



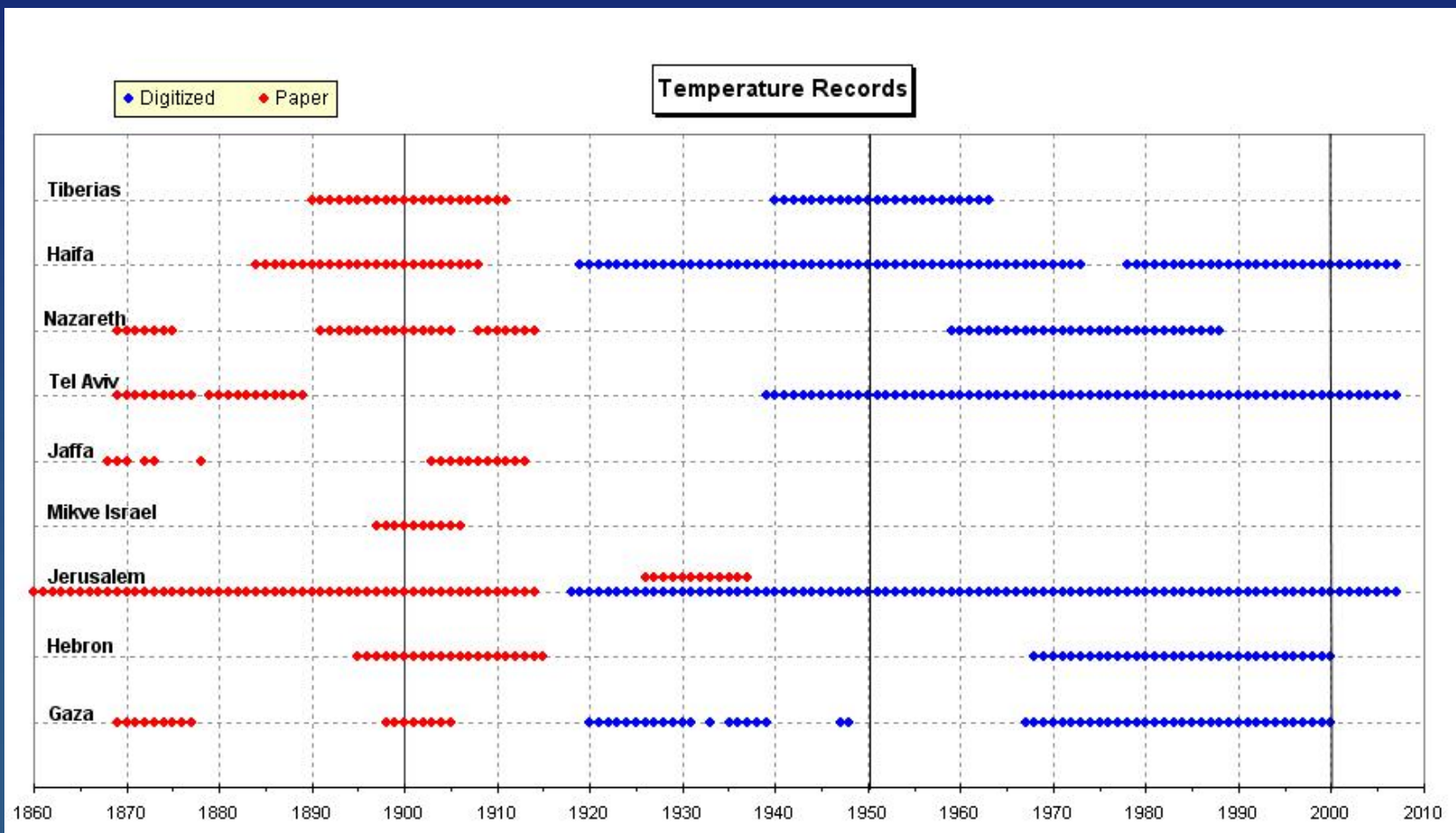
Long meteorological records in Israel

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Remainder from Tarragona

- Graphical presentation on availability of long records...



Remainder from Tarragona

- List of long records (workshop proceedings)

Table 1: A list of selected stations with long rainfall records in Israel. Additional information is given in the comments below. Activity period is refers to the digitized data.

No.	station numbers	station name	geographical coordinates	altitude (meters)	activity period	time resolution of the records	gaps
1	245170	Jerusalem, English Mission Hospital, Old City	N 31°46'38" E 35°13'50"	760	1846/47-1974/75	daily (see comments)	Exist
2	244650	Jerusalem, St Anne	N 31°46'54" E 35°14'09"	735	1908/09- tcday	daily	Exist
3	244730	Jerusalem, Central	N 31°46'51" E 35°13'19"	815	Jan. 1950-today	daily	None!
4	135600	Tel Aviv, Ha_Qiryat	N 32°04' E 34°47'	25	1879/80-1959/60	Daily, a few monthly	Exist
5	134650	Tel Aviv, Qiryat Shaul	N 32°07' E 34°49'	40	1944/45-today	Daily, a few monthly	Exist
6	120100	Haifa, German Colony	N 32°49' E 34°59'	10	Nov. 1880-1938/39	Daily, a few monthly	None!
7	120150	Haifa, D. O. (District Office)	N 32°49' E 34°59'	10	1921/22-1947/48	Daily, from 03/1948 monthly	None!
8	120200/ 120202	Haifa, Harbour	N 32°49' E 34°59'	10/30	1952/53- today	Daily	None!
9	251650	Be'er Sheva	N 31°14' E 34°47'	270	1921/22-1956/57	Daily	None!



Remainder from Tarragona

Comments for table 1 (For quick reference, comments numbers are according to the field No. in the table):

1. 245170; Jerusalem, English Mission Hospital, Old City - The series is reconstructed (see [Rosenan 1955](#)). Daily data exists but with less confidence. Gaps: seasons 1849/50; 1859/60; 1963/64-1966/67; part of 1967/68.
2. 244850; Jerusalem, St Anne - Gaps: seasons 1948/49-1962/63. [Rosenan](#) used this station, among others, for the reconstruction of the English Mission Hospital series.
3. 244730; Jerusalem, Central – Located on the roof of [Generali](#) building, 4 floors above the ground. Also was used by [Rosenan](#) for the reconstruction of the English Mission Hospital series.
4. 135600; Tel Aviv HaQinya - Data before 1948/49 is actually from [Sarona](#) (a [Templer](#) agricultural settlement). It is actually the same place and probably the measurements were taken very close to each other. The station from 1948/49 and after was located in the courtyard of what was the Israel Meteorological Service before it was moved to its present building in Bet Dagan in 1962. Gaps: part of 1889/90; seasons 1890/91-1897/98; part of 1899/1900; part of 1904/05; seasons 1917/18-1923/24 and 1944/45-1947/48.
5. 134850; Tel Aviv, [Qiryat Shaul](#) – Cannot be considered as a continuation of Tel Aviv [HaQinya](#) series but it may help in the reconstruction of that series better than coastal stations like [Sage](#) [Dov](#) due to its more inland location. Gaps: 1948/49; Jan. 1958; part of 1959/60.
8. 120200/120202; Haifa, [Harbour](#) – Although very close to the German Colony (120100) and D.O. (120150) stations it is not necessarily a continuation of their series. It seems it gets less

We knew about the paper records existence but we didn't have many details...



What was scanned?

Typical **examples** (by locations, not stations):

Jerusalem – 1860-65; 1867-75; 1878-1915; 1923- 1937 (not necessarily the same station)

Sarona (Tel Aviv) – 1880-89; 1895-1903; 1906-09; 1911-17; 1924-38.

Jaffa – 1868-74; 1878-80; 1903-13; 1918-36.

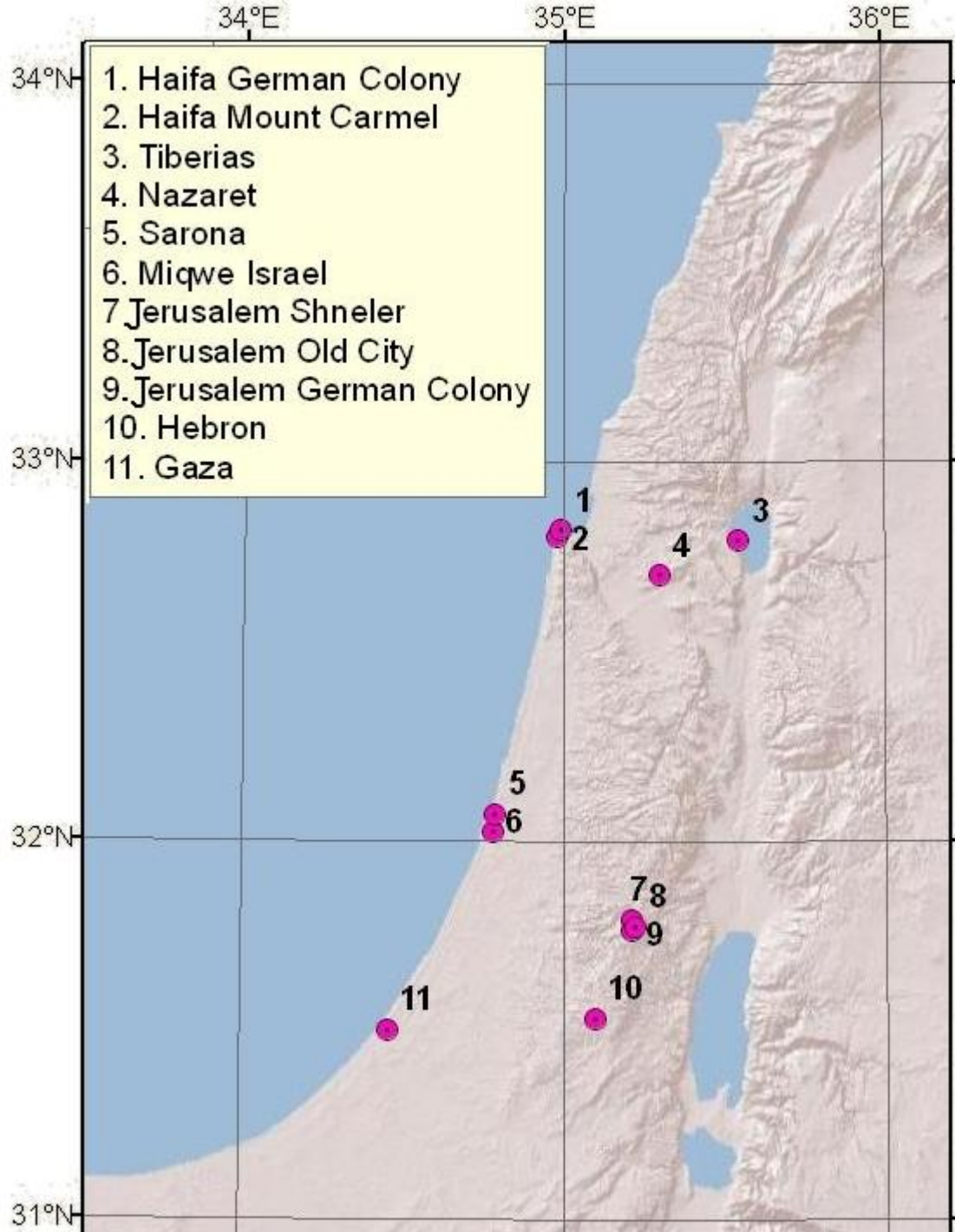
Nazareth – 1869-77; 1891-1900; 1903-14; 1917-32; 1934-37.

Haifa – 1895-1908; 1917-26.

Tiberias – 1890-1909; 1911, 1913, 1914.

Hebron – 1895-1911; 1913-14.

Gaza – 1870-77; 1898-1905; 1927-38.

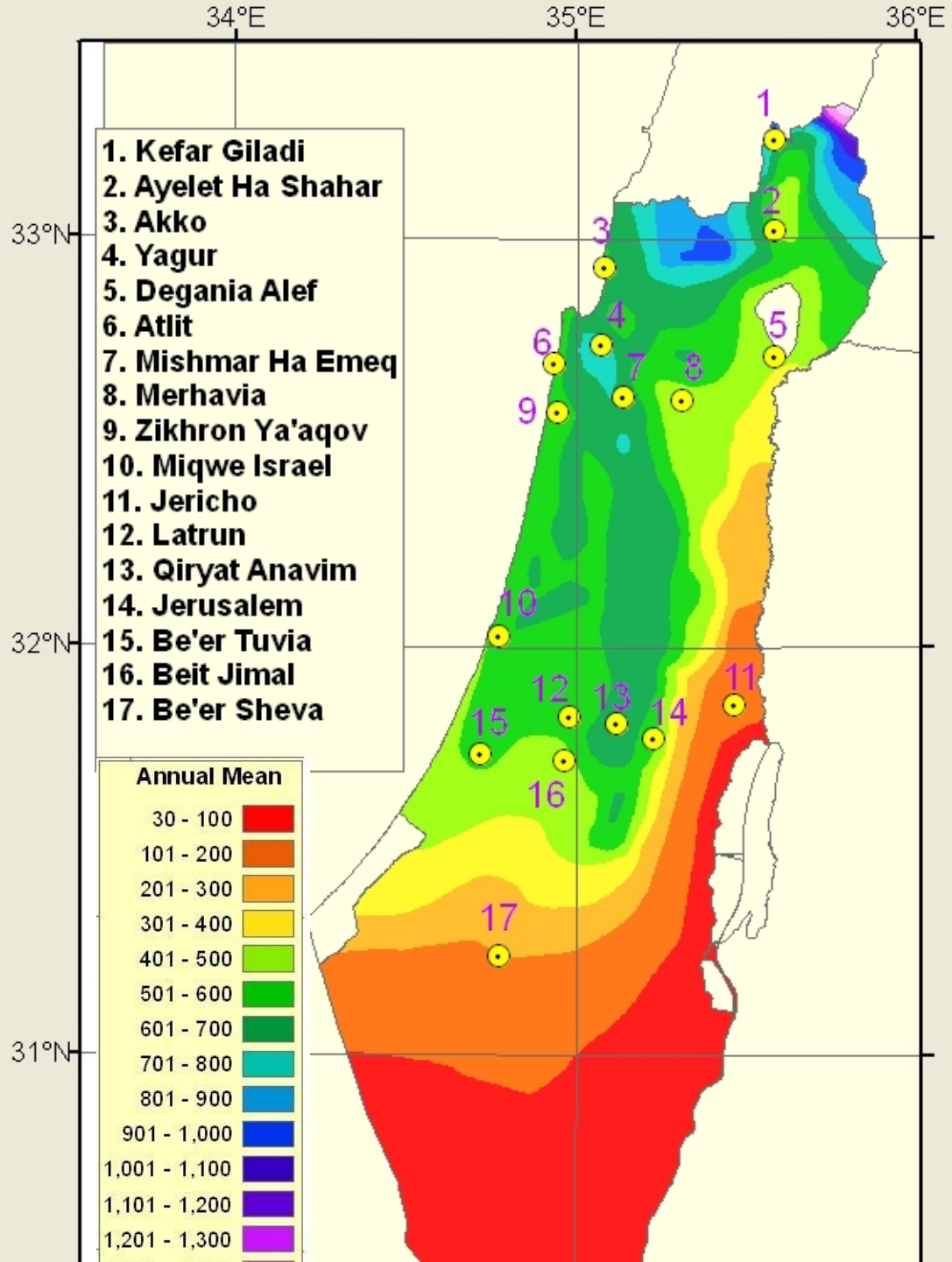




Long rainfall records

- Some changes with regard to the proceeding list.
- Emphasis on records with about 80 years or more – “gap optimization”.

Geographic distribution of long rainfall records

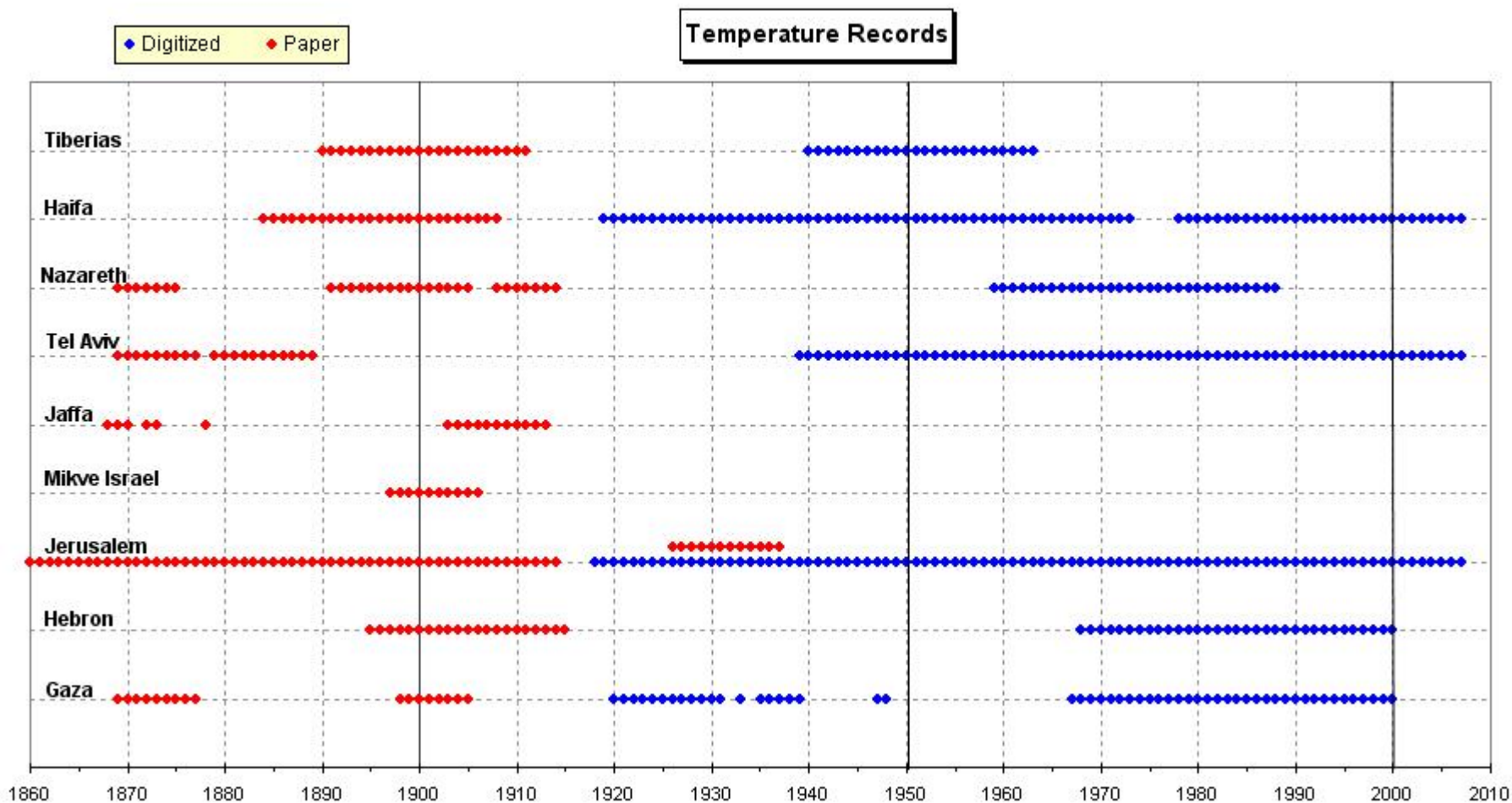




Long rainfall records cont.

- No series is absolutely “clean” (except, maybe, Beit Jimal).
- Jerusalem is outstanding in terms of length – though many problems. Especially during the 19th century
Caution!

Long temperature records





Long temperature records cntd.

- Jerusalem is the only candidate if we want to go back to the 19th century.
- Most (but not all) records from that time do contain atmospheric pressure, max/min temperature, dry/wet bulb, clouds, wind and rain (mostly at 9 am).
- Format changed over time.

Jerusalem old city January 1861

Meteorological Journal kept at Jerusalem, about 2400 feet above level

Date 1861 January	9 o'clk a.m.		3 o'clk pm		Exten ^d . Therm ^o in shade				Rain read off at 9 am Inches	Wind 9 am		Remarks a.m.
	Baromete	Therm ^o	Baromete	Therm ^o	Fahrenheit		Self register			Direction	Force	
					9 am	3 pm	9 am	3 pm				
Tues. 1 st	27.180	50	27.250	52	43	48				W	0	Very cold
W. 2	.370	52	.345	53	44	49				W	2	
Th. 3	.538	53	.512	53	44	50				W	1	
F. 4	.630	54	.594	54.5	50	54				W	3	
S. 5	.614	53	.584	52	47	56				E	2	
©. 6	.572	54	.498	53	51	57				E	2	
M. 7	.460	53	.402	53	53	58				E	1	
T. 8	.438	52	.420	52	50	57				E	3	
W. 9	.422	51	.386	52	47	53				E	3	Air cold - heavy clouds
Th. 10	.412	51	.400	52	49	54				E	2	
F. 11	.422	50	.468	51	42	40				E	2	Very cold. Frost at night
S. 12	.318	51.5	.298	54	45	48				NE	1	Do
©. 13	.408	50.5	.412	53.5	42	47				E	2	Night cold and frosty
M. 14	.442	51	.386	51.5	45	51				E	1	
T. 15	.342	50	.342	51	44	50		.4	W	3	Lightning at 5 p.m. & rain	
W. 16	.468	52	.490	52	46	46		.5	W	2	Cloudy	
Th. 17	.598	53	.542	52.5	46	50		.3	W	1	Clear sky	
F. 18	.522	51	.468	52	47	53			SE	2	Do	
S. 19	.442	51	.364	51	51	51			SW	2	Cloudy	
©. 20	.466	54	.452	52	46	51			W	3	Clear	
M. 21	.498	51	.462	52	46	49		.8	W	1	Hazy. Cold. Showery	
T. 22	.368	54	.312	54	46	45		1.4	W	3	Cloudy. gusty wind & rain	
W. 23	.294	51	.286	50	40	44		8.6	W	3	Continuous rain	
Th. 24	.270	53	.320	50	42	43		12.2	W	8	9 a.m. Lightning during night. Hail storm at 7.30 p.m. Ice & snow collected during night	
F. 25	.610	53	.622	52	37	39		6.8	W	2	Snow	
S. 26	.498	52	.456	52	44	47		1.1	W	8	Cold stormy & rain mist	
©. 27	.352	51	.260	50	48	47		1.8	W	5	Heavy clouds. Mist & rain gusts	
M. 28	.182	51	.180	54	47	48		1.1	W	3	Misty and damp	
T. 29	.160	54	.152	56	46	50		1.6	W	0	Cloudy	
											7	Cloudy and cold

Meteorological Observations.

taken here in Jerusalem at 9 o'clock of the morning

1865	Barometer	Thermometer	S. P. Thermometer		Hygrometer		Wind	Clouds & Remarks
			Max	Min	Dry bulb	Wet		
Aug ¹⁴	29 342	76	91. 8	65.	81. 2	63. 5	0	N.W. 05 Clear, haze round & horizon
15 "	342	75	87. 2	66. 8	80. 6	62. 1	0	N.W. 0 do do do
16 "	372	77	88. 5	72	83. 6	60. 6	0	N.W. 5 do do do
17 "	422	77	89. 4	77.	88. 1	60. 3	0	N.W. 05 do do do
18 "	347	74	90. 6	60. 4	75. 6	66. 0	0	W. 05 do do do
19 "	349	74	89. 6	62.	75. 6	63. 1	0	N.W. 05 do do do
20 "	362	75	86. 5	62.	81. 6	62. 8	0	W. 0 do do do
21 "	372	75. 5	88. 5	64.	74. 1	65. 1	0	N.W. 05 few red cum N.W. Sea
22 "	379	75. 5	85. 5	63.	74. 1	66. 0	0	W. 0 clear haze horizon low
23 "	402	72.	85	61.	73. 8	65.	0	N.W. 05 red cum & cum 4
24 "	397	72. 5	85	64	79. 6	63. 1	0	N.W. 0 Clear haze horizon. Sea
25 "	420	74.	88	65	80. 5	68. 2	0	N.W. 05 do do
26 "	372	75.	86.	70.	78. 6	67.	0	W. 1 do do
27 "	372	75	86. 5	71. 7	84. 1	66.	0	S.W. 0 do do
28 "	372	76	90. 5	65. 2	80. 5	71.	0	S. 05 Cumuli 7
29 "	472	74	88.	64.	74	65.	20	N.W. 05 do - 16
30 "	502	72.	82.	62.	72. 4	63.	0	N.W. 2 Cirri cum 4

Jerusalem
old city
August
1865



Long temperature records cntd.

- As for 20th century records:
- **Jerusalem** – from 12/1949 at Generaly building. Until today. Now also AWS. Before – stations in Mt. Olives (1918-26), American Colony (1927-1935), Palace Hotel (1935-1947), Talbiyeh (11/1948-12/1949). **Caution with merging the series.**
- **Beit Jimal** – from 1920 until today. Now also AWS.
- **Har Kenaan (Safed)** – from 1939 until today. Also AWS. WMO 40153.
- **Beer Sheva** – from 1921. current station from 1957. Today also AWS.
- **Tel Aviv** – Reading (1939-1972), Sede Dov (1971-today) – we recommend not to use after 2004. from 3/2005 AWS in a different location, closer to sea shore. Difficult to combine.



20th century long
temperature records (blue)
that still operate today (as
AWS).

North – Har Kenaan

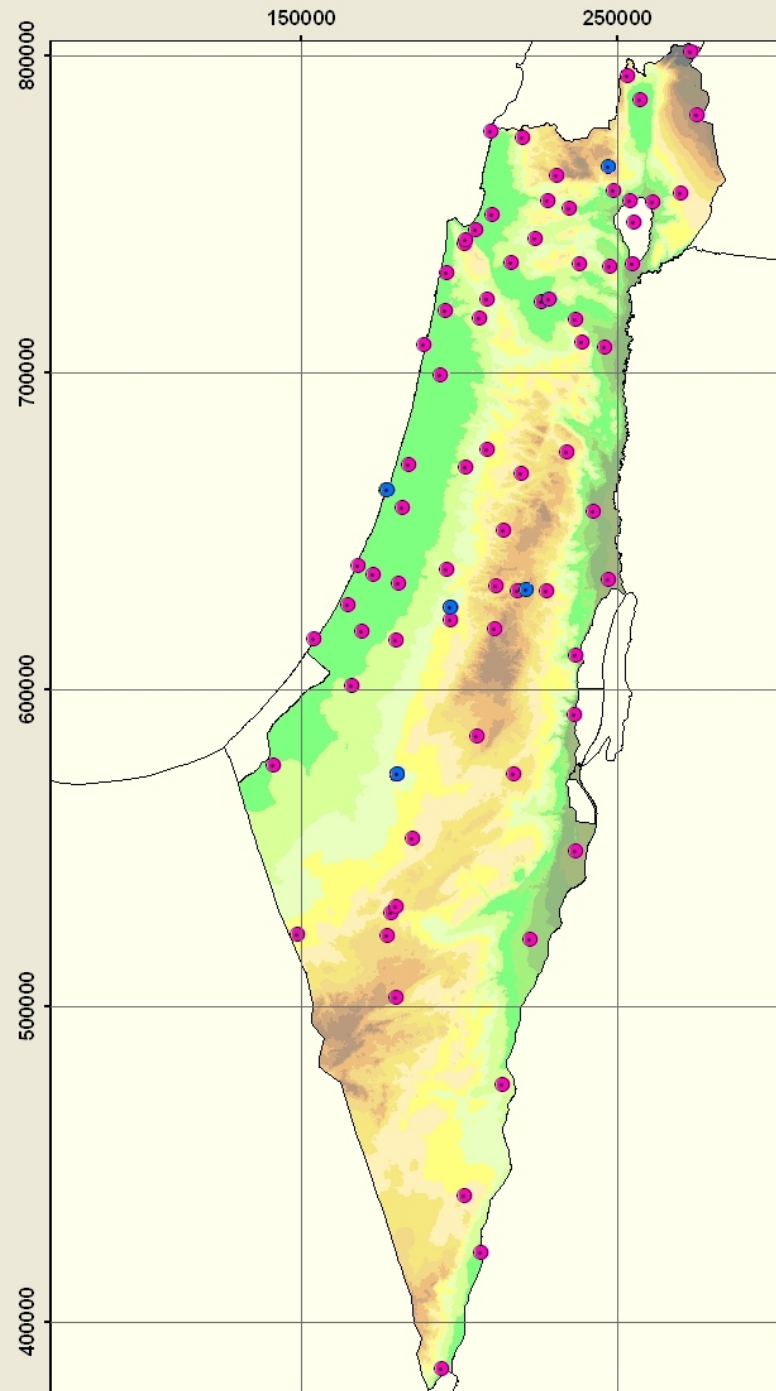
Coast – Tel Aviv

Mountain – Jerusalem

Hilly lowland – Beit Jimal

South – Beer Sheva

All other active AWS's
(pink)





Points to be considered

- Electronic data before 1964 did not pass QC systematically (QC was present on paper). That's the reason why temperature data in ECA&D is only from that year). At the moment we use monthly publications before that date.
- Minimum temperatures between 1948 to 1955 were corrected by a constant monthly factor. (an instruction by R. Feige, first IMS director). It is difficult to follow what instrument change took place in 1956 that enabled cancellation of that instruction.



Current and future activity

- Scanning – an on going project. We are now scanning log books from 20th century. There is budget (not for all the archive though... have to prioritize...). Next - metadata logbooks.
- Improving meta data information – files describing availability of station data (at the moment: daily rainfall and AWS); photos of rainfall stations.
- Preservation procedures - intention to start next year.

Thank you



Rain totalizer in the Negev (southern Israel) - 1959