



AGROMETEOROLOGICAL BULLETIN

*August 2013
3rd 10-day period*

- Temperature
- Relative Humidity
- Soil Temperature
- Sunshine Duration
- Precipitation
- Evaporation
- Growing Degrees
- Reference Evapotranspiration
- Accumulated Rainfall from the beginning of wet period
- Accumulated Reference Evapotranspiration
- Number of dry days



Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

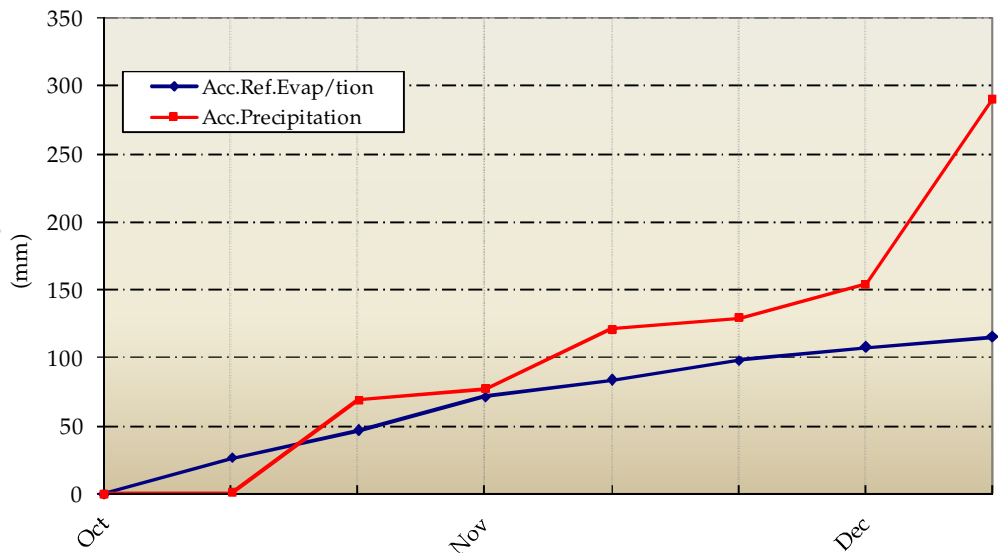
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.0	35.4	35.0	35.0	35.0	33.2	34.4	33.5	33.4	33.4	32.8	34.2	36.9	32.2
	Min	17.4	15.0	18.2	19.0	19.2	17.0	18.4	19.6	20.4	18.2	18.5	18.3	17.7	16.7
Relative Humidity	Max	86	79	88	81	87	82	87	87	93	92	82	86	63	-
	Min	24	24	27	24	33	35	32	39	37	24	32	30	22	-
Soil Temperature at 10 cm	06 UTC	31.0	30.0	30.0	31.0	30.0	30.0	30.0	30.6	31.0	30.0	30.2	30.3	30.0	25.7
	12 UTC	34.8	35.0	35.0	34.0	34.0	34.0	34.0	34.0	34.4	33.8	33.6	34.2	34.6	31.3
Sunshine Duration		11.6	12.6	8.9	12.2	9.9	11.7	11.7	9.5	11.4	12.2	9.9	11.1	12.2	10.2
Precipitation															9.6
Evaporation		7.7	7.2	6.8	8.6	9.8	7.1	9.3	8.9	10.3	10.0	9.0	94.7	92.8	73.7
Growing Degrees	5	21.2	20.2	21.6	22.0	22.1	20.1	21.4	21.6	21.9	20.8	20.7	233.5	245.7	214.1
	10	16.2	15.2	16.6	17.0	17.1	15.1	16.4	16.6	16.9	15.8	15.7	178.5	190.7	159.1

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.6	58.8	50.3
Precipitation - Reference Evapotranspiration	-54.6	-58.8	-40.7
Number of Rainy Days	0.0	0.0	1.2
Number of Dry Days	41.0	29.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

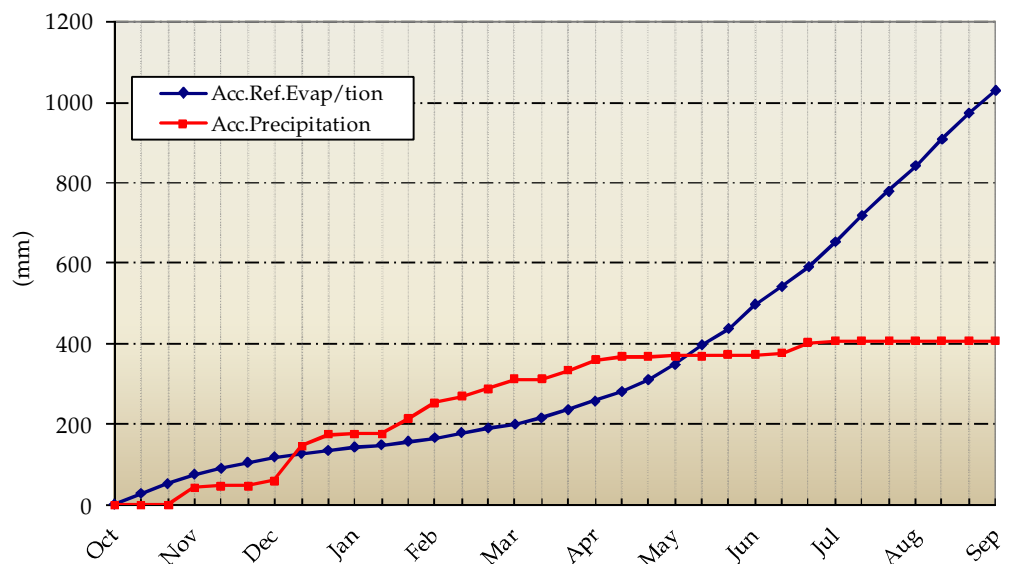


This station is not fully operated

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.4	32.6	32.8	33.2	32.6	31.4	31.6	31.4	32.0	30.4	28.8	31.7	33.7	29.1
	Min	22.6	22.8	21.4	17.6	17.8	19.8	19.4	18.6	21.6	22.0	20.8	20.4	19.5	16.6
Relative Humidity	Max	66	68	73	71	73	87	85	74	93	81	80	77	77	-
	Min	26	29	24	28	24	23	36	41	45	34	32	31	26	-
Soil Temperature at 10 cm	06 UTC	28.8	28.4	27.8	27.6	27.6	27.6	27.8	28.0	28.6	28.8	28.2	28.1	27.9	23.0
	12 UTC	30.8	31.2	31.4	31.0	30.8	31.0	31.2	31.4	31.8	31.4	30.4	31.1	31.3	27.1
Sunshine Duration		12.5	12.0	12.6	12.2	12.2	12.3	12.1	11.1	10.5	7.3	7.6	11.1	12.1	9.8
Precipitation														1.4	4.5
Evaporation		11.4	11.8	9.2	8.6	8.5	7.6	9.1	7.3	8.4	7.5	12.1	101.5	96.1	93.1
Growing Degrees	5	22.5	22.7	22.1	20.4	20.2	20.6	20.5	20.0	21.8	21.2	19.8	231.8	238.0	196.4
	10	17.5	17.7	17.1	15.4	15.2	15.6	15.5	15.0	16.8	16.2	14.8	176.8	183.0	141.4

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.8	58.7	54.2
Precipitation - Reference Evapotranspiration	-56.8	-57.3	-49.7
Number of Rainy Days	0.0	1.0	1.0
Number of Dry Days	61.0	82.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

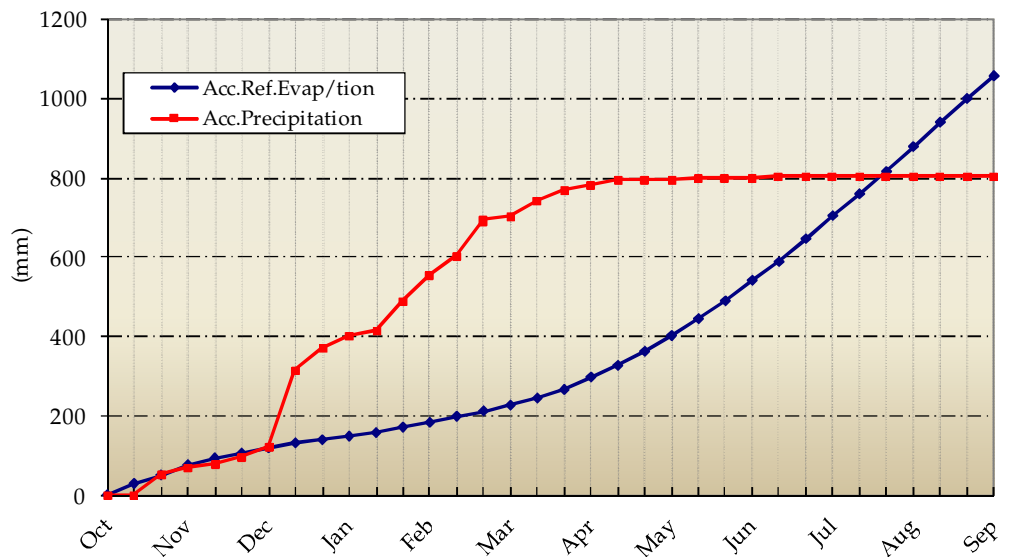


Andravida

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.0	32.5	32.0	31.4	30.2	30.1	32.0	32.9	31.7	30.3	30.4	31.7	33.8	30.0
	Min	18.8	19.0	17.8	20.5	21.0	19.9	19.8	21.6	21.8	23.0	19.1	20.2	19.5	18.5
Relative Humidity	Max	84	85	79	85	86	88	89	88	88	75	83	85	80	-
	Min	15	24	27	36	49	49	41	33	38	37	35	35	25	-
Soil Temperature at 10 cm	06 UTC	28.2	28.2	27.6	28.0	28.4	27.6	28.0	28.6	29.0	28.8	27.8	28.2	28.5	26.8
	12 UTC	35.6	34.4	34.8	35.0	34.4	34.4	34.8	35.0	35.2	34.8	32.8	34.7	36.4	30.8
Sunshine Duration		11.1	11.6	11.6	11.1	10.7	11.5	11.0	10.7	10.1	11.5	11.4	11.1	11.6	10.6
Precipitation															3.8
Evaporation		8.4	14.0	12.0	6.0	5.7	6.4	6.9	8.2	7.0	8.0	8.0	90.6	93.0	74.7
Growing Degrees	5	21.9	20.8	19.9	21.0	20.6	20.0	20.9	22.3	21.8	21.7	19.8	230.4	237.9	211.8
	10	16.9	15.8	14.9	16.0	15.6	15.0	15.9	17.3	16.8	16.7	14.8	175.4	182.9	156.8

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.3	65.2	49.7
Precipitation - Reference Evapotranspiration	-57.3	-65.2	-45.9
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	82.0	94.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

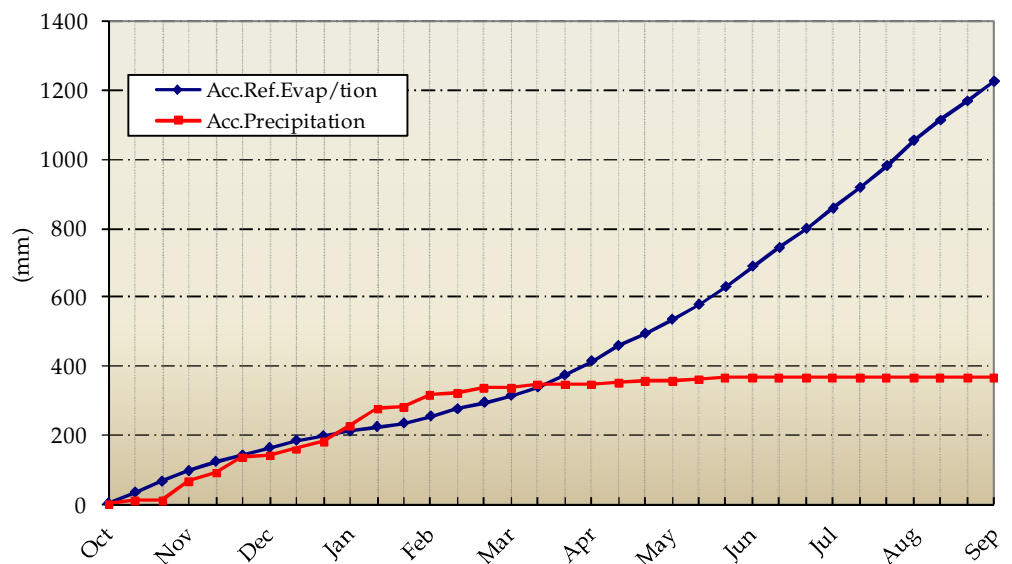


Iraklio

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.4	27.6	28.4	28.6	29.4	29.2	30.0	31.0	30.0	29.8	29.0	29.2	-	27.8
	Min	21.0	20.0	20.2	21.6	18.6	20.6	21.0	22.0	24.6	22.4	23.4	21.4	-	21.3
Relative Humidity	Max	84	82	87	76	81	87	83	75	89	82	84	83	-	-
	Min	62	63	55	52	46	64	40	37	39	59	57	52	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		11.4	10.3	11.4	11.6	11.5	11.0	11.6	11.1	11.1	11.4	11.2	11.2	-	10.8
Precipitation														-	0.6
Evaporation		5.8	3.4	5.0	6.6	6.1	5.8	3.0	6.1	7.7	3.7	7.9	61.1	-	88.9
Growing Degrees	5	19.7	18.8	19.3	20.1	19.0	19.9	20.5	21.5	22.3	21.1	21.2	223.4	-	215.1
	10	14.7	13.8	14.3	15.1	14.0	14.9	15.5	16.5	17.3	16.1	16.2	168.4	-	160.1

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.1	-	-
Precipitation - Reference Evapotranspiration	-57.1	-	0.6
Number of Rainy Days	0.0	-	0.1
Number of Dry Days	105.0	-	-

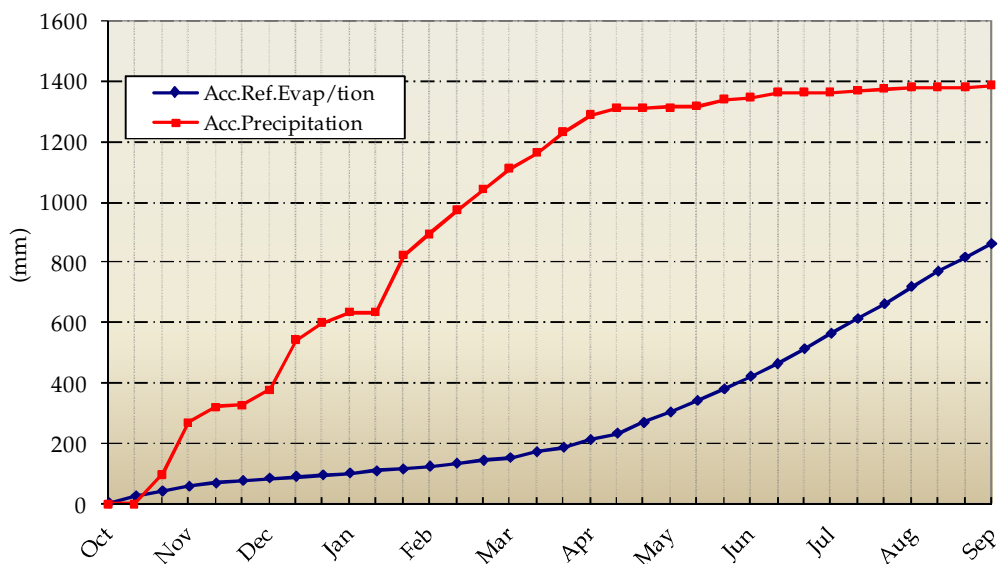
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	31.6	30.6	32.5	29.4	32.2	32.3	30.0	30.3	30.7	30.6	31.0	34.8	29.2
	Min	15.6	18.0	12.6	14.6	16.7	13.4	14.2	12.8	18.2	12.8	15.1	14.9	15.4	14.3
Relative Humidity	Max	84	80	85	74	69	95	72	88	96	90	68	82	69	-
	Min	19	18	21	40	30	21	25	37	28	17	27	26	20	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	21.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	25.5
Sunshine Duration		9.3	9.4	7.0	10.2	7.2	9.5	9.6	6.7	7.4	10.5	10.0	8.8	9.7	8.9
Precipitation						0.0			8.0				8.0		15.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	70.8
Growing Degrees	5	18.0	19.8	16.6	18.6	18.1	17.8	18.3	16.4	19.3	16.8	17.9	197.3	221.4	178.0
	10	13.0	14.8	11.6	13.6	13.1	12.8	13.3	11.4	14.3	11.8	12.9	142.3	166.4	124.8

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.0	53.1	44.4
Precipitation - Reference Evapotranspiration	-37.0	-53.1	-28.5
Number of Rainy Days	1.0	0.0	2.1
Number of Dry Days	27.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

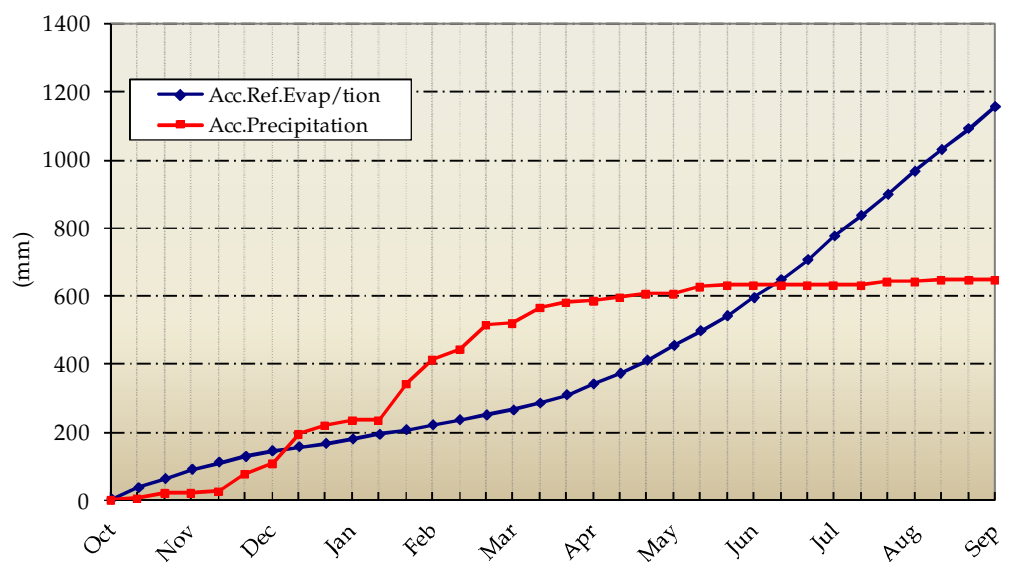


Kalamata

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.8	30.4	30.8	30.6	32.3	34.6	34.8	35.1	34.9	33.8	31.1	32.7	33.7	30.5
	Min	18.6	19.0	19.1	17.8	19.1	19.4	20.1	22.2	24.0	21.0	19.5	20.0	19.0	17.7
Relative Humidity	Max	73	89	81	88	89	87	85	78	83	72	73	82	83	-
	Min	28	30	35	42	29	18	27	28	21	25	28	28	29	-
Soil Temperature at 10 cm	06 UTC	26.2	26.4	25.2	25.6	25.4	26.2	26.2	26.6	27.2	27.2	26.2	26.2	25.9	25.4
	12 UTC	29.2	28.4	28.0	28.4	28.4	29.0	29.0	29.0	29.6	29.4	29.6	28.9	27.6	29.0
Sunshine Duration		9.6	6.4	11.2	11.3	11.4	11.8	11.7	11.0	12.0	12.0	12.0	10.9	11.7	10.0
Precipitation			1.0										1.0		3.6
Evaporation		6.8	0.0	7.4	7.6	6.7	5.2	10.0	7.6	9.8	5.1	5.5	71.7	95.1	81.7
Growing Degrees	5	20.2	19.7	20.0	19.2	20.7	22.0	22.5	23.7	24.5	22.4	20.3	235.0	235.2	210.0
	10	15.2	14.7	15.0	14.2	15.7	17.0	17.5	18.7	19.5	17.4	15.3	180.0	180.2	155.0

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	65.2	65.4	52.5
Precipitation - Reference Evapotranspiration	-64.2	-65.4	-48.9
Number of Rainy Days	1.0	0.0	0.9
Number of Dry Days	20.0	19.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

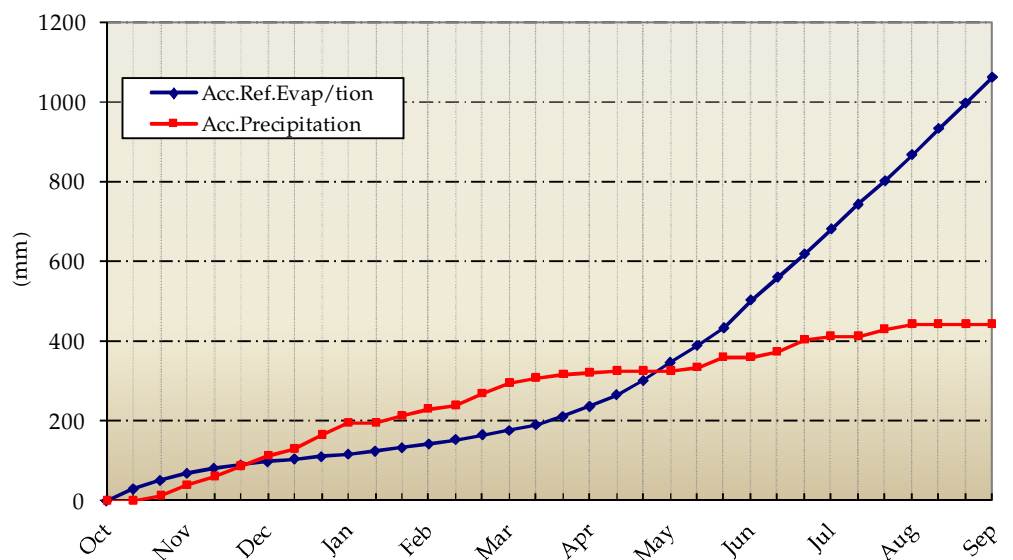


Larisa

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.4	31.6	33.0	35.0	34.6	36.2	37.2	37.6	36.4	33.0	29.2	34.1	35.9	31.3
	Min	18.0	17.0	17.4	17.8	17.6	17.2	18.6	19.1	18.0	23.8	22.3	18.8	17.6	16.4
Relative Humidity	Max	66	68	65	64	72	76	78	84	74	46	69	69	62	-
	Min	24	25	21	17	25	12	19	16	13	19	27	20	17	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.0	25.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	29.9	27.7
Sunshine Duration		11.4	11.4	9.6	9.6	10.3	10.6	10.9	8.6	10.3	10.4	6.7	10.0	11.1	9.7
Precipitation															8.3
Evaporation		11.0	10.6	8.7	13.7	10.1	9.0	10.0	8.0	11.2	10.9	7.1	110.3	106.4	85.2
Growing Degrees	5	19.7	19.3	20.2	21.4	21.1	21.7	22.9	23.4	22.2	23.4	20.8	236.0	239.2	207.5
	10	14.7	14.3	15.2	16.4	16.1	16.7	17.9	18.4	17.2	18.4	15.8	181.0	184.2	152.5

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	64.4	62.8	54.4
Precipitation - Reference Evapotranspiration	-64.4	-62.8	-46.1
Number of Rainy Days	0.0	0.0	1.6
Number of Dry Days	40.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

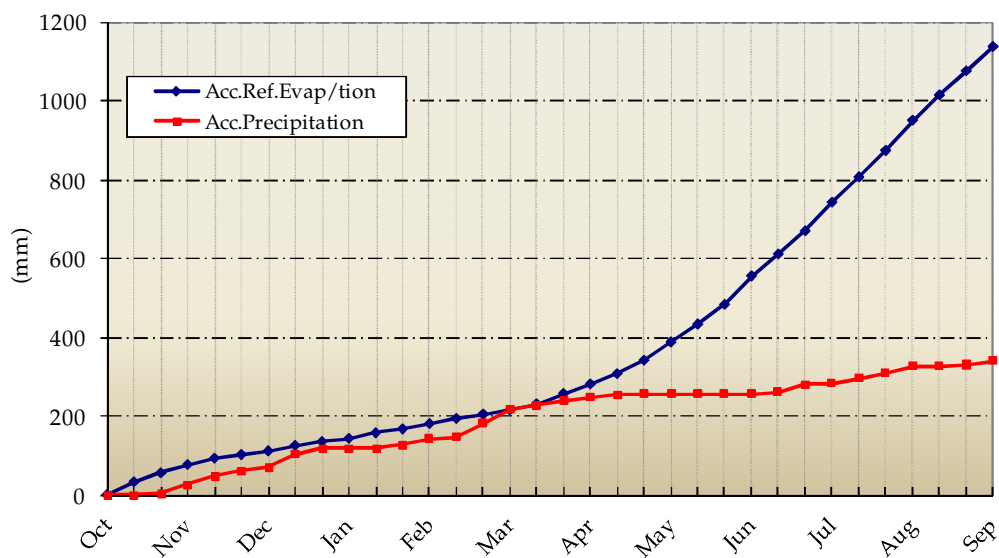


Mikra

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	31.4	32.2	33.0	32.4	33.2	34.4	30.8	32.2	31.1	28.8	31.9	33.8	29.9
	Min	22.0	19.2	20.7	20.0	18.2	18.8	18.8	20.0	18.0	23.6	21.6	20.1	20.2	17.9
Relative Humidity	Max	66	65	71	77	84	63	68	87	86	46	82	72	65	-
	Min	26	25	24	21	26	26	24	36	26	27	41	27	24	-
Soil Temperature at 10 cm	06 UTC	29.6	29.0	29.0	28.8	27.0	26.8	27.4	28.4	25.2	26.4	26.8	27.7	28.9	25.1
	12 UTC	34.8	34.6	36.6	36.4	32.0	32.2	32.2	32.2	30.2	30.0	28.6	32.7	33.4	29.4
Sunshine Duration		11.8	11.3	11.2	10.4	11.5	11.5	8.4	7.7	10.3	11.1	7.1	10.2	11.2	9.2
Precipitation					0.0	1.7			6.7			2.5	10.9		10.5
Evaporation		13.4	7.6	9.2	9.5	10.1	11.6	5.2	11.9	8.8	11.8	7.4	106.5	114.2	84.9
Growing Degrees	5	21.6	20.3	21.5	21.5	20.3	21.0	21.6	20.4	20.1	22.4	20.2	230.8	242.1	208.0
	10	16.6	15.3	16.5	16.5	15.3	16.0	16.6	15.4	15.1	17.4	15.2	175.8	187.1	153.0

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.0	72.4	53.4
Precipitation - Reference Evapotranspiration	-51.1	-72.4	-42.9
Number of Rainy Days	3.0	0.0	1.6
Number of Dry Days	7.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

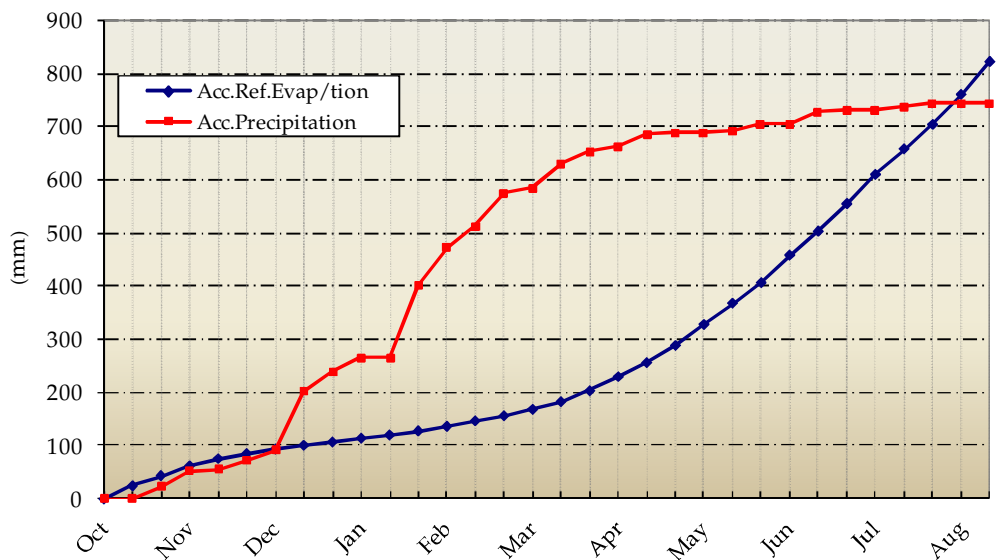


Tripoli

3rd 10-day period (21-31/08/2013)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.7	29.2	31.1	30.5	31.3	31.5	34.8	33.8	-	31.6	28.1	31.3	33.6	29.3
	Min	13.7	15.4	12.1	12.6	12.4	12.4	12.5	15.4	14.6	13.7	13.3	13.5	14.7	13.3
Relative Humidity	Max	67	79	81	80	87	77	76	69	65	77	81	76	50	-
	Min	17	20	18	18	14	16	13	15	14	16	30	17	15	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	24.4	24.6	26.2	25.6	25.4	-	25.2	24.5	23.4
	12 UTC	-	-	-	-	-	30.2	30.2	32.0	30.8	30.6	-	30.8	30.3	26.2
Sunshine Duration		-	-	-	-	0.0	11.2	11.4	10.9	11.8	11.7	-	9.5	11.4	9.5
Precipitation					0.0	0.0						0.1	0.1		5.3
Evaporation		-	-	-	-	6.0	5.2	6.7	9.2	7.6	7.4	-	-	79.4	54.7
Growing Degrees	5	17.2	17.3	16.6	16.6	16.9	17.0	18.7	19.6	-	17.7	15.7	-	210.9	179.5
	10	12.2	12.3	11.6	11.6	11.9	12.0	13.7	14.6	-	12.7	10.7	-	155.9	124.5

3rd 10-day period (21-31/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.4	55.8	47.4
Precipitation - Reference Evapotranspiration	-48.3	-55.8	-42.1
Number of Rainy Days	1.0	0.0	1.2
Number of Dry Days	40.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



This station is not fully operated



◆ **List of Symbols and Abbreviations**

Reference Evapotranspiration ETo (mm):

Calculated by the FAO Penman-Montieth equation

$$ET_0 = \frac{0.408 * \Delta * (R_n - G) + \gamma * \frac{900}{T + 273} * u_2 * (e_s - e_a)}{\Delta + \gamma * (1 + 0.34 * u_2)}$$

using 10-day step.

R_n is estimated from sunshine measurements and G assumed to be zero.

Growing Degrees: Degrees with mean temperature exceeding the base of 5 or 10 °C.

Number of Rainy Days: Number of days with precipitation of at least 0.1 mm.

Number of Dry Days: Number of dry days recorded since the last rainy day.

Mesurements Units

- ◆ Temperature : °C
- ◆ Relative Humidity : %
- ◆ Soil Temperature : °C
- ◆ Sunshine Duration : Hours
- ◆ Precipitation : mm
- ◆ Evaporation (Pan) : mm
- ◆ Growing Degrees : °C

UTC (Universal Time coordinates) in Greece

- ◆ Winter : Time(UTC) = Local time - 2
- ◆ Summer : Time(UTC) = Local time - 3

© HELLENIC NATIONAL METEOROLOGICAL SERVICE
 Reproduction is prohibited without written permission
 El. Venizelou street 14, Zip Code 16777
 Helliniko, Athens