



AGROMETEOROLOGICAL BULLETIN

June 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



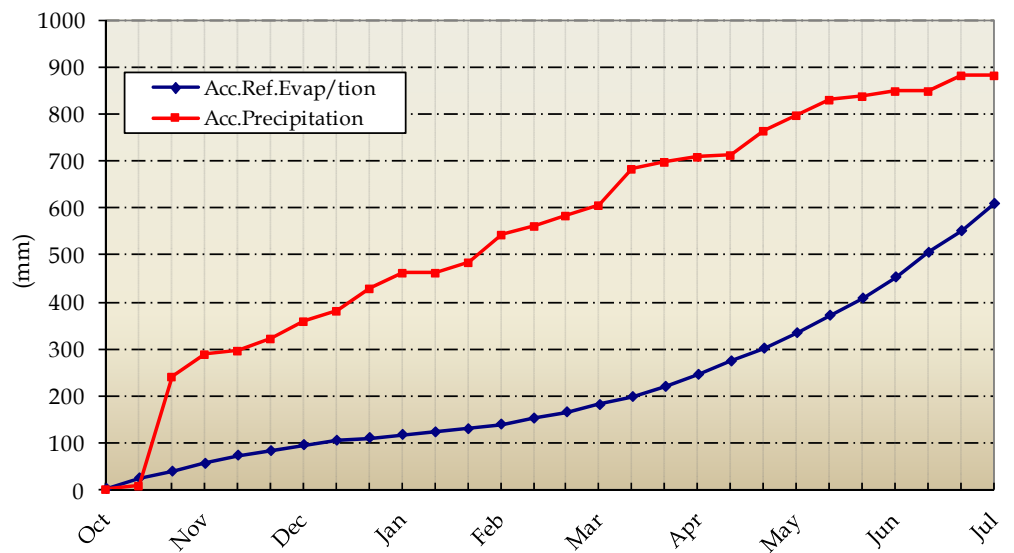
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3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.6	34.0	34.2	35.6	35.4	30.4	30.0	28.6	29.2	31.4	32.3	-	31.8
	Min	17.4	18.6	16.8	16.0	21.2	20.2	13.0	14.0	15.6	15.6	16.8	-	16.2
Relative Humidity	Max	96	94	88	87	86	80	89	89	91	-	89	-	-
	Min	32	32	32	27	29	26	25	33	51	-	32	-	-
Soil Temperature at 10 cm	06 UTC	25.6	26.8	26.8	26.2	28.6	29.0	27.0	27.2	27.6	26.6	27.1	-	25.7
	12 UTC	30.4	31.6	31.8	32.8	33.6	32.6	32.2	32.0	32.4	32.4	32.2	-	31.9
Sunshine Duration		12.8	13.3	14.0	13.7	13.9	13.6	13.8	13.5	10.5	-	13.2	-	11.8
Precipitation													-	3.5
Evaporation		9.8	11.0	11.0	8.6	10.2	10.2	9.0	10.0	6.8	8.8	95.4	-	86.4
Growing Degrees	5	21.0	21.3	20.5	20.8	23.3	20.3	16.5	16.3	17.4	18.5	195.9	-	189.7
	10	16.0	16.3	15.5	15.8	18.3	15.3	11.5	11.3	12.4	13.5	145.9	-	139.7

3rd 10-day period (21-30/06/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	58.1	-	56.5
Precipitation - Reference Evapotranspiration	-58.1	-	-53.0
Number of Rainy Days	0.0	-	0.6
Number of Dry Days	13.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

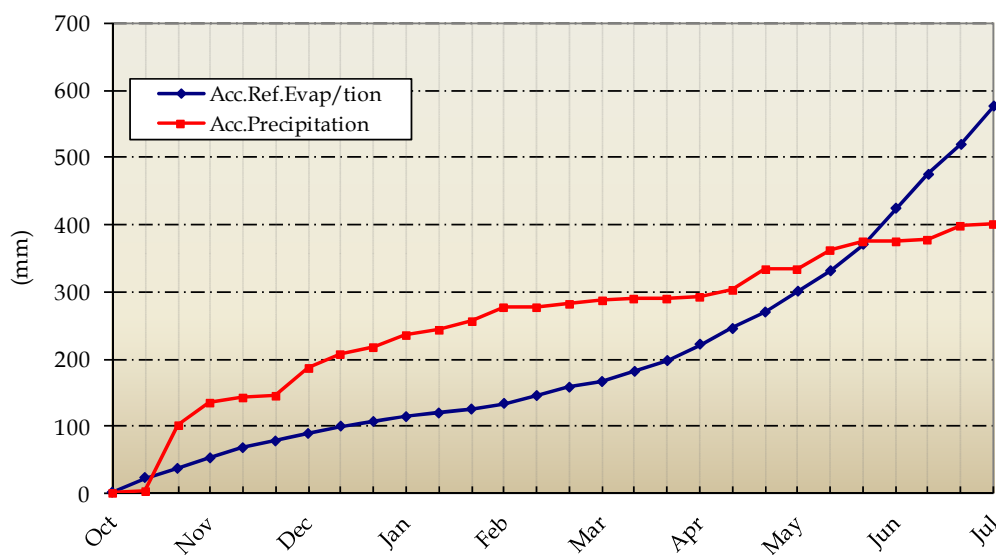


Alexandroupoli

3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	31.8	32.8	33.4	32.4	26.0	26.4	25.6	24.2	26.8	29.0	25.4	28.7
	Min	19.2	16.8	15.0	19.0	20.0	17.4	15.2	14.6	16.6	16.2	17.0	17.5	16.0
Relative Humidity	Max	79	65	72	77	79	77	74	80	80	85	77	89	-
	Min	23	28	21	26	28	27	27	31	40	41	29	52	-
Soil Temperature at 10 cm	06 UTC	24.0	23.6	24.0	25.2	24.6	25.0	22.0	22.4	22.0	22.4	23.5	23.5	23.1
	12 UTC	27.6	29.0	28.0	28.5	29.0	28.0	25.2	25.0	25.0	28.0	27.3	25.2	27.7
Sunshine Duration		13.1	13.2	13.0	13.2	13.6	12.0	10.8	7.2	7.6	11.6	11.5	7.2	10.9
Precipitation						0.5	0.9					1.4	13.8	4.4
Evaporation		6.6	12.4	14.6	10.4	6.4	7.0	9.9	5.1	6.3	6.8	85.5	-	85.9
Growing Degrees	5	19.8	19.3	18.9	21.2	21.2	16.7	15.8	15.1	15.4	16.5	179.9	164.6	173.3
	10	14.8	14.3	13.9	16.2	16.2	11.7	10.8	10.1	10.4	11.5	129.9	114.6	123.3

3rd 10-day period (21-30/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.2	41.0	55.0
Precipitation - Reference Evapotranspiration	-55.8	-27.2	-50.6
Number of Rainy Days	2.0	5.0	1.3
Number of Dry Days	8.0	11.0	-

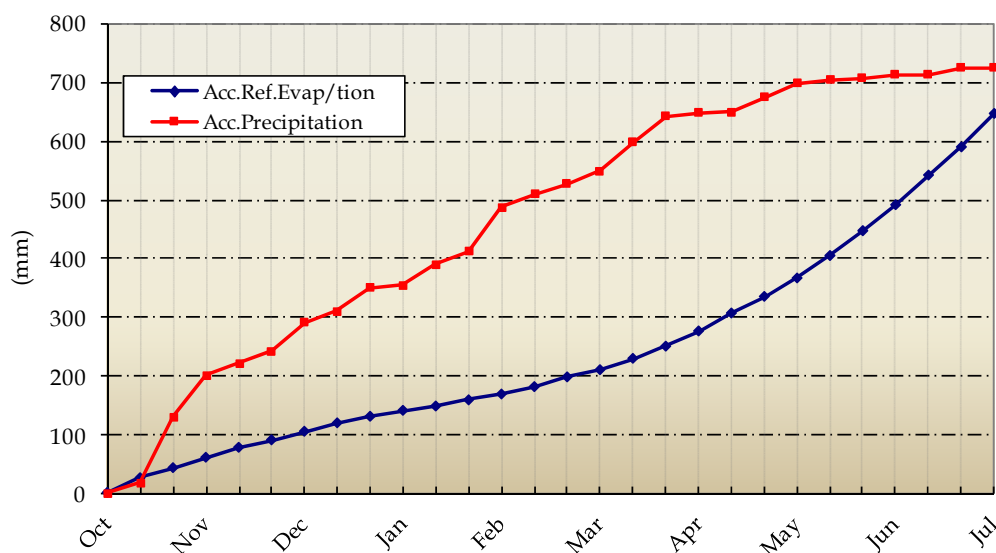
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.2	30.4	30.8	31.4	31.0	29.8	27.2	27.6	27.2	28.6	29.6	26.0	28.9
	Min	18.4	18.2	15.8	16.4	19.6	18.8	15.6	16.0	16.8	17.6	17.3	16.7	17.0
Relative Humidity	Max	90	90	90	90	91	88	92	82	87	91	89	90	-
	Min	39	34	34	28	38	35	26	39	50	39	36	50	-
Soil Temperature at 10 cm	06 UTC	26.0	26.2	26.0	26.0	27.2	27.4	25.8	25.0	25.6	26.0	26.1	25.1	25.9
	12 UTC	33.2	33.0	33.0	32.6	34.2	33.0	32.6	26.0	32.2	33.4	32.3	31.1	30.7
Sunshine Duration		12.7	12.7	13.2	12.7	12.8	11.4	12.9	12.6	12.6	12.9	12.6	11.0	12.3
Precipitation													1.8	1.3
Evaporation		6.6	9.3	9.5	8.3	8.8	8.1	5.6	7.2	11.7	7.3	82.4	65.3	74.3
Growing Degrees	5	20.3	19.3	18.3	18.9	20.3	19.3	16.4	16.8	17.0	18.1	184.7	163.4	179.7
	10	15.3	14.3	13.3	13.9	15.3	14.3	11.4	11.8	12.0	13.1	134.7	113.4	129.7

3rd 10-day period (21-30/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.2	49.1	53.3
Precipitation - Reference Evapotranspiration	-57.2	-47.3	-52.0
Number of Rainy Days	0.0	2.0	0.2
Number of Dry Days	15.0	16.0	-

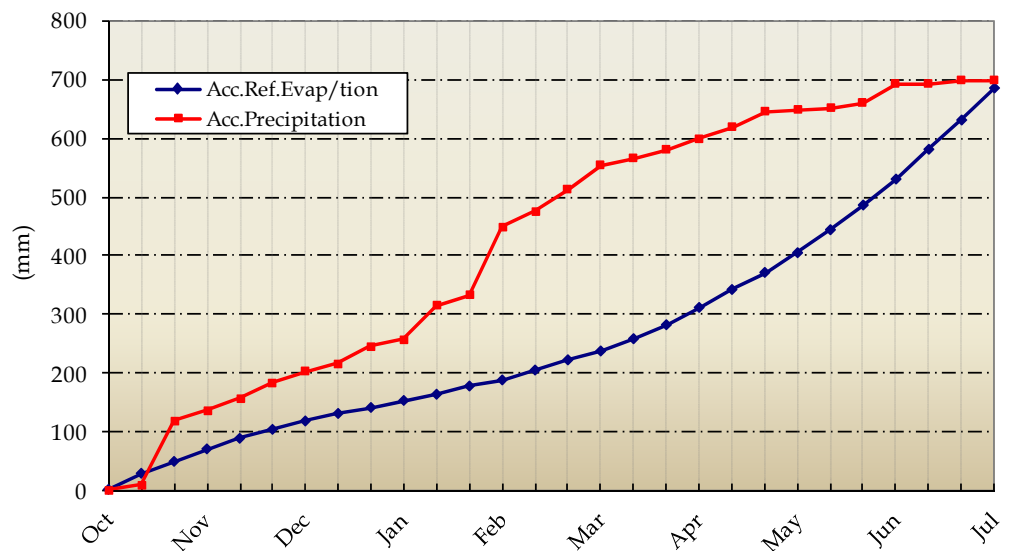
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	29.6	29.0	29.8	31.6	29.0	26.8	27.2	29.6	31.2	29.4	27.0	30.4
	Min	16.8	19.8	16.4	15.6	17.2	19.6	15.0	14.8	15.0	16.2	16.6	16.4	16.7
Relative Humidity	Max	96	94	94	94	90	92	80	87	96	98	92	91	-
	Min	47	44	44	48	51	59	38	50	36	38	46	46	-
Soil Temperature at 10 cm	06 UTC	23.0	23.6	23.6	23.4	23.8	24.6	23.2	23.0	22.6	23.0	23.4	22.8	24.2
	12 UTC	26.0	26.8	26.4	26.0	26.4	26.5	26.0	25.0	25.4	25.6	26.0	25.0	28.7
Sunshine Duration		11.4	12.6	12.4	12.6	12.6	5.3	9.8	11.1	11.4	12.8	11.2	11.6	11.8
Precipitation													1.2	0.4
Evaporation		3.8	6.6	9.2	2.8	7.0	6.0	7.6	7.4	7.8	7.4	65.6	56.9	88.4
Growing Degrees	5	18.4	19.7	17.7	17.7	19.4	19.3	15.9	16.0	17.3	18.7	180.1	167.2	185.7
	10	13.4	14.7	12.7	12.7	14.4	14.3	10.9	11.0	12.3	13.7	130.1	117.2	135.7

3rd 10-day period (21-30/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.6	54.2	58.1
Precipitation - Reference Evapotranspiration	-54.6	-53.0	-57.7
Number of Rainy Days	0.0	2.0	0.3
Number of Dry Days	15.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

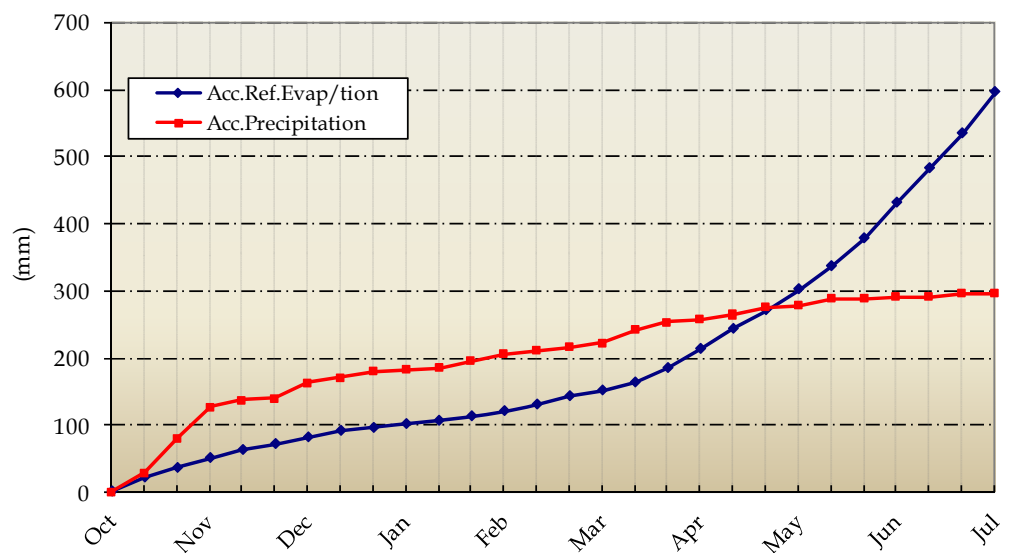


Larisa

3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	31.4	33.0	35.2	34.6	27.6	28.6	30.2	29.6	33.4	31.5	29.2	32.8
	Min	23.0	16.6	15.8	16.0	18.4	21.0	15.6	13.0	20.2	14.4	17.4	16.2	16.5
Relative Humidity	Max	70	82	77	73	72	45	60	66	68	77	69	78	-
	Min	30	32	26	23	29	21	26	23	30	30	27	31	-
Soil Temperature at 10 cm	06 UTC	25.8	24.6	24.8	25.0	26.2	25.2	25.0	24.0	25.6	24.6	25.1	24.0	25.0
	12 UTC	27.6	27.4	28.4	29.0	34.0	27.0	27.2	27.0	27.0	27.4	28.2	27.1	27.7
Sunshine Duration		9.4	12.4	12.8	12.9	11.2	12.2	12.9	11.6	8.3	10.4	11.4	8.5	11.1
Precipitation						0.0						0.0	6.5	6.4
Evaporation		8.5	11.3	10.0	9.4	12.5	9.7	7.8	8.5	9.0	9.1	95.8	70.8	93.9
Growing Degrees	5	22.0	19.0	19.4	20.6	21.5	19.3	17.1	16.6	19.9	18.9	194.3	177.0	196.6
	10	17.0	14.0	14.4	15.6	16.5	14.3	12.1	11.6	14.9	13.9	144.3	127.0	146.6

3rd 10-day period (21-30/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.7	48.6	61.9
Precipitation - Reference Evapotranspiration	-61.7	-42.1	-55.5
Number of Rainy Days	0.0	4.0	0.9
Number of Dry Days	14.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

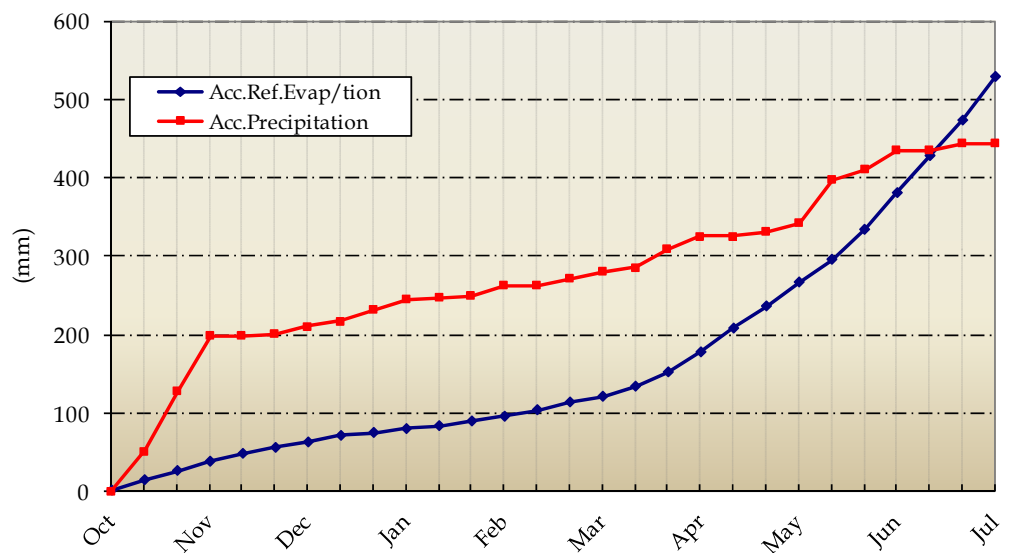


3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.8	33.6	35.6	37.4	33.8	30.6	30.0	28.2	30.0	32.6	32.5	29.5	31.5
	Min	20.4	15.6	17.4	18.2	20.4	17.4	18.0	16.0	18.6	14.6	17.7	16.7	17.5
Relative Humidity	Max	76	87	81	77	81	44	59	68	84	87	74	76	-
	Min	18	26	17	22	28	16	15	23	25	26	22	32	-
Soil Temperature at 10 cm	06 UTC	27.2	27.0	27.4	28.0	28.8	28.0	27.6	27.2	26.6	27.0	27.5	23.6	24.0
	12 UTC	29.2	29.6	29.4	30.6	30.8	30.0	29.4	28.6	28.8	29.0	29.5	24.7	28.2
Sunshine Duration		11.7	11.6	11.8	11.8	11.6	11.9	12.0	6.0	11.2	11.0	11.1	8.5	10.6
Precipitation									0.2			0.2	5.3	11.1
Evaporation		9.0	8.2	7.8	10.3	9.7	8.6	6.7	9.5	5.3	7.9	83.0	45.8	70.6
Growing Degrees	5	21.6	19.6	21.5	22.8	22.1	19.0	19.0	17.1	19.3	18.6	200.6	180.8	194.9
	10	16.6	14.6	16.5	17.8	17.1	14.0	14.0	12.1	14.3	13.6	150.6	130.8	144.9

Series

3rd 10-day period (21-30/06/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	55.8	47.1	51.1
Precipitation - Reference Evapotranspiration	-55.6	-41.8	-40.0
Number of Rainy Days	1.0	5.0	1.6
Number of Dry Days	11.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

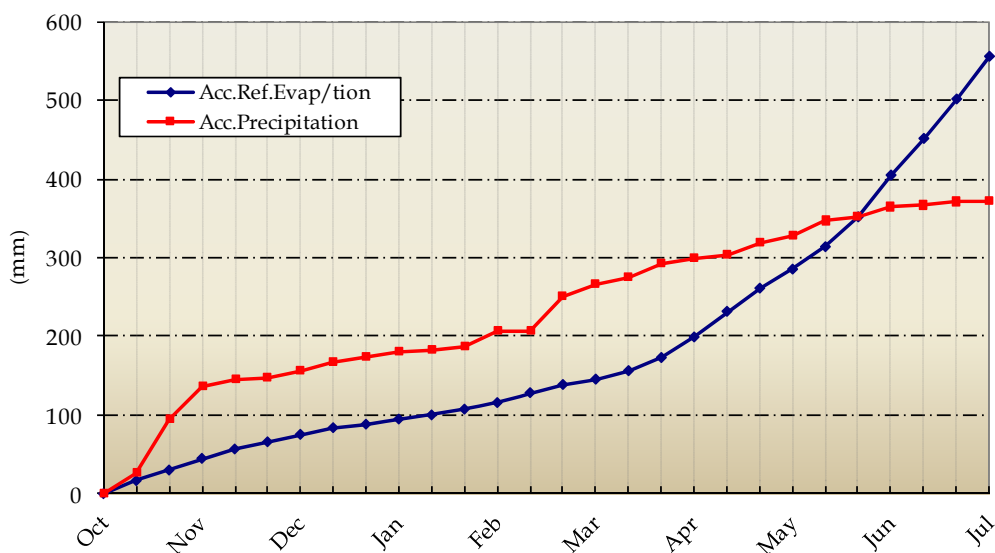


Trikala Imathias

3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.8	31.6	34.0	33.6	30.4	28.6	26.0	27.0	29.2	31.4	30.3	29.0	30.8
	Min	19.6	17.0	18.2	18.0	18.8	17.8	13.4	14.6	16.6	15.4	16.9	15.9	17.0
Relative Humidity	Max	97	98	85	90	84	53	80	94	98	94	87	91	-
	Min	30	43	32	37	38	30	29	29	35	42	34	38	-
Soil Temperature at 10 cm	06 UTC	29.8	25.0	25.2	25.4	26.4	25.2	24.4	23.6	23.2	23.2	25.1	23.6	24.2
	12 UTC	29.8	28.4	29.0	29.0	29.2	27.6	26.2	26.0	25.6	26.6	27.7	27.4	25.9
Sunshine Duration		12.2	11.5	11.8	13.0	11.6	13.0	12.7	5.9	9.0	9.3	11.0	9.1	10.5
Precipitation									0.7	0.4		1.1	4.8	9.1
Evaporation		5.1	6.8	8.6	6.4	8.0	8.6	7.4	9.3	5.6	3.6	69.4	46.2	66.6
Growing Degrees	5	20.2	19.3	21.1	20.8	19.6	18.2	14.7	15.8	17.9	18.4	186.0	174.6	189.1
	10	15.2	14.3	16.1	15.8	14.6	13.2	9.7	10.8	12.9	13.4	136.0	124.6	139.1

3rd 10-day period (21-30/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.4	46.8	52.3
Precipitation - Reference Evapotranspiration	-53.3	-42.0	-43.2
Number of Rainy Days	2.0	1.0	1.0
Number of Dry Days	12.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

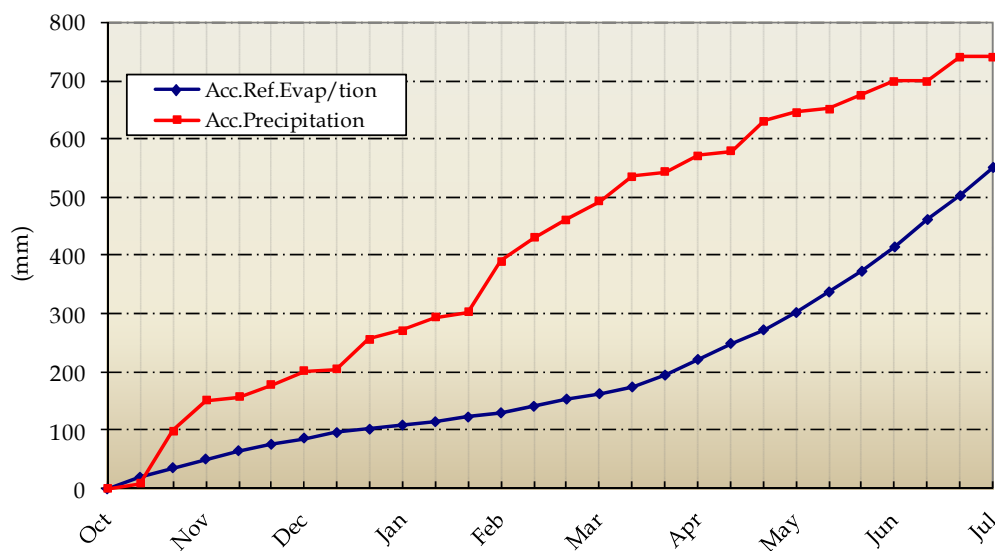


Tripoli

3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	29.6	30.8	31.4	31.4	25.0	24.0	24.8	24.8	28.8	27.9	-	29.8
	Min	13.4	13.8	10.6	11.4	13.2	16.4	7.8	8.4	10.6	11.6	11.7	-	12.5
Relative Humidity	Max	89	91	90	86	83	73	81	92	90	91	87	-	-
	Min	41	30	25	31	34	49	32	35	36	38	35	-	-
Soil Temperature at 10 cm	06 UTC	24.0	24.0	23.8	24.2	25.2	24.8	21.2	21.6	22.4	22.0	23.3	-	24.0
	12 UTC	31.4	30.2	31.2	31.6	32.0	27.2	28.2	28.6	28.0	29.4	29.8	-	27.2
Sunshine Duration		10.4	12.9	13.2	13.6	11.2	3.7	9.8	11.5	8.0	12.6	10.7	-	11.1
Precipitation													-	5.4
Evaporation		7.0	8.0	11.0	9.0	6.0	4.0	6.0	6.0	5.0	7.0	69.0	-	65.6
Growing Degrees	5	16.0	16.7	15.7	16.4	17.3	15.7	10.9	11.6	12.7	15.2	148.2	-	161.5
	10	11.0	11.7	10.7	11.4	12.3	10.7	5.9	6.6	7.7	10.2	98.2	-	111.5

3rd 10-day period (21-30/06/2011)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.6	53.9
Precipitation - Reference Evapotranspiration	-48.6	-48.5
Number of Rainy Days	0.0	0.7
Number of Dry Days	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

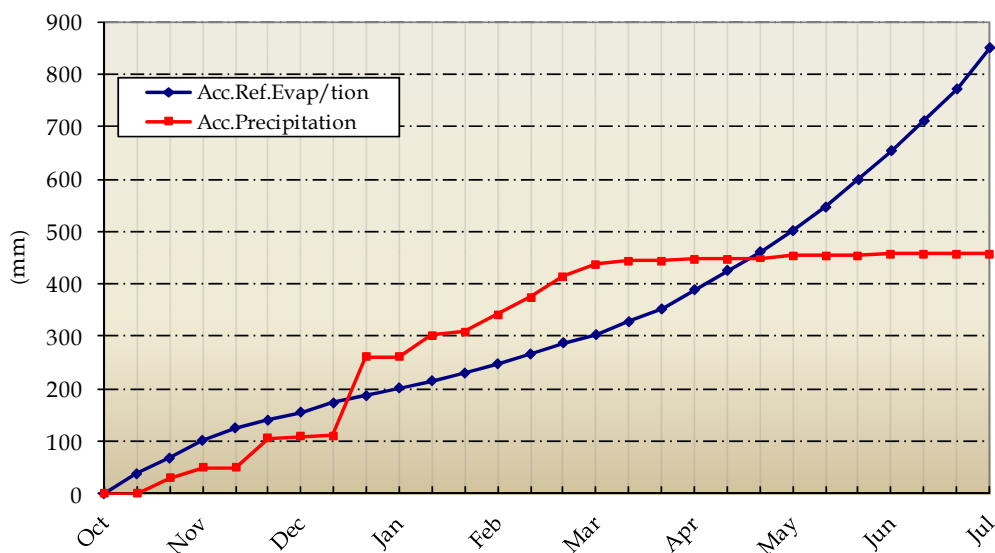


Tympaki

3rd 10-day period (21-30/06/2011)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.0	31.4	32.2	31.8	33.8	29.4	28.8	28.8	26.0	29.8	30.7	25.7	30.0
	Min	19.2	21.6	16.8	18.0	20.4	22.6	20.0	16.2	17.0	17.6	18.9	17.5	18.5
Relative Humidity	Max	62	47	56	46	42	59	41	94	97	98	64	97	-
	Min	23	24	21	16	15	28	17	21	63	61	29	53	-
Soil Temperature at 10 cm	06 UTC	29.4	30.2	28.4	28.4	28.4	30.4	28.2	27.2	27.8	28.8	28.7	28.2	29.2
	12 UTC	35.8	34.2	34.0	33.4	34.8	33.8	33.4	33.4	33.8	34.6	34.1	33.8	34.1
Sunshine Duration		13.6	13.4	13.4	13.7	13.6	13.4	13.6	13.6	13.3	13.2	13.5	10.5	12.5
Precipitation														
Evaporation		14.6	12.2	15.3	18.1	14.3	16.1	14.9	10.4	4.4	10.4	130.7	86.6	97.7
Growing Degrees	5	22.1	21.5	19.5	19.9	22.1	21.0	19.4	17.5	16.5	18.7	198.2	166.0	192.5
	10	17.1	16.5	14.5	14.9	17.1	16.0	14.4	12.5	11.5	13.7	148.2	116.0	142.5

3rd 10-day period (21-30/06/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	78.6	50.4	58.6
Precipitation - Reference Evapotranspiration	-78.6	-50.4	-58.6
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	33.0	25.0	-

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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