. During nighttime, the temperatures in most regions exceeded the average by 2.5 to 4 degrees (Table 1).

When compared to the past, it appears that in the mountains and inland, it is the hottest September since the beginning of the measurements, during the days as well as the nights and it considerably exceeds the previous record (set on September 2015).

As tables 2 and 3 show, in the Coastal Plain and the Shfela, September 2020 sets a new record for minimum temperatures. However with regard to maximum temperatures, September 2015 was hotter than the current September or similar to it. From a comparison of September 2020 to all the months in the past, it appears that in a countrywide average it is ranked fourth in the last 70 years, with only August 2010, August 2015 and July 2017 ahead of it.

It should also be mentioned that September this year was hotter than the main summer months July and August. It is considerably exceptional and in the last 70 years, it happened only once more, during summer 1986.

The weather throughout the month and the extremity of the heat spell

Almost all the days during September were hotter than average, especially during the heat spell that prevailed during the first part of the month. After a heat spell at the end of August, there was some cooling during the first two days of September, but it was still warm than usual and on the 3rd, there was a considerable warming and a prolonged heat spell began to prevail, lasting until the end of the second decade of the month.

The peak of the heat spell was at its beginning, between September 3rd and the 5th, when extreme values were measured, some of which set new records, not only for September, but also for the entire year. The highest temperature was measured in Eilat, 48.9 degrees (on the 4th) and this is highest temperature for the entire year for this station, since the beginning of measurements there, more than 70 years ago. In Kefar Blum (47.0 degrees) and Ayyelet HaShahar (46.6 degrees), new maximum temperature records were also set. In Zefat, with 40.6 degrees, the temperature was equaled to the absolute record, established in August 2010. In some of the stations, new maximum temperature records were set for September. In Jerusalem (Givat Ram), the old record from 118 years ago, was replaced with a new one on September 3rd with 41.2 degrees, compared with the previous 41.1 degrees on 1902.

On the following day, September 4th, 41.1 degrees were measured. It should be mentioned that the absolute records set in the far past, were measured with different instruments and with a different positioning and therefore there is a real difficulty in comparing the values in the current event with the ones from the past. Nevertheless, it was indeed an extreme and very rare event for September.

New historical records were also set with the minimum temperature, most of which occurred during the night between the 3rd and the 4th September. In Jerusalem, Givat Ram, a minimum temperature of 31.0 degrees was measured and replaced the previous record of 30.5 degrees from June 1942. In Bet Dagan (28.9 degrees) as well as in Zefat (30.3 degrees), a new record was set for the entire year. In several stations, such as Tel-Aviv and the Besor, new records were set for September minimum temperatures.

On the 6th, there was some cooling, but it still remained warmer than average and the heat spell continued to prevail, with less intensity. Until the 11th-12th, high temperatures were still being measured - more than 34 degrees in Jerusalem Givat Ram, above 38 degrees in the Hula Valley and the Kinneret, above 36-37 degrees in the North of the Negev and above 33 degrees in the Coastal Plain.

On the following days, there were occasional rises and falls in temperatures, but it continued to be hotter than average and only on September 21st – 22nd, there was a more significant cooling. The 24th – 26th was the only time period during this month, in which temperatures in the mountains and inland were close to the average or slightly below it. During the 25th, it even rained in the Gilboa and Bet-Shean valley with 1-3 mm and with some light rain in the Ramat-Menashe area.

On the 27th (the eve of Yom Kippur, the Day of Atonement), it became warmer once again and until the end of the month, it returned to be hotter than average.

From examining the sequence of hot days in September 2020 compared to the past, it can be seen that this sequence is very exceptional for September and in several cases, even for the entire year. Several examples:

- Jerusalem (Givat Ram), had a sequence of 24 days with temperatures above 31 degrees from the 28th August till the 20th September. No comparable sequences (concentrated in September) have ever been recorded since the beginning of the measurements in 1867. In July-August, there were only two similar cases, in 1922 and 1887.
- Beer Sheva had a sequence of 12 days with more than 36 degrees. In the past, similar cases occurred in September 1931 and August 1922.
- In Kefar Blum, there was a sequence of eight days with more than 40 degrees. There was no comparable sequences since the beginning of the measurements in this station for more than 65 years, for all months of the year.
- In Bet-Dagan, there was a sequence of 36 days with more than 33 degrees. Such a sequence has not occurred in this station since the beginning of measurements in 1962 (a shorter sequence of 14 days has occurred in August 2015).

Table 1: September 2020 temperatures¹ (°C) compared with the average

Region	Station	September 2020		Deviation from the average 1995-2009	
		Maximum	Minimum	Maximum	Minimum
Coastal Plain and the Shfela	Haifa (Technion)	31.7	24.1	+3.9	+2.4
	En HaHoresh	32.6	22.0	+1.9	+4.2
	Bet Dagan	33.2	24.0	+2.4	+3.1
	Negba	33.1	23.4	+2.3	+2.8
Northern mountains	Elon (western Galilee)	32.9	22.6	+3.1	+2.3
	Merom Golan Picman	33.0	16.1	+5.3	+2.0
	Avne Etan	35.3	20.1	+3.6	+2.5
	Zefat Har Kenaan	32.0	22.5	+3.9	+4.7
	Tavor	36.5	22.8	+3.8	+2.7
Northern valleys	Afula, Nir HaEmeq	36.3	22.9	+3.4	+3.6
	Kefar Blum	39.0	21.7	+4.9	+3.1
	Zemah	38.8	24.4	+3.2	+3.0
	Eden Farm (Bet Shean)	39.2	25.3	+3.5	+3.4
Central mountains	Karne Shomron	33.0	22.1	+3.4	+2.5
	Jerusalem	33.4	21.9	+5.0	+3.2
	Bet Jimal	34.6	22.9	+2.9	+2.3
	Rosh Zurim	31.1	20.7	+4.5	+3.6
Negev	Besor	32.9	22.6	+1.7	+2.9
	Arad	35.8	20.7	+4.5	+2.6
	Be'er Sheva	36.6	23.0	+3.7	+3.4
	Sede Boqer	34.8	20.9	+4.0	+3.5
Arava	Sedom	39.8	32.3	+2.8	+3.4
	Elat	40.4	28.8	+3.1	+3.6

¹ Due to installment of new temperature sensors, maximum temperatures might be higher by several tenths of °C when compared with readings of older sensors. This is currently being investigated.

Table 2: September 2020 average daily maximum temperature (°C) compared with the past

Station	Average daily max temp in Sep 2020 (°C)	Ranking of average daily max temp in Sep 2020 compared to the past	Highest max temp in Sep until 2019 (°C) (year recorded)	Period of measurements
En HaHoresh	32.6	2	32.8 (2015)	1949-2020
Bet Dagan	33.2	1-2	33.2 (2015)	1963-2020
Negba	33.1	2	33.3 (2015)	1950-2020
Bet Jimal	34.6	2	35.0 (2015)	1921-2020
Kefar Blum	39.0	1	36.4 (2015)	1954-2020
Zemah	38.8	1	37.9 (2015)	1945-2020
Newe Yaar	35.3	1	35.0 (2015)	1949-2020
Elon (western Galilee)	32.9	1	32.7 (2015)	1975-2020
Zefat Har Kenaan	32.0	1	31.0 (2015)	1939-2020
Jerusalem (Givat Ram)	33.4	1	31.7 (2015)	1867-2020
Rosh Zurim	31.1	1	29.8 (2015)	1970-2020
Be'er Sheva	36.6	2	36.7 (1931)	1921-2020
Sede Boqer	34.8	1	33.7 (2015)	1959-2020
Gilgal	41.8	1	41.0 (2015)	1990-2020
Sedom	39.8	1	39.4 (2015)	1959-2020
Elat	40.4	1	39.4 (2015)	1950-2020

Table 3: September 2020 average daily minimum temperature (°C) compared with the past

Station	Average daily max temp in Sep 2020 (°C)	Ranking of average daily max temp in Sep 2020 compared to the past	Highest max temp in Sep until 2019 (°C) (year recorded)	Period of measurements
En HaHoresh	22.0	1	21.2 (2015)	1949-2020
Bet Dagan	24.0	1	22.5 (2015)	1963-2020
Negba	23.4	1	22.7 (2015)	1950-2020
Bet Jimal	22.9	2	23.1 (2015)	1921-2020
Kefar Blum	21.7	1	21.3 (2015)	1954-2020
Zemah	24.4	2	24.5 (2015)	1945-2020
Newe Yaar	23.4	1	23.0 (2015)	1949-2020
Elon (western Galilee)	22.6	2	23.2 (2015)	1975-2020
Zefat Har Kenaan	22.5	1	20.8 (2015)	1939-2020
Jerusalem (Givat Ram)	21.9	1-2	21.9 (2015)	1867-2020
Rosh Zurim	20.7	1	20.0 (2015)	1970-2020
Be'er Sheva	23.0	1	22.1 (2015)	1921-2020
Sede Boqer	20.9	1	20.1 (2015)	1959-2020
Gilgal	26.8	1	25.8 (2015)	1990-2020
Sedom	32.3	1	31.7 (2015)	1959-2020
Elat	28.8	1	28.1 (2015)	1950-2020

Table 2: Extreme temperatures in September 2020 ($^{\circ}\text{C}$) compared with the past

Station	September 2020				Extreme Values in record				Period of measurements
	Extreme Max.		Extreme Min.		Extreme Max.		Extreme Max.		
	Temp.	Date	Temp.	Date	Temp.	Date	Temp.	Date	
Bet Dagan	35.3	4/9/20	20.3	28/9/20	42.0	6/9/96	10.8	28/9/92	1962-2020
Negba	35.7	4/9/20	20.5	27/9/20	42.4	6/9/96	12.8	28/9/92	1950-2020
Zefat Har Kenaan	40.6*	4/9/20	16.8	25/9/20	38.0	11/9/15	10.7	30/9/49	1939-2020
Jerusalem ¹	41.2*	3/9/20	17.7	25/9/20	38.0	16/9/52 10/9/06	13.2	28/9/92	1867-2020
Be'er Sheva ²	44.0*	4/9/20	17.1	27/9/20	43.8	18/9/31	9.4	22/9/30	1922-2020
Elat	48.9*	4/9/20	25.3	26/9/20	45.0	6/9/96	18.6	26/9/74	1949-2020

* A record for September and in Elat for the entire year

¹ For Jerusalem: Giv'at Ram 2020; Center 1950-2019; Talbiye 1948-1949; Palace Hotel 1935-1947, American Colony 1927-1935, Mt. of Olives 1918-1926, German Colony 1895-1915, English Hospital Nevi'im St 1898-1913, English Hospital Old City 1867-1915

² For Be'er Sheva: Negev Institute 1957-2020; Old Town 1922-1957.

Figure 1: Daily minimum and maximum temperatures in Jerusalem in September 2020 compared with the long-term average

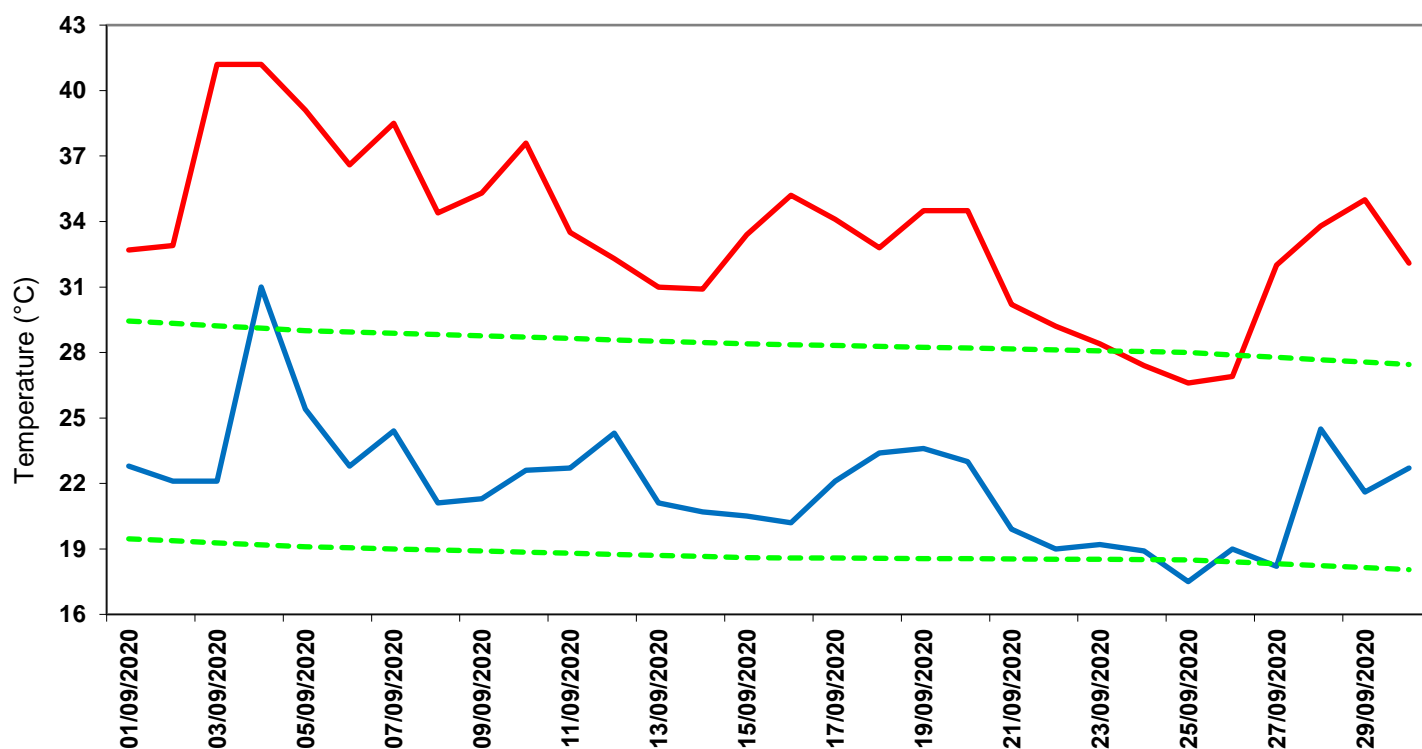


Figure 2: Daily minimum and maximum temperatures in Bet Dagan in September 2020 compared with the long-term average

