



AGROMETEOROLOGICAL BULLETIN

June 2015
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



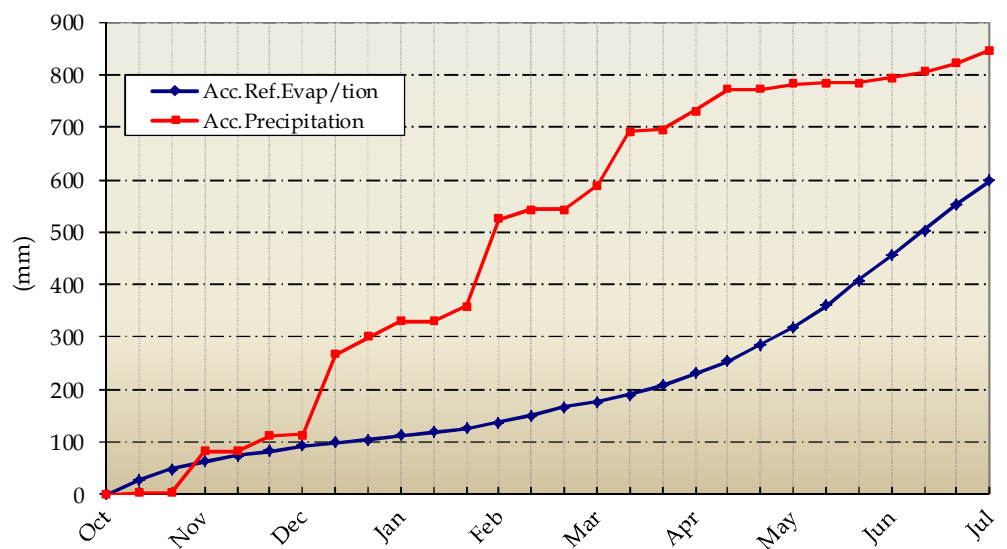
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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	22.6	26.0	27.0	26.4	26.2	26.0	27.0	27.0	27.4	26.3	28.8	28.7
	Min	18.6	16.2	14.8	14.4	19.2	16.4	17.4	18.0	14.6	18.4	16.8	16.9	16.0
Relative Humidity	Max	83	94	91	91	91	83	73	90	79	90	86	84	-
	Min	38	43	43	47	65	38	45	40	49	44	45	41	-
Soil Temperature at 10 cm	06 UTC	24.0	23.4	19.6	20.4	22.8	21.2	22.4	22.0	22.4	22.0	22.0	23.6	23.1
	12 UTC	28.6	24.8	24.4	27.6	27.0	26.2	27.0	25.6	26.2	25.8	26.3	28.8	27.7
Sunshine Duration		7.9	2.8	9.7	13.8	5.8	10.2	12.1	6.3	6.6	5.9	8.1	11.6	10.9
Precipitation			17.3	0.2		3.5				4.5		25.5	6.7	4.4
Evaporation		7.9	0.6	7.3	5.6	7.5	7.2	7.1	7.1	5.1	4.2	59.6	89.4	85.9
Growing Degrees	5	17.8	14.4	15.4	15.7	17.8	16.3	16.7	17.5	15.8	17.9	165.3	178.8	173.3
	10	12.8	9.4	10.4	10.7	12.8	11.3	11.7	12.5	10.8	12.9	115.3	128.8	123.3

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.6	54.1	55.0
Precipitation - Reference Evapotranspiration	-18.1	-47.4	-50.6
Number of Rainy Days	4.0	2.0	1.3
Number of Dry Days	3.0	0.0	-

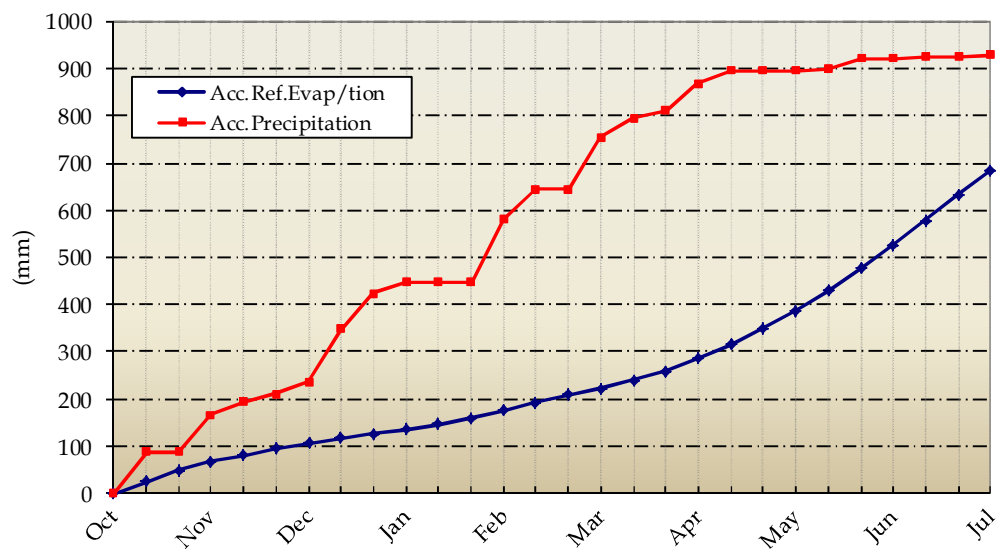
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	25.6	26.3	26.5	28.2	26.2	26.1	27.3	27.4	27.8	26.8	30.5	28.9
	Min	18.1	20.0	15.4	15.6	18.4	16.2	16.5	15.1	17.2	17.2	17.0	18.0	17.0
Relative Humidity	Max	87	81	87	86	88	86	84	87	89	90	86	85	-
	Min	51	44	41	43	44	40	42	38	45	43	43	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	26.4	25.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	32.7	30.7
Sunshine Duration		12.5	13.5	13.6	13.3	12.8	12.2	7.2	10.0	10.5	10.3	11.6	12.8	12.3
Precipitation								4.7				4.7		1.3
Evaporation		10.0	4.4	9.0	15.5	11.0	9.0	6.7	5.0	8.0	5.0	83.6	67.8	74.3
Growing Degrees	5	17.3	17.8	15.9	16.1	18.3	16.2	16.3	16.2	17.3	17.5	168.8	192.4	179.7
	10	12.3	12.8	10.9	11.1	13.3	11.2	11.3	11.2	12.3	12.5	118.8	142.4	129.7

3rd 10-day period (21-30/06/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.4	57.7
Precipitation - Reference Evapotranspiration	-46.7	-57.7
Number of Rainy Days	1.0	0.0
Number of Dry Days	8.0	21.0

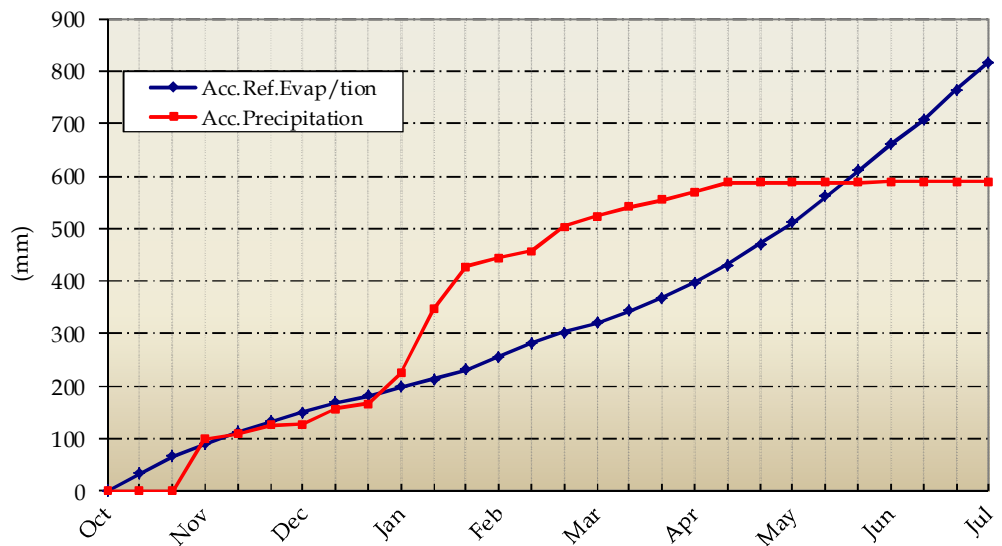
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	26.2	24.2	25.6	27.0	26.2	25.4	25.6	26.0	26.2	25.9	29.6	28.2
	Min	19.0	18.8	21.0	20.0	18.8	18.4	20.6	21.6	18.0	18.4	19.5	21.7	20.4
Relative Humidity	Max	90	86	78	82	89	90	90	79	71	86	84	78	-
	Min	55	65	55	46	60	63	54	57	56	55	57	44	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.6	12.7	12.9	13.1	12.9	12.6	11.2	10.6	12.4	12.9	12.2	12.7	12.3
Precipitation														0.0
Evaporation		1.9	9.2	5.6	5.9	3.6	6.6	5.7	6.2	4.5	6.0	55.2	67.2	89.0
Growing Degrees	5	17.7	17.5	17.6	17.8	17.9	17.3	18.0	18.6	17.0	17.3	176.7	206.4	193.1
	10	12.7	12.5	12.6	12.8	12.9	12.3	13.0	13.6	12.0	12.3	126.7	156.4	143.1

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.7	63.2	-
Precipitation - Reference Evapotranspiration	-53.7	-63.2	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	32.0	25.0	-

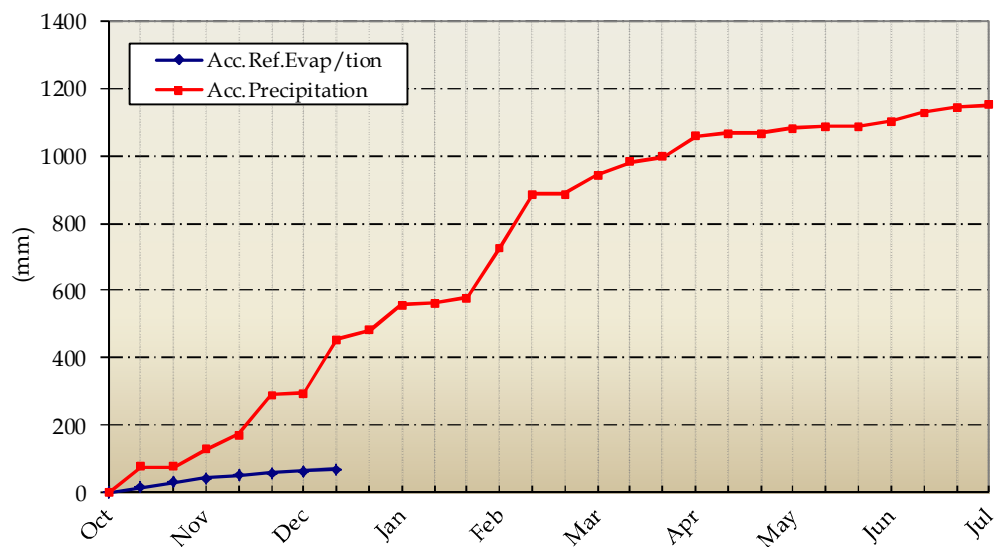
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	26.7	27.4	28.9	29.4	27.8	25.9	27.3	28.0	21.6	26.9	30.6	29.4
	Min	14.7	12.2	10.5	9.6	12.6	9.9	15.2	9.9	13.0	13.8	12.1	14.9	13.7
Relative Humidity	Max	100	97	100	100	100	100	86	100	100	100	98	74	-
	Min	41	29	31	27	23	24	27	33	31	72	34	29	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.9
Sunshine Duration		8.2	7.8	11.6	12.1	13.0	12.2	10.0	3.7	5.9	0.6	8.5	10.7	10.8
Precipitation		1.2							2.1	2.2	2.8	8.3	0.0	6.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	67.3
Growing Degrees	5	15.2	14.5	14.0	14.3	16.0	13.9	15.6	13.6	15.5	12.7	145.0	177.4	166.2
	10	10.2	9.5	9.0	9.3	11.0	8.9	10.6	8.6	10.5	7.7	95.0	127.4	116.2

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	43.5	50.2
Precipitation - Reference Evapotranspiration	-	-43.5	-43.7
Number of Rainy Days	4.0	0.0	1.3
Number of Dry Days	0.0	10.0	-

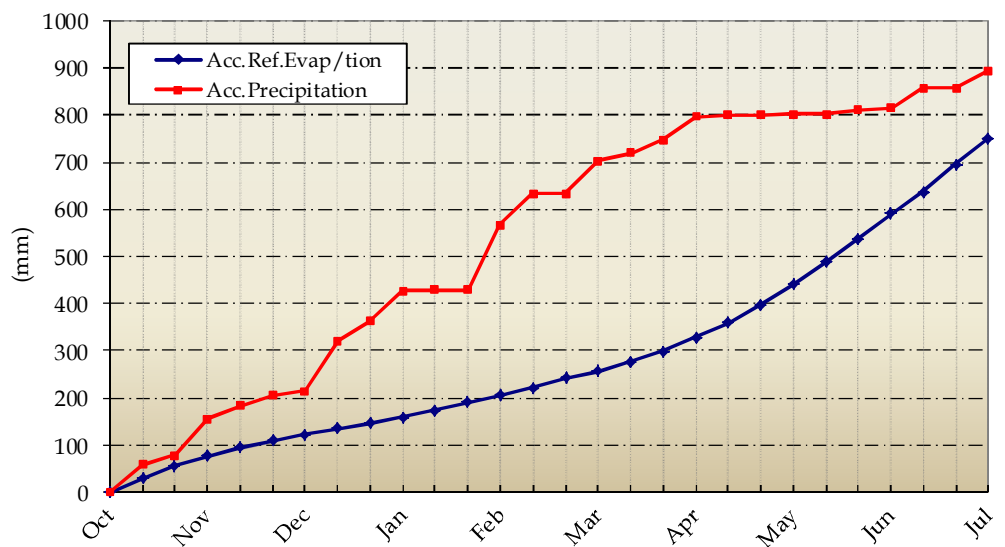
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.5	27.7	26.7	30.0	32.8	27.4	25.4	27.5	27.5	27.4	28.1	31.8	30.4
	Min	14.8	17.8	16.0	13.5	20.6	16.5	15.5	13.6	17.5	15.8	16.2	17.9	16.7
Relative Humidity	Max	91	77	89	95	80	75	95	90	93	94	88	87	-
	Min	45	33	45	28	31	34	45	34	41	46	38	32	-
Soil Temperature at 10 cm	06 UTC	23.2	23.4	23.8	23.4	23.8	23.8	22.2	22.0	22.8	22.6	23.1	24.2	24.2
	12 UTC	24.6	24.6	25.0	24.8	25.0	24.6	22.6	23.4	24.2	24.0	24.3	26.7	28.7
Sunshine Duration		12.3	12.3	12.7	12.7	12.7	12.7	6.5	10.7	8.2	8.7	11.0	12.2	11.8
Precipitation								30.1	0.0		5.4	35.5		0.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	88.4
Growing Degrees	5	16.7	17.8	16.4	16.8	21.7	17.0	15.5	15.6	17.5	16.6	171.3	198.4	185.7
	10	11.7	12.8	11.4	11.8	16.7	12.0	10.5	10.6	12.5	11.6	121.3	148.4	135.7

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.4	62.7	58.1
Precipitation - Reference Evapotranspiration	-18.9	-62.7	-57.7
Number of Rainy Days	2.0	0.0	0.3
Number of Dry Days	15.0	10.0	-

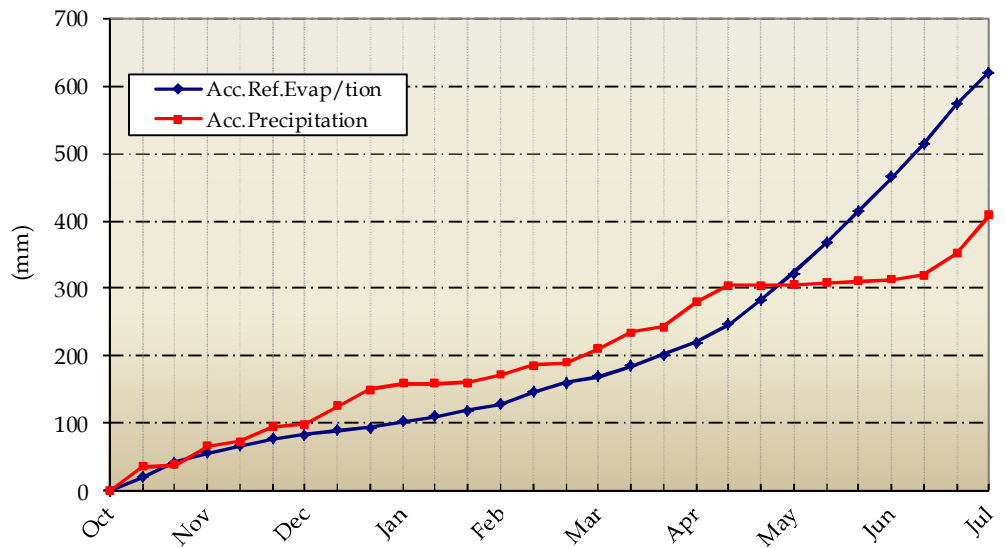
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	25.3	30.2	33.6	31.2	28.6	27.4	29.4	27.6	26.4	28.8	34.6	32.8
	Min	19.0	15.8	13.3	14.2	18.8	20.4	18.3	16.3	15.4	17.8	16.9	18.4	16.5
Relative Humidity	Max	100	100	100	100	97	43	67	100	100	100	91	69	-
	Min	44	34	22	19	27	24	25	28	39	52	31	19	-
Soil Temperature at 10 cm	06 UTC	25.4	24.8	24.0	24.6	25.6	26.2	26.2	26.0	25.4	25.2	25.3	-	25.0
	12 UTC	25.0	24.8	24.0	24.8	26.0	26.2	26.0	25.0	25.4	24.8	25.2	-	27.7
Sunshine Duration		3.9	7.6	12.5	11.1	12.1	9.3	7.1	7.1	5.8	2.1	7.9	11.5	11.1
Precipitation		0.3	7.0		0.0				0.8	12.3	35.3	55.7		6.4
Evaporation		5.6	5.5	10.9	8.8	14.1	9.7	7.0	6.8	16.3	1.0	85.7	121.0	93.9
Growing Degrees	5	18.6	15.6	16.8	18.9	20.0	19.5	17.9	17.9	16.5	17.1	178.6	214.9	196.6
	10	13.6	10.6	11.8	13.9	15.0	14.5	12.9	12.9	11.5	12.1	128.6	164.9	146.6

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.1	68.6	61.9
Precipitation - Reference Evapotranspiration	8.6	-68.6	-55.5
Number of Rainy Days	5.0	0.0	0.9
Number of Dry Days	0.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

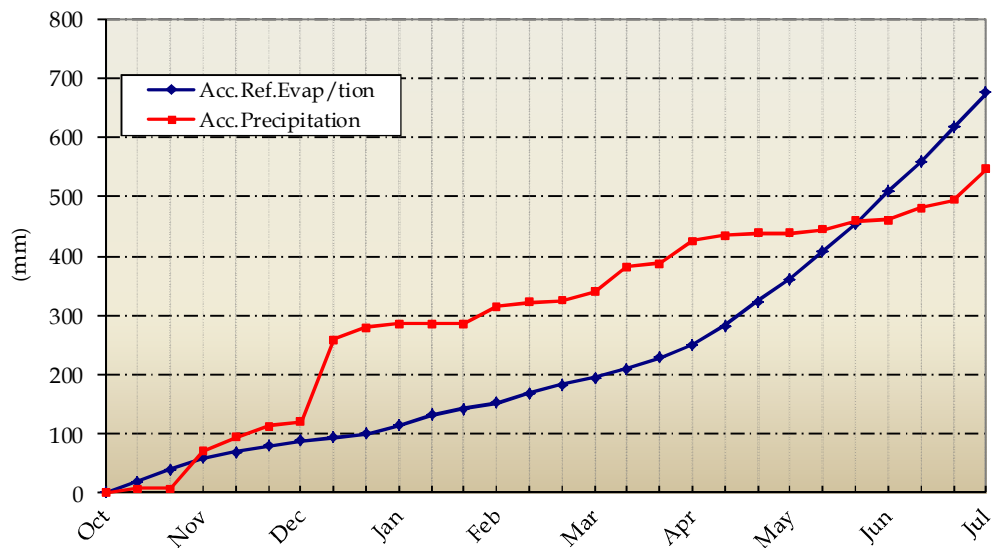


Mikra

3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.3	25.8	27.9	30.0	27.5	26.3	27.1	29.4	28.9	26.4	27.4	30.9	30.8
	Min	16.9	17.6	16.6	15.4	19.6	18.7	18.7	17.5	19.4	16.8	17.7	19.2	17.9
Relative Humidity	Max	94	81	88	84	81	56	66	74	79	95	80	72	-
	Min	42	33	30	31	25	29	34	29	39	43	34	30	-
Soil Temperature at 10 cm	06 UTC	25.5	21.8	23.8	24.4	25.7	24.2	24.2	24.8	26.2	26.4	24.7	26.0	25.3
	12 UTC	25.6	27.6	29.4	30.2	29.2	29.4	27.8	30.2	31.2	29.0	29.0	31.5	30.2
Sunshine Duration		4.8	9.9	13.6	13.5	11.6	13.1	6.2	11.6	10.6	3.5	9.8	11.2	11.0
Precipitation		17.6	0.0			0.0		0.0		0.0	35.6	53.2	1.4	4.8
Evaporation		7.2	7.8	11.5	5.2	10.7	9.4	8.8	9.6	5.4	2.1	77.7	91.8	93.3
Growing Degrees	5	15.6	16.7	17.3	17.7	18.6	17.5	17.9	18.5	19.2	16.6	175.4	200.4	193.2
	10	10.6	11.7	12.3	12.7	13.6	12.5	12.9	13.5	14.2	11.6	125.4	150.4	143.2

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.1	61.9	61.4
Precipitation - Reference Evapotranspiration	-3.9	-60.5	-56.6
Number of Rainy Days	2.0	1.0	1.1
Number of Dry Days	2.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

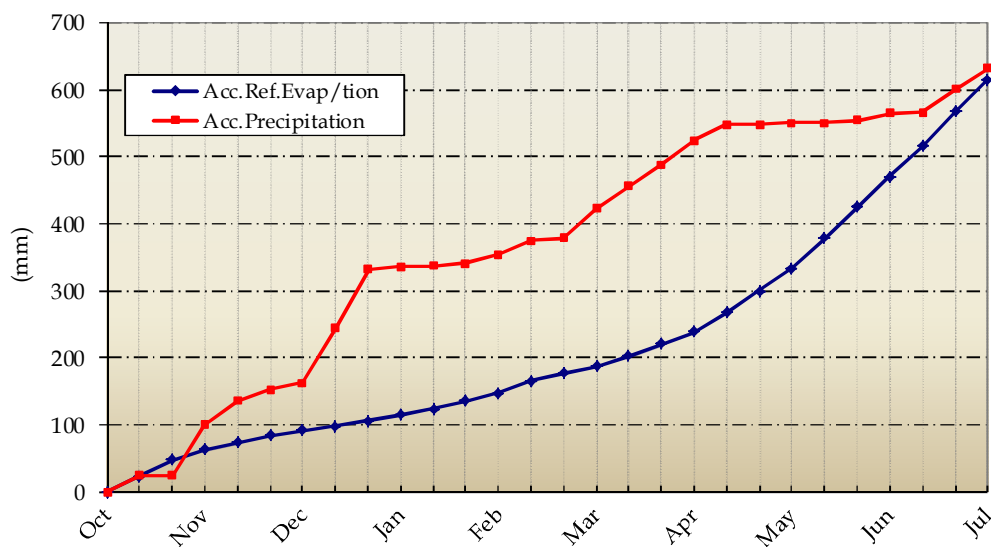


Tanagra

3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	22.4	26.9	30.0	28.8	27.1	23.5	28.7	28.2	28.1	27.0	33.1	31.5
	Min	16.7	17.3	13.3	14.9	18.0	18.7	17.9	15.2	15.6	15.8	16.3	19.2	17.1
Relative Humidity	Max	100	93	97	94	80	73	75	77	81	100	87	67	-
	Min	48	52	28	24	32	28	43	28	35	35	35	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		6.8	5.5	12.8	13.0	13.2	11.8	7.2	10.0	12.8	7.6	10.1	-	-
Precipitation		3.2	7.1								20.8	31.1	0.1	2.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	16.6	14.9	15.1	17.5	18.4	17.9	15.7	17.0	16.9	17.0	166.8	-	-
	10	11.6	9.9	10.1	12.5	13.4	12.9	10.7	12.0	11.9	12.0	116.8	-	-

3rd 10-day period (21-30/06/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.4	-
Precipitation - Reference Evapotranspiration	-16.3	-
Number of Rainy Days	3.0	1.0
Number of Dry Days	1.0	-

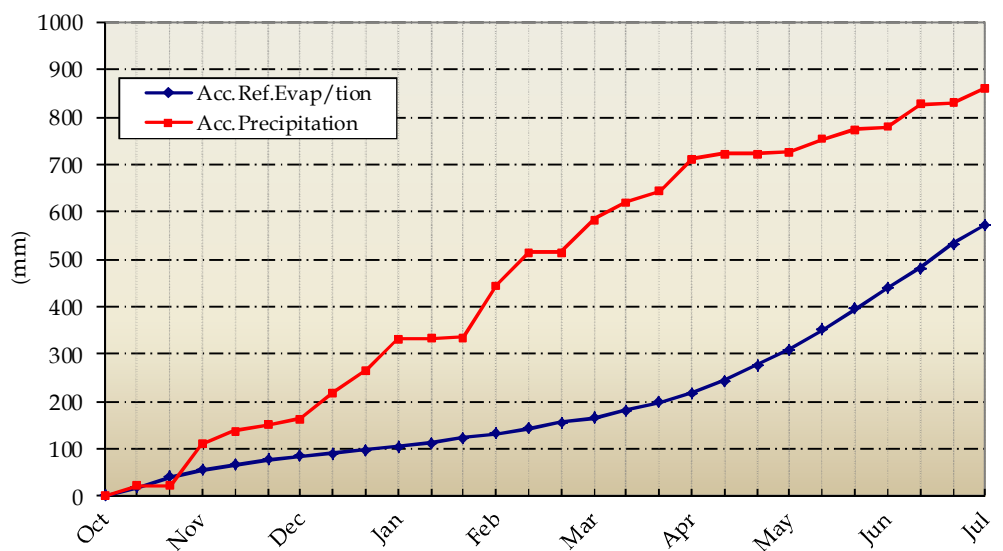
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	24.0	25.5	27.6	29.5	26.9	20.0	24.3	24.6	25.1	25.2	31.4	29.8
	Min	11.3	14.3	11.2	10.5	15.4	10.8	13.4	8.7	13.1	11.0	12.0	12.9	12.5
Relative Humidity	Max	100	100	100	100	96	100	100	100	100	100	100	87	-
	Min	40	42	34	29	23	18	47	36	38	42	35	23	-
Soil Temperature at 10 cm	06 UTC	-	22.4	20.6	20.6	23.2	22.2	22.8	18.8	20.0	19.6	21.1	25.0	24.0
	12 UTC	-	27.8	-	-	26.6	28.4	-	-	23.8	24.4	26.2	32.5	27.2
Sunshine Duration		0.0	7.8	11.6	13.1	11.6	10.8	2.6	6.5	7.6	5.7	7.7	10.1	11.1
Precipitation		0.7	19.1	0.4				4.7	1.0	0.1	4.4	30.4		5.4
Evaporation		-	5.4	5.7	6.0	6.9	6.6	2.3	3.8	3.2	2.7	-	-	65.6
Growing Degrees	5	13.2	14.2	13.4	14.1	17.5	13.9	11.7	11.5	13.9	13.1	136.1	171.5	161.5
	10	8.2	9.2	8.4	9.1	12.5	8.9	6.7	6.5	8.9	8.1	86.1	121.5	111.5

3rd 10-day period (21-30/06/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.1	51.0	53.9
Precipitation - Reference Evapotranspiration	-9.7	-51.0	-48.5
Number of Rainy Days	7.0	0.0	0.7
Number of Dry Days	0.0	21.0	-

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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