



# AGROMETEOROLOGICAL BULLETIN

*June 2011*  
*1st 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



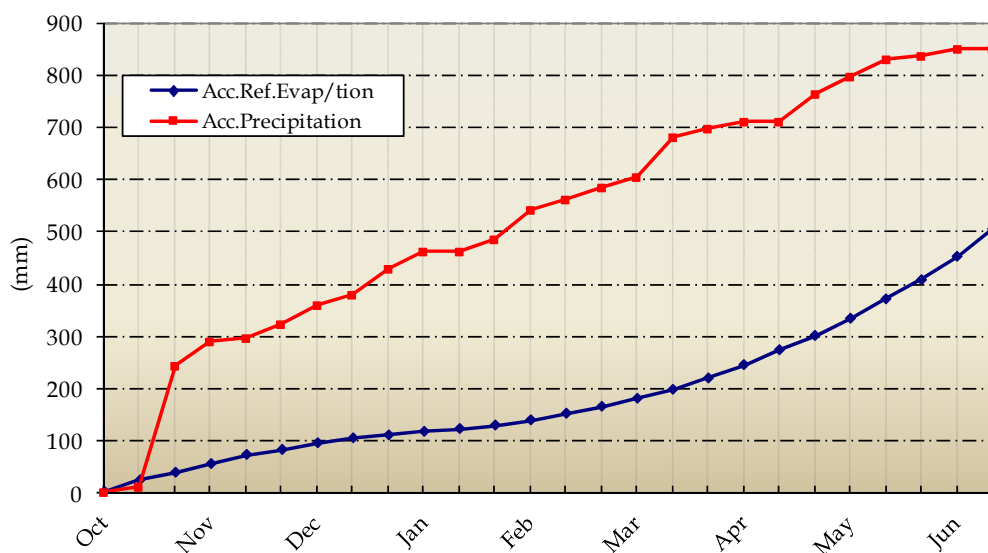
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1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.6	29.4	28.4	30.7	32.0	33.2	32.8	33.8	32.0	30.0	31.0	-	29.2
	Min	14.8	14.0	15.4	14.8	15.4	18.4	18.4	18.6	16.0	15.0	16.1	-	14.5
Relative Humidity	Max	98	98	96	85	96	86	90	84	90	92	92	-	-
	Min	50	35	46	31	38	23	32	30	47	31	36	-	-
Soil Temperature at 10 cm	06 UTC	21.8	22.6	23.4	23.2	24.6	25.6	26.4	26.0	25.6	26.2	24.5	-	22.9
	12 UTC	27.0	27.0	28.4	29.8	30.4	31.0	28.8	29.6	31.8	31.6	29.5	-	29.1
Sunshine Duration		12.0	11.1	6.5	12.6	11.2	10.6	6.2	11.6	12.2	13.3	10.7	-	10.4
Precipitation													-	6.6
Evaporation		6.8	8.0	3.8	11.4	8.4	12.6	5.8	6.1	10.1	10.0	83.0	-	77.7
Growing Degrees	5	16.2	16.7	16.9	17.8	18.7	20.8	20.6	21.2	19.0	17.5	185.4	-	168.5
	10	11.2	11.7	11.9	12.8	13.7	15.8	15.6	16.2	14.0	12.5	135.4	-	118.5

1st 10-day period (1-10/06/2011)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.6	- 50.8
Precipitation - Reference Evapotranspiration	-52.6	- -44.2
Number of Rainy Days	0.0	- 1.4
Number of Dry Days	11.0	- -

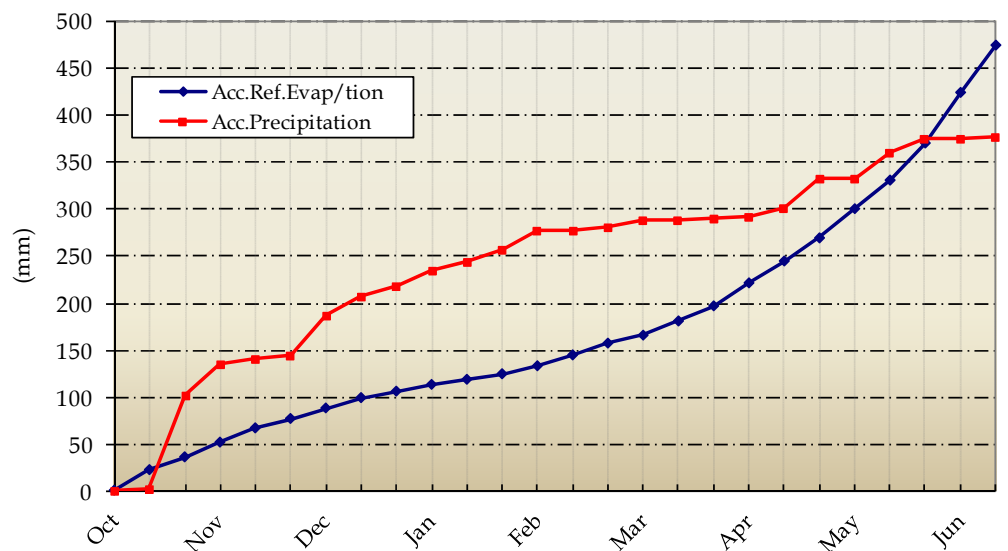
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.6	27.0	27.6	30.0	30.4	30.6	28.8	29.0	30.0	29.6	28.8	26.0	25.8
	Min	15.0	15.2	17.0	17.6	14.6	20.4	17.6	16.0	15.0	20.6	16.9	17.0	14.0
Relative Humidity	Max	96	96	82	90	89	77	74	92	89	82	87	87	-
	Min	62	52	45	40	34	38	32	35	38	40	42	44	-
Soil Temperature at 10 cm	06 UTC	21.2	21.0	20.8	21.2	21.5	23.0	22.6	23.0	23.0	24.0	22.1	21.1	20.6
	12 UTC	24.6	24.0	24.2	26.0	25.4	25.8	27.0	26.0	28.0	27.0	25.8	23.5	25.3
Sunshine Duration		9.6	9.2	5.2	13.3	12.5	11.5	11.9	12.2	12.6	7.7	10.6	7.8	9.7
Precipitation		1.3									0.0	1.3	32.2	10.6
Evaporation		4.7	4.0	7.0	8.0	6.2	11.4	7.9	6.5	6.0	14.0	75.7	47.4	72.8
Growing Degrees	5	14.8	16.1	17.3	18.8	17.5	20.5	18.2	17.5	17.5	20.1	178.3	165.0	148.7
	10	9.8	11.1	12.3	13.8	12.5	15.5	13.2	12.5	12.5	15.1	128.3	115.0	98.7

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.4	43.7	48.0
Precipitation - Reference Evapotranspiration	-49.1	-11.5	-37.4
Number of Rainy Days	1.0	5.0	2.2
Number of Dry Days	11.0	10.0	-

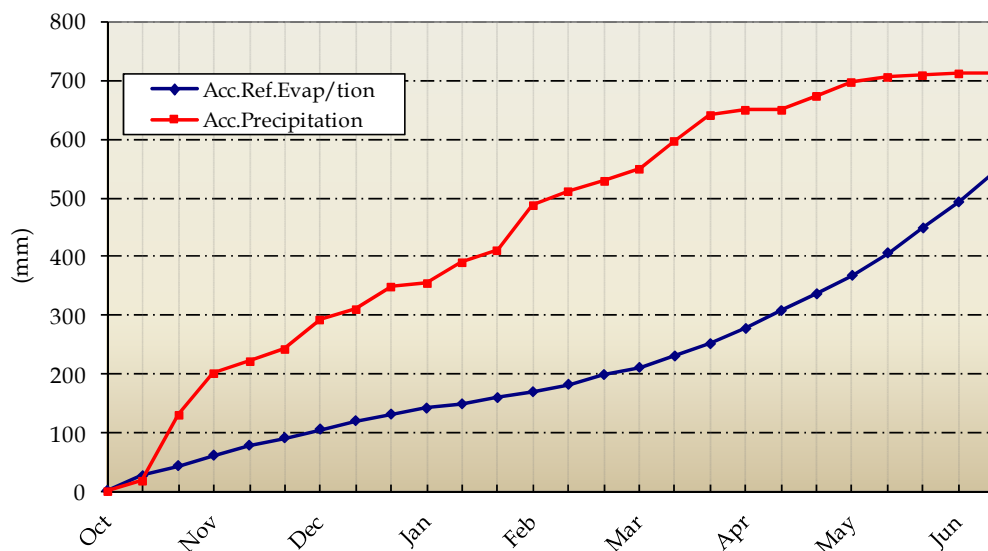
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	26.0	27.8	30.0	30.0	31.0	33.4	34.8	29.8	27.2	29.6	25.6	26.9
	Min	17.8	15.2	17.4	14.6	16.0	17.8	18.6	17.4	16.8	17.4	16.9	15.7	15.3
Relative Humidity	Max	92	92	90	92	89	92	84	92	86	94	90	94	-
	Min	51	44	42	31	36	34	30	20	46	50	38	50	-
Soil Temperature at 10 cm	06 UTC	23.8	23.2	22.0	23.8	24.4	25.0	25.8	25.0	24.8	25.0	24.3	22.9	23.0
	12 UTC	30.8	31.0	31.4	31.4	31.5	32.0	29.8	31.0	32.0	32.0	31.3	29.6	27.7
Sunshine Duration		11.6	10.7	12.1	12.3	9.4	9.9	6.4	8.9	12.0	12.8	10.6	11.1	11.1
Precipitation									0.0			0.0	0.2	2.3
Evaporation		2.6	6.0	6.5	7.8	6.9	10.1	6.1	8.8	7.4	8.2	70.4	60.3	67.5
Growing Degrees	5	16.7	15.6	17.6	17.3	18.0	19.4	21.0	21.1	18.3	17.3	182.3	156.1	160.7
	10	11.7	10.6	12.6	12.3	13.0	14.4	16.0	16.1	13.3	12.3	132.3	106.1	110.7

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.8	47.6	48.5
Precipitation - Reference Evapotranspiration	-50.8	-47.4	-46.2
Number of Rainy Days	0.0	1.0	0.7
Number of Dry Days	13.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

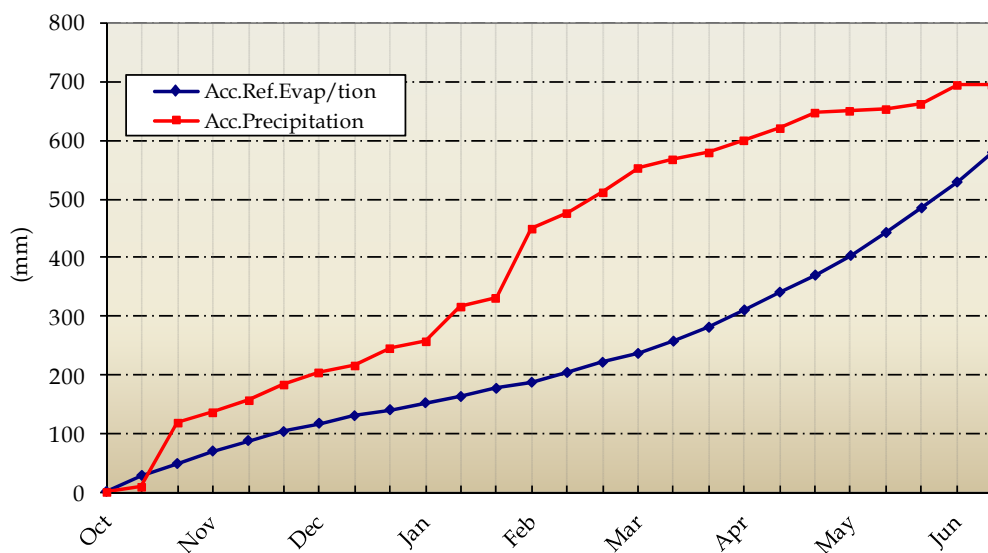


Kalamata

1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	26.0	26.8	28.0	28.0	30.2	31.4	31.4	30.4	29.4	28.8	25.3	27.6
	Min	14.4	14.8	17.4	15.4	16.0	16.0	16.0	17.6	16.6	17.2	16.1	14.6	14.5
Relative Humidity	Max	98	93	96	98	92	98	96	88	94	98	95	95	-
	Min	64	61	56	53	53	42	39	39	46	42	50	50	-
Soil Temperature at 10 cm	06 UTC	20.2	21.0	21.6	21.8	21.0	22.4	22.2	22.0	22.0	22.6	21.7	20.5	21.6
	12 UTC	24.0	24.4	25.0	25.0	25.0	25.4	24.0	24.0	24.8	25.0	24.7	22.6	25.8
Sunshine Duration		11.7	11.6	11.6	11.5	11.4	11.4	1.9	7.1	12.3	12.5	10.3	9.7	10.5
Precipitation													25.9	2.7
Evaporation		7.6	7.8	4.4	7.8	9.8	7.8	3.4	5.6	7.4	10.8	72.4	58.1	75.1
Growing Degrees	5	15.4	15.4	17.1	16.7	17.0	18.1	18.7	19.5	18.5	18.3	174.7	149.3	160.6
	10	10.4	10.4	12.1	11.7	12.0	13.1	13.7	14.5	13.5	13.3	124.7	99.3	110.6

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.8	46.3	50.2
Precipitation - Reference Evapotranspiration	-50.8	-20.4	-47.5
Number of Rainy Days	0.0	1.0	0.9
Number of Dry Days	11.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

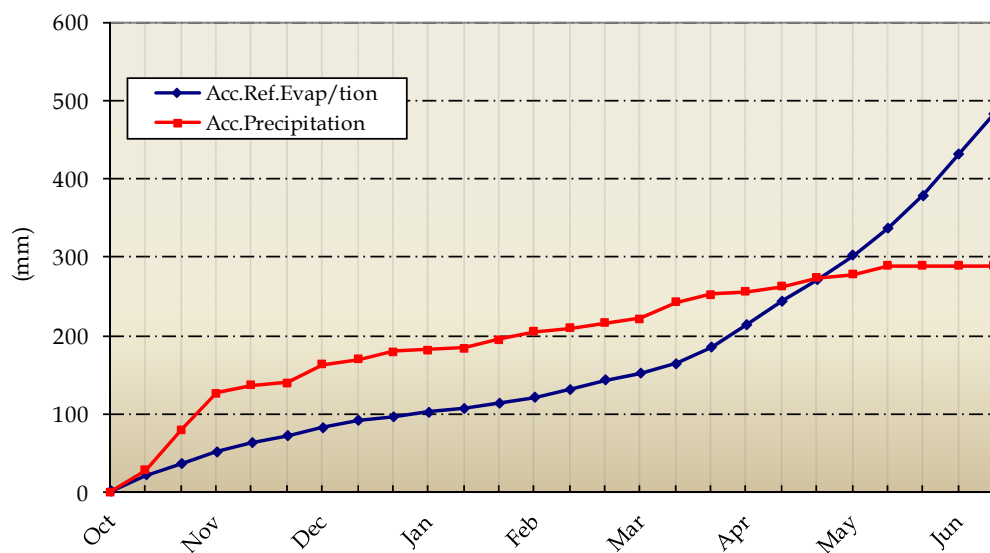


Larisa

1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	28.6	26.4	26.6	30.2	30.4	30.2	31.4	34.8	31.4	30.0	28.4	29.7
	Min	14.0	16.0	15.8	15.0	14.4	15.6	14.4	17.0	16.8	17.0	15.6	16.0	14.1
Relative Humidity	Max	96	94	94	94	93	89	79	90	92	59	88	90	-
	Min	41	38	51	54	32	28	31	34	24	24	36	38	-
Soil Temperature at 10 cm	06 UTC	20.0	21.0	20.2	20.6	20.4	21.0	22.0	22.0	23.0	23.0	21.3	21.8	21.7
	12 UTC	22.8	23.4	21.8	22.0	23.4	24.0	24.4	24.0	25.8	26.0	23.8	24.1	24.3
Sunshine Duration		10.8	5.7	8.7	4.5	10.5	8.0	5.5	12.0	9.9	12.0	8.8	8.8	10.4
Precipitation			0.0	0.0	0.0							0.0	3.7	9.2
Evaporation		9.4	1.8	2.0	2.5	6.9	7.0	8.0	7.9	10.1	8.0	63.6	66.4	79.0
Growing Degrees	5	16.8	17.3	16.1	15.8	17.3	18.0	17.3	19.2	20.8	19.2	177.8	172.1	169.0
	10	11.8	12.3	11.1	10.8	12.3	13.0	12.3	14.2	15.8	14.2	127.8	122.1	119.0

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.3	48.5	54.0
Precipitation - Reference Evapotranspiration	-51.3	-44.8	-44.8
Number of Rainy Days	0.0	4.0	2.3
Number of Dry Days	13.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

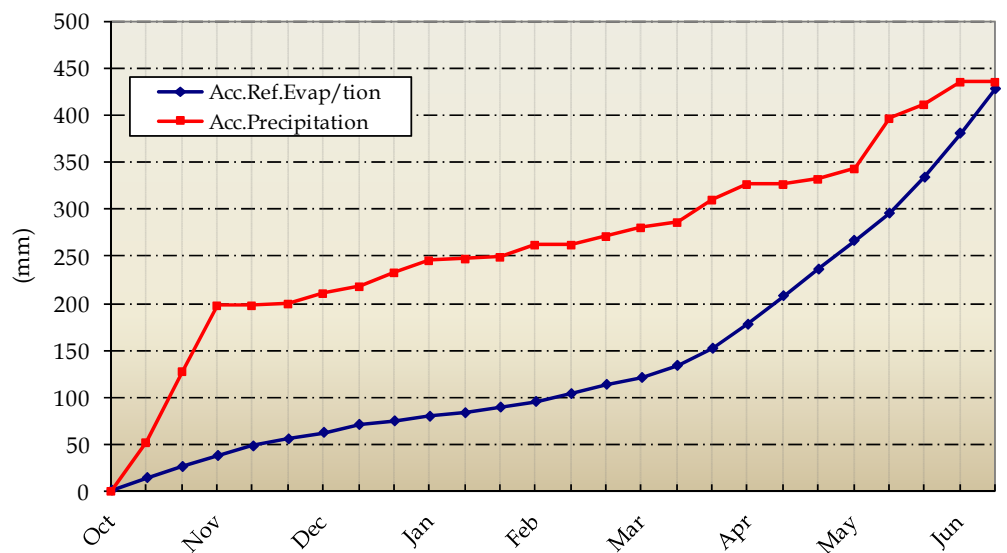


1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.8	29.8	30.2	24.4	32.8	32.0	31.6	32.4	34.4	30.6	30.9	28.2	28.7
	Min	14.6	15.2	16.6	18.2	15.6	15.0	17.0	16.4	16.8	17.8	16.3	15.0	15.4
Relative Humidity	Max	95	94	91	92	94	83	84	83	85	79	88	84	-
	Min	33	38	38	31	24	32	34	30	20	26	31	38	-
Soil Temperature at 10 cm	06 UTC	21.0	21.8	22.4	22.6	22.8	23.0	23.6	23.4	23.8	24.2	22.9	21.9	21.3
	12 UTC	24.0	24.8	25.0	24.4	25.6	25.8	25.8	25.4	26.2	26.8	25.4	23.7	25.2
Sunshine Duration		8.5	8.8	5.3	7.9	12.0	11.1	8.8	10.3	9.3	12.5	9.4	7.3	9.3
Precipitation		0.0	0.0									0.0	15.3	18.7
Evaporation		3.2	4.7	3.0	3.7	6.8	6.6	4.2	5.6	6.3	10.5	54.6	39.2	61.1
Growing Degrees	5	17.7	17.5	18.4	16.3	19.2	18.5	19.3	19.4	20.6	19.2	186.1	166.0	170.3
	10	12.7	12.5	13.4	11.3	14.2	13.5	14.3	14.4	15.6	14.2	136.1	116.0	120.3

Series

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.5	39.9	45.4
Precipitation - Reference Evapotranspiration	-47.5	-24.6	-26.7
Number of Rainy Days	0.0	4.0	3.0
Number of Dry Days	10.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

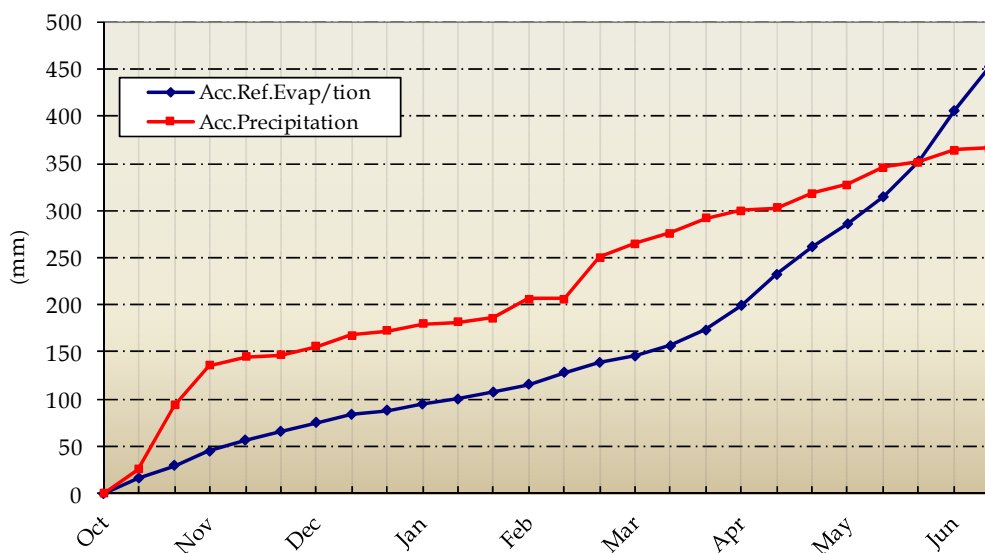


Trikala Imathias

1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	29.6	30.0	27.8	31.8	31.2	28.2	30.6	33.6	30.8	30.4	27.3	28.7
	Min	16.4	18.0	16.4	18.2	17.8	17.0	17.8	18.4	16.4	17.4	17.4	16.6	15.8
Relative Humidity	Max	98	89	91	98	96	97	87	92	70	72	89	94	-
	Min	39	47	40	54	44	38	49	26	36	30	40	45	-
Soil Temperature at 10 cm	06 UTC	21.4	22.0	21.5	21.4	21.6	22.4	22.6	21.4	22.8	23.0	22.0	21.7	21.9
	12 UTC	24.4	25.0	23.6	23.2	24.4	25.0	24.8	24.8	25.8	25.4	24.6	24.6	23.7
Sunshine Duration		12.1	5.6	6.1	5.5	10.2	7.7	4.8	11.0	9.0	12.9	8.5	8.9	9.8
Precipitation		1.8		0.4								2.2	26.4	9.9
Evaporation		3.0	4.6	4.8	4.4	4.4	6.6	4.3	5.9	4.2	4.9	47.1	38.4	60.8
Growing Degrees	5	18.5	18.8	18.2	18.0	19.8	19.1	18.0	19.5	20.0	19.1	189.0	169.2	171.3
	10	13.5	13.8	13.2	13.0	14.8	14.1	13.0	14.5	15.0	14.1	139.0	119.2	121.8

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.7	45.2	48.7
Precipitation - Reference Evapotranspiration	-44.5	-18.8	-38.8
Number of Rainy Days	2.0	3.0	2.1
Number of Dry Days	2.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



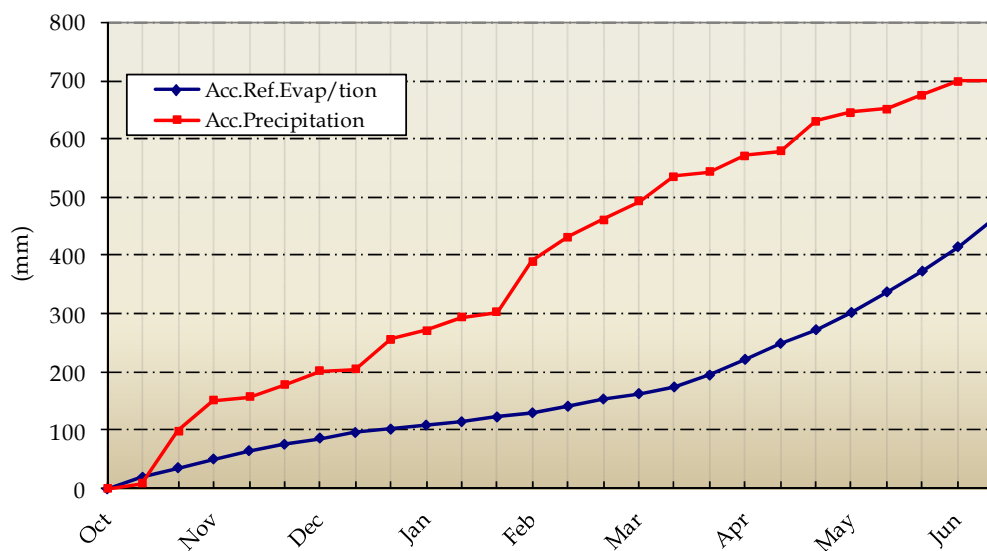


Tripoli

1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.6	26.0	25.4	27.2	26.0	27.0	27.6	29.0	31.4	27.6	27.4	-	26.4
	Min	9.0	10.6	13.4	11.4	12.2	13.6	12.4	13.2	13.0	12.6	12.1	-	10.7
Relative Humidity	Max	97	95	93	95	95	91	87	89	81	77	90	-	-
	Min	42	43	48	37	41	34	38	37	27	30	38	-	-
Soil Temperature at 10 cm	06 UTC	17.2	18.6	19.6	19.8	20.8	22.4	22.6	21.8	21.4	23.0	20.7	-	20.3
	12 UTC	24.6	25.4	26.8	26.6	28.0	29.6	26.6	26.4	30.6	28.6	27.3	-	23.4
Sunshine Duration		10.9	8.7	9.6	11.8	11.1	12.0	6.9	8.7	13.0	13.3	10.6	-	10.2
Precipitation		0.0										0.0	-	6.1
Evaporation		4.0	5.0	5.0	4.0	4.0	8.0	3.0	4.0	8.0	7.0	52.0	-	55.4
Growing Degrees	5	12.8	13.3	14.4	14.3	14.1	15.3	15.0	16.1	17.2	15.1	147.6	-	135.3
	10	7.8	8.3	9.4	9.3	9.1	10.3	10.0	11.1	12.2	10.1	97.6	-	85.3

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.0	-	48.9
Precipitation - Reference Evapotranspiration	-47.0	-	-42.8
Number of Rainy Days	0.0	-	1.6
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

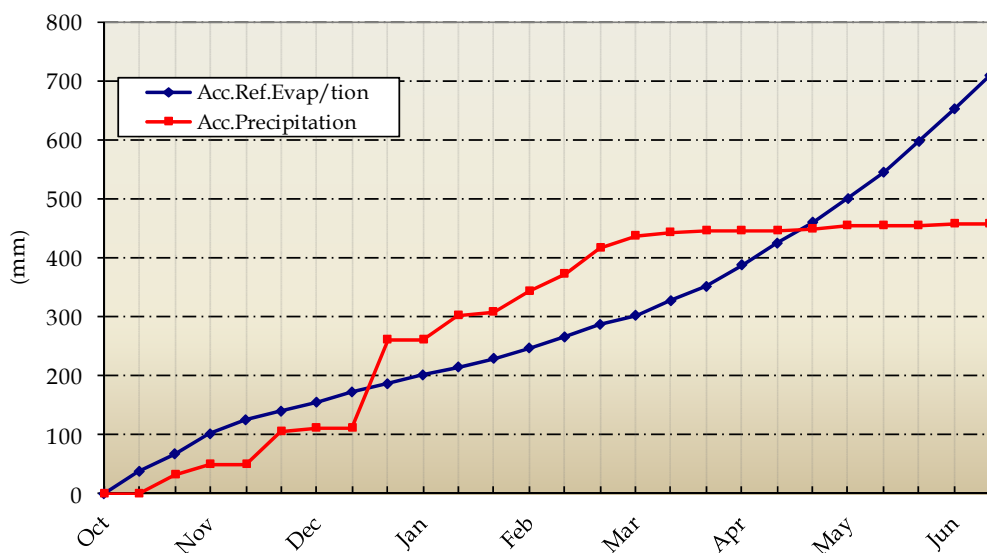


Tympaki

1st 10-day period (1-10/06/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.8	25.0	27.6	27.0	27.8	28.6	30.0	30.0	34.6	26.0	28.1	27.1	27.1
	Min	15.6	15.2	18.4	20.6	20.4	20.2	19.0	18.6	20.4	17.8	18.6	17.3	16.3
Relative Humidity	Max	99	97	89	70	81	84	82	68	97	89	86	92	-
	Min	50	42	27	36	35	19	22	21	21	38	31	42	-
Soil Temperature at 10 cm	06 UTC	25.6	26.0	27.0	28.6	28.2	28.6	28.8	29.4	29.8	27.6	28.0	26.7	26.9
	12 UTC	32.0	33.0	33.4	34.0	34.4	34.6	35.0	35.6	32.0	32.8	33.7	32.3	32.0
Sunshine Duration		12.7	12.3	12.0	10.3	11.8	12.2	10.2	7.5	3.0	13.2	10.5	10.3	11.4
Precipitation													1.9	0.4
Evaporation		8.2	6.9	9.5	8.1	10.3	7.9	8.5	8.0	6.2	8.8	82.4	86.6	87.9
Growing Degrees	5	15.2	15.1	18.0	18.8	19.1	19.4	19.5	19.3	22.5	16.9	183.8	172.1	165.3
	10	10.2	10.1	13.0	13.8	14.1	14.4	14.5	14.3	17.5	11.9	133.8	122.1	115.8

1st 10-day period (1-10/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.8	54.8	51.1
Precipitation - Reference Evapotranspiration	-56.8	-52.9	-50.7
Number of Rainy Days	0.0	1.0	0.3
Number of Dry Days	13.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





◆ **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<sub>n</sub> 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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