A monthly weather summary - February 2021

General

Overall, February was close to average with its rainfall amounts. In some of the areas, the amounts were smaller than average, especially in the North. On the other hand, there were areas, which were rainier than average like Samaria and the central and southern Coastal Plain.

Most of the monthly rain fell during an event occurring in the middle of the month, where also large amounts of snow fell in the mountains, so that in February, like in January and December, a few focused rain storms managed to bring most of the areas of the country to near average amounts. This is despite a winter, characterized by a deficiency of rainy days and a large number of sunny days.

Despite the low temperatures during the central precipitation event of the month, February was warmer than average.

Regarding the rainfall amounts since the beginning of the season - the prominent areas in February were the centre and the east, unlike the course till the end of January in which the North and the West had the advantage and this moderated the differences between the north and the centre. Nevertheless, the general trend has not changed significantly- the accumulated amounts exceed the average for the parallel period in the Coastal Plain and the north, are close to average in the Central Mountains and lower than it in the South.

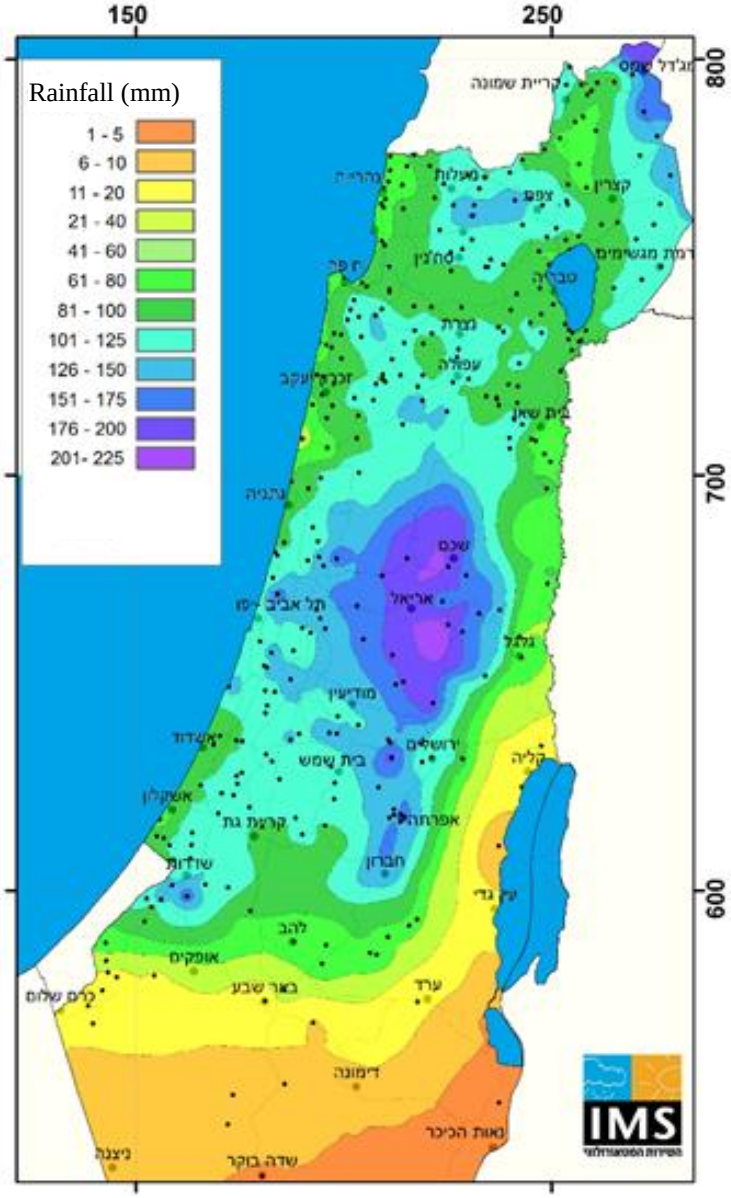
Rain in February

In the North, the rainfall amounts were below average: in the Northern Mountains 90 to 140 mm were measured and in the Hula Valley 80 to 100 mm, which is 70% to 90% of the average of February in these regions. In the Western Galilee and north of Haifa, the amounts reached only 60% to 70% of the average. A rainier area in the North was the Kinneret, where the amounts were close to the monthly average, so was the Jezreel Valley.

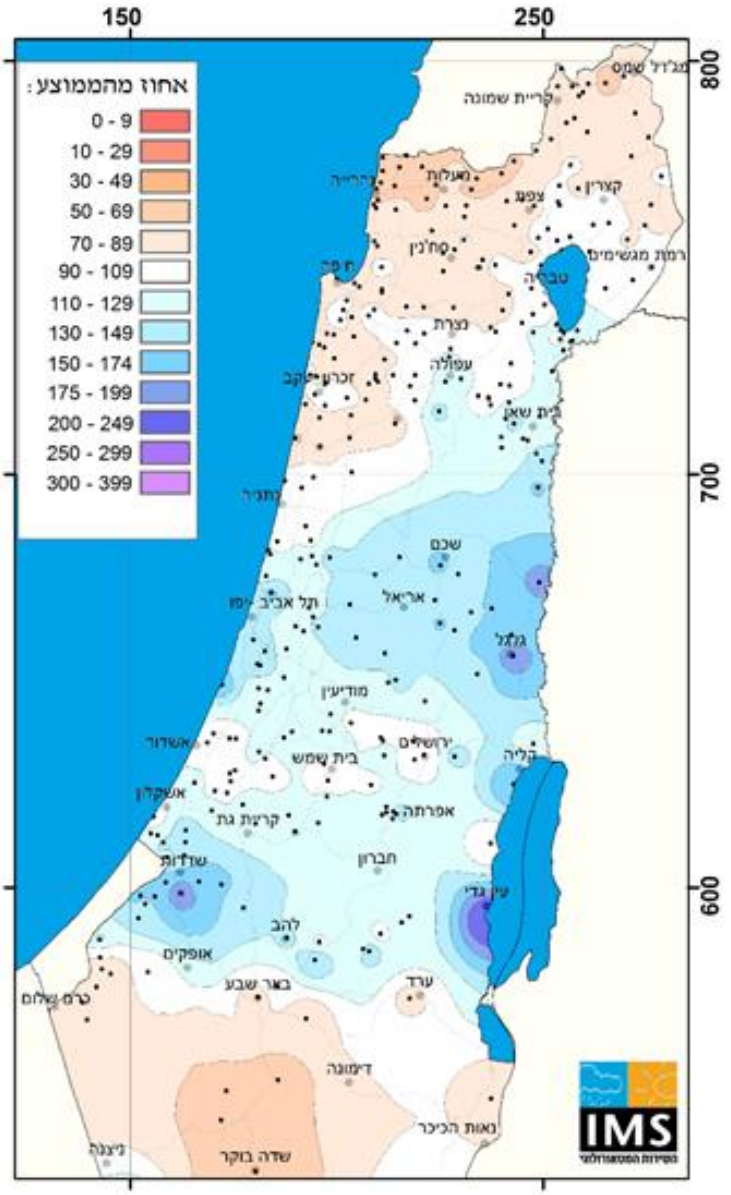
The Central Mountains area was rainier than average, and it was especially noticeable in Samaria, with 150 to200 mm, which is 130% to 160% of the monthly average. The Jordan Valley area was rainier than average at a similar rate. In the Jerusalem corridor and Gush Etzion, February was also rainier than average (110% to 140%) and in the area of Jerusalem, the amounts were close to average.

The difference between north and south was also evident in the Coastal Plain.. North of Haifa, there was a deficiency of rains, while south of Haifa to Hadera, rainfall was close to average. In the Sharon area and in the central and southern Coastal Plain, the amounts mounted to 110% to 150% of the monthly average and in the area around the Gaza Strip, where 120 to 160 mm and more were measured (Yachini, 167 mm), the amounts are more than 150% and even close to twice the average of February.

In the Northern Negev, 20 to 30 mm were measured, which is 70% to 90% of the average of February and the rains also reached the more southern parts of the country - 10 to 15 mm in the Central Negev and 5 to 10 mm in the Arava (maps 1,2 and table 1).



Map 1: Precipitation in February 2021 (mm)



Map 2: Precipitation in February 2021 – percent of average

Table 1: Rainfall in February 2021 in comparison with the long term average[1]

	Station	Rainfall in February 2021 (mm)	Long term average for February (mm)	% of February average
Coastal Plain and the Shfela[2]	Liman	70	110	64%
	Nahariyya	70	105	67%
	Haifa (Port)	74	95	78%
	Yagur	128	137	94%
	En HaShofet	97	120	81%
	En HaHoresh	103	101	101%
	Kefar Hess	116	114	102%
	Nir Eliyyahu	163	119	137%
	Nahshonim	145	104	140%
	HaKefar HaYarok	106	101	105%
	Miqwe Yisrael	112	87	129%
	Bet Dagan	130	89	145%
	Gan Shlomo (Rehovot)	112	95	118%
	Qevuzat Yavne	91	91	100%
	Nizzanim	101	89	113%
	Negba	111	93	120%
	Ziqim	80	74	109%
	Dorot	122	75	163%
	Yakhini	167	84	199%
	Be'eri	84	63	133%
	Besor	31	43	72%
Northern Mountains	Merom Golan Picman	133	181	74%
	Gamla	104	120	87%
	Elon	97	148	66%
	Kefar Gil'adi	123	161	76%
	Meron	134	184	73%
	Zefat Har Kenaan	104	131	79%
	Harashim	156	189	83%
	Deir Hanna	101	120	84%
Northern Valleys	Newe Ya'ar	105	109	96%
	Merhavya	104	89	117%
	Dafna	89	122	73%
	Kefar Blum	80	101	79%
	Ayelet HaShahar	85	93	91%
	Ginnosar	81	85	95%
	Zemah	93	83	112%
	Sede Eliyyahu	73	57	128%
Central Mountains	Kedumim	195	131	149%
	Eli	174	115	151%
	Talmon	156	129	121%
	Zova	182	146	124%
	Jerusalem Centre	110	118	93%
	Beit Jimal	103	109	95%
	Rosh zurim	139	121	115%
Negev	Arad	25	29	85%
	Beer Sheva	32	39	81%
	Sede Boqer	10	18	56%
	Mizpe Ramon	15	16	91%
Jordan Valley and the Arava[3]	Gilgal	64	36	178%
	Sedom	6		
	Hatzeva	10		
	Paran	6		
	Timna (Ramon Apt.)	8		
	Elat	6		

1 Long-term average pertains to 1991-2020. For stations that were not active, averages are computed for this period

2 Foothills between the Coastal Plain and the central mountains.

3 In arid zones, the monthly average and the rainfall for the same period average are not presented due to the non-regular characteristics of rainfall in these areas

Rain days in February

February had a small number of rain days - in most of the stations in the North and the Centre, there were only 6 to 7 in comparison with a multi-annual average of 9 to 12 days. The precipitation mostly occurred in one event, on the 16-19th, so t in a single event of four days, close to average amounts of the entire month were obtained. Also in December and January, the rainfall amounts were close to average and most of the rains fell in a single central event in the month. This situation is consistent with what was presented in a recent Meteorological Service publication comparing three standard rainfall standard periods in Israel from 1931 to 2020 (in Hebrew), which stated, among other things, that there is a decrease of 10% in the number of low threshold rain days (a daily amount of 1 mm and above), while there is some increase in the number of high-threshold rainy days (a daily amount of 50 mm and above). This is in line with the warming trend that our area has experienced in in the last few decades - the warmer it gets, there is a tendency for higher rainfall intensities and this may be reflected in the moderate increase in the number of rainy days at the high threshold and the average rainfall that is not reduced.

At the same time, it should be kept in mind, that a climatic change is a long-term change, so evenif there as decrease declining trend with the number of the rainy days, it does not have to be reflected in each and every season, and indeed, the two previous rainy seasons (2018/19 and 2019/20), which were rainy and were also characterized by a large number of rainy days in all thresholds (in the North 85 to 90 rainy days and more, in comparison with an average of 65 to 70 days).

Rain events in February

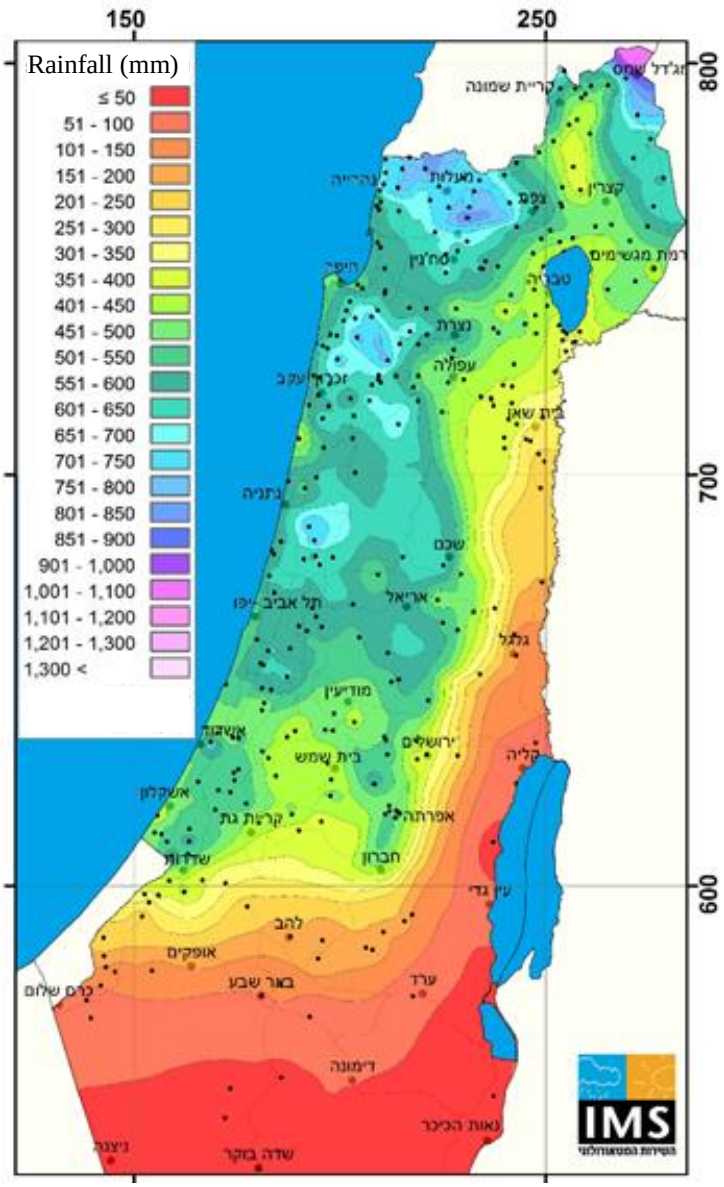
February 3-5: most of the rain fell in the South and Centre: in Samaria and Judea 20 to 40 mm were measured and in several stations 50 mm and more. In the Central and Southern Coastal Plain, 10 to 25 mm and similar amounts were also measured in the Negev and the Dead Sea area. In the North, 5 to 10 mm.

February 16-19: the main precipitation events of the month. In many areas from northern Israel to the north western Negev, amounts of 100 mm and more were measured. In parts of the Northern Mountains, the eastern Sharon, Samaria and the northern Gaza Strip, 120 to 150 mm were measured. The rains decreased sharply in the more southern parts - in the Northern Negev 10 to 20 mm were measured and south of it, even less than 10 mm. In the first part of the event, from the night of February 16-17th until the 18th, it snowed in the mountains. In the Northern and Central Golan Heights, the snow depth reached to 40-50 cm, in the Upper Galilee 10 cm and at the top of Mount Meron 25 to 30 cm. In the Jerusalem area, the snow reached a depth of 10 to 15 cm and in the Hebron Mountains to 25-30 cm. In the peaks of

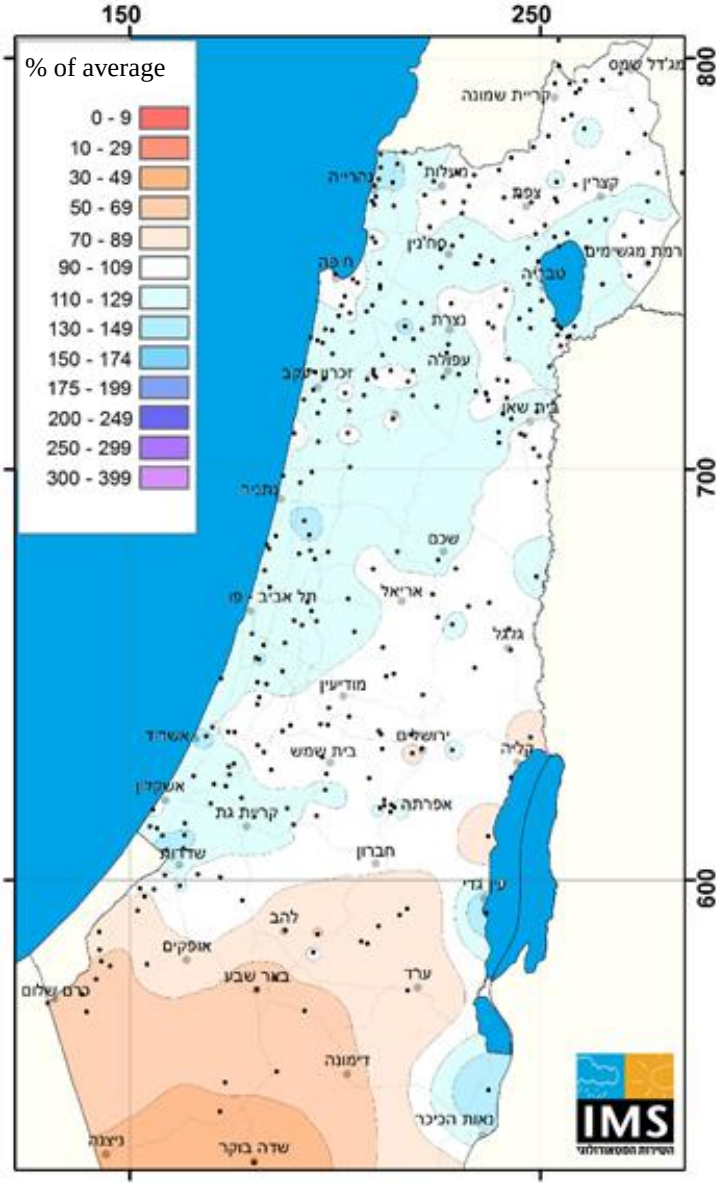
Samaria, 5 to 10 cm were measured and it also snowed in the Yattir area and even in a part of the Negev Mountains area, piling up into a thin layer.
On February 23rd there were small amounts (several tenths of a mm) in several areas in the country. Also on the 28th, there was a light rain (in the North West, 5 to 6 mm), and the rain continued on March 1.

Accumulated rainfall since the beginning of the season

The rainfall amounts since the beginning of the season continue to be higher than average for the same period (until the end of February) in the north and the Coastal Plain and below it in the east and south.
In the Coastal Plain, 120% to 140% of the rainfall average for the parallel period have been measured to. In most of the area, the accumulated amounts have already reached the multi-annual average for the entire season and in some parts, even exceed it (105% to 120% of the average for the entire season). In quite a few stations in the Coastal Plain, it is the third year in a row, in which they exceed the average for the entire season and in the northern Coastal Plain, it is even the fourth year in a row.
In the north of the country, the accumulated amounts exceed the average for the parallel period and reach 110% to 120% of it. Referring to the entire season, the amounts measured reach 80% to 90% in the Northern Mountains and the Hula Valley and close to average for the entire season in the Kinneret area (maps 3,4 and table 2).
In Samaria, too, the accumulated amounts since the beginning of the season are higher than the multi-annual average for the same period (110% to 120%), while in the Judean Mountains, they are close to it. A deficit continues to exist in the South - in the Northern Negev, only 60% to 80% of the average have accumulated and south of it, even less.



Map 3: Accumulated precipitation Sep 2020 to Feb 2021 (mm)



Map 4: Accumulated precipitation Sep 2020 to Feb 2021 - % of same period average

Table 2: Accumulated rainfall since the beginning of the season until the end of February 2021 compared with the average[1]

Station	Accumulated rainfall Sep 2020-Feb 2021 (mm)	Long term average September to February (mm)	% of average for the same period	Annual average (mm)	% of annual average
Liman	695	540	129%	636	109%
Nahariyya	692	523	132%	615	113%
Haifa (Port)	493	484	102%	565	87%
Yagur	710	606	117%	709	100%
En HaShofet	614	566	108%	661	93%
En HaHoresh	589	499	118%	576	102%
Kefar Hess	727	533	137%	614	118%
Nir Eliyyahu	626	544	115%	636	98%
Nahshonim	585	476	123%	552	106%
HaKefar HaYarok	568	489	116%	566	100%
Miqwe Yisrael	562	457	123%	522	108%
Bet Dagan	599	466	128%	540	111%
Gan Shlomo	532	465	114%	535	99%
Qevuzat Yavne	485	458	106%	526	92%
Nizzanim	517	443	117%	505	102%
Negba	514	432	119%	500	103%
Ziqim	476	393	121%	447	106%
Dorot	354	338	105%	394	90%
Yakhini	415	388	107%	451	92%
Be'eri	233	313	75%	359	65%
Besor	106	183	58%	216	49%
Merom Golan	619	658	94%	811	76%
Gamla	480	468	102%	578	83%
Elon	809	664	122%	805	100%
Kefar Gil'adi	610	619	99%	757	81%
Meron	701	730	96%	881	80%
Zefat Har Kenaan	584	567	103%	688	85%
Harashim	872	815	107%	988	88%
Deir Hanna	559	508	110%	616	91%
Newe Ya'ar	672	499	135%	584	115%
Merhavya	435	387	112%	460	95%
Dafna	483	503	96%	615	79%
Kefar Blum	427	417	102%	507	84%
Ayelet HaShahar	446	395	113%	472	94%
Ginnosar	418	369	113%	447	94%
Zemah	390	318	123%	383	102%
Sede Eliyyahu	246	229	107%	278	88%
Kedumim	602	536	112%	642	94%
Eli	500	433	115%	522	96%
Talmon	528	534	99%	648	81%
Zova	533	545	98%	656	81%
Jerusalem Centre	383	426	90%	522	73%
Beit Jimal	418	423	99%	506	83%
Rosh zurim	471	460	102%	564	84%
Arad	81	107	76%	134	60%
Beer Sheva	97	156	62%	192	51%
Sede Boqer	21	67	31%	87	24%
Mizpe Ramon	27	55	49%	70	39%
Gilgal	141	144	98%	171	82%
Sedom[2]	41			39	105%
Hatzeva[2]	23			40	58%
Paran[2]	9			33	27%
Timna (Ramon Apt.) [2]	21			25	84%
Elat[2]	18			22	82%

1 Long-term average pertains to 1991-2020. For stations that were not active, averages are computed for this period

2 In arid zones, the monthly average and the rainfall for the same period average are not presented due to the non-regular characteristics of rainfall in these areas

Temperatures and weather during the month

Temperatures in February were above average (1995-2009). This was especially evident with the maximum temperatures, that were higher than average in most parts of the country by 2 to 3 degrees. The minimum temperatures exceeded the average by 1 to 1.5 degrees in the mountains and inland and by 0.5 to 1 degrees in the Coastal Plain.

It is an unusual situation that a month, which includes a significant snow system, was still considerably warmer than average - usually, a significant snow system occurs in a month which is cooler than average or close to it.

The high temperatures stood out in the first part of February, so that until the 16th, the temperatures were considerably higher than average most of the time. During daytime, they were higher than average by 4 to 5 degrees and sometimes even more. Between the 1st and the 3rd and the 8-9th, temperatures of 25 to 27 degrees were measured in the Coastal Plain, the Shfela and the northern Negev and at several stations even 28 degrees. In comparison, the long-term average is 18 to 19 degrees. In the Arava, 30 degrees were measured during these days.

On the 10th, there was a drop in temperatures and during the nighttime, it became even cooler than average in the Coastal Plain and in the lowlands, but during daytime, it continued to be warmer than average. On the 17th, there was a considerable drop in temperatures with the entrance of the cold air that accompanied the rain and snow system and the mountainous stations measured minimum temperatures below 0 degrees. On the 17th and the 18th, the station in Zefat measured minimum temperatures of -0.9 to -1.1 degrees and in Jerusalem -0.3 to -0.4 degrees. On the 19th, there was a rise in temperatures, but until the 21st it continued to be cooler than average. On that date, minimum temperatures of 1 to 2 degrees were measured in the Northern Valleys and 2 to 4 degrees in the Coastal Plain, the Shfela and the Northern Negev. It was also very cold in the Golan Heights, and in Merom Golan station a minimum temperature of -4.7 degrees was measured.

The last week of the month was warmer than average, but not significantly and at the end of the month, the temperatures had returned to normal.

Table 3: February 2021 temperatures[1] (^{0}C) compared with the average

Region	Station	February 2021		Deviation from the average 1995-2009	
		Maximum	Minimum	Maximum	Minimum
Coastal Plain and the Shfela	Haifa (Technion)	18.9	11.0	+2.7	+1.2
	En HaHoresh	20.4	7.5	+1.9	+0.9
	Bet Dagan	21.0	8.6	+2.1	+0.4
	Negba	20.1	8.5	+1.9	+0.2
Northern mountains	Elon (western Galilee)	19.3	10.0	+2.5	+1.4
	Merom Golan Picman	13.9	2.6	+2.9	+0.6
	Avne Etan	18.0	6.9	+2.2	+1.0
	Zefat Har Kenaan	14.0	6.7	+2.7	+1.3
	Deir Hanna	18.8	10.9	+2.9	+1.9
Northern valleys	Afula, Nir HaEmeq	20.5	7.0	+2.2	+1.3
	Eden Farm (Bet Shean)	21.5	9.2	+2.4	+1.3
	Kefar Blum	21.6	7.5	+3.2	+0.8
	Zemah	21.5	9.5	+2.0	+0.9
Central mountains	Qarne Shomron	19.0	8.9	+2.6	+0.6
	Jerusalem	16.0	8.2	+2.2	+1.1
	Bet Jimal	19.5	10.6	+1.9	+1.3
	Rosh Zurim	13.9	6.7	+2.0	+1.2
Negev	Besor	20.3	9.3	+1.3	+1.0
	Arad	17.8	8.8	+2.2	+1.4
	Be'er Sheva	21.5	8.7	+2.8	+1.0
	Sede Boqer	19.1	6.6	+2.3	+1.1
Arava	Sedom	23.7	16.7	+1.4	+1.8
	Elat	25.5	13.9	+2.5	+2.1

[1] Due to installment of new temperature sensors, maximum temperatures might be higher by several tenths of ^{0}C when compared with readings of older sensors. This is currently being investigated.

Table 4: Extreme temperatures in February 2021 (^{0}C) compared with the past

Station	February 2021				Extreme Values in record				Period of measurements
	Extreme Max.		Extreme Min.		Extreme Max.		Extreme Min.		
	Temp.	Date	Temp.	Date	Temp.	Date	Temp.	Date	
Bet Dagan	27.2	9/2/21	3.9	21/2/21	33.4	17/2/73	-2.2	4/2/89	1962-2021
Negba	27.5	9/2/21	4.3	22/2/21	32.4	17/2/73	-1.5	6/2/50	1950-2021
Zefat Har Kenaan	19.8	10/2/21	-1.1	18/2/21	26.7	23/2/41	-9.0	6/2/50	1939-2021
Jerusalem[1]	22.6	9/2/21	-0.4	18/2/21	29.9	23/2/41	-5.1	6/2/50	1867-2021
Be'er Sheva[2]	28.1	9/2/21	3.8	22/2/21	35.2	23/2/41	-4.0	6/2/50	1922-2021
Elat	30.6	14/2/21	8.0	19/2/21	35.8	29/2/04	0.9	7/2/50	1949-2021

[1] For Jerusalem: Center 1950-2021; 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 1957-2021; Old Town 1922-1957.

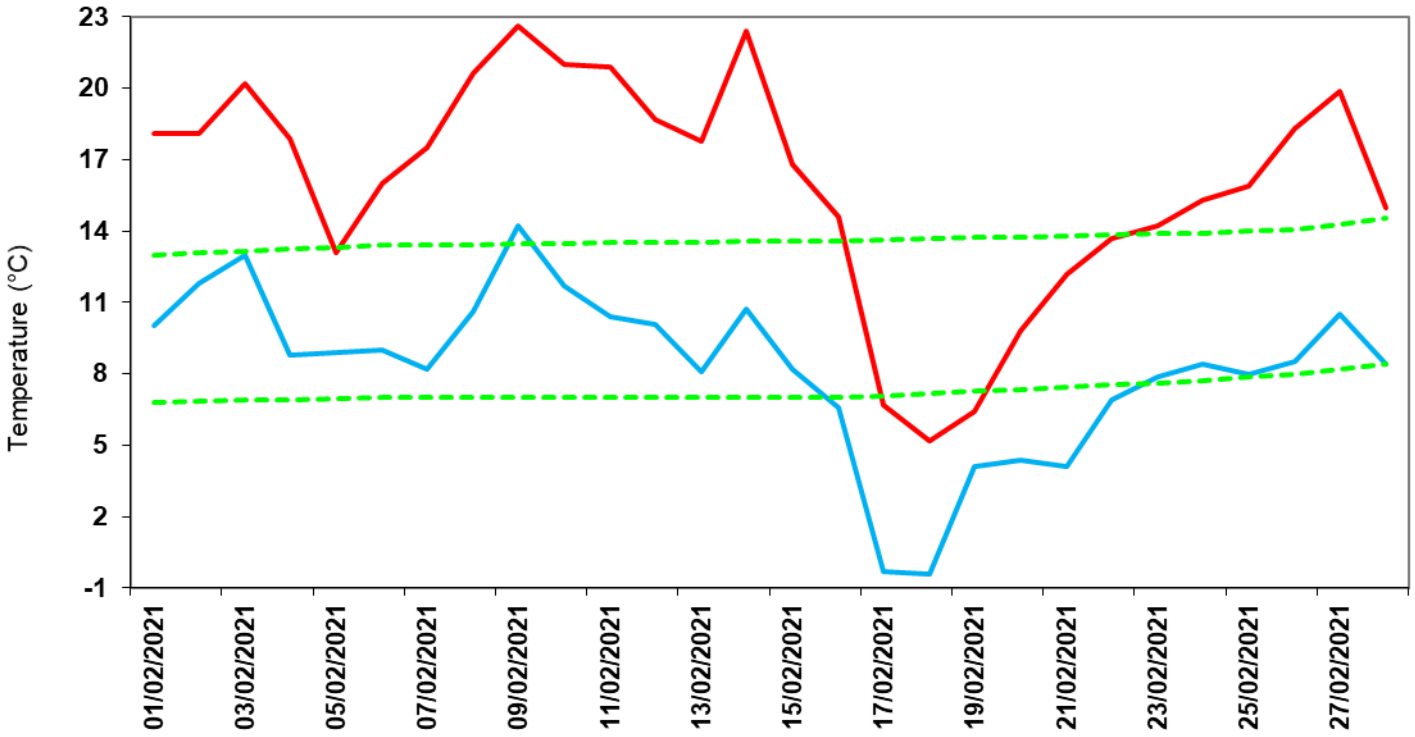


Figure 1: Daily minimum and maximum temperatures in Jerusalem in February 2021 compared with the long-term average

Figure 2: Daily minimum and maximum temperatures in Bet Dagan in February 2021 compared with the long-term average