



AGROMETEOROLOGICAL BULLETIN

June 2016
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



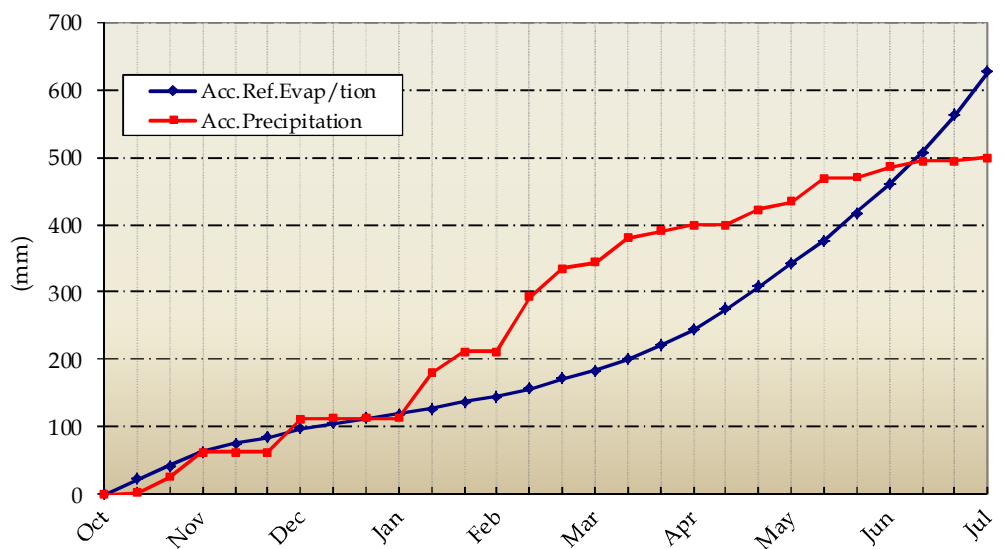
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www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.0	36.2	36.6	35.8	33.6	31.8	31.0	36.4	28.6	31.0	33.8	26.3	28.7
	Min	24.8	26.4	26.0	26.6	24.2	23.0	20.8	19.4	18.6	19.4	22.9	16.8	16.0
Relative Humidity	Max	59	54	56	62	68	96	91	87	81	92	75	86	-
	Min	27	30	30	29	35	43	55	48	46	50	39	45	-
Soil Temperature at 10 cm	06 UTC	28.6	29.4	29.6	29.8	29.6	28.8	25.8	26.5	26.2	25.0	27.9	22.0	23.1
	12 UTC	34.0	34.6	34.6	34.6	34.4	28.2	32.8	31.4	29.2	29.8	32.4	26.3	27.7
Sunshine Duration		13.0	13.0	12.9	12.8	12.9	6.1	10.3	6.2	8.5	10.6	10.6	8.1	10.9
Precipitation							3.4	0.2		1.5		5.1	25.5	4.4
Evaporation		17.1	12.2	10.4	13.5	12.6	5.8	6.8	5.0	6.9	6.0	96.3	59.6	85.9
Growing Degrees	5	25.9	26.3	26.3	26.2	23.9	22.4	20.9	22.9	18.6	20.2	233.6	165.3	173.3
	10	20.9	21.3	21.3	21.2	18.9	17.4	15.9	17.9	13.6	15.2	183.6	115.3	123.3

3rd 10-day period (21-30/06/2016)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	64.3	43.6	55.0
Precipitation - Reference Evapotranspiration	-59.2	-18.1	-50.6
Number of Rainy Days	3.0	4.0	1.3
Number of Dry Days	18.0	3.0	-

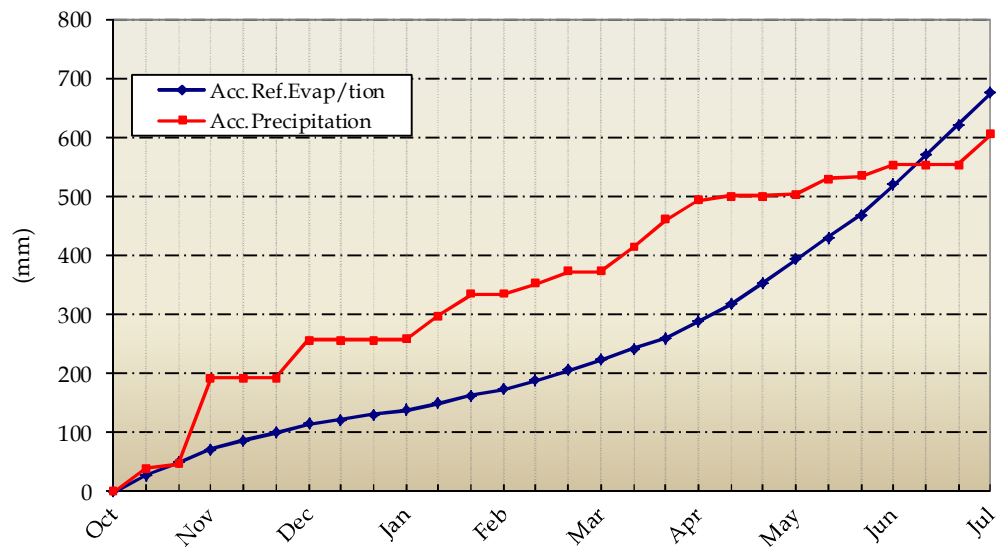
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	38.0	33.8	37.8	27.5	27.9	31.0	30.0	28.7	29.0	31.7	26.8	28.9
	Min	19.1	18.6	20.0	20.0	18.6	18.4	19.9	20.8	21.4	19.0	19.6	17.0	17.0
Relative Humidity	Max	88	90	86	85	92	92	91	90	82	89	88	86	-
	Min	40	18	28	24	63	59	45	44	46	53	42	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	30.7
Sunshine Duration		11.3	12.6	11.1	11.3	2.4	11.1	13.0	13.2	13.1	13.4	11.2	11.6	12.3
Precipitation						37.5	14.0					51.5	4.7	1.3
Evaporation		8.0	0.0	5.6	2.0	5.0	0.0	1.5	5.0	2.0	11.9	41.0	83.6	74.3
Growing Degrees	5	21.1	23.3	21.9	23.9	18.1	18.2	20.5	20.4	20.1	19.0	206.3	168.8	179.7
	10	16.1	18.3	16.9	18.9	13.1	13.2	15.5	15.4	15.1	14.0	156.3	118.8	129.7

3rd 10-day period (21-30/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.4	51.4	53.3
Precipitation - Reference Evapotranspiration	-2.9	-46.7	-52.0
Number of Rainy Days	2.0	1.0	0.2
Number of Dry Days	15.0	8.0	-

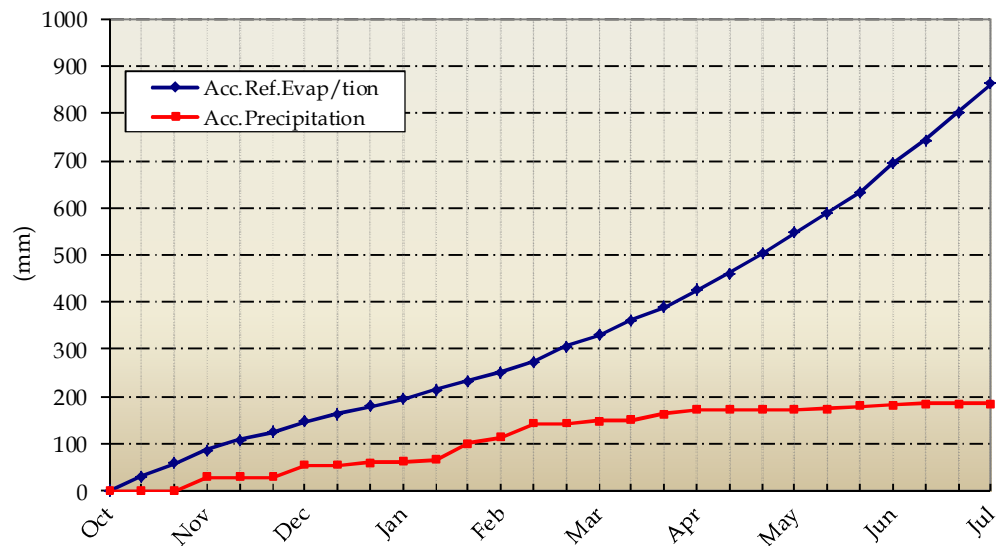
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	29.2	29.4	29.0	29.0	28.6	28.8	30.0	27.8	28.8	29.0	25.9	28.2
	Min	22.0	24.0	26.8	23.4	22.8	20.8	24.4	22.8	22.6	21.0	23.1	19.5	20.4
Relative Humidity	Max	75	72	79	75	82	85	85	78	89	85	80	84	-
	Min	48	59	57	63	61	50	68	57	68	66	60	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.8	12.8	12.8	12.7	12.5	11.8	10.7	13.2	12.3	13.3	12.5	12.2	12.3
Precipitation														0.0
Evaporation		6.3	7.5	6.8	6.6	7.4	2.8	4.6	7.7	7.0	5.1	61.8	55.2	89.0
Growing Degrees	5	20.8	21.6	23.1	21.2	20.9	19.7	21.6	21.4	20.2	19.9	210.4	176.7	193.1
	10	15.8	16.6	18.1	16.2	15.9	14.7	16.6	16.4	15.2	14.9	160.4	126.7	143.1

3rd 10-day period (21-30/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.7	53.7	-
Precipitation - Reference Evapotranspiration	-59.7	-53.7	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	22.0	32.0	-

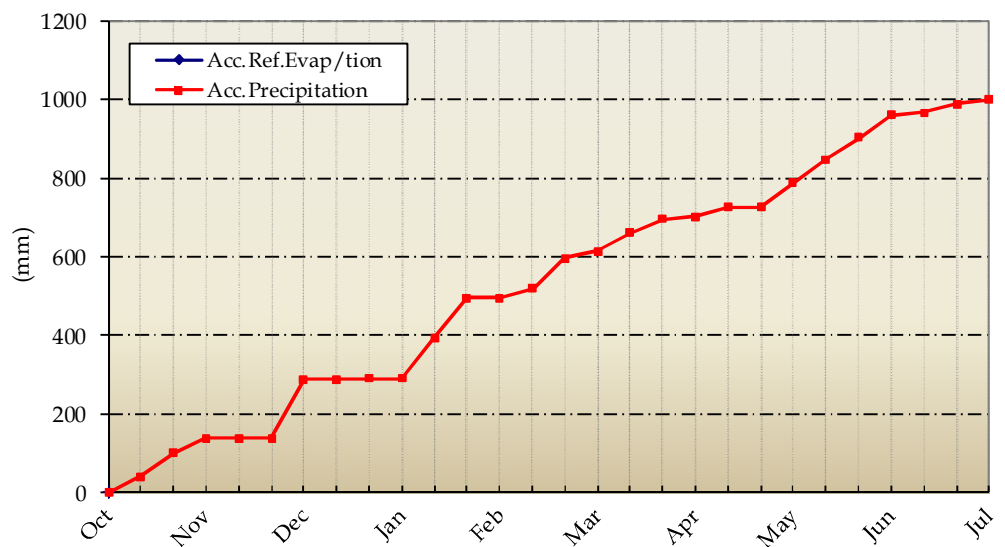
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.8	35.8	34.5	33.6	31.6	30.8	31.6	30.8	31.4	31.4	32.7	26.9	29.4
	Min	15.8	22.1	20.4	25.3	23.6	17.5	12.5	15.1	13.6	15.3	18.1	12.1	13.7
Relative Humidity	Max	100	75	84	45	93	100	100	100	100	79	88	98	-
	Min	21	21	22	23	26	32	31	34	29	37	28	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.9
Sunshine Duration		11.9	12.4	12.8	12.8	9.8	3.5	12.5	10.0	12.9	10.4	10.9	8.5	10.8
Precipitation						0.1	0.9		10.7			11.7	8.3	6.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	67.3
Growing Degrees	5	20.8	24.0	22.5	24.5	22.6	19.2	17.1	18.0	17.5	18.4	204.3	145.0	166.2
	10	15.8	19.0	17.5	19.5	17.6	14.2	12.1	13.0	12.5	13.4	154.3	95.0	116.2

3rd 10-day period (21-30/06/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	50.2
Precipitation - Reference Evapotranspiration	-	-43.7
Number of Rainy Days	3.0	1.3
Number of Dry Days	10.0	-

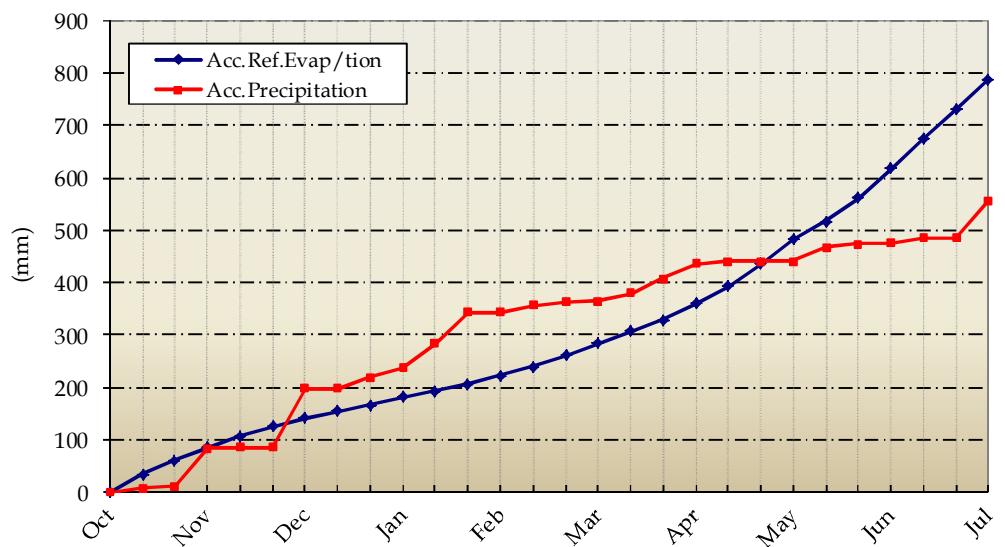
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.6	33.5	33.9	32.1	28.1	27.8	32.6	34.4	29.4	30.7	31.6	28.1	30.4
	Min	19.6	19.2	21.0	19.2	17.8	18.4	19.6	20.8	21.4	18.0	19.5	16.2	16.7
Relative Humidity	Max	84	90	81	89	98	92	92	82	90	91	89	88	-
	Min	34	35	30	37	72	59	37	25	46	44	42	38	-
Soil Temperature at 10 cm	06 UTC	24.6	25.2	25.6	25.0	26.0	23.4	24.6	25.4	25.4	25.2	25.0	23.1	24.2
	12 UTC	27.4	27.4	27.4	27.2	26.4	25.4	26.4	27.0	27.2	27.4	26.9	24.3	28.7
Sunshine Duration		11.6	12.5	12.2	12.4	2.9	9.1	11.2	12.5	12.4	11.9	10.9	11.0	11.8
Precipitation						64.1	5.8					69.9	35.5	0.4
Evaporation		7.2	7.1	5.3	9.2	2.0	5.0	12.0	10.5	0.5	5.4	64.2	-	88.4
Growing Degrees	5	21.6	21.4	22.5	20.7	18.0	18.1	21.1	22.6	20.4	19.4	205.6	171.3	185.7
	10	16.6	16.4	17.5	15.7	13.0	13.1	16.1	17.6	15.4	14.4	155.6	121.3	135.7

3rd 10-day period (21-30/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.8	54.4	58.1
Precipitation - Reference Evapotranspiration	12.1	-18.9	-57.7
Number of Rainy Days	2.0	2.0	0.3
Number of Dry Days	11.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

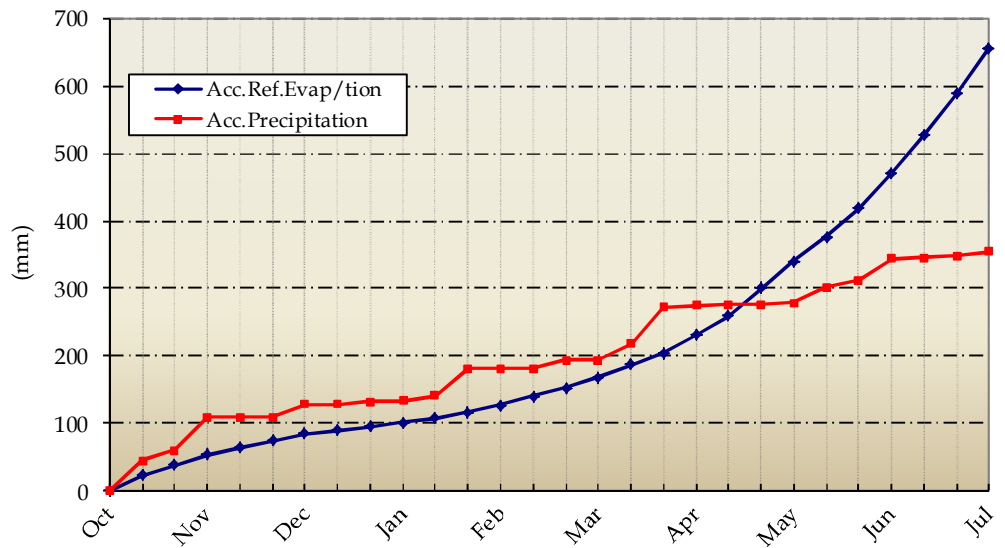


Larisa

3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.8	36.2	37.0	35.8	33.0	34.5	38.4	34.2	32.0	34.8	35.4	28.8	32.8
	Min	20.1	20.3	23.6	22.8	23.9	21.2	19.9	17.6	18.8	18.6	20.7	16.9	16.5
Relative Humidity	Max	73	72	60	65	74	74	80	100	96	88	78	91	-
	Min	17	16	21	25	28	22	17	26	28	22	22	31	-
Soil Temperature at 10 cm	06 UTC	25.8	26.0	26.4	26.4	27.0	26.6	26.8	27.2	26.4	26.2	26.5	25.3	25.0
	12 UTC	26.0	26.2	26.6	26.4	27.0	26.4	27.0	27.2	26.2	26.2	26.5	25.2	27.7
Sunshine Duration		11.7	11.9	12.2	11.8	8.4	10.5	11.7	6.3	11.8	12.1	10.8	7.9	11.1
Precipitation							0.7		4.7			5.4	55.7	6.4
Evaporation		15.4	9.7	20.9	12.0	12.1	14.0	12.8	6.7	7.2	13.0	123.8	85.7	93.9
Growing Degrees	5	24.0	23.3	25.3	24.3	23.5	22.9	24.2	20.9	20.4	21.7	230.3	178.6	196.6
	10	19.0	18.3	20.3	19.3	18.5	17.9	19.2	15.9	15.4	16.7	180.3	128.6	146.6

3rd 10-day period (21-30/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	68.1	47.1	61.9
Precipitation - Reference Evapotranspiration	-62.7	8.6	-55.5
Number of Rainy Days	2.0	5.0	0.9
Number of Dry Days	11.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

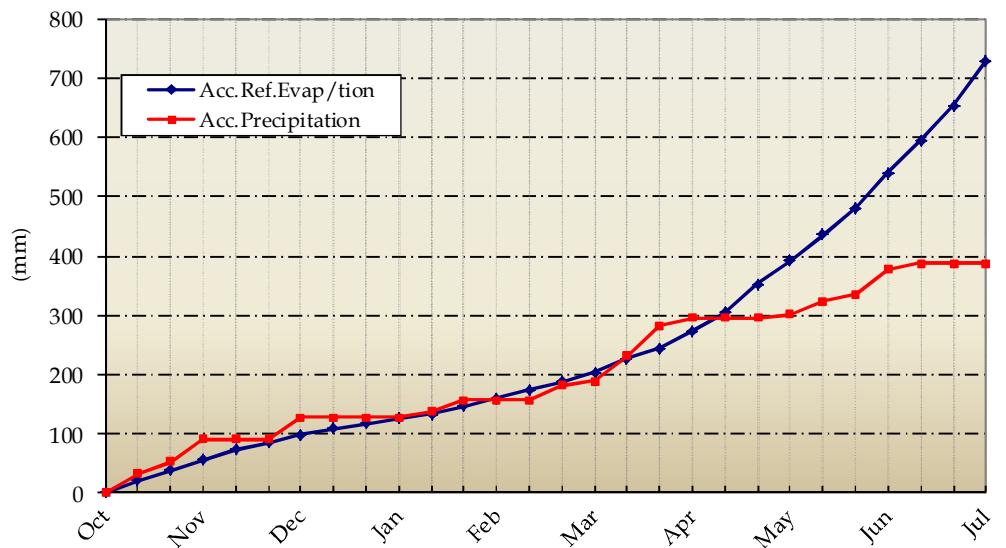


Mikra

3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.3	36.4	37.6	37.1	35.8	33.6	35.0	32.0	32.0	33.1	35.0	27.4	30.8
	Min	20.4	24.0	26.2	27.0	23.6	22.0	20.8	24.1	22.0	20.8	23.1	17.7	17.9
Relative Humidity	Max	78	71	71	55	62	68	72	61	58	70	67	80	-
	Min	19	22	18	23	20	25	26	33	31	30	25	34	-
Soil Temperature at 10 cm	06 UTC	28.0	29.4	30.4	31.0	30.4	30.2	28.5	29.1	28.0	29.4	29.4	24.7	25.3
	12 UTC	34.0	34.0	35.8	35.2	34.8	35.0	35.2	33.2	33.4	35.0	34.6	29.0	30.2
Sunshine Duration		13.4	13.1	13.5	12.2	13.5	9.4	12.1	7.5	13.7	13.5	12.2	9.8	11.0
Precipitation							0.0		0.5			0.5	53.2	4.8
Evaporation		10.2	12.0	12.0	13.4	10.4	10.2	7.3	11.4	14.5	6.0	107.4	77.7	93.3
Growing Degrees	5	23.9	25.2	26.9	27.1	24.7	22.8	22.9	23.1	22.0	22.0	240.4	175.4	193.2
	10	18.9	20.2	21.9	22.1	19.7	17.8	17.9	18.1	17.0	17.0	190.4	125.4	143.2

3rd 10-day period (21-30/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	76.6	57.1	61.4
Precipitation - Reference Evapotranspiration	-76.1	-3.9	-56.6
Number of Rainy Days	1.0	2.0	1.1
Number of Dry Days	19.0	2.0	-

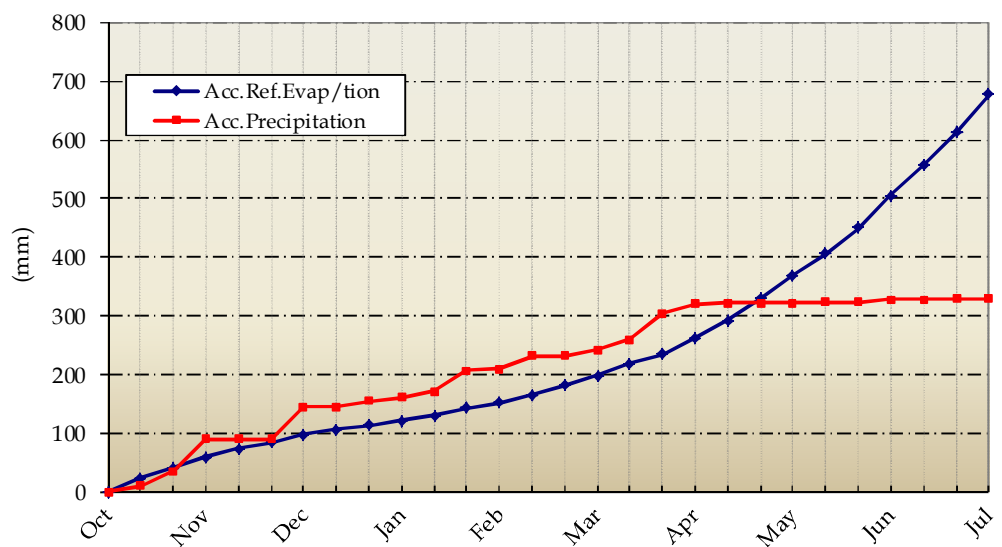
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.2	33.6	32.9	32.0	31.2	30.0	35.7	33.6	31.0	32.6	32.8	27.0	31.5
	Min	22.0	25.2	24.4	25.5	23.2	24.3	21.0	23.4	18.2	18.9	22.6	16.3	17.1
Relative Humidity	Max	59	53	56	62	65	60	66	74	78	63	64	87	-
	Min	21	26	29	39	36	37	19	24	27	28	29	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.9	12.5	13.1	12.9	10.9	11.0	12.2	8.7	13.2	12.3	12.0	10.1	
Precipitation									0.3			0.3	31.1	2.6
Evaporation		4.2	11.3	12.5	8.5	10.0	7.4	10.1	9.0	7.0	8.0	88.0	-	
Growing Degrees	5	23.6	24.4	23.7	23.8	22.2	22.2	23.4	23.5	19.6	20.8	227.0	166.8	
	10	18.6	19.4	18.7	18.8	17.2	17.2	18.4	18.5	14.6	15.8	177.0	116.8	

3rd 10-day period (21-30/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	65.2	47.4	
Precipitation - Reference Evapotranspiration	-64.9	-16.3	2.6
Number of Rainy Days	1.0	3.0	0.8
Number of Dry Days	13.0	1.0	-

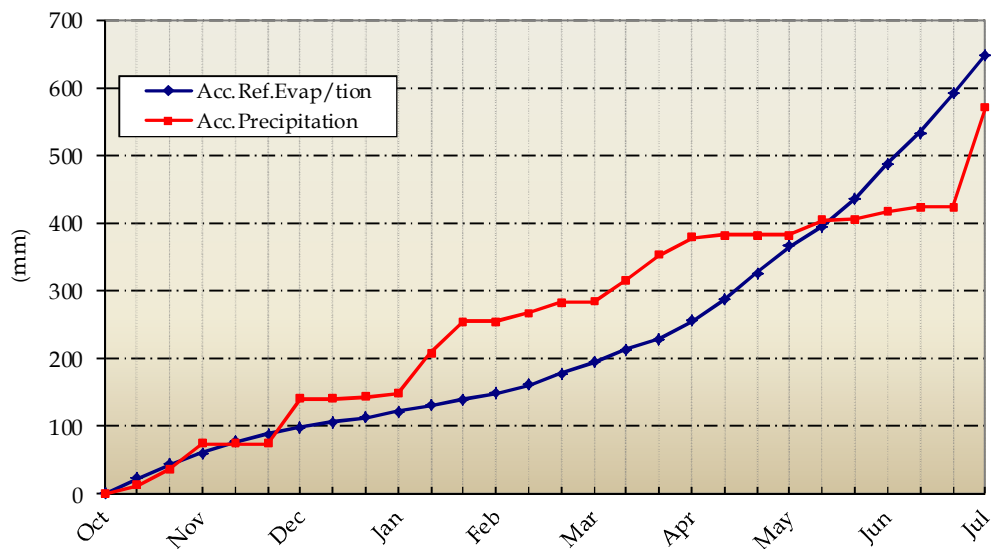
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.9	34.9	35.3	35.2	31.0	28.7	32.8	32.2	26.6	30.7	32.5	25.2	29.8
	Min	16.5	19.2	21.1	22.5	13.8	7.5	14.7	14.3	13.0	14.4	15.7	12.0	12.5
Relative Humidity	Max	81	62	57	62	100	100	100	73	100	100	84	100	-
	Min	15	14	15	23	32	77	32	28	41	40	32	35	-
Soil Temperature at 10 cm	06 UTC	27.6	28.2	28.4	29.0	29.2	21.4	22.8	23.6	24.8	24.4	25.9	21.1	24.0
	12 UTC	34.2	34.0	34.8	35.0	-	-	29.6	30.2	30.2	30.8	32.4	26.2	27.2
Sunshine Duration		12.3	13.2	13.1	13.1	6.6	6.9	13.0	13.2	8.7	11.9	11.2	7.7	11.1
Precipitation						80.0	68.4					148.4	30.4	5.4
Evaporation		11.8	10.9	12.0	11.2	2.0	4.0	8.8	8.7	5.7	6.8	81.9	-	65.6
Growing Degrees	5	22.2	22.1	23.2	23.9	17.4	13.1	18.8	18.3	14.8	17.6	191.2	136.1	161.5
	10	17.2	17.1	18.2	18.9	12.4	8.1	13.8	13.3	9.8	12.6	141.2	86.1	111.5

3rd 10-day period (21-30/06/2016)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	57.0	40.1	53.9
Precipitation - Reference Evapotranspiration	91.4	-9.7	-48.5
Number of Rainy Days	2.0	7.0	0.7
Number of Dry Days	14.0	0.0	-

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.

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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