

October 31, 2019

Monthly Weather Summary – October 2019

General

October was warmer than the average and its rainfall was not evenly distributed. Although this state is characteristic for this month of the transitional period (from summer to winter), this year it was more noticeable. The main reasons causing this state were the unstable atmospheric conditions that predominated our region during the second half of the month, as well as the absence of a regular synoptic pattern. It brought multiple rainy days with widespread isolated rains.

Heavy rains occurred towards the end of the month causing floods in the southern part of the country. In the middle of the month, a heat wave with temperatures of 40°C occurred in several regions, as well as many lightning storms.

Rain in October

October rains fluctuated widely and in some regions there were considerable differences in rainfall between neighboring points (maps 1-2), as detailed below.

Coastal Plain

In the northwestern part of the country (Western Galilee and the coastal plain north of Akko) rainfall amounts in October were 15-35 mm, but there were considerable differences between nearby stations. e.g. in Nahariya 21 mm

P.O.B 25, Bet Dagan 50250, Israel
Email: ims@ims.gov.il

www.ims.gov.il
Fax: +972-3-960-4065

were recorded, while in Bet HaEmeq, 6-7 km away, 50 mm were recorded. In the coastal plain south of Akko and down to the Sharon region, rainfall was 5-15 mm, but in the Mount Carmel region 20-30 mm were recorded. In the central and southern coastal plain rainfall was spread out more evenly, and most stations recorded 10-25 mm. However, some stations close to the seashore recorded heavier rainfall, such as Shefayim (38 mm) and Palmahim (35 mm).

Northern Israel

In the northern part of the country, the rainfall variability was much more noticeable, particularly in the Upper Galilee and the Golan Heights. Some stations recorded 5-15 mm (Avne Etan, Yonatan, Bar'am, Elon), whereas other stations recorded much higher values: Alone HaBashan – 67 mm, Tefen – 65 mm, Yiftah – 53 mm.

In the Hula Valley, there were also considerable variations between stations that recorded only a few mm (HaHula, Ayelet HaShachar) and stations like Kefar Blum – 25 mm and Lehavot HaBashan – 54 mm.

In the Lower Galilee and Yizreel Valley 15-25 mm were recorded, while around the Sea of Galilee and the Jordan Valley only a few mm were recorded.

Central Mountains

In Samaria, there were also considerable fluctuations of rainfall, with stations receiving less than 10 mm (Har Bracha, Karne Shomron), while others

recording larger amounts, like Eli and Ariel with 20-22 mm and Itamar 40 mm. In the Judean Hills 10-25 mm were recorded.

Southern Israel

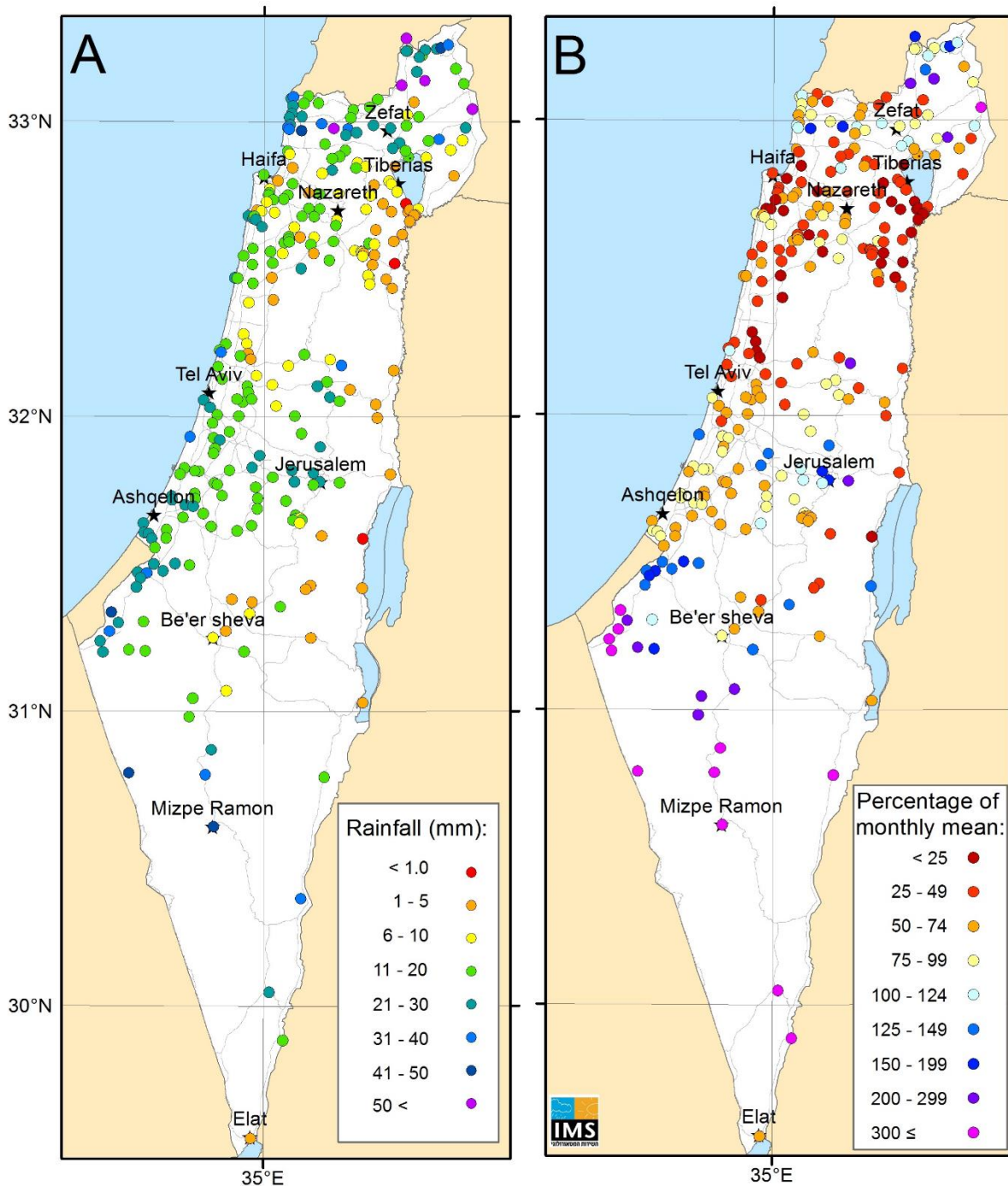
In the south, rainfall was generally well above the average (5-15 mm) for October. Most of the rainfall occurred on October 26. In the Gaza Envelope¹ area and the Northwestern Negev 15-35 mm (Nirim – 46 mm) were recorded, and in the Northern Negev 5-15 mm.

In the Central Negev 30-40 mm were recorded, far above the average for this arid region: In Ezuz, near the border with Egypt – 42 mm, and in Mizpe Ramon – 41 mm. In the Arava² and the Southern Negev there were also considerable amounts of rain: Paran – 35 mm, Ne'ot Smadar – 28 mm, Yotvata – 13 mm.

Table 1 compares the rainfall in October with the average, at several stations.

¹ Refers to a region in Israel surrounding the Gaza Strip

² Continuation of the Jordan Valley and Dead Sea Depression in the southern direction.



Map 1: Rainfall in October 2019)mm Map long to

(2 Rainfall in October :2019 with regard - term average (%)

P.O.B 25, Bet Dagan 50250, Israel
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Table 1: Rainfall in October 2019 compared with multi-year average

Coastal Plain, and Northwestern Negev					
Station	Rainfall (mm) October	Multi-year average (mm) for October	Station	Rainfall (mm) October	Multi-year average (mm) for October
Rosh HaNikra	40	35	Tel Aviv Coast	28	34
Nahariya	21	34	Bet Dagan	16	24
Bet HaEmeq	50	34	Palmahim	35	27
Haifa (Technion)	10	30	Nezer Sereni	24	24
En Carmel	27	32	Nitzanim	24	29
En HaShofet	18	28	Negba	18	26
En Hahoresh	10	34	Karmiyya	26	25
Kefar Hess	6	34	Dorot	24	16
Shefayim	38	35	Be'eri	26	20
HaKefar	14	34	Nirim	46	14
Nahshonim	14	25	Besor	32	9

Northern Mountains					
Metula	53	25	Elon	15	36
Kefar Gil'adi	20	24	Tefen	65	35
Nimrod Fort	43	30	Meron	30	28
Merom Golan	17	22	Zefat Har Kenaan	23	24
Alone Ha Bashan	66	20	Bet Jan	29	35
Gamla	9	20	Dier Hanna	6	22
Avne Etan	5	20	Yodefot	26	20

Northern Valleys					
Neve Ya'ar	14	26	Ayyelet HaShahar	6	20
Afula Nir	14	20	Kefar Nahum	11	18
Dafna	12	24	Ginnosar	3	17
Kefar Blum	25	20	Zemach	1	14
Lehavot	54	20	Sede Eliyyahu	4	12

Central Mountains					
Har Beracha	7	25	Zova	21	20
Itamar	40	25	Jerusalem Center	21	14
Eli	21	25	Beit Jimal	17	19
Pesagot	26	23	Rosh Zurim	16	18

Negev					
Arad	4	10	Ezuz	42	5
Be'er Sheva	7	9	Mizpe Ramon	41	4
Sede Boqer	29	4	Ne'ot Smadar	28	3

Jordan Valley and Arava					
Gilgal	3	9	Paran	35	4
Sedom	1	5	Yotvata	13	2
Hazeva	12	5	Elat	2	4

*Multi-year average pertains to 1981-2010. For stations that were not active throughout the entire period, averages were adapted for the period.

Rain events

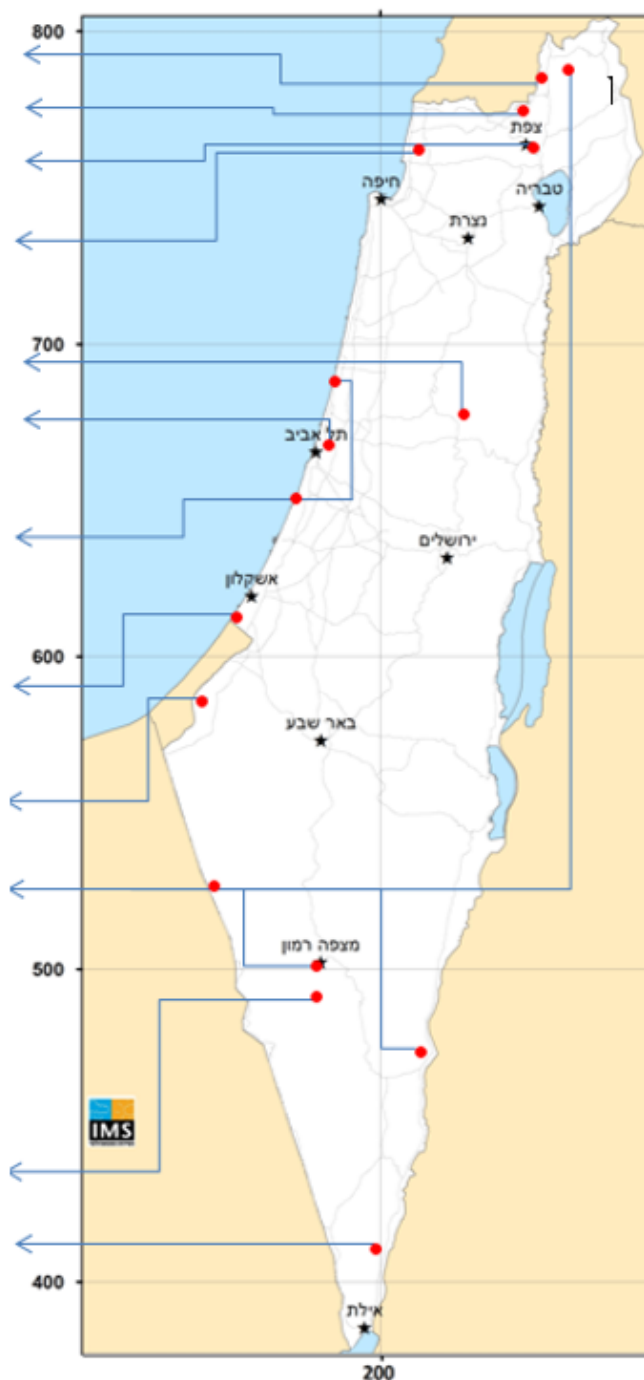
October rains fell mainly in the second half of the month. It rained almost every day in different parts of the country, due to atmospheric instability. Throughout the period, there was a trough over the Eastern Mediterranean in high and medium levels, coupled, at the surface level, with either a red sea trough or a shallow depression. This generated isolated rain clouds mainly in the interior parts of the country. A more orderly synoptic system occurred on October 26. Map 3 depicts the locations in which heavy rainfall was recorded during the significant events of the month.

- A. Oct 5: Very little rain (up to 2 mm) in the central coastal plain and also in Elat.
- B. Oct 13 to Oct 17: On 13 – several mm in the north and on 14 also in the center of the country. On 15: 5-15 mm in the northern coastal plain, Mount Carmel, and Samaria. Several mm also in the central and southern coastal plain, and in the Judean Mountains. These were accompanied by lightning and thunderstorms mainly in the southern coastal plain. A lightning that stroke in the Zikkim beach killed a youth and injured several people. On 16 – several mm in the coastal plain, Samaria, and Judea. On 17 – no rain in most of the country, but a cloud that developed over the northeastern part of the country precipitated 29 mm in Kibbutz Yiftach.
- C. Oct 21 to Oct 25: On 21 – several mm in northeastern Israel. On 22-23 – small amounts of rain in many places in the country. In some places there were higher amounts; Jerusalem – 7 mm, Metula – 15 mm, HaGoshrim – 13 mm. On 24 – rains generally in the north of the country, mostly less than 5 mm. However in some places more than that; Yodfat – 14 mm, Ram On – 17 mm, Itamar – 32 mm. On 25 – little rain in the northern and central regions, but heavier rain in a few places; Me Ami – 16 mm, Alone HaBashan – 25 mm.

D. Oct 26: Heavy rains in the south, central coastal plain, and in the northeastern part of the country. These rains started in the afternoon hours and continued into the night. Lightning and thunderstorms occurred mainly in the central and southern coastal plain. In the central and western Negev rainfalls of 35-40 mm were recorded; in the central Arava – 20-30 mm; in the central and southern coastal plain – 10-20 mm, and in several stations near the beach – 20-30 mm; Around Gaza – 10-20 mm; in the central mountains and northern Negev – 5-10 mm. In the north of the country there were lighter rains, but in several stations in the northeastern part of the country (eastern Galilee, Hula Valley, and the Golan Heights) 20-50 mm.

E. Oct 27-29: On 27 – several mm in the northern and central coastal plain. In the southern coastal plain and northwestern part of the Negev – 5-10 mm, and in some places more: Besor – 14 mm; Nirim – 24 mm. Another focal point was Metula in the north – 19 mm. On 28 it mainly rained in the north of the country. Most stations recorded 5-15 mm, but in several places, greater amounts were recorded: Tefen – 50 mm; Peki'in – 28 mm; Bet HaEmeq – 35 mm. On 29 – little rain in the central coastal plain and the Carmel coastal plain; Binyamina – 12 mm.

17/10 – rain in Upper Galilee 29 mm in Yiftah
13/10 – hail and storms in Gush Halav
21/10 – cloud burst in Zefat
28/10 – heavy rains in Western Galilee: Tefen – 50 mm Bet Haemeq – 35 mm Regba – 29 mm
24/10 – rain mainly in interior. Itamar – 32 mm
29/10 – heavy rain in Dan Area, floods in Bene Berak.
26/10 – heavy rain near coasts of the Sharon and Rishon-Le-Zion – Palmahim. Ga'ash – 32 mm Palmahim – 30 mm
15/10 – thunders and rain on a very hot day, disastrous lightning stroke on Zikkim beach.
27/10 – rain and thunderstorms along the Sharon coast. Nirim – 24 mm
26/10 – heavy rains and widespread floods in Western Negev, Negev Mountains, and Central Arava. Azuz – 40 mm Mizpe Ramon – 38 mm Paran – 30 mm A few hours earlier, heavy rain in the north. Lehavot HaBashan – 42 mm
16/10 – floods in the Negev Mountains and Eastern Negev.
23/10 – local flood in Timna.



Map 3: Main rain occurrences in October 2019

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www.ims.gov.il
 Fax: +972-3-960-4065

Temperatures and weather in October 2019

October was warmer than the average (1995-2009). Daytime temperatures were higher by 1.5 -2^oC than the average. Nighttime temperatures were also higher by 1.5 -2^oC than the average in some parts of the country (coastal plain, northern valleys, the Arava), and elsewhere higher by 0.5-1.5^oC.

During the first half of October temperatures were higher than average in the interior regions. In the coastal plain, they were fairly close to the average during the first ten days, but later on, they were higher than the average. On October 13 it became warmer, and on 14-15 – a severe Sharav³ prevailed. At its peak (on 14 in the interior regions and on 15 in the coastal plain) temperatures of 38-40^oC were recorded in the coastal plain, the northern Negev and the northern valleys. In the Jordan Valley 40-42^oC was recorded, while in the mountainous regions – 32-34^oC.

The second half of October was generally cooler than the average in the interior regions. In the coastal plain daytime temperatures were close to the average while at night they were above that.

On Oct 16, the heat wave trailed off and during the following days temperatures were close to the average. On Oct 21-24, temperatures were again slightly above average. On Oct 25, there was a drop in temperatures, and up to the end of the month the weather was cooler than the average.

³ Warm and dry spell

Table 2: October 2019 temperatures⁴ (°C) compared to the average

	Station	October 2019		Deviation from Average 1995-2009	
		Maximum	Minimum	Maximum	Minimum
Coastal Plain	Haifa Technion	27.4	20.2	+1.6	+1.1
	En Hahoresht	29.6	16.8	+1.2	+2.2
	Bet Dagan	29.5	19.2	+1.1	+1.7
	Negba	29.4	19.1	+1.3	+1.2
Northern Mountains	Elon (Western Galilee)	28.9	18.9	+1.7	+0.9
	Merom Golan Picman	25.9	11.4	+1.8	+0.5
	Avne Etan	30.2	16.1	+1.8	+1.3
	Zefat Har Kenaan	25.4	16.1	+1.0	+0.6
	Tavor	32.1	18.2	+2.2	+1.1
Northern Valleys	Afula, Nir HaEmeq	31.8	17.5	+1.6	+1.9
	Kefar Blum	33.0	17.1	+2.1	+1.7
	Zemach	33.5	20.0	+1.9	+1.7
	Eden Farm (Bet Sh'an)	33.7	20.6	+1.6	+1.9
Central Mountains	Qarne Shomeron	29.1	18.5	+2.0	+1.5
	Jerusalem	26.8	17.6	+1.5	+0.8
	Bet Jimal	29.7	18.9	+1.0	+0.5
	Rosh Zurim	24.8	15.8	+1.5	+0.7
Negev	Besor	29.0	18.5	+0.6	+1.4
	Arad	29.1	17.0	+1.7	+1.0
	Be'er Sheva	31.4	17.8	+1.7	+1.1
	Sede Boqer	28.8	15.9	+1.6	+1.3
Arava	Sedom	34.1	27.3	+1.3	+1.6
	Elat	34.8	23.6	+1.7	+1.8

⁴ Due to installment of new temperature sensors, maximum temperatures may be higher by several tenths of °C when compared with readings of older sensors. This is currently being investigated.

Table 3: Extreme Temperatures in October 2019 (°C) compared to the past

	October 2019				Extreme Values since measurements began				Period of measurements
	Extreme Max.		Extreme Min.		Extreme Max.		Extreme Min.		
	Temp.	Date	Temp.	Date	Temp.	Date	Temp.	Date	
Bet Dagan	39.3	15/10/19	15.5	30/10/19	41.8	20/10/10	7.0	30/10/85	1962-2019
Negba	38.3	15/10/19	16.1	30/10/19	41.6	13/10/98	9.0	31/10/65	1920-2019
Zefat Har Kenaan	32.0	14/10/19	12.5	30/10/19	36.0	1/10/02	5.9	14/10/48	1939-2019
Jerusalem ⁵	33.6	14/10/19	14.0	29/10/19	36.6	1/10/02	8.3	25/10/00	1935-2019
Be'er Sheva ⁶	38.2	14/10/19	13.7	30/10/19	41.7	20/10/10	6.0	16/10/26	1922-2019
Elat	40.9	15/10/19	18.0	30/10/19	43.4	1/10/02	9.2	31/10/63	1949-2019

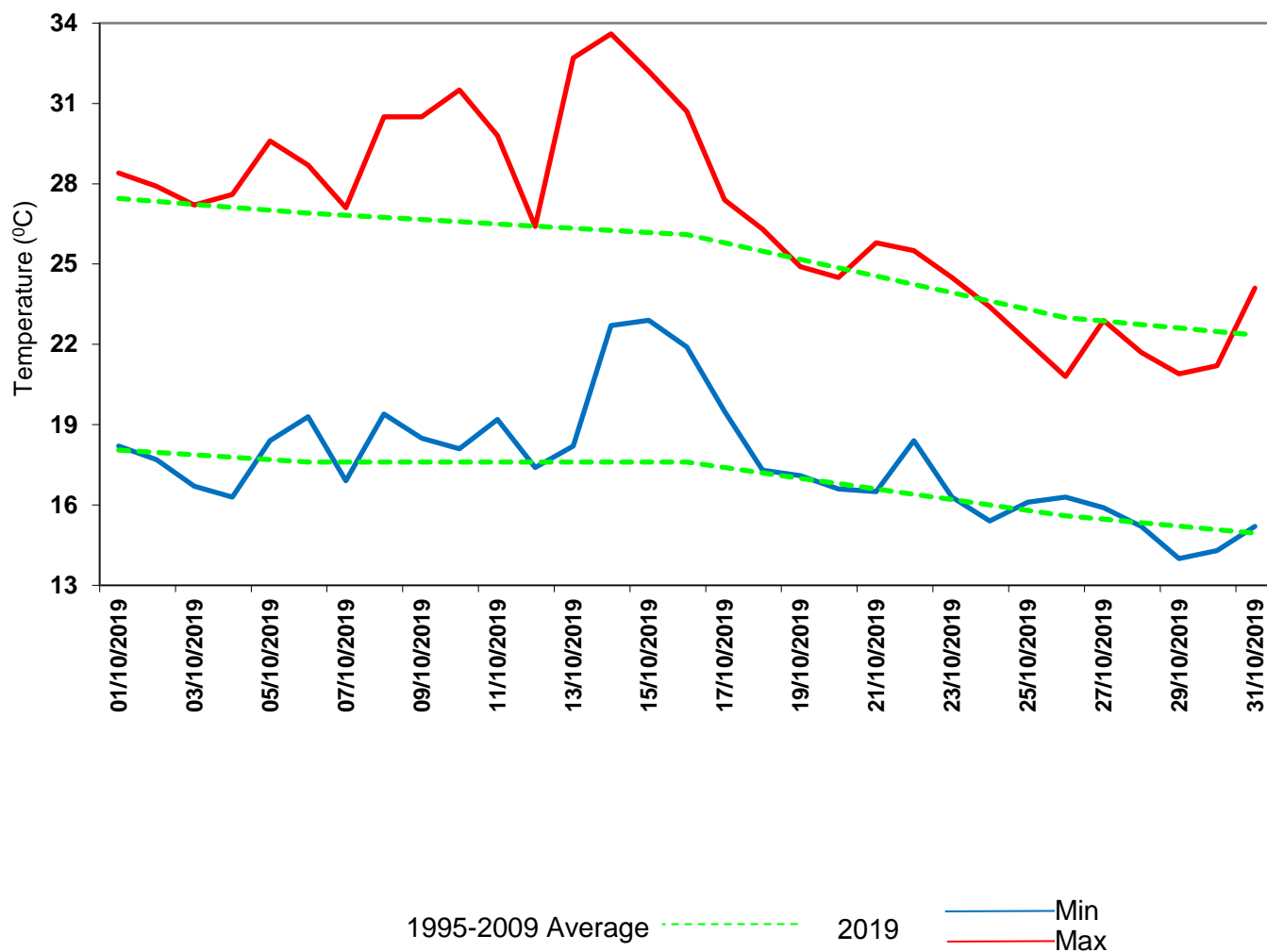
⁵ For Jerusalem: Giv'at Ram 2019; Center 1950-2018; Talbiye 1948-1949; Palace Hotel 1935-1947.

⁶ For Be'er Sheva: Negev Institute 1957-2019; Old Town 1922-1957.

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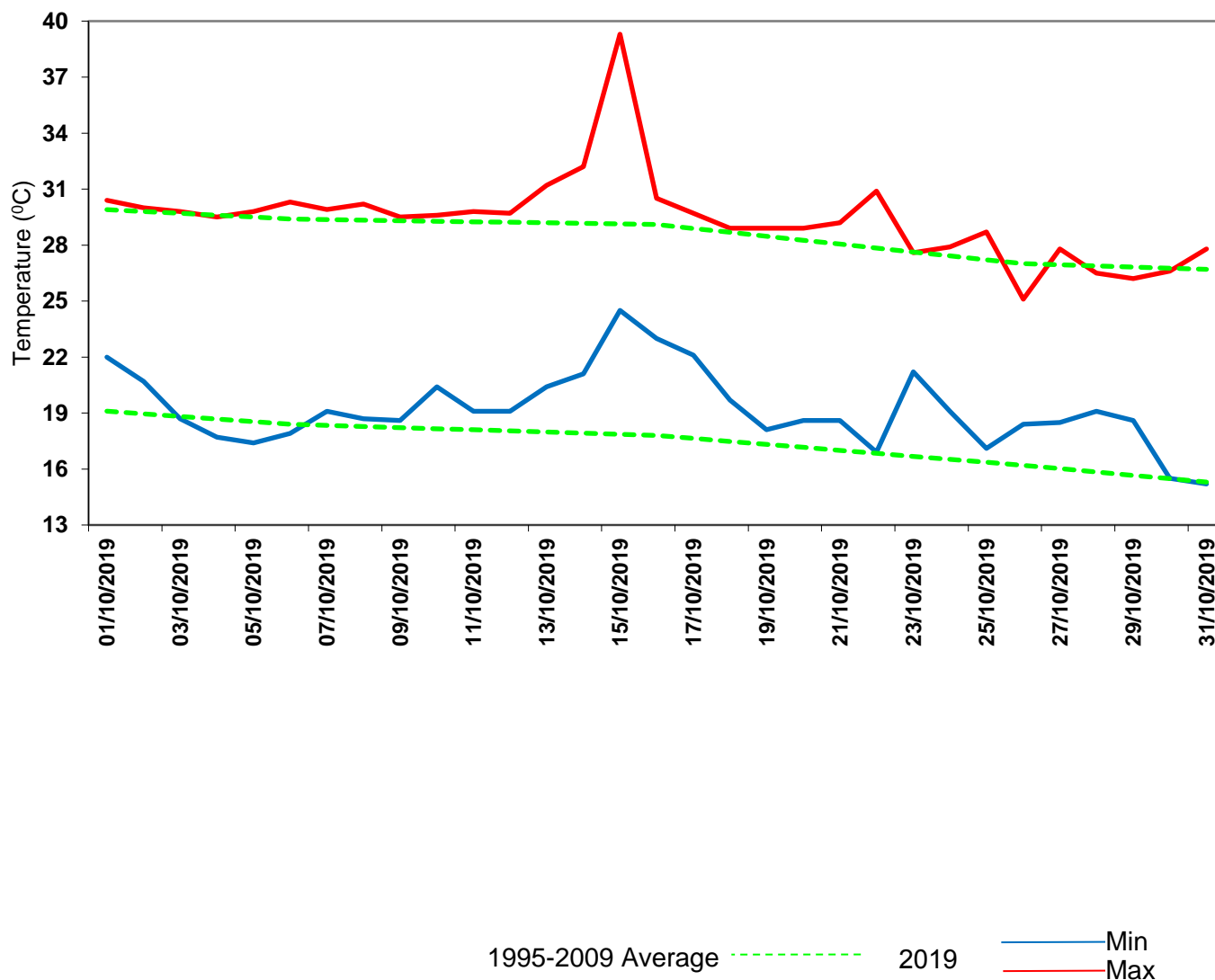
Fig. 2: Daily Minimum and Maximum Temperatures in Jerusalem in October 2019 compared with the long-term average



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Fig. 3: Daily Minimum and Maximum Temperatures in Bet Dagan in October 2019 compared with the long-term average



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