



Long meteorological records –Israel's progress

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outline

- The real progress – a change in IMS policy with regard to climate data
- What will be available? Example from the new website
- Progress in digitizing
- Use of digitized data to check the validity of old records
- Progress in metadata information
- A look forward



IMS Data - Free Access

- As from 2012 the IMS gets full budget for its activities so there is no need for income.
- As part of this initiative the IMS gives **free access** to all its data.
- A dedicated website for the IMS data has been produced under the Israeli [DataGov](#). The site will be available to the public after debugging.
- Constraints for free access: **Quality Control**.



IMS Data - Free Access – What will be available?

- Rainfall – **almost all the data** in the computerized archive
- Other climatic elements – All the quality controlled data (since 1964 at first).
- AWS data – 10 minutes resolution. All the data (at first – since 2000)



Web example (1)

my.gov הפורטל 27/09/2012 Israel Government Portal gov www.gov.il פורטל השירותים והמידע הממשלתי

אתר מאגרי המידע הממשלתיים | Data.gov.il

דף הבית אודות האתר מאגרים רשימת מאגרים שאלות נפוצות

מאגר נתוני השירות המטאורולוגי

metorologic data archive Real Time Data Monthly rainfall About

נתונים שעתיים נתונים יומיים גשם יומי גשם חודשי גשם שנתי מאגרים קרינה

Choose variables

Please mark at least one variable. Choose all Clear

Monthly rainfall amount Number of rainfall days Maximum daily amount

Pick Timeline

Dates Range

from date: 01/08/1865 to date: 31/07/1866

Clear >> Next >>

Defined Range

Stations

Data display

By Data By stations

Show Data >>

Web example (2)

מאגר נתוני השירות המטאורולוגי

meteorologic data archive Real Time Data **Monthly rainfall** [About](#)

נתונים שעתיים נתונים יומיים גשם יומי **גשם חודשי** גשם שנתי מאגרים קרינה

Choose variables

Please mark at least one variable. [Choose all](#) [Clear](#)

Monthly rainfall amount Number of rainfall days Maximum daily amount

Pick Timeline

Dates Range ⌵

from date: to date:

[Clear >>](#) [Next >>](#)

Defined Range ⌵

Stations

Choose Stations

Search Sort by: number station

JERUSALEM OLD CITY HOSP - 245170

[Pick >>](#)

[<< Remove](#)

Chosen Stations

Data display

By Date By stations



Web example (3)

☑ meteorologic data archive ○ Real Time Data **Monthly rainfall** [About](#)

נתונים שעתיים נתונים יומיים גשם יומי **גשם חודשי** גשם שנתי מאוגרים קרינה

Choose variables

Please mark at least one variable. [Choose all](#) [Clear](#)

Monthly rainfall amount Number of rainfall days Maximum daily amount

Pick Timeline

Dates Range ⌆

from date: to date:

[Clear >>](#) [Next >>](#)

Defined Range ⌇

Stations

Choose Stations

Search: Sort by: number station

[Pick >>](#)

[<< Remove](#)

Chosen Stations

JERUSALEM OLD CITY HOSP - 245170

Data display

By Data By stations

[Show Data >>](#)



Web example – final result

mygov הפורטל שלי

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תוצאות

 json result  Download As Csv

Search:

Station Name	Station Number	Time Observed	Monthly rainfall amount(mm)	Monthly rainfall - code	Number of rainfall days	Number of rainfall days - code	Maximum daily amount (mm)	Maximum daily amount - code
JERUSALEM OLD CITY HOSP	245170	10-1865	0	0	-	-	-	-
JERUSALEM OLD CITY HOSP	245170	11-1865	39.9	8	-	-	-	-
JERUSALEM OLD CITY HOSP	245170	12-1865	139.6	0	11	0	35.2	0
JERUSALEM OLD CITY HOSP	245170	01-1866	139.9	0	15	0	31.1	0
JERUSALEM OLD CITY HOSP	245170	02-1866	92.9	0	9	0	25	0

Showing 1 to 7 of 7 entries

SHARE 

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Progress in Digitizing

- 19th century – at the moment - based on students work – excel files with proof reading

1881. August Obs. at 9. A.M.										September 1881. Obs. at 9. A.M.										
Date	Barom.	Therm. Max.	Therm. Min.	Therm. Day	Wind	Clouds	Precip.	Rel. Hum.	Barom. Red. to Sea Level	Date	Barom.	Therm. Max.	Therm. Min.	Therm. Day	Wind	Clouds	Precip.	Rel. Hum.	Barom. Red. to Sea Level	
1.	27.334	80	82.5	59.5	76	68.5	cu	5	W 0.5	1.	27	506	81	90	72.5	82.5	68	st	1	NW 0.5
2.	448	79	87	62	78	68	cu	2	NW 0.2	2.	532	81	91.3	60.5	77	67.5	0		N	0.5
3.	462	78	90	63.5	78.5	65.5	cu	1	NW 0.1	3.	472	82	86.5	63	76	67	cu	2	NW 0.5	
4.	476	79	86.6	58	77	67	0		NW 0.1	4.	472	80	83	61	75	67.5	0		NW	0.5
5.	442	79	85	61	76	68	0		NW 0.1	5.	486	79	86	63	77	70	0		NW	0.1
6.	378	79	85.8	62	76	68.5	cu	1	NW 0.1	6.	494	80	86	62	72	67.5	cu	9	W	0.5
7.	390	79	84.8	62	77	68	cu		NW 0.3	7.	516	78	84.5	60	73.5	66.5	cu	9	NW 0.1	
8.	382	79	86.8	62	82.5	64	0		NW 0.1	8.	488	77	84.8	61	76.5	67	0		N	0
9.	416	79	91.5	64	81.3	63.7	0		NW 0.1	9.	448	77	88.4	61	77.5	66.5	0		N	0.5
10.	410	78	87	61	72.8	63.5	cu	3	NW 0.5	10.	458	76	86.2	65	81	64.5	0		NW	0.2
11.	422	75	80	59	72.5	65	cu	1	NW 0.2	11.	510	75	87	66	79.5	63	0		N	0.5
12.	366	78	88	61	77	67.5	0		N 0.1	12.	552	76	92.2	66	83	66	0		NW	0.5
13.	332	77	90.5	65	89	69	0		N 0.5 SE	13.	506	77	92.8	64	78	66	0		NW	0.2
14.	77	99	90	89.5	87	66	0		N 0.1	14.	480	77	91.9	64	85	71	0		SE	0.1
15.	362	77	94.2	69	87	65	0		NW 0.1	15.	422	77	96	69	88	65	0		N	0.1
16.	428	77	91	85.5	82.5	65	0		NW 0.1	16.	390	78	100	74	90.5	68	0		N	0.1
17.	420	77	90.4	60	79	64	0		N 0.1	17.	468	77	98	66.5	80	62.5	0		N	0.1
18.	378	77	86	61	74	67	cu	1	W 0.5	18.	548	77	89.5	62	72	87.5	cu	1	W	0.5
19.	332	76	88	61.5	75	67	cu	3	NW 0.1	19.	576	76	83	59	73	65.7	cu	1	N	0.5
20.	372	77	87.3	62	80	70	0		NW 0.2	20.	446	76	80.5	59	72.5	65	cu	1	NW	0.5
21.	410	77	95	65.5	85	72	0		NW 0.1	21.	364	76	81.5	59.5	80.5	65.8	cu	1	SE	0
22.	422	78	96.7	65	87	69.4	0		N 0	22.	486	75	84	60.8	72.5	66	cu	3	W	0.5
23.	434	77	91.5	67.5	85.5	72	0		N 0	23.	565	75	82.5	56	80	67	0		N	0
24.	460	77	96	70	93	68	0		NE 0	24.	532	75	88	57	85.5	65.3	0		E	0.5
25.	392	79	107	80	97.6	66.5	0		NE 0	25.	472	77	88	64	81.2	66	Heavy		E	0.5
26.	358	81	108.8	82	102	67	0		NE 0	26.	464	76	95	61.5	80.5	71	0		NWN	0
27.	404	81	109	81	100.5	65	ccu	3	NE 0.5	27.	562	76	90	64	88	69	0		NW	0
28.	448	83	112	81	101	68	ccu	1	SE 0.2	28.	584	75	87.5	61	74	67.5	cu	5	N	0.5
29.	398	83	111.5	83	100.5	69.5	ccu	3	NSE 0	29.	562	74	78.8	57	70.5	63	cu	5	NW	0.5
30.	386	86	112	79	94	73.5	ccu	6	W 0	30.	582	73	79	55.5	71.5	63.7	0		N	0.5
31.	434	85	102	74.5	89.5	73	ccu	1	N 0.5	31.	491	76	87.9	62.4	70.4	66.5	1.8		0	0.3

Example:
Jerusalem Old City
Hospital– August 1881



Progress in Digitizing

AB	AA	Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
September 1881			August 1881			July 1881			June 1881			May 1881			April 1881			March 1881		February 1881		January 1881					
	MAX	MIN		MAX	MIN		MAX	MIN		MAX	MIN		MAX	MIN		MAX	MIN		MAX	MIN		MAX	MIN		MAX	MIN	
1	90	72.5	1	87.8	59.5	1	87	59.5	1	81.9		1	80.1		1	74.1		1	55.5		1	67		1	51		1
2	91.3	60.5	2	87	62	2	87.5	67	2	71.8		2	78		2	75.6		2	57		2	62		2	52		2
3	86.5	63	3	90	63.5	3	89.2	61	3	78		3	66		3	67		3	62		3	63.6		3	51		3
4	83	61	4	86.6	58	4	79.6	61	4	73.9		4	77		4	73.5		4	52		4	58.5		4	53		4
5	86	63	5	85	61	5		59	5	77		5	80.3		5	78		5	54		5	57		5	54.2		5
6	86	62	6	85.8	62	6	87.2	58	6	75		6	84		6	80		6	52.8		6	51		6	52		6
7	84.5	60	7	84.8	62	7	87.6	60	7	75		7	87		7	81.5		7	50.5		7	56.5		7	53		7
8	84.8	61	8	86.8	62	8	87.3	61	8	81.6		8	82		8	84.5		8	57.2		8	64		8	56.5		8
9	88.4	61	9	91.5	64	9	83.5	61	9	97.5		9	86.4		9	84.5		9	57.4		9	67		9	59.2		9
10	86.2	65	10	87	61	10	81.2	60	10	91.5		10	85.3		10	70.8		10	64.5		10	60		10	63.2		10
11	87	66	11	80	59	11	86	65.5	11	100.2	77.5	11	85		11	67.3		11	61.6		11	60.3		11	60.5		11
12	92.2	66	12	83	61	12	91.8	70	12	100.2	60	12	71		12	73.9		12	64.5		12	49.5		12	53		12
13	92.8	64	13	90.5	65	13	91	66	13	84.2	63.5	13	69.5		13	75		13	52.8		13	54		13	56		13
14	91.9	64	14	99.9	70	14	87	62	14	84	56	14	78.3		14	59		14	53		14	61		14	56.4		14
15	96	69	15	94.8	69	15	83.8	58	15	89.3		15	85.8		15	62		15	62.3		15	61		15	55		15
16	100	74	16	91	65.5	16	82.2	61	16	76	53	16	77		16	59		16			16	55		16	59.5		16
17	98	66.5	17	90.4	60	17	86	62	17	79.5	52	17	75		17	55.2		17	75.1		17	50		17	58.5		17
18	89.5	62	18	86	61	18	85.2	65.5	18			18	74		18	53		18	78		18	47		18	70.5		18
19	83	59	19	88	61.5	19	90.3	67	19	83.6	58	19	78.8		19	50.8		19	54.4		19	51.5		19	63.5		19
20	80.5	59	20	87.3	62	20	92	66	20	84	64	20	86.4		20	56.5		20	48		20	52		20	56.9		20
21	81.5	59.5	21	95	65.5	21	94.5	70.5	21	85.5	60	21	86.5		21	77		21	51		21	56		21	66.9		21
22	84	60.8	22	94.7	65	22	91	62.5	22	89.4	59	22	80		22	84		22	62.5		22	53.5		22	68.4		22
23	82.5	56	23	91.5	67.5	23	87	60	23	90	66	23	75.3		23	86.5		23	70.3		23	49		23	60		23
24	88	57	24	96	70	24	82	60	24	92	68	24	74		24	78		24	75.6		24	48		24	56.8		24
25	95	64	25	107	80	25	88.2	65	25	93.2	67	25	72		25	79		25	58.6		25	46.5		25	62		25
26	95	61.5	26	108.5	82	26	90	64	26	89.7	63	26	71.3		26	86		26	49.6		26	49		26	54.8		26
27	90	64	27	109	81	27	88.3	61	27	82.5	58	27	76		27	69		27	59		27	51		27	53		27
28	87.5	61	28	112	81.5	28	86	59.5	28	81.5	62	28	77		28	71		28	68.3		28	55.5		28	59		28
29	79.8	57	29	111.5	83	29	86	62	29	88.4	66.5	29	80		29	83		29	72.6		29			29	65.8		29
30	79	55.5	30	112	78	30	88.3	64	30	91.3	62.5	30	80.5		30	87		30	77.5		30			30	65.9		30
31			31	102.5	74.5	31			31				88.9		31			31	73		31			31	67.6		31
	100	55.5		112	58		94.5	58		100.2	52		88.9	0		87	0		78	0		67	0		70.5	0	

Highest max temperature for Jerusalem

Monthly Min.
 Monthly Max.
 N/A or hard to decipher



Value of digitized data

- How the digitized data helped us to check the validity of published old records?
- In 2011 the IMS published the first phase of a new climatic atlas.
- Among the elements published - Absolute maximum and minimum temperatures.

TEMPERATURE 1995-

2009

Jerusalem - Center

Height: 810m

CLIMATOLOGICAL AVERAGES

Region: Central (Judea) Mountains

Month	January	February	March	April	May	June	July	August	September	October	November	December
Average daily maximum	12.8	13.8	17.0	21.5	25.9	28.4	30.0	29.9	28.4	25.3	19.9	15.2
Average daily minimum	6.9	7.1	9.2	12.1	16.0	18.2	20.2	20.0	18.7	16.8	12.8	9.0
Daily average	9.8	10.5	13.1	16.8	21.0	23.3	25.1	25.0	23.6	21.1	16.3	12.1
Average daily range	5.9	6.7	7.8	9.4	9.9	10.2	9.8	9.9	9.7	8.5	7.1	6.2
Average monthly maximum	19.9	21.9	26.0	31.4	34.6	34.8	35.0	34.1	34.7	32.9	26.4	22.2
Average monthly minimum	2.3	2.2	3.7	6.7	10.7	13.9	16.9	17.6	16.1	12.5	8.1	4.5
Absolute maximum	26.3	29.9	33.1	39.1	39.6	42.2	41.1	44.4	41.1	37.8	33.2	28.5
Date of absolute maximum	15/1/1960	23/2/1941	30/3/1901	24/4/1928	22/5/1871 11/5/1941	18/6/1894	12/7/1888 13/7/1888	28/8/1881 30/8/1881	16/9/1902	6/10/1905	2/11/1941 3/11/1941	3/12/2005
Absolute minimum	6.7-	5.1-	2.4-	1.1-	3.3	7.2	11.8	14.0	10.0	8.2	0.6-	5.0-
Date of absolute minimum	25/1/1907	6/2/1950	13/3/1910 6/3/1943	6/4/1886	13/5/1901	2/6/1900	1/7/1934	3/8/1926	25/9/1895	26/10/1933	20/11/1908	22/12/1905

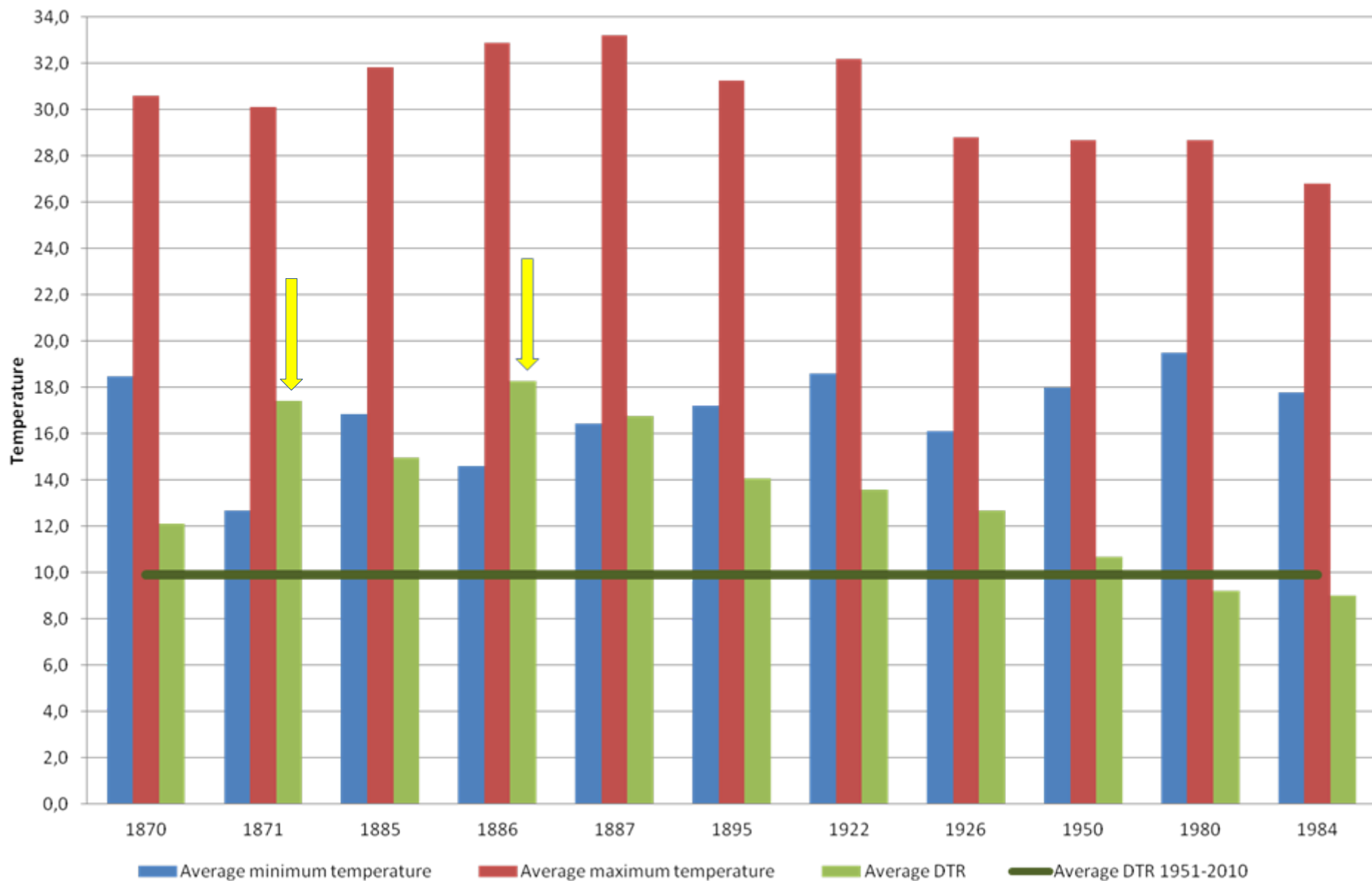
Periods of absolutes: 1866-1915, 1918-2011

The lowest temperature from the original source



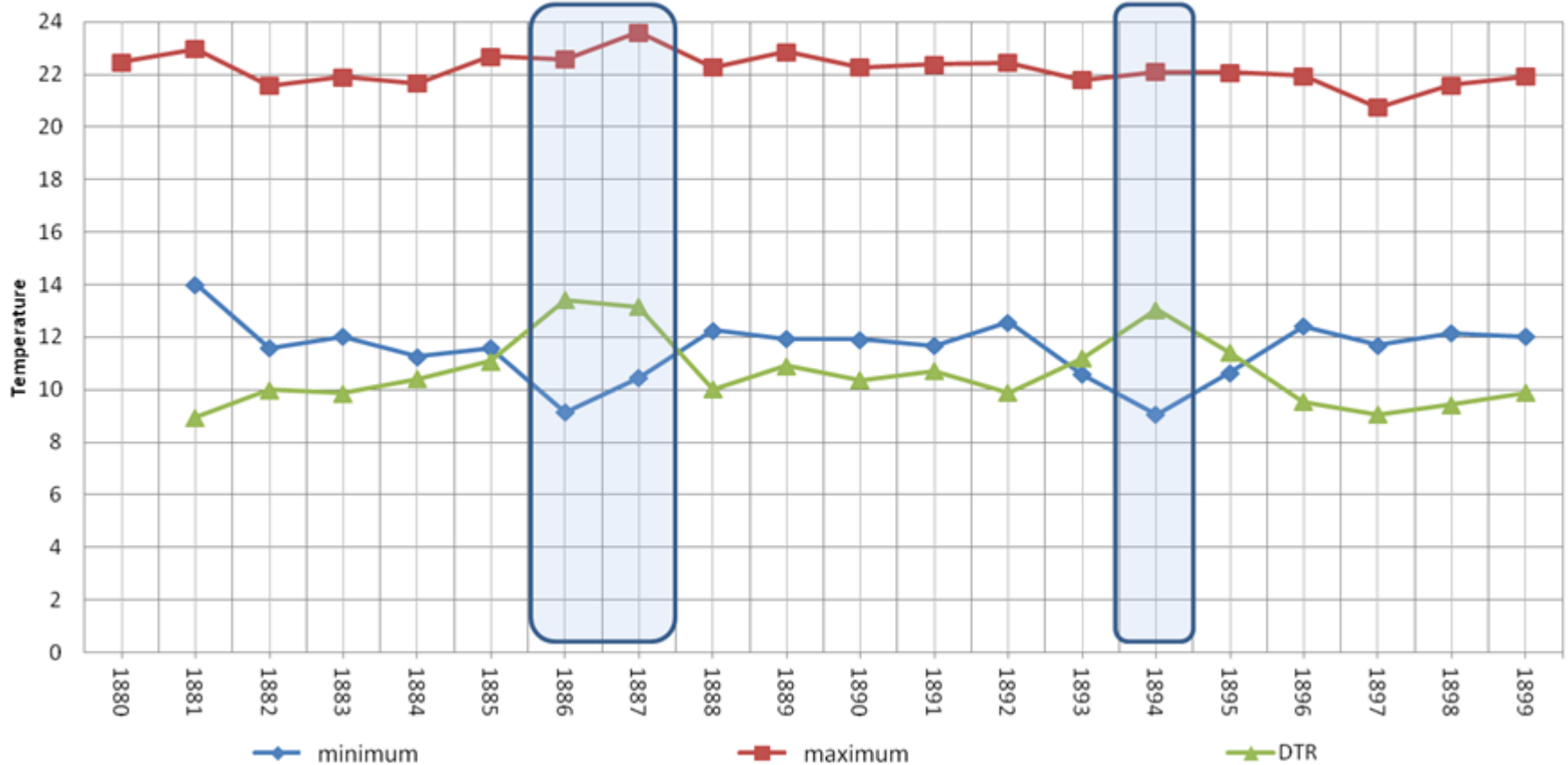
9.4	10.6	5.6	0.0
	23/8/1871		
	26/8/1871		
	28/8/1871	17/9/1871	
2/7/1871	31/8/1871	27/9/1871	24/10/1871

Average Temperature (max, min, DTR) for August in Jerusalem



Annual Average Temperature in Jerusalem 1880-1899

(The English hospital in the Old City)



Suspected years (high DTR): 1886, 1887, 1894
 The average DTR for 1995-2009 is 8.4 C°.
 The average DTR for JJA 1995-2009 is 10.0 C°.

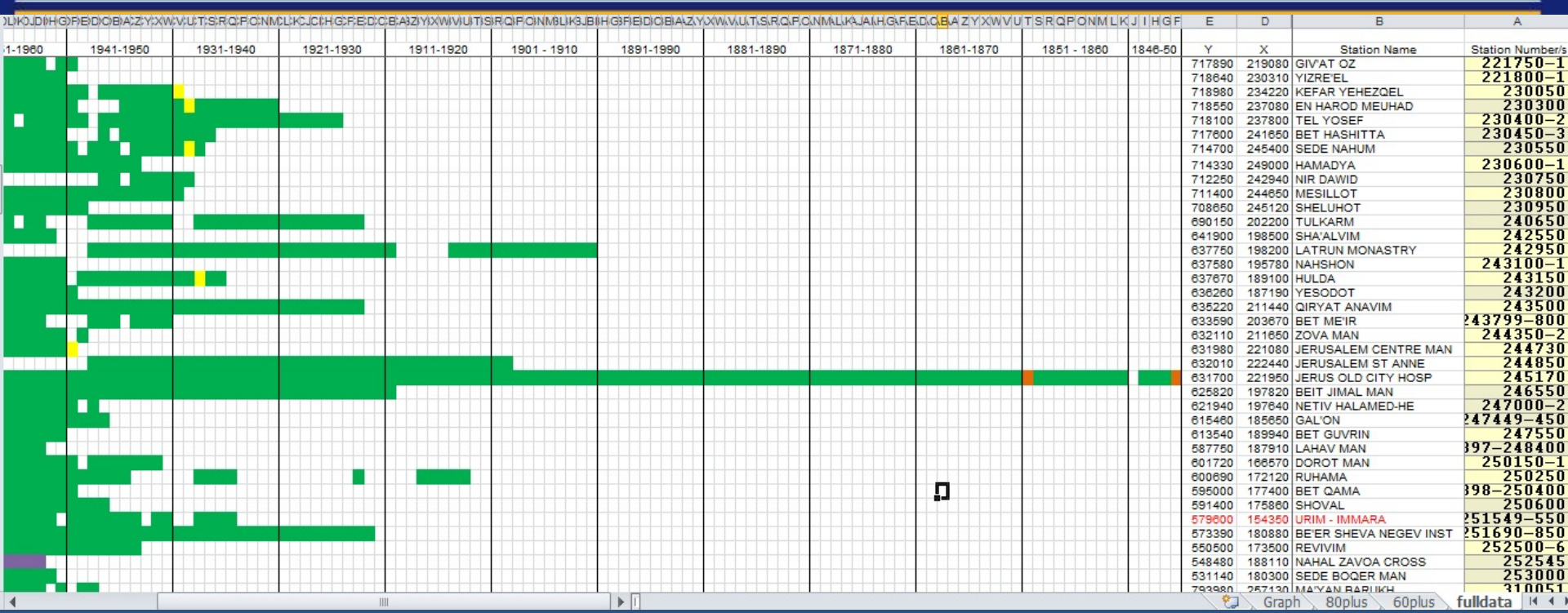


Progress in Meta Data

- An effort to determine, as accurate as possible, the exact location of the stations
- Use of old maps (British Mandate era) and historical information gained mostly through the web
- Organizing the rainfall station data availability both in excel file and on Google Earth.

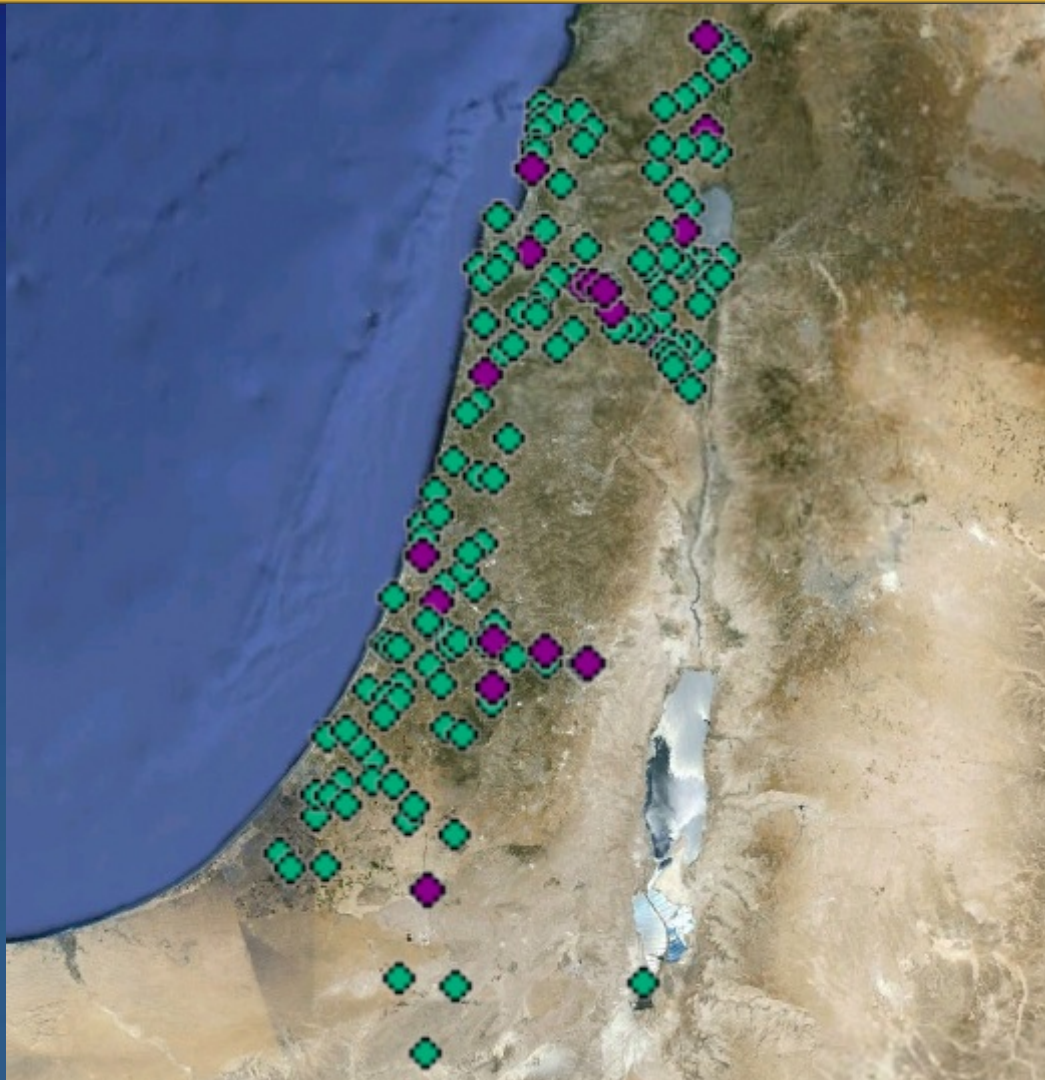


Progress in Meta Data - Rainfall



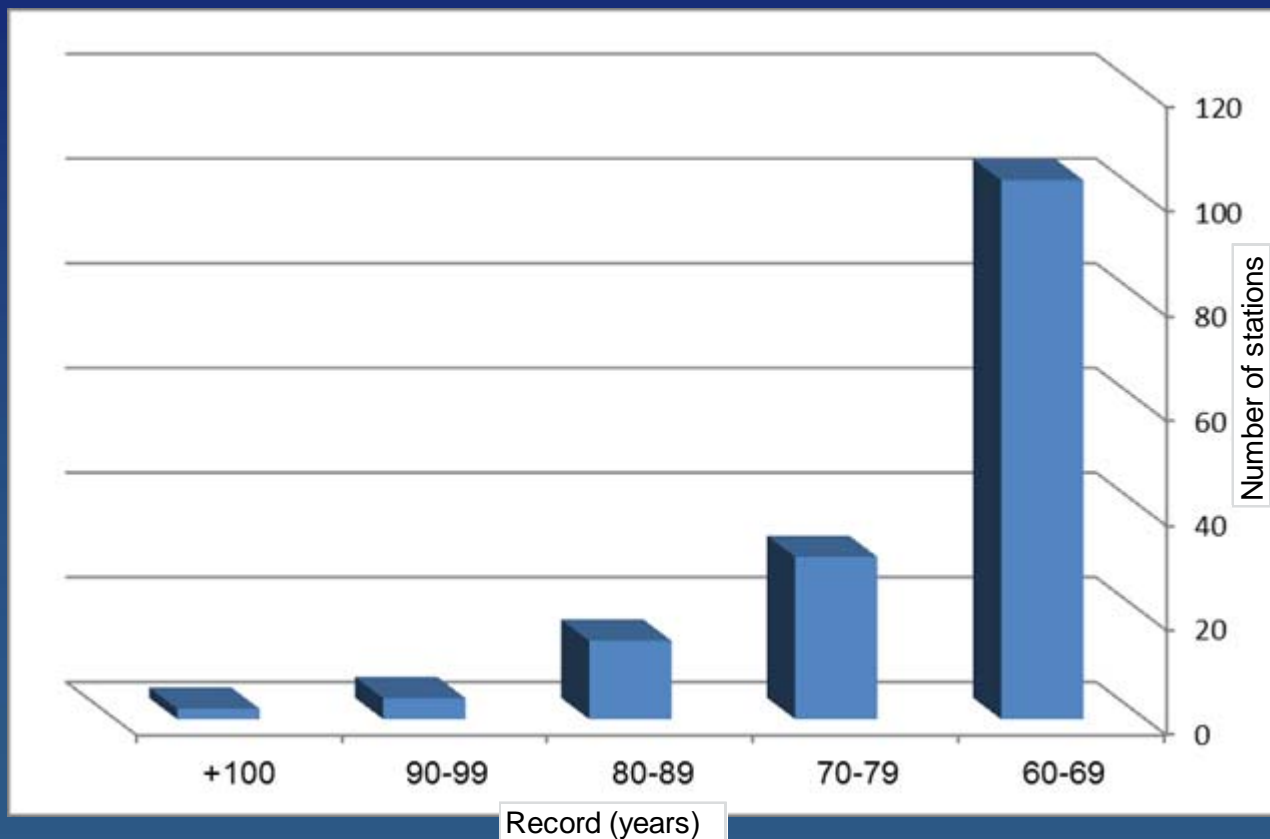
Excel

Progress in Meta Data -Rainfall



[Google Earth](#)

Availability of long rainfall records



Stations	Record (years)
103	60-69
31	70-79
15	80-89
4	90-99
2	100+



A look forward

- Exposing the IMS database to the public!
- Improving metadata (accurate geographic information, adding relevant comments gained from metadata logbooks, photos....)
- Continue digitizing 19th century records.
- Quality control of selected long records from 1963 backwards

Thank you



Photography: Dr. Yaacov Rozner. Courtesy of KKL-JNF Photo Archive

צילום: ד"ר יעקב רוזנר. באדיבות ארכיון הצילומים של קק"ל

Meteorological screen of Tirat Zevi, Nov. 1944,

Asia highest temperature record on June 21st 1942 – 54 °C