

AGROMETEOROLOGICAL BULLETIN

April 2011
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



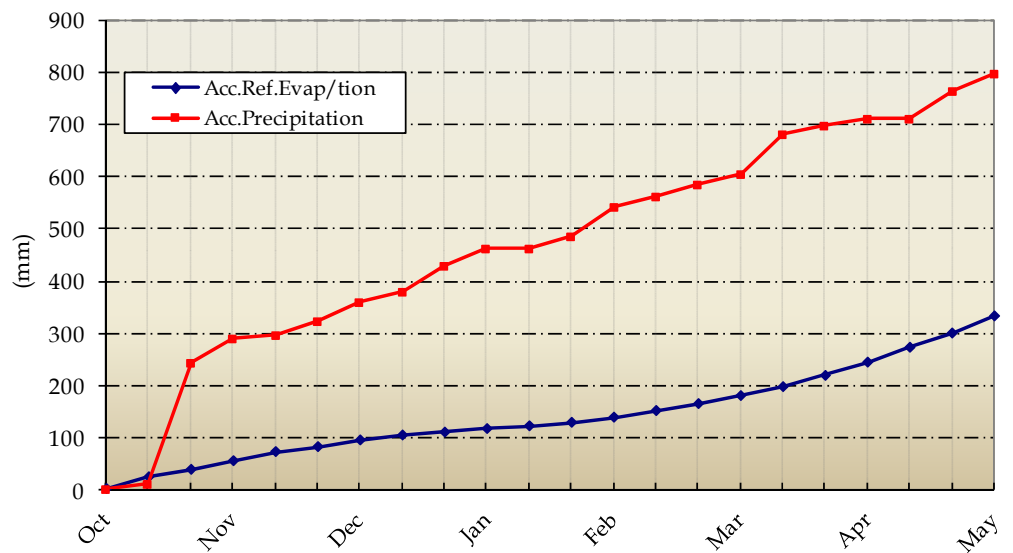
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3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.7	23.5	24.2	23.8	23.2	21.6	16.2	21.2	22.7	20.8	22.1	-	21.9
	Min	5.0	4.6	7.6	12.4	6.5	14.6	12.6	12.0	12.4	8.5	9.6	-	8.7
Relative Humidity	Max	91	88	97	93	95	57	98	95	98	97	91	-	-
	Min	23	36	35	46	34	40	74	60	52	60	46	-	-
Soil Temperature at 10 cm	06 UTC	13.8	15.2	15.2	16.2	16.6	16.6	16.6	15.4	17.0	16.4	15.9	-	14.6
	12 UTC	18.1	18.4	17.0	19.8	19.2	19.0	16.6	17.4	19.6	18.6	18.4	-	19.4
Sunshine Duration		12.0	11.9	9.8	11.1	9.6	6.7	0.0	1.8	7.2	3.6	7.4	-	7.7
Precipitation								20.4	11.0	0.3	0.4	32.1	-	13.1
Evaporation		5.4	6.2	5.8	8.7	10.0	6.5	1.8	2.1	4.4	2.0	52.9	-	47.7
Growing Degrees	5	9.4	9.1	10.9	13.1	9.9	13.1	9.4	11.6	12.6	9.7	108.6	-	103.2
	10	4.4	4.1	5.9	8.1	4.9	8.1	4.4	6.6	7.6	4.7	58.6	-	53.2

3rd 10-day period (21-30/04/2011)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.0	- 33.8
Precipitation - Reference Evapotranspiration	-0.9	- -20.7
Number of Rainy Days	4.0	- 2.8
Number of Dry Days	8.0	- -

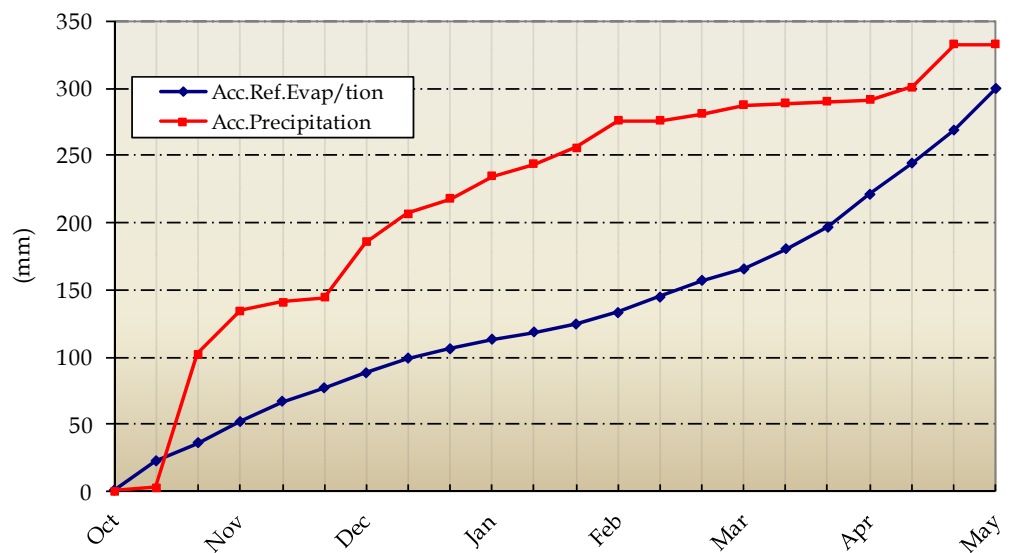
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	17.4	18.0	17.2	15.0	18.2	15.0	18.2	17.6	20.0	17.4	20.9	18.4
	Min	4.4	2.0	5.2	2.2	6.2	7.2	9.6	11.0	6.2	8.6	6.3	9.9	7.8
Relative Humidity	Max	79	74	76	87	91	83	93	92	94	90	86	83	-
	Min	25	30	24	43	49	44	62	61	59	59	46	37	-
Soil Temperature at 10 cm	06 UTC	8.6	9.4	10.6	10.6	12.0	12.0	13.4	13.2	12.4	13.4	11.6	15.3	12.7
	12 UTC	12.6	15.0	14.2	15.2	14.6	15.2	13.2	13.6	15.4	15.6	14.5	17.9	16.6
Sunshine Duration		12.5	12.7	12.6	12.6	9.8	4.5	0.0	0.0	5.3	8.3	7.8	8.8	7.4
Precipitation								0.3				0.3	4.6	11.6
Evaporation		4.8	2.5	8.0	5.0	6.0	2.9	2.1	2.6	2.8	4.2	40.9	57.4	46.0
Growing Degrees	5	6.1	4.7	6.6	4.7	5.6	7.7	7.3	9.6	6.9	9.3	68.5	104.4	80.8
	10	1.1	0.0	1.6	0.0	0.6	2.7	2.3	4.6	1.9	4.3	19.1	54.4	32.3

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.1	38.1	31.2
Precipitation - Reference Evapotranspiration	-30.8	-33.5	-19.6
Number of Rainy Days	1.0	1.0	2.2
Number of Dry Days	6.0	0.0	-

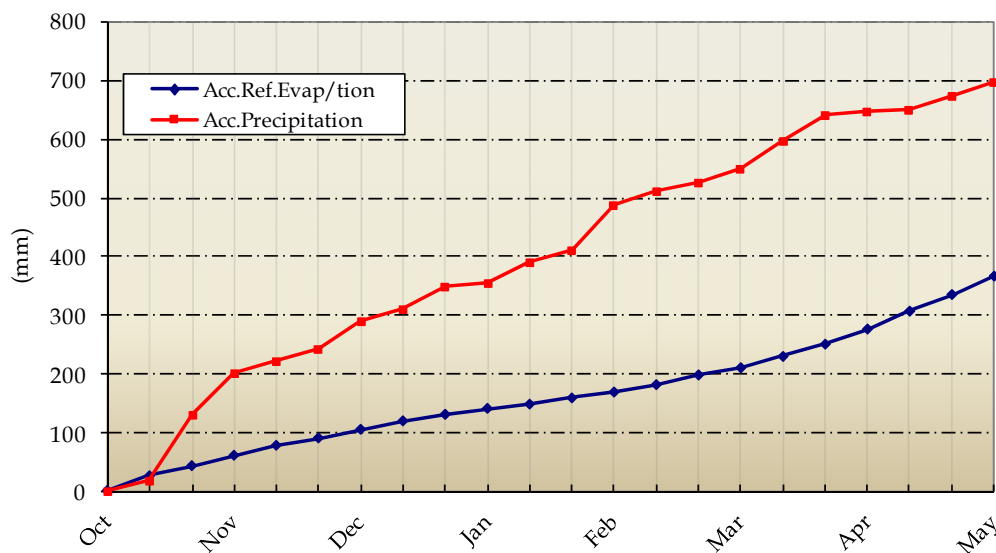
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.8	19.0	22.0	20.6	23.2	23.8	17.2	18.8	19.4	21.0	20.6	23.5	20.2
	Min	5.8	7.0	8.8	11.0	11.4	12.2	13.4	13.0	13.2	11.0	10.7	10.1	9.8
Relative Humidity	Max	91	94	95	93	93	95	95	95	95	95	94	89	-
	Min	37	48	40	52	43	42	70	70	69	54	52	29	-
Soil Temperature at 10 cm	06 UTC	14.4	14.6	15.0	16.4	16.2	17.8	17.4	16.6	16.8	16.6	16.2	17.3	15.0
	12 UTC	21.0	17.0	17.5	17.5	21.8	22.8	20.0	19.2	23.2	23.0	20.3	24.9	18.4
Sunshine Duration		11.5	10.9	10.7	11.0	9.1	7.2	0.0	0.4	11.2	2.3	7.4	10.8	8.8
Precipitation								4.9	18.4		0.0	23.3		8.8
Evaporation		6.0	3.9	5.0	4.1	2.5	5.8	0.8	0.2	6.0	1.2	35.5	68.2	43.9
Growing Degrees	5	8.3	8.0	10.4	10.8	12.3	13.0	10.3	10.9	11.3	11.0	106.3	117.8	100.1
	10	3.3	3.0	5.4	5.8	7.3	8.0	5.3	5.9	6.3	6.0	56.3	67.8	50.1

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.5	42.2	33.2
Precipitation - Reference Evapotranspiration	-8.2	-42.2	-24.4
Number of Rainy Days	2.0	0.0	1.8
Number of Dry Days	8.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

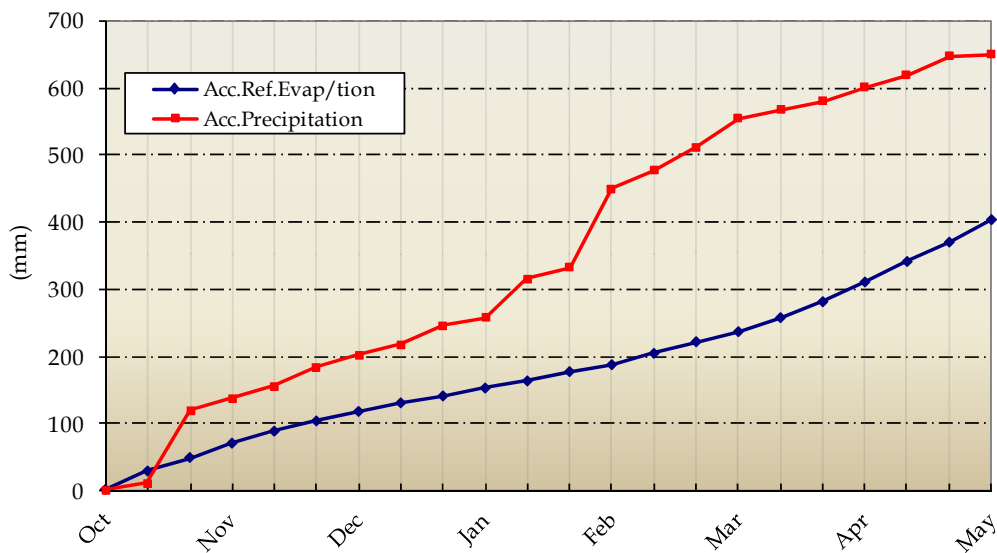


Kalamata

3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.8	19.4	18.8	19.8	21.4	23.4	20.8	21.0	21.0	20.0	20.7	22.1	20.8
	Min	6.2	4.2	6.4	8.2	9.4	12.8	13.0	13.6	12.2	10.4	9.6	9.1	9.1
Relative Humidity	Max	97	97	95	98	100	85	98	93	98	98	96	94	-
	Min	29	52	63	62	46	47	57	57	57	64	53	38	-
Soil Temperature at 10 cm	06 UTC	13.6	13.8	14.6	16.2	15.6	16.4	6.8	16.8	16.6	16.2	14.7	16.5	15.1
	12 UTC	16.6	15.8	17.6	18.2	18.2	18.6	17.4	17.6	18.4	19.0	17.7	18.7	18.5
Sunshine Duration		12.3	11.0	10.0	10.9	10.1	7.6	0.9	0.0	10.9	6.1	8.0	10.3	8.3
Precipitation							0.5		2.5			3.0		12.2
Evaporation		5.2	4.9	4.7	4.2	4.5	1.4	4.4	2.4	4.6	3.3	39.6	64.4	46.5
Growing Degrees	5	9.0	6.8	7.6	9.0	10.4	13.1	11.9	12.3	11.6	10.2	101.9	105.8	99.4
	10	4.0	1.8	2.6	4.0	5.4	8.1	6.9	7.3	6.6	5.2	51.9	55.8	49.4

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.6	41.4	34.1
Precipitation - Reference Evapotranspiration	-30.6	-41.4	-21.9
Number of Rainy Days	2.0	0.0	2.6
Number of Dry Days	6.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

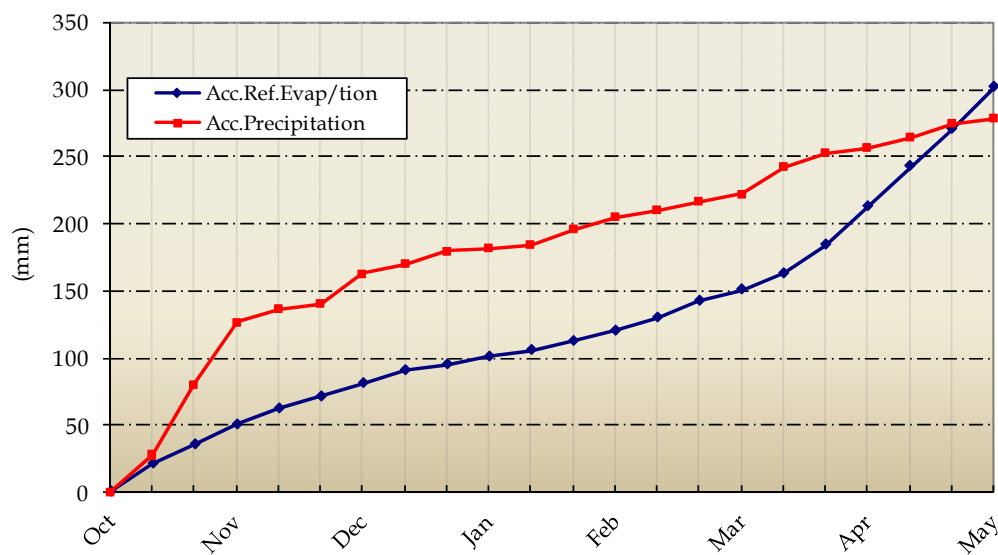


Larisa

3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.6	19.8	18.0	21.2	19.0	15.0	12.4	17.2	21.4	23.0	18.6	22.6	21.1
	Min	7.8	4.0	3.2	4.6	4.2	7.6	10.0	11.0	10.6	7.0	7.0	9.1	7.3
Relative Humidity	Max	78	90	90	93	88	89	95	95	95	97	91	88	-
	Min	37	38	45	37	44	62	83	63	56	45	51	34	-
Soil Temperature at 10 cm	06 UTC	12.2	12.6	13.2	13.4	13.6	14.2	14.2	13.8	13.6	14.4	13.5	15.4	14.2
	12 UTC	16.0	16.0	16.0	16.2	13.4	16.0	7.4	15.4	15.8	17.0	14.9	16.9	16.2
Sunshine Duration		12.2	12.0	10.9	12.0	12.0	9.5	0.0	0.4	5.3	5.3	8.0	9.6	7.9
Precipitation							0.2	1.0	1.2	2.0	0.0	4.4	0.5	10.7
Evaporation		5.4	5.4	0.8	4.7	6.9	1.2	0.0	1.1	2.6	4.6	32.7	53.3	43.9
Growing Degrees	5	8.2	6.9	5.6	7.9	6.6	6.3	6.2	9.1	11.0	10.0	77.8	108.2	91.9
	10	3.2	1.9	0.6	2.9	1.6	1.3	1.2	4.1	6.0	5.0	27.8	58.2	42.7

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.4	39.9	34.0
Precipitation - Reference Evapotranspiration	-27.0	-39.4	-23.3
Number of Rainy Days	4.0	2.0	2.7
Number of Dry Days	7.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

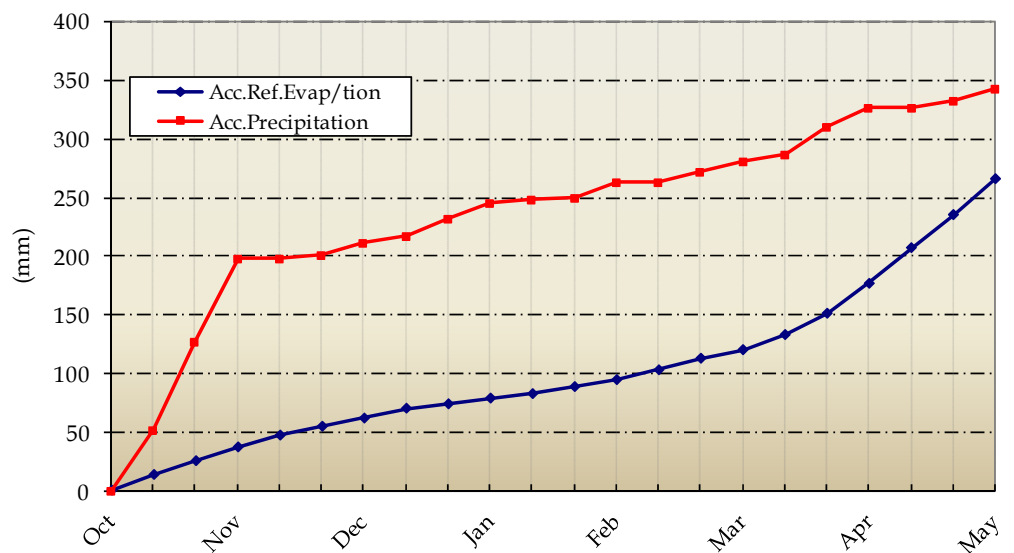


Series

3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.0	21.6	19.6	22.6	20.6	19.0	14.2	22.2	22.6	25.2	21.0	23.8	21.1
	Min	5.4	3.6	4.4	9.6	6.2	6.8	10.0	8.8	12.2	8.8	7.6	9.2	8.8
Relative Humidity	Max	82	62	85	78	88	91	95	94	94	96	86	76	-
	Min	29	33	39	32	40	41	76	38	44	36	41	36	-
Soil Temperature at 10 cm	06 UTC	13.8	13.8	14.0	15.4	15.2	15.4	15.6	14.6	16.0	15.2	14.9	16.2	13.9
	12 UTC	16.2	16.4	16.8	18.0	17.8	16.4	15.8	16.2	18.2	18.6	17.0	18.0	17.2
Sunshine Duration		11.8	11.9	10.7	9.6	10.4	4.4	0.0	3.9	4.7	8.4	7.6	7.9	7.2
Precipitation								5.4		5.0		10.4	1.6	11.5
Evaporation		4.2	4.9	4.0	4.6	5.4	2.0	1.5	3.6	2.3	3.6	36.1	33.0	38.3
Growing Degrees	5	8.7	7.6	7.0	11.1	8.4	7.9	7.1	10.5	12.4	12.0	92.7	114.9	99.5
	10	3.7	2.6	2.0	6.1	3.4	2.9	2.1	5.5	7.4	7.0	42.7	64.9	49.8

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.7	33.7	30.1
Precipitation - Reference Evapotranspiration	-20.3	-32.1	-18.6
Number of Rainy Days	2.0	1.0	3.0
Number of Dry Days	8.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

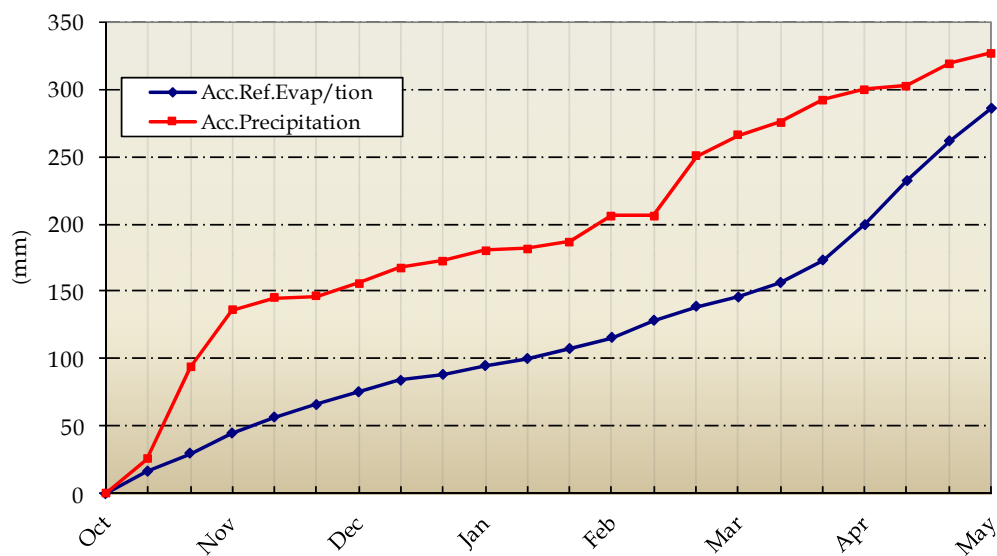


Trikala Imathias

3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.2	-	-	-	19.4	18.6	14.6	19.8	23.0	-	19.3	24.7	21.0
	Min	8.2	-	-	-	4.8	9.2	9.8	11.4	12.0	-	9.2	11.0	9.3
Relative Humidity	Max	-	-	-	98	94	100	100	100	-	100	99	92	-
	Min	-	-	-	53	45	50	92	64	-	70	62	26	-
Soil Temperature at 10 cm	06 UTC	13.4	-	-	-	14.2	15.0	14.4	14.2	15.2	-	14.4	16.4	14.6
	12 UTC	16.2	-	-	-	16.8	16.2	14.4	15.4	17.4	-	16.1	19.4	15.9
Sunshine Duration		-	-	-	-	8.3	1.8	0.0	2.2	-	7.5	4.0	9.5	7.0
Precipitation								6.2		0.7	0.8	7.7	1.9	16.5
Evaporation		-	-	-	-	3.0	1.8	0.4	1.0	-	-	-	43.5	39.7
Growing Degrees	5	9.2	-	-	-	7.1	8.9	7.2	10.6	12.5	-	-	128.2	101.6
	10	4.2	-	-	-	2.1	3.9	2.2	5.6	7.5	-	-	78.2	52.0

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.2	39.5	31.6
Precipitation - Reference Evapotranspiration	-16.5	-37.6	-15.1
Number of Rainy Days	3.0	2.0	3.0
Number of Dry Days	8.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

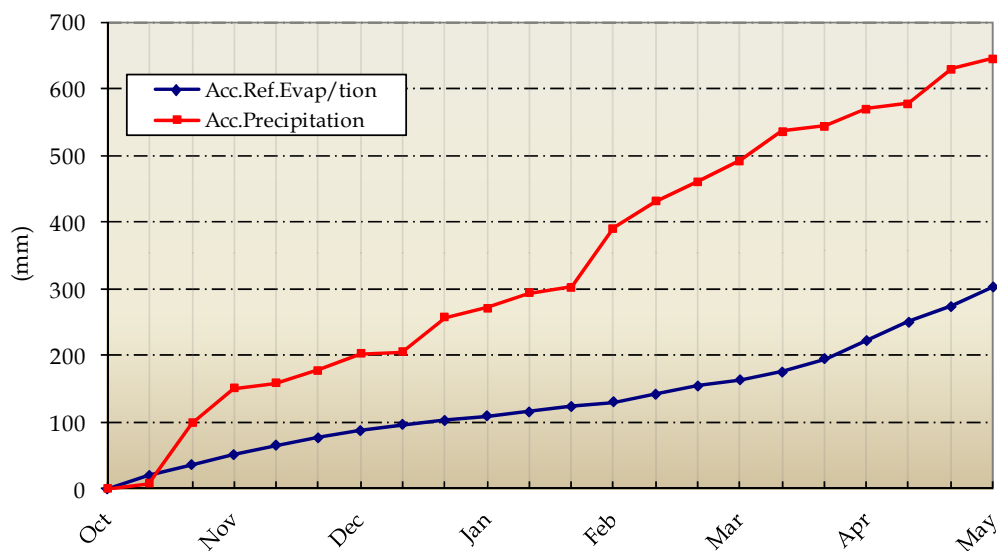


Tripoli

3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	19.0	20.6	20.2	18.0	14.2	11.2	15.6	17.0	20.2	17.3	-	18.7
	Min	1.6	0.8	1.2	3.2	3.2	8.0	8.4	9.6	8.2	5.0	4.9	-	5.4
Relative Humidity	Max	96	88	96	97	97	97	97	97	97	97	96	-	-
	Min	29	28	30	33	36	61	87	69	58	40	47	-	-
Soil Temperature at 10 cm	06 UTC	8.2	9.0	8.0	11.8	12.6	13.8	13.2	12.4	12.8	12.0	11.4	-	12.1
	12 UTC	15.8	17.8	18.8	19.8	19.0	18.2	13.2	15.2	17.2	18.8	17.4	-	14.3
Sunshine Duration		11.7	11.6	11.2	11.7	10.7	7.8	0.0	3.4	3.1	6.6	7.8	-	8.0
Precipitation							1.0	10.5	2.2	0.7		14.4	-	14.5
Evaporation		6.0	3.0	6.0	4.0	3.7	4.0	0.0	1.3	0.7	3.0	31.7	-	35.0
Growing Degrees	5	4.3	4.9	5.9	6.7	5.6	6.1	4.8	7.6	7.6	7.6	61.1	-	70.7
	10	0.0	0.0	0.9	1.7	0.6	1.1	0.0	2.6	2.6	2.6	12.1	-	24.2

3rd 10-day period (21-30/04/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	29.6	-	32.9
Precipitation - Reference Evapotranspiration	-15.2	-	-18.4
Number of Rainy Days	4.0	-	2.7
Number of Dry Days	6.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

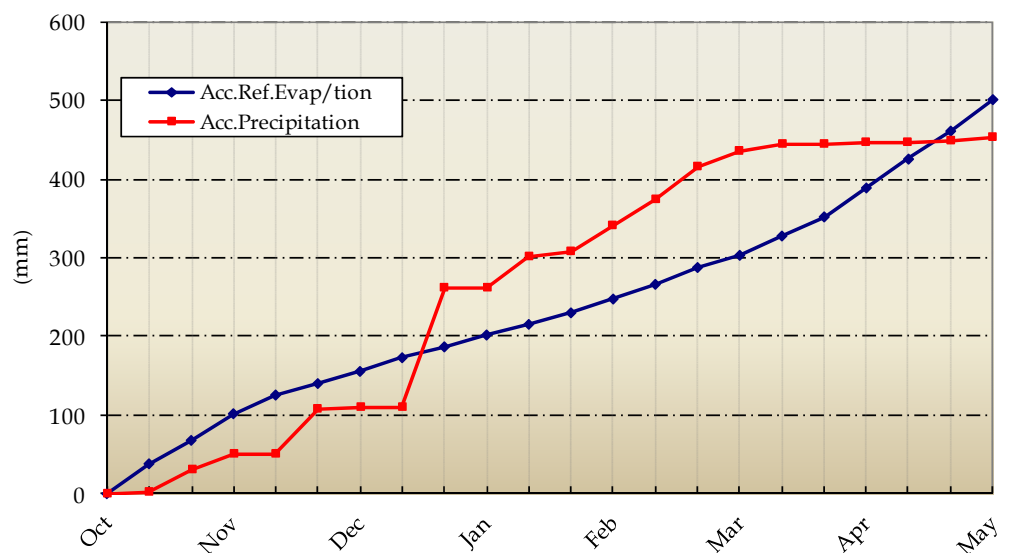


Tympaki

3rd 10-day period (21-30/04/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	19.4	21.8	22.8	20.0	22.8	24.2	20.0	21.2	20.8	21.1	22.1	21.4
	Min	11.4	8.2	8.6	9.0	9.0	13.0	15.0	14.6	14.6	11.0	11.4	11.6	11.1
Relative Humidity	Max	81	83	76	79	84	100	99	100	100	96	90	80	-
	Min	29	33	32	27	42	26	44	70	37	30	37	31	-
Soil Temperature at 10 cm	06 UTC	16.6	16.0	16.4	17.6	18.0	19.0	19.8	20.8	21.6	19.2	18.5	20.0	19.4
	12 UTC	20.6	21.2	22.0	23.0	23.0	23.4	25.0	26.0	24.6	26.0	23.5	25.1	24.1
Sunshine Duration		11.8	10.7	11.6	11.9	10.9	5.3	8.8	9.9	10.0	10.3	10.1	8.4	9.0
Precipitation		0.8						1.5		2.1		4.4		2.6
Evaporation		9.5	9.0	6.9	8.7	7.1	6.0	5.3	5.6	7.5	5.3	70.9	75.2	56.5
Growing Degrees	5	9.6	8.8	10.2	10.9	9.5	12.9	14.6	12.3	12.9	10.9	112.6	118.4	112.4
	10	4.6	3.8	5.2	5.9	4.5	7.9	9.6	7.3	7.9	5.9	62.6	68.4	62.4

3rd 10-day period (21-30/04/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.1	44.6	36.3
Precipitation - Reference Evapotranspiration	-35.7	-44.6	-33.7
Number of Rainy Days	3.0	0.0	0.6
Number of Dry Days	1.0	11.0	-

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_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

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