State of Israel
Ministry of Transport
Israel Meteorological Service

7 May 2026

Floods and Hail Event Summary in Southern and Eastern Israel – 27.04.2026

Abstract

On 27 April 2026, heavy rainfall fell in southern and eastern Israel from the noon hours through the afternoon. This occurred due to atmospheric instability accompanied by moisture in the mid-levels, under a synoptic situation involving an upper-level low with cold air in the upper levels of the atmosphere in combination with warm air in the lower levels. The storm clouds developed rapidly over the eastern slopes of the Judean Mountains and the northern Negev and produced, within a short time, tens of millimeters of rain, as well as heavy hail that covered the Kana'im Valley area (northeast of Arad) with a white layer. The abundant precipitation caused significant floods in some of the streams of the Judean Desert and the eastern Negev. The most significant rainfall intensities were observed along the boundary between the catchment basins of Nahal Ze'elim and Nahal Rahaf; consequently, an exceptional peak discharge of more than 500 m^3/s was recorded, a value that had never previously been measured in Nahal Ze'elim.

1. The Synoptic Situation

In the days preceding the event, an upper-level low prevailed over the eastern Mediterranean and moved slowly eastward, accompanied by a trough in the lower layers of the atmosphere. Ahead of the surface trough, southerly flows advected warm air into our region, and temperatures were above normal. On the 27th of the month, a trough in the upper levels of the atmosphere passed over our region, with a closed upper-level low at its center. The low reached its peak when it was over the Sinai region in the late morning hours, when the height at its center fell to 5,630 m (Figure 1a). This location caused southwesterly winds and advection of moisture in the upper and mid-levels from southern areas (Figure 1b). During the noon hours, the center of the low passed over central Israel, accompanied by values of 5,640 m (Figure 1c) and by a pocket of cold air that dropped below -18°C at its center. In combination with relatively warm air at the 850-hPa level (about 10°C) and surface heating from strong solar radiation, an unstable atmospheric lapse rate developed, accompanied by high CAPE values (Figure 1d) and very strong vertical wind shear, which aided the development of mature cumulonimbus clouds over eastern Israel as well as over the deserts of Jordan and Syria, and significant floods in these areas.

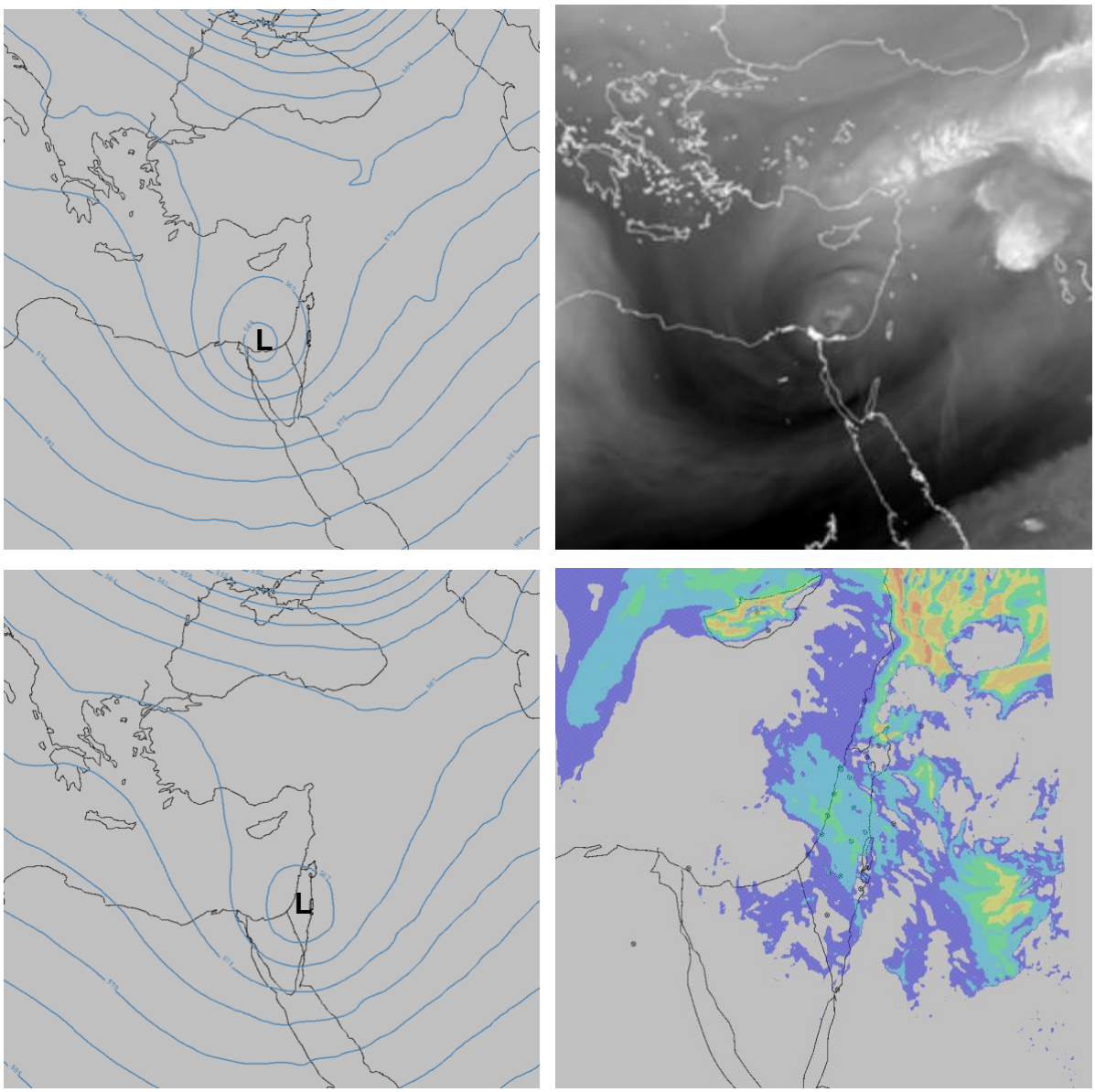

Figure 1: a (top-left) - 500-hPa map, 27.04.26 09 UTC; b (top-right) - satellite image (water vapor), morning of 27.04.26; c (bottom-left) - 500-hPa map, 27.04.26 12 UTC; d (bottom-right) - CAPE (Convective Available Potential Energy) values on 27.4.26

2. Course of the Event and the Rainfall

During the morning hours of 27 April, rain clouds developed over the Sinai Peninsula, originating from moisture in the lower levels that arrived from the Mediterranean Sea with northerly winds (Figure 2a). These clouds dissipated along the Negev-Sinai border but left moisture in the air and, with diurnal heating (convection), a few rain clouds also began to form over the Negev toward noon (Figure 2b). Toward 14:00, high-intensity rain began falling in the eastern Negev and the Judean Desert. Already at this stage, significant flow developed in the upper part of Nahal HaRo'e in the Merhav Am area, which later led to the collapse of the HaRo'e Dam. Subsequently, rainfall intensities weakened in the Yeruham area and then became concentrated on the eastern slopes of the Judean Mountains and the northern Negev, from Mizpe Jericho in the north to Highway 25 in the south (Figures 2c to 2f), producing tens of millimeters of rain across this area. Toward 16:00, the rains in the Judean Desert began to diminish and move eastward toward the Dead Sea (Figures 2g + 2h). A new focus of developed cloudiness formed in northeastern Israel, but in the Judean Desert the event came to an end toward evening.

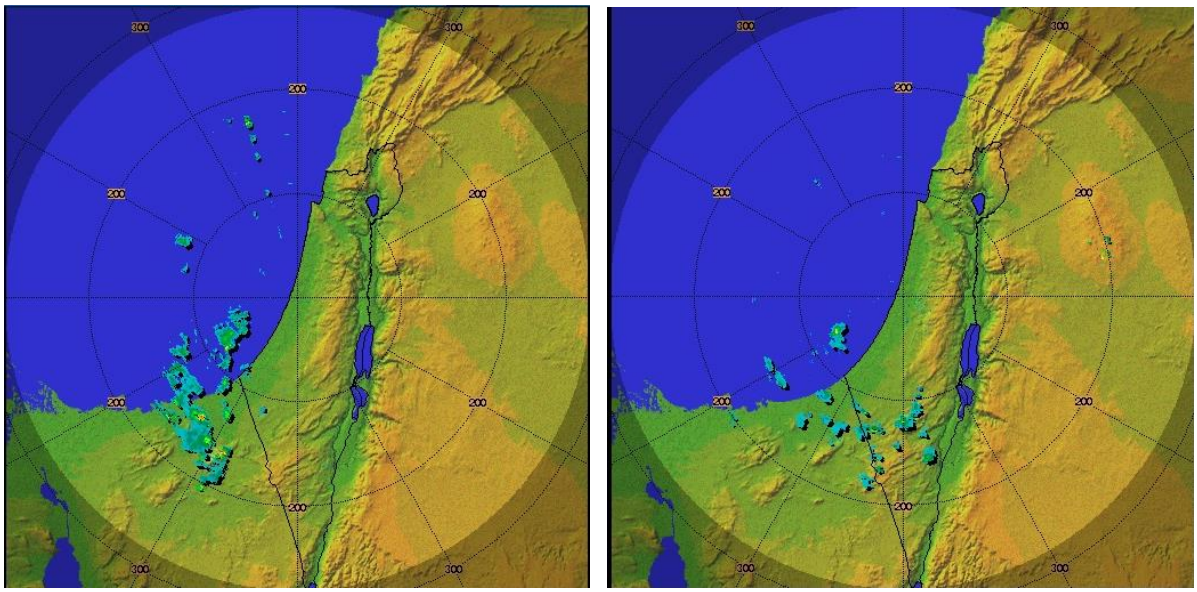

Figure 2: Rain-radar images on 27.04.2026 – a (left) - 11:00, b (right) - 13:00

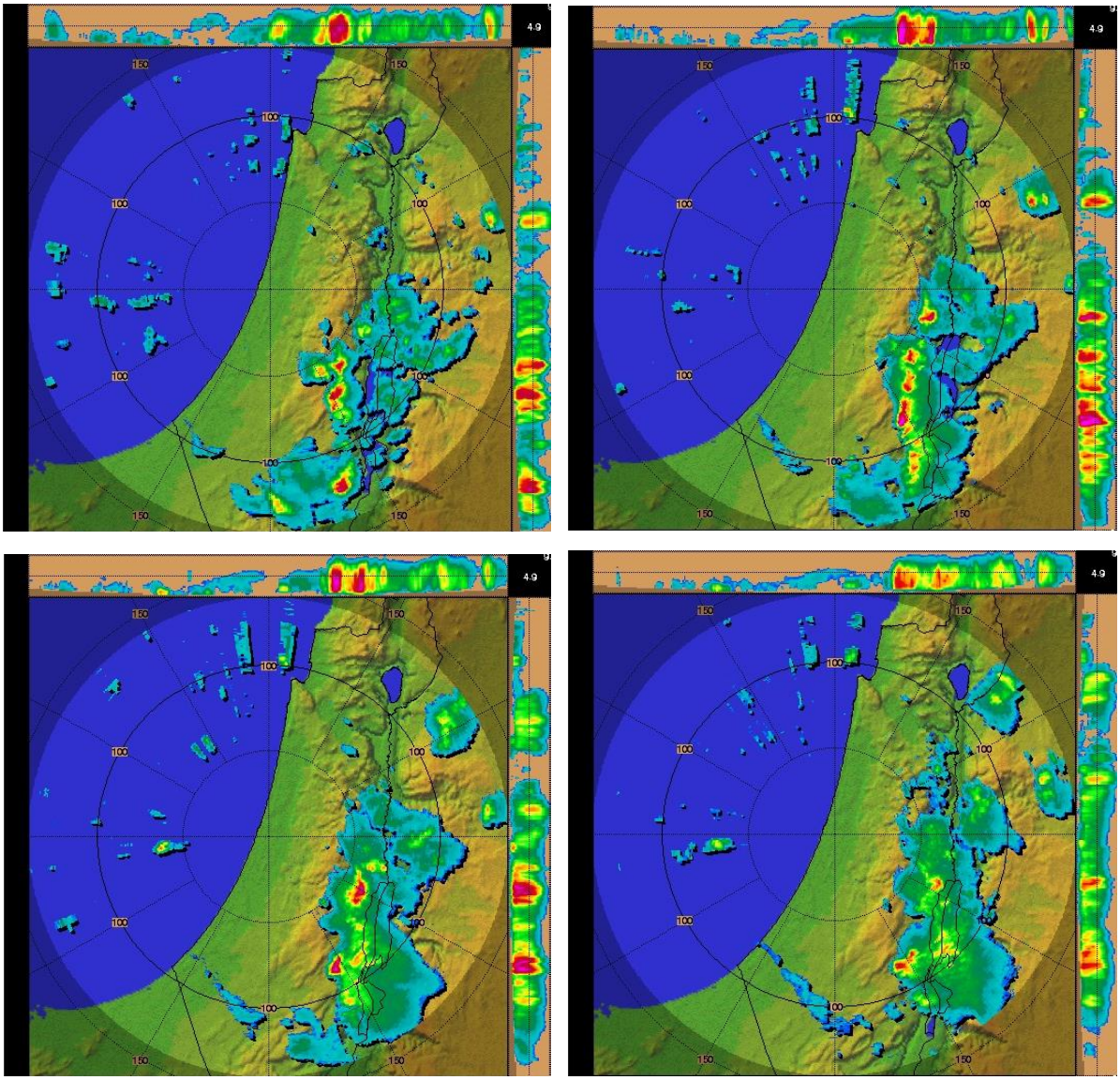

Figure 2 (continued): Rain-radar images (max Z) on 27.04.2026 - c (top-left) - 14:00, d (top-right) - 14:30; e (bottom-left) - 15:00, f (bottom-right) - 15:30

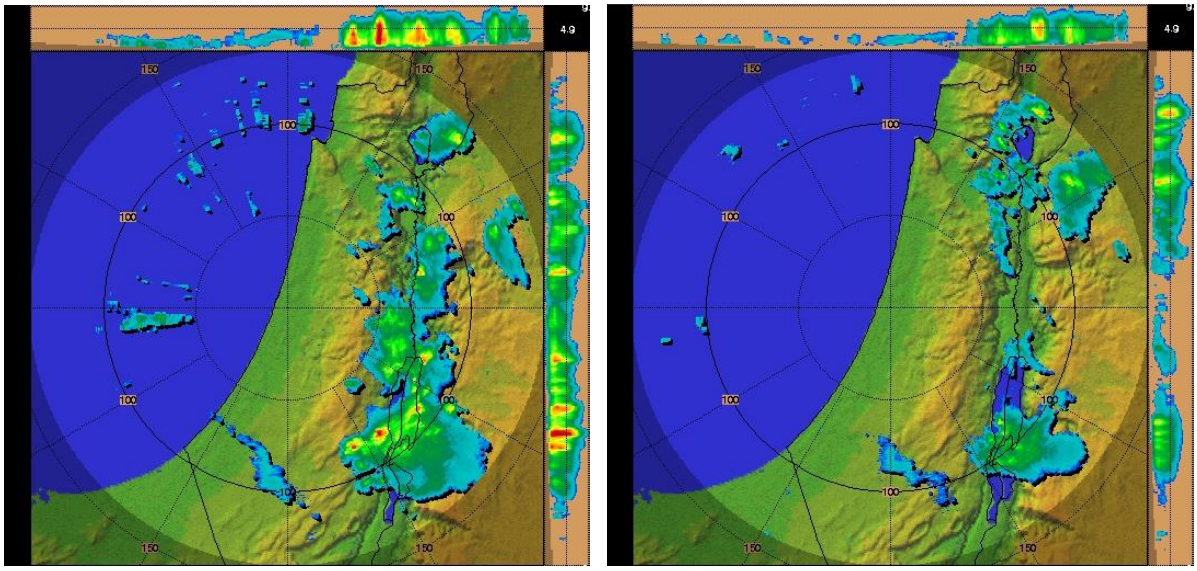

Figure 2 (continued): Rain-radar images (max Z) on 27.04.2026 – g (left) - 16:00, h (right) - 17:00

3. Rainfall Amounts

The largest rainfall amounts were measured at Mizpe Jericho: 37 mm, and at the automatic station of the Desert Floods Research Center (MALSHAB), where 30 mm were measured, about 90% of them within an hour and a half (14:30 to 16:00). At the "Zman Midbar" station, which also belongs to MALSHAB and is located between Arad and Kefar HaNokdim, 22 mm fell, the overwhelming majority within 90 minutes. At other stations that were on the margins of the event focus, relatively small amounts were measured (Table 1), except for the manual station at Enot Zuqim, where 14 mm were measured.

Figure 3 shows, on a map, the daily rainfall amounts measured at the various stations. In addition, rainfall amounts throughout the area are shown based on an algorithm that calculates them from the rain radar. It can be seen that the rainfall focus was in an area extending over about 40 km² of the Nahal Ze'elim basin and a few square kilometers in the Nahal Rahaf basin, northwest of the rain stations of Kefar HaNokdim and "Zman Midbar". Rainfall measurement using this method is not precise, but it may be estimated that more than 50 mm fell in the focus area during the event.

Table 1: Daily rainfall amounts on 27.4.26 in the area of the Judean Mountains, the Dead Sea and the northern Arava

Station	Rainfall amount (mm)	Station	Rainfall amount (mm)	Station	Rainfall amount (mm)
Ma'ale Mikhmas	0	Shani	0	Argaman Swamp Agro	0
Kefar Adumim	0	Susiya Agro	0	Gilgal	0.3
Mizpe Jericho	37.0	Amasa R&D	0	Gilgal Manned	0.3
Ma'ale Adummim Manual	0.3	Kefar HaNokdim R&D	30.3	Bet HaArava	0.8
Ma'ale Adummim	0.1	"Zman Midbar" R&D	22.5	Enot Zuqim	14.0
Jerusalem Center	0	Tel Arad R&D	0	Mezuke Dragot	0.2
Rosh Zurim	0	Arad	0	En Gedi R&D	0.8
Elazar	0	Beer Sheva	0	Masada R&D	6.0
Migdal Oz	0.3	Negev Minerals Agro	0	Ashalim 5 R&D	9.2
Karmi Zur	1.6	Efa R&D	0	Sedom	0
Carmel R&D	1.1	Ashalim 3 R&D	0	Hazeva	0
Carmel	1	Ashalim 2 R&D	0	Idan	0
Maon	0	Ashalim 1 R&D	0		

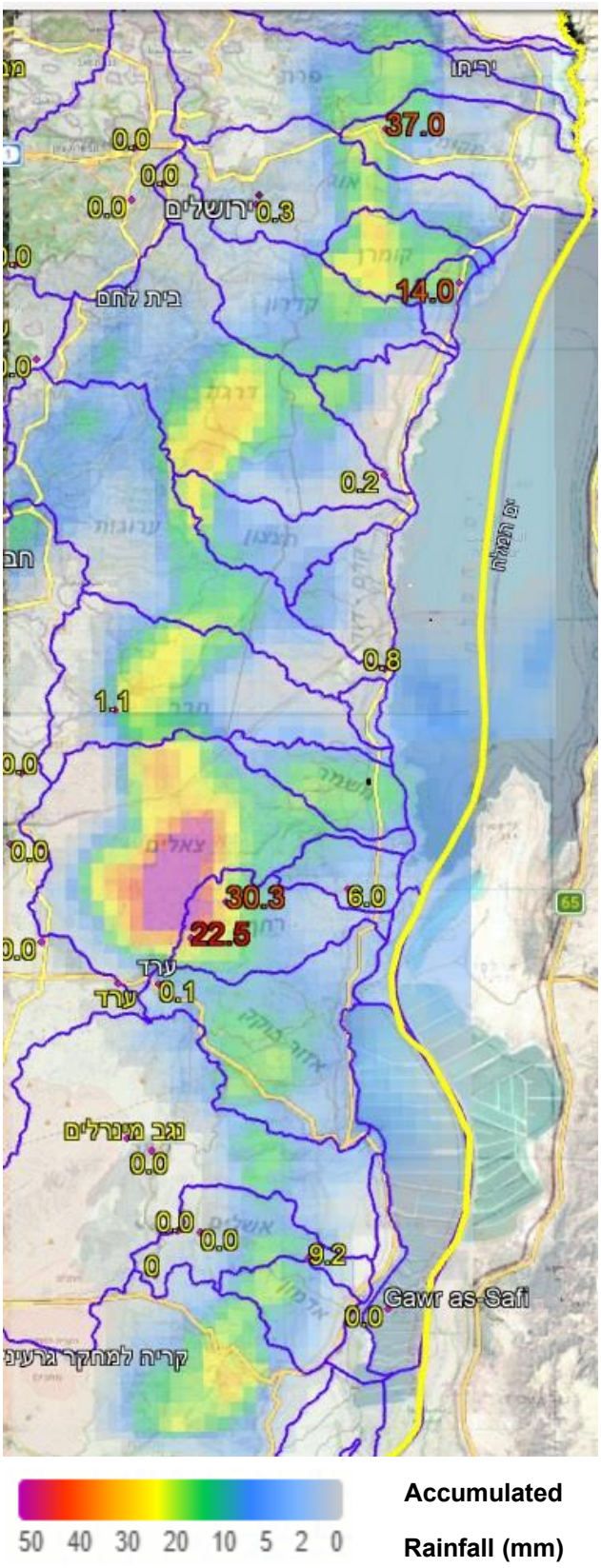

Figure 3: Rainfall amounts on 27.04.2026 - numerical values based on rain stations and colors based on the application that computes values from the rain radar

4. Rainfall Intensities and Their Degree of Exceptionality

Table 2 presents the maximum rainfall intensities for different durations (from ten minutes to three hours) at the two automatic stations southeast of the rainfall focus where significant rainfall amounts were recorded. It can be seen that for short durations of up to 30 minutes, the return period of the rainfall intensities is about 5 to 10 years. For longer durations, the rainfall intensities are more exceptional - for one hour, the return period is 14 years at both stations, and for durations of 90 to 180 minutes, the exceptionality of the rainfall intensities at the station in Kefar HaNokdim is high, reaching 30 to 35 years.

At the rainfall focus along the boundary between the Ze'elim and Rahaf basins, more than 50 mm fell according to the analysis of IMS radar data and the new precipitation-calculation algorithm used by the IMS, which is based on MTG satellite data. According to the radar, this amount of precipitation fell over a period of about three hours, with the vast majority within about an hour and a half. These intensities are even more exceptional, and their return period is 100 years or more.

Table 2: Rainfall amounts and rainfall intensities for different durations on 27.4.26 and their return periods

	Kefar HaNokdim			"Zman Midbar"		
Time (minutes)	Rainfall amount (mm)	Rainfall intensity (mm/hour)	Return period (years)	Rainfall amount (mm)	Rainfall intensity (mm/hour)	Return period (years)
10	5.2	31.2	3	8.9	53.4	11-12
20	9.5	28.5	6	11.4	34.2	10
30	10.7	21.4	6	14.6	29.2	12
60	18.9	18.9	14	18.7	18.7	14
90	25.6	17.1	35	20.8	13.9	20
120	28.6	14.3	35	21.6	10.8	13
180	30.2	10.1	31	22.5	7.5	11

5. Floods

Following the strong rainfall intensities, flows began in many streams in the Judean Desert and northeastern Negev. In most of the streams, the discharges were not high or rare, but in Nahal Ze'elim, where, as noted, the strongest rainfall intensities were recorded over an area of tens of square kilometers, the peak discharge reached 511 m^3/s according to Water Authority data, and the water level rose to more than four meters within less than half an hour from the start of the event, according to official measurements by the Hydrological Service of the Water Authority. This is the highest value in the stream since measurements began, with an estimated return period of more than 50 years. It should be noted that documentation of an unusual flood also arrived from the city of Jericho.

6. Hail

In the Kana'im Valley area, northeast of Arad, heavy hail was reported in parallel with the heavy rains. The hail began close to 14:00 and continued until 16:00. It accumulated briefly over a broad area that included, in addition to the Kana'im Valley, the hilly area north of Arad.

In addition to the reports received from the field, the Israel Meteorological Service operates a real-time algorithm that processes radar data and the freezing level. This algorithm calculates, for each pixel in the radar image, the probability of hailstones and their estimated maximum size (Figure 4). Between 13:55 and 15:15, pixels with a probability of hail exceeding 90% were identified in the area northeast of Arad, with a maximum size of more than 4 cm. According to the algorithm, there is a high likelihood that hail also occurred at several additional foci north and south of the main focus, with maximum hailstone sizes of about 3 cm.

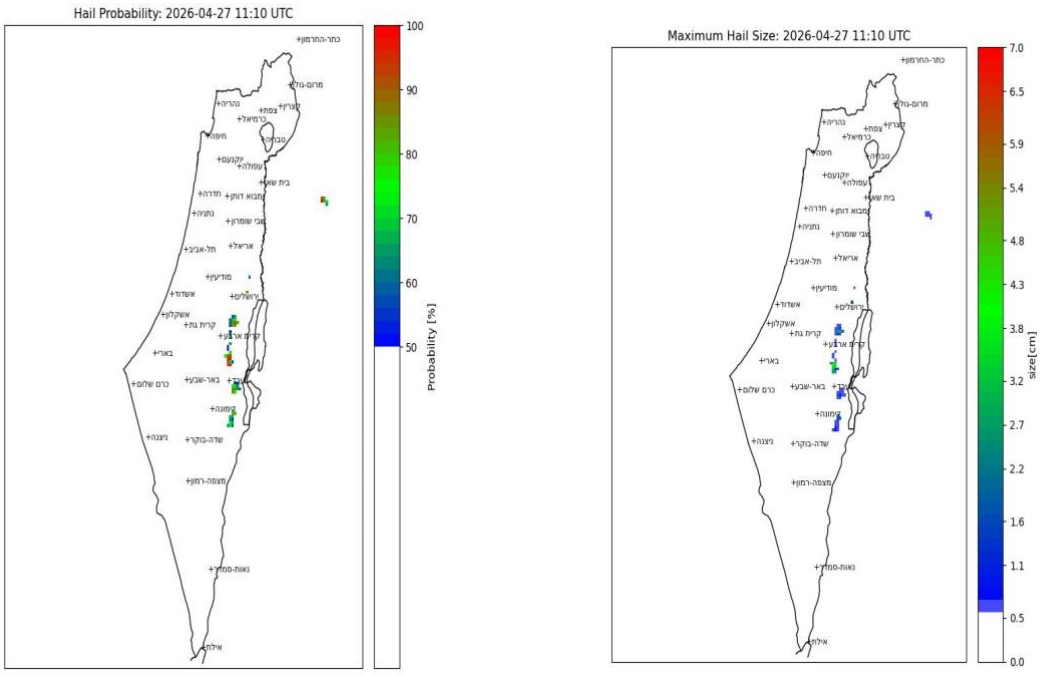

Figure 4: Probability of the presence of hailstones (left panel) and their expected maximum size (right panel), based on the radar scan from 14:10 (local time).

An indication of hail can be observed east of the watershed along the Judean Desert. The red pixels north of Arad (in the left panel) indicate a probability of over 90% for hail in a cloud cell approaching the Kana'im Valley; in the same cell there is potential for hailstones about 4 cm in diameter.

7. Forecasting the Event

The regional models run by the Israel Meteorological Service show a gradual and continuous improvement in the ability to forecast floods, and this was also reflected in this event.

This event, which the global models had difficulty identifying, was forecast by the regional models several days in advance and consistently, both in terms of location and timing. This made it possible to issue, one to two days before the event, a focused warning for the Judean Desert and the northern Negev area around the noon and afternoon hours. Figure 5 shows the great similarity in the distribution and intensity of the event between the model forecast and the actual precipitation amount.

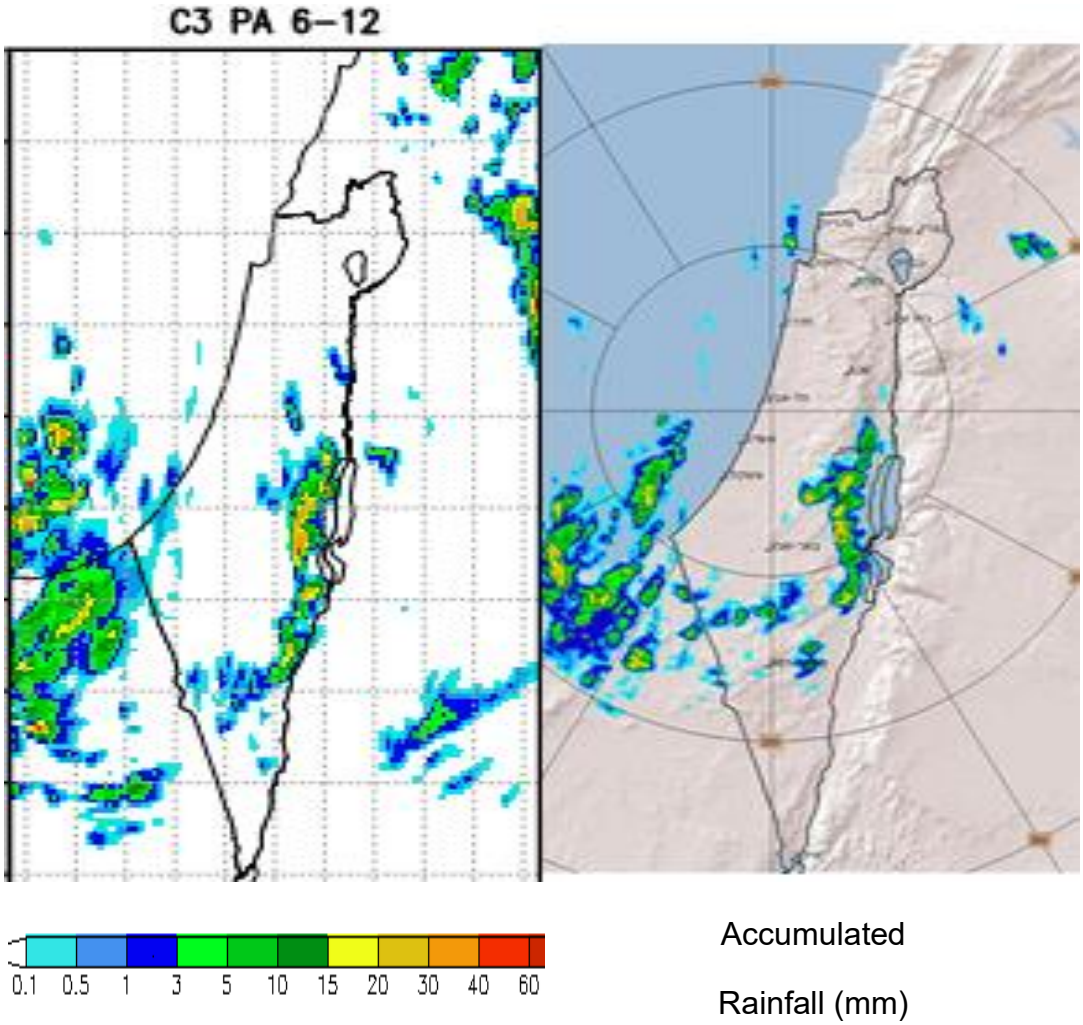

Figure 5: Precipitation amounts accumulated up to 15:00 according to the radar-based estimates (right) and according to the regional COSMO model (left), received on the morning of the event.

Summary

On 27 April 2026, a combination of atmospheric conditions enabled the development of widespread developed cloudiness in southern and eastern Israel, and especially in the eastern Judean Mountains and northeastern Negev Highlands. As a result, large amounts of rain fell within about an hour and a half to two hours, reaching 30 to 50 mm in the Kana'im Valley area and the Nahal Ze'elim basin. Rainfall intensities for these durations were exceptional, with a return period of more than 30 years, and at the rainfall focus even more than 100 years. Consequently, flows occurred in many streams in the Judean Desert and northeastern Negev, and an exceptional peak discharge occurred in Nahal Ze'elim. The rains were also accompanied by widespread hail, which covered a broad area north of Arad and in the Kana'im Valley.

This event joins additional events that occurred during the last rainy season, in which large amounts of rain fell in the southern and eastern parts of the country, with floods in the area. Thus, the 2025/26 rainy season was unusually rich in events of this type. At some of the stations, rainfall amounts measured since the beginning of the season are among the highest measured in comparison with the past.