



AGROMETEOROLOGICAL BULLETIN

*August 2013
2nd 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
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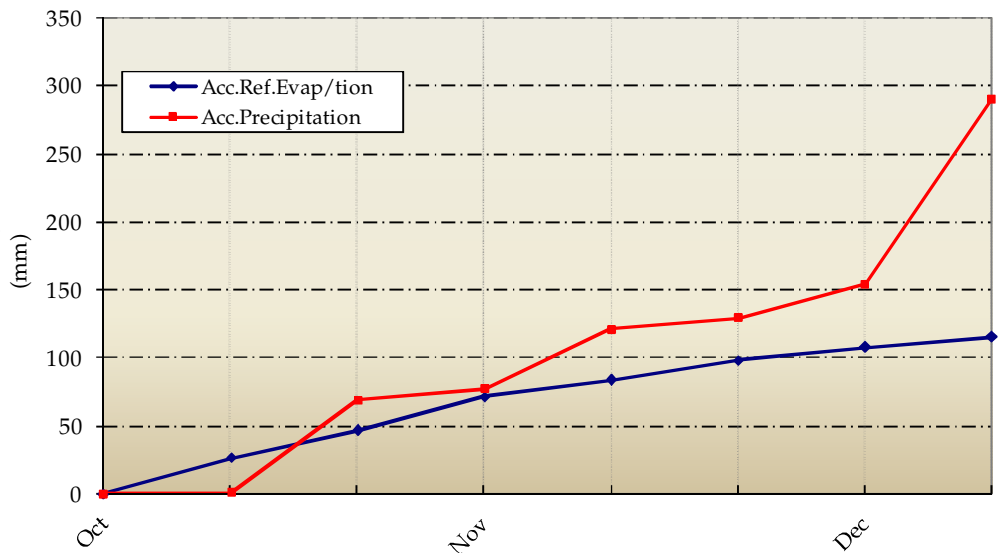
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Agrinio

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.2	35.4	35.6	37.0	37.5	37.5	35.2	35.4	36.4	36.4	36.3	34.5	33.5
	Min	17.4	19.0	19.4	19.6	17.0	17.6	17.8	17.4	17.8	18.2	18.1	19.6	17.4
Relative Humidity	Max	86	81	78	78	76	81	79	75	83	77	79	72	-
	Min	24	27	26	23	26	26	27	29	26	24	26	32	-
Soil Temperature at 10 cm	06 UTC	31.0	35.0	33.0	32.0	31.0	31.0	32.2	31.2	31.2	31.0	31.9	30.4	27.0
	12 UTC	34.0	36.0	36.0	38.0	32.0	35.0	34.8	35.0	35.2	35.2	35.1	34.7	33.0
Sunshine Duration		12.3	12.0	10.6	12.4	12.4	11.1	12.1	11.4	12.0	12.3	11.9	12.0	10.6
Precipitation														4.5
Evaporation		7.2	10.6	11.1	11.0	10.2	10.0	8.4	10.0	10.0	9.7	98.2	80.8	74.4
Growing Degrees	5	21.8	22.2	22.5	23.3	22.3	22.6	21.5	21.4	22.1	22.3	221.9	220.3	204.3
	10	16.8	17.2	17.5	18.3	17.3	17.6	16.5	16.4	17.1	17.3	171.9	170.3	154.3

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.2	53.1	49.8
Precipitation - Reference Evapotranspiration	-54.2	-53.1	-45.3
Number of Rainy Days	0.0	0.0	1.0
Number of Dry Days	30.0	18.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

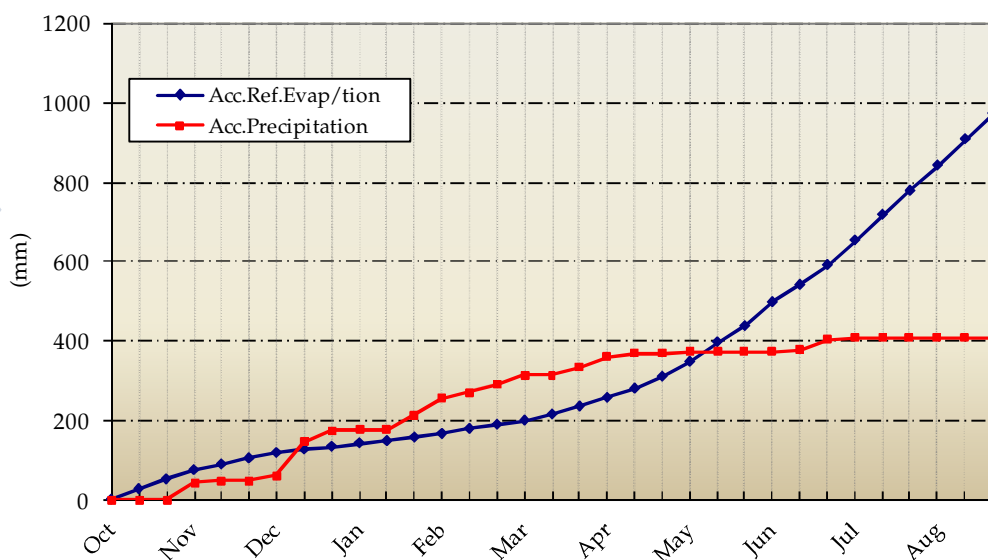


This station is not fully operated

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.6	32.6	34.0	35.6	34.4	33.0	33.2	33.6	34.2	33.6	33.8	31.7	30.5
	Min	22.4	19.6	22.4	22.8	20.0	23.4	25.0	22.0	19.4	22.0	21.9	19.8	17.7
Relative Humidity	Max	70	72	72	71	66	72	52	65	74	66	68	73	-
	Min	24	29	29	23	27	35	26	15	29	26	26	29	-
Soil Temperature at 10 cm	06 UTC	29.2	28.2	28.0	28.4	24.8	29.4	29.0	28.4	28.4	28.8	28.3	29.0	23.8
	12 UTC	31.6	32.0	31.8	31.6	31.6	31.2	32.0	31.6	30.2	31.4	31.5	31.6	27.9
Sunshine Duration		12.5	12.2	11.9	13.0	11.6	12.2	12.1	12.6	11.8	12.0	12.2	11.0	10.0
Precipitation													0.0	3.9
Evaporation		9.3	6.9	9.2	13.3	14.7	12.0	12.9	11.1	11.1	11.3	111.8	104.6	94.5
Growing Degrees	5	23.0	21.1	23.2	24.2	22.2	23.2	24.1	22.8	21.8	22.8	228.4	207.2	191.3
	10	18.0	16.1	18.2	19.2	17.2	18.2	19.1	17.8	16.8	17.8	178.4	157.2	141.3

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	64.4	53.5	55.4
Precipitation - Reference Evapotranspiration	-64.4	-53.5	-51.5
Number of Rainy Days	0.0	0.0	1.0
Number of Dry Days	50.0	75.0	-

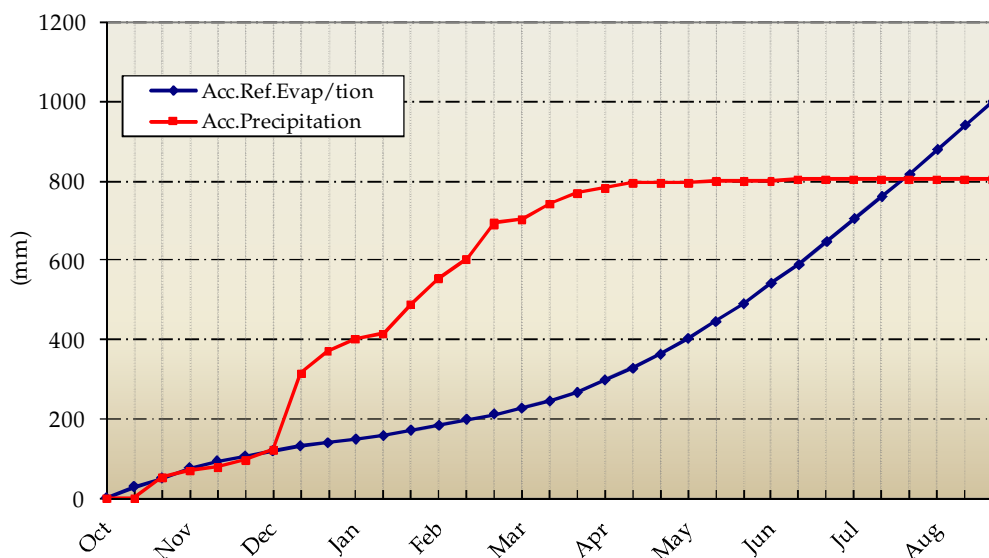
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.1	32.8	33.0	32.2	34.1	36.4	33.5	34.1	33.1	34.2	33.6	32.6	31.2
	Min	18.7	19.4	19.0	19.9	18.0	17.9	19.2	22.4	19.7	17.8	19.2	19.9	18.7
Relative Humidity	Max	86	80	85	85	86	81	77	83	82	84	83	82	-
	Min	29	27	26	38	25	16	29	25	30	22	27	32	-
Soil Temperature at 10 cm	06 UTC	28.6	28.2	28.6	28.6	28.0	28.0	28.4	28.2	28.4	27.6	28.3	29.3	27.4
	12 UTC	34.4	34.4	35.4	35.0	35.4	35.0	34.2	34.0	35.0	35.0	34.8	37.3	31.7
Sunshine Duration		12.1	11.3	11.7	11.7	11.5	11.1	11.4	11.5	11.6	11.8	11.6	11.8	11.2
Precipitation														4.0
Evaporation		8.7	11.0	17.2	8.9	9.4	14.5	12.3	9.0	19.2	8.9	119.1	87.3	73.5
Growing Degrees	5	20.9	21.1	21.0	21.1	21.1	22.2	21.4	23.3	21.4	21.0	214.3	212.9	199.2
	10	15.9	16.1	16.0	16.1	16.1	17.2	16.4	18.3	16.4	16.0	164.3	162.9	149.2

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.7	55.1	49.2
Precipitation - Reference Evapotranspiration	-59.7	-55.1	-45.2
Number of Rainy Days	0.0	0.0	0.3
Number of Dry Days	71.0	83.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

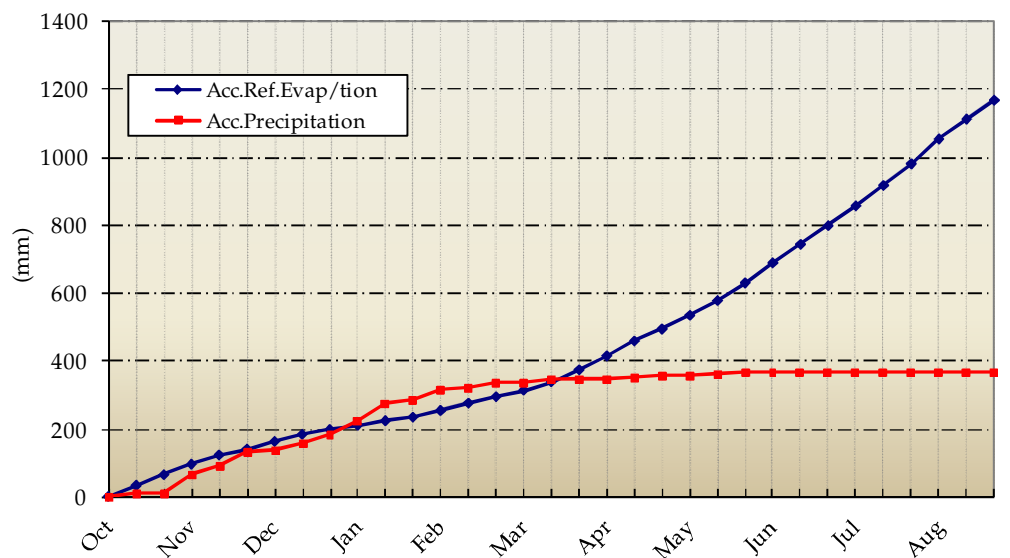


Iraklio

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.4	29.0	28.6	29.0	30.0	28.6	28.8	28.5	28.4	29.0	28.9	-	28.2
	Min	19.8	24.0	23.4	20.8	21.0	21.0	22.4	24.8	25.2	21.0	22.3	-	22.2
Relative Humidity	Max	74	68	68	81	87	82	79	76	74	81	77	-	-
	Min	54	54	52	52	53	57	66	52	60	53	55	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		11.2	11.6	11.9	11.8	11.7	11.3	7.1	10.9	11.5	11.0	11.0	-	11.0
Precipitation													-	0.0
Evaporation		5.1	8.8	6.3	4.9	5.7	4.6	8.2	8.0	0.6	6.3	58.5	-	81.3
Growing Degrees	5	19.6	21.5	21.0	19.9	20.5	19.8	20.6	21.7	21.8	20.0	206.4	-	202.0
	10	14.6	16.5	16.0	14.9	15.5	14.8	15.6	16.7	16.8	15.0	156.4	-	152.0

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.5	-	-
Precipitation - Reference Evapotranspiration	-55.5	-	0.0
Number of Rainy Days	0.0	-	0.1
Number of Dry Days	94.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

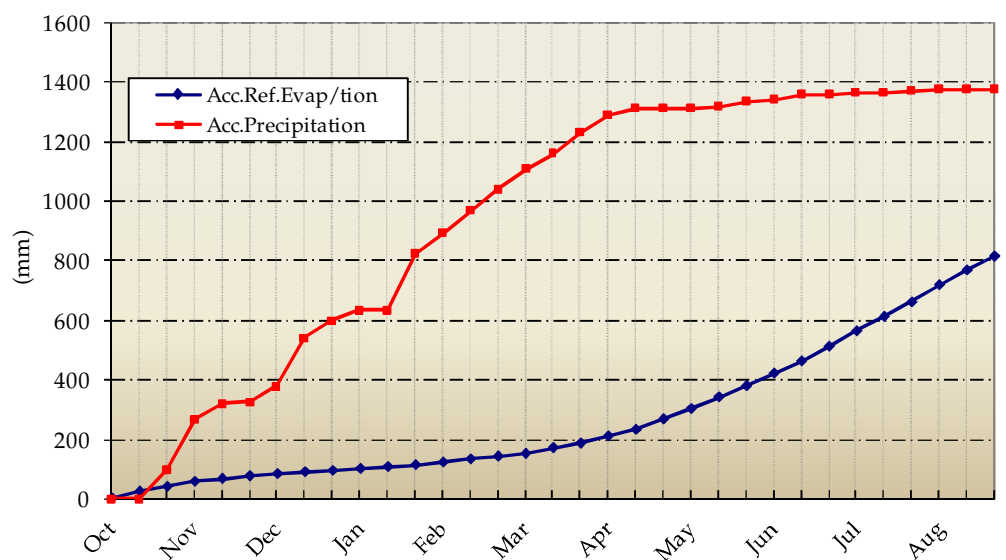


Ioannina

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.8	32.8	32.0	33.2	33.8	31.6	33.6	33.9	33.0	33.8	33.0	31.8	30.9
	Min	12.9	15.3	16.0	16.4	16.0	19.2	19.6	14.4	15.8	15.4	16.1	16.2	15.4
Relative Humidity	Max	96	69	82	67	76	33	73	64	94	68	72	82	-
	Min	20	25	30	28	18	24	18	25	15	16	22	32	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.1
Sunshine Duration		9.1	7.2	8.2	8.6	9.0	9.4	8.5	6.4	8.3	10.0	8.5	9.3	9.5
Precipitation			0.0					0.0	0.0			0.0	4.1	11.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	64.1
Growing Degrees	5	17.4	19.1	19.0	19.8	19.9	20.4	21.6	19.2	19.4	19.6	195.3	190.0	176.6
	10	12.4	14.1	14.0	14.8	14.9	15.4	16.6	14.2	14.4	14.6	145.3	140.0	127.8

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.1	43.3	45.3
Precipitation - Reference Evapotranspiration	-46.1	-39.2	-34.0
Number of Rainy Days	0.0	2.0	1.8
Number of Dry Days	20.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

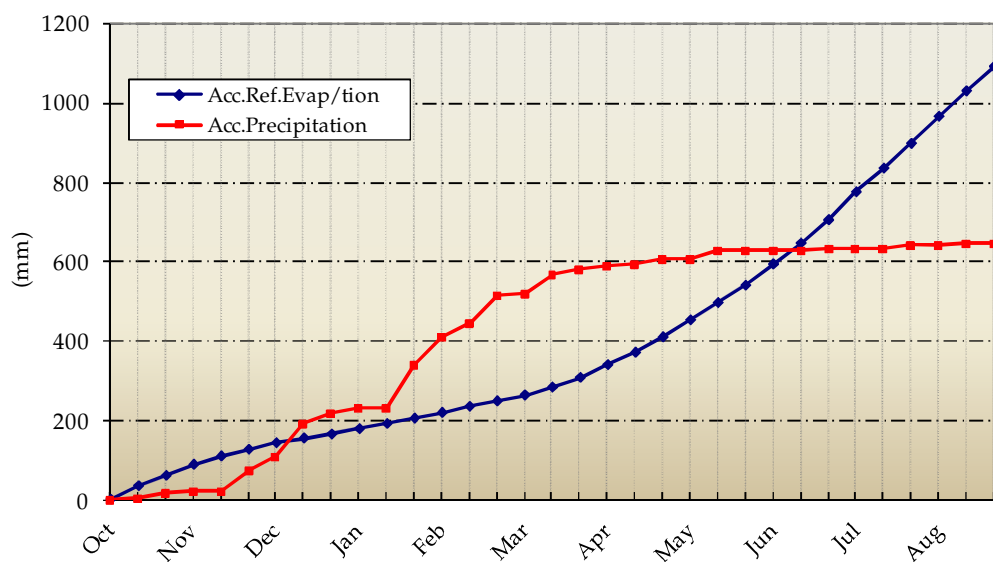


Kalamata

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.9	35.4	36.8	34.1	32.2	32.7	34.9	35.3	35.3	32.0	34.1	33.1	31.4
	Min	18.9	17.8	18.4	19.7	18.6	20.1	19.1	23.9	19.6	19.0	19.5	20.0	18.2
Relative Humidity	Max	86	77	82	84	80	85	83	77	67	74	80	78	-
	Min	36	23	17	27	40	27	25	22	21	31	27	29	-
Soil Temperature at 10 cm	06 UTC	26.0	26.0	26.0	26.4	26.4	26.2	26.2	26.6	26.4	26.2	26.2	26.4	25.7
	12 UTC	29.0	29.0	28.6	29.4	29.4	29.4	29.0	29.2	29.4	29.4	29.2	28.3	29.6
Sunshine Duration		10.6	9.3	11.0	11.8	11.8	10.3	10.7	10.4	11.8	11.9	11.0	11.3	10.6
Precipitation							0.0	0.0	0.0			0.0	24.5	3.9
Evaporation		10.2	10.2	15.4	9.6	11.4	9.6	9.8	3.2	9.2	7.0	95.6	-	78.6
Growing Degrees	5	20.4	21.6	22.6	21.9	20.4	21.4	22.0	24.6	22.5	20.5	217.9	215.7	198.2
	10	15.4	16.6	17.6	16.9	15.4	16.4	17.0	19.6	17.5	15.5	167.9	165.7	148.2

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.3	60.2	50.7
Precipitation - Reference Evapotranspiration	-61.3	-35.7	-46.8
Number of Rainy Days	0.0	1.0	0.7
Number of Dry Days	19.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

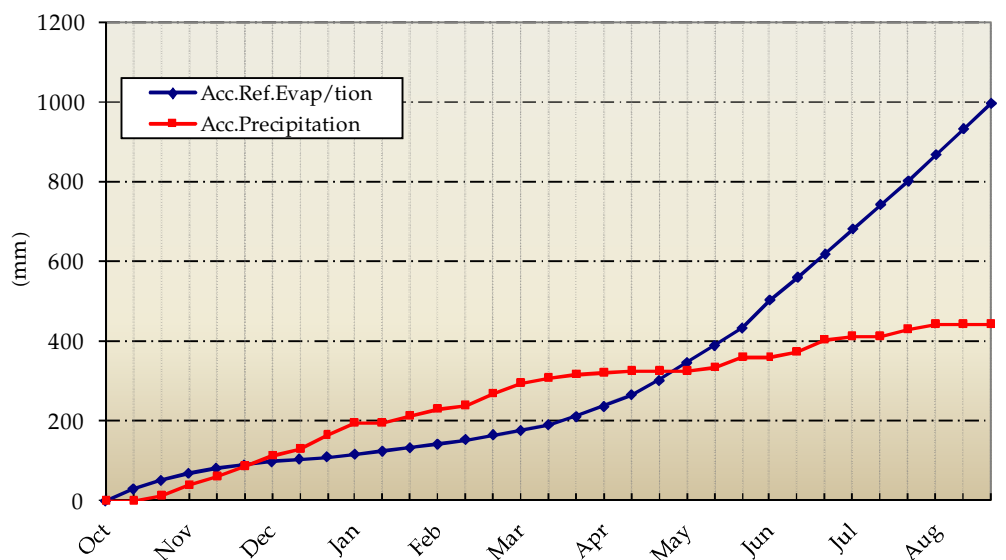


Larisa

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.4	34.2	35.4	35.4	35.2	34.0	34.0	33.8	34.2	34.6	34.5	33.6	32.3
	Min	18.0	18.8	18.3	18.0	18.4	18.3	23.2	19.6	18.6	16.4	18.8	18.5	17.5
Relative Humidity	Max	65	68	64	67	61	62	64	69	69	63	65	77	-
	Min	21	23	20	17	14	23	23	25	21	18	20	25	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	28.4	26.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	30.0	28.7
Sunshine Duration		11.4	11.4	11.7	11.9	11.9	11.0	10.4	11.8	11.4	11.2	11.4	10.6	9.9
Precipitation													0.2	6.2
Evaporation		10.0	9.9	12.5	11.4	13.4	12.2	12.1	11.7	12.1	11.8	117.1	89.0	84.1
Growing Degrees	5	21.2	21.5	21.9	21.7	21.8	21.2	23.6	21.7	21.4	20.5	216.4	210.6	199.1
	10	16.2	16.5	16.9	16.7	16.8	16.2	18.6	16.7	16.4	15.5	166.4	160.6	149.1

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.9	56.9	53.3
Precipitation - Reference Evapotranspiration	-63.9	-56.7	-47.1
Number of Rainy Days	0.0	1.0	1.4
Number of Dry Days	29.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

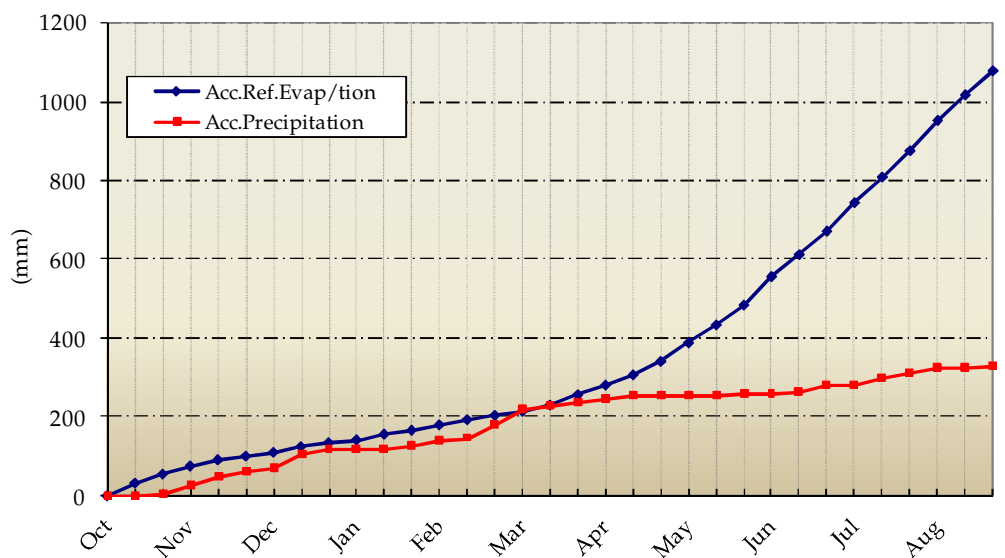


Mikra

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	32.8	34.5	35.0	35.3	34.1	33.6	32.2	33.8	33.8	33.8	31.6	31.3
	Min	21.8	19.5	21.0	20.8	20.8	22.0	22.3	20.4	20.6	20.0	20.9	20.6	18.9
Relative Humidity	Max	81	81	60	65	62	71	78	65	70	60	69	75	-
	Min	32	27	24	19	18	29	26	28	22	23	25	31	-
Soil Temperature at 10 cm	06 UTC	30.2	28.0	29.4	29.9	30.0	30.2	29.0	29.0	29.0	29.6	29.4	28.1	26.0
	12 UTC	33.8	33.4	34.4	34.0	34.8	33.4	33.4	33.0	33.0	33.8	33.7	32.7	30.5
Sunshine Duration		7.9	11.8	12.0	11.6	11.6	6.6	11.1	11.3	11.8	11.8	10.8	10.4	10.0
Precipitation		1.3						1.3				2.6	0.9	6.6
Evaporation		6.3	13.2	9.2	12.6	7.7	9.6	8.9	9.6	6.2	16.4	99.7	103.8	83.0
Growing Degrees	5	22.2	21.2	22.8	22.9	23.1	23.1	23.0	21.3	22.2	21.9	223.5	211.0	201.0
	10	17.2	16.2	17.8	17.9	18.1	18.1	18.0	16.3	17.2	16.9	173.5	161.0	151.0

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.2	57.7	52.4
Precipitation - Reference Evapotranspiration	-58.6	-56.8	-45.8
Number of Rainy Days	2.0	1.0	1.1
Number of Dry Days	19.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

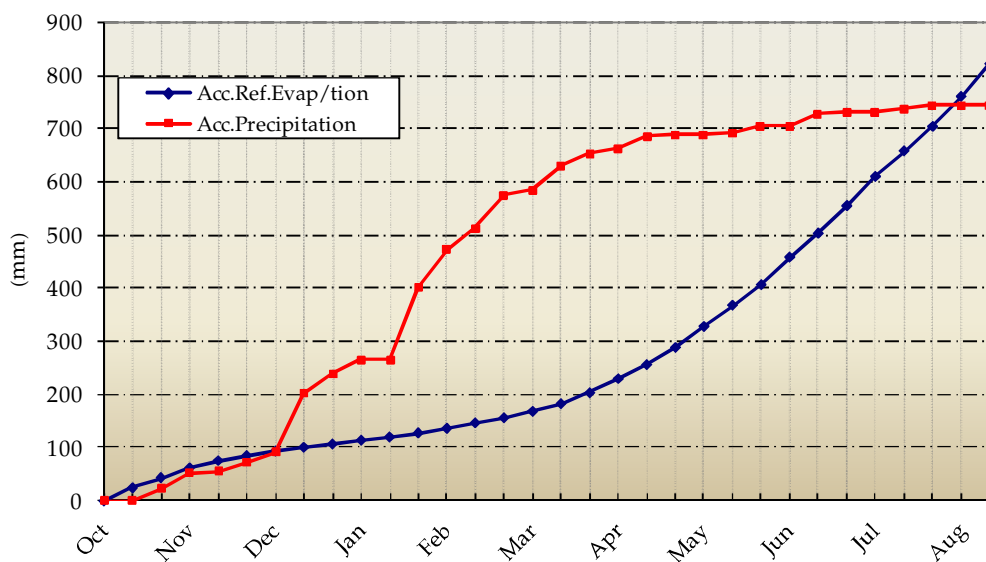


Tripoli

2nd 10-day period (11-20/08/2013)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.2	32.2	32.7	33.2	33.5	31.3	32.1	31.9	32.6	33.0	32.5	30.7	29.9
	Min	13.9	15.8	14.2	14.7	12.4	15.9	19.2	20.9	14.2	12.2	15.3	16.1	14.5
Relative Humidity	Max	53	59	68	67	67	61	59	58	72	67	63	72	-
	Min	34	20	17	14	14	20	20	19	18	12	19	27	-
Soil Temperature at 10 cm	06 UTC	25.8	26.2	-	-	-	-	-	-	-	-	26.0	23.6	24.7
	12 UTC	-	31.4	-	-	-	-	-	-	-	-	31.4	29.8	27.4
Sunshine Duration		10.1	-	-	-	-	-	-	-	-	-	10.1	9.5	9.7
Precipitation													35.7	13.8
Evaporation		7.6	-	-	-	-	-	-	-	-	-	-	64.0	56.3
Growing Degrees	5	18.1	19.0	18.5	19.0	18.0	18.6	20.7	21.4	18.4	17.6	189.1	183.8	172.3
	10	13.1	14.0	13.5	14.0	13.0	13.6	15.7	16.4	13.4	12.6	139.1	133.8	122.3

2nd 10-day period (11-20/08/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	46.2	47.6
Precipitation - Reference Evapotranspiration	-	-10.5	-33.8
Number of Rainy Days	0.0	3.0	1.4
Number of Dry Days	30.0	8.0	-

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.

Measurements 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

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