



AGROMETEOROLOGICAL BULLETIN

*May 2017
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



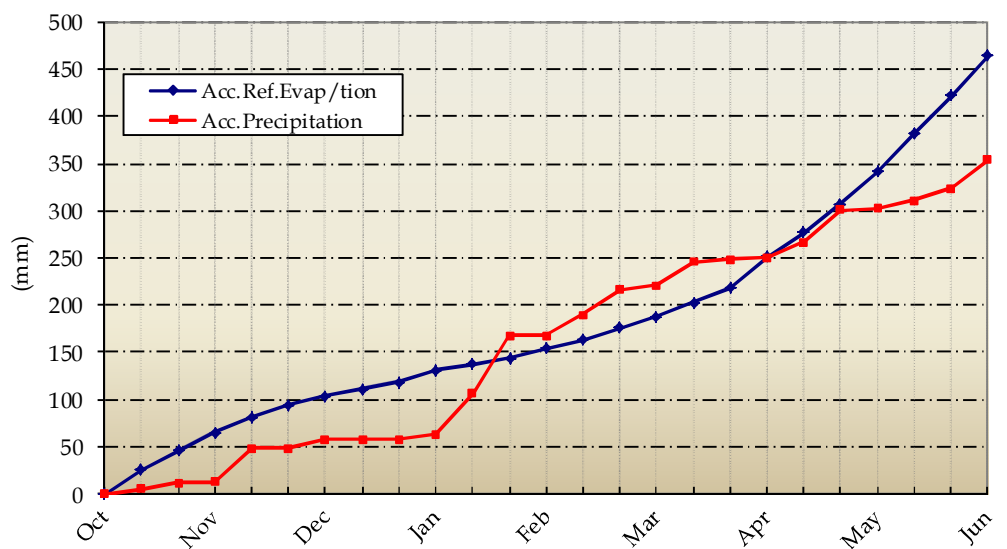
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*Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.8	21.4	23.6	22.8	23.6	24.0	21.6	23.2	26.4	25.2	25.2	23.5	23.7	24.2
	Min	9.4	9.4	12.6	10.6	11.0	8.6	15.4	14.8	16.2	11.6	12.4	12.0	12.6	12.7
Relative Humidity	Max	97	98	93	98	86	93	96	87	79	93	93	92	91	-
	Min	48	58	48	46	42	59	68	53	42	50	57	52	51	-
Soil Temperature at 10 cm	06 UTC	19.8	18.2	19.2	19.6	20.0	19.4	20.0	18.2	18.0	19.2	20.2	19.3	18.6	19.3
	12 UTC	22.8	24.6	24.2	26.0	22.8	28.6	24.4	22.6	24.6	27.0	28.0	25.1	23.7	23.6
Sunshine Duration		6.7	6.7	7.2	11.1	5.6	4.3	3.2	7.8	11.3	12.4	13.6	8.2	8.3	8.3
Precipitation			0.0	0.3		0.3	0.2	25.8	3.3				29.9	15.1	12.4
Evaporation		9.5	0.9	6.1	8.9	2.9	5.0	4.4	15.4	8.0	7.8	8.2	77.1	53.9	70.1
Growing Degrees	5	10.6	10.4	13.1	11.7	12.3	11.3	13.5	14.0	16.3	13.4	13.8	140.4	144.6	147.7
	10	5.6	5.4	8.1	6.7	7.3	6.3	8.5	9.0	11.3	8.4	8.8	85.4	89.6	92.7

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	42.1	43.1	45.7
Precipitation - Reference Evapotranspiration	-12.2	-28.0	-33.3
Number of Rainy Days	5.0	4.0	2.4
Number of Dry Days	5.0	2.0	-

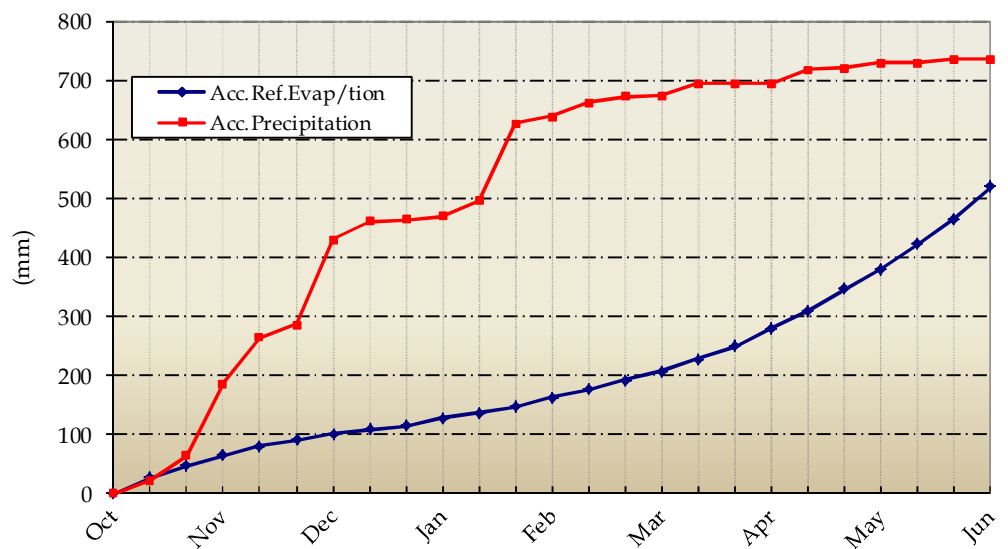
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.6	25.2	26.6	25.4	25.0	22.9	23.9	25.7	26.6	26.5	25.2	25.1	25.7	25.4
	Min	15.6	14.7	14.1	15.2	15.8	15.9	11.4	16.8	15.6	13.2	14.0	14.8	14.4	14.0
Relative Humidity	Max	90	78	87	88	87	87	88	81	84	85	88	86	86	-
	Min	44	25	33	43	44	35	40	34	30	33	42	37	38	-
Soil Temperature at 10 cm	06 UTC	21.0	21.4	22.0	22.8	23.4	23.5	23.0	23.2	23.0	23.0	24.0	22.8	-	21.4
	12 UTC	22.8	23.0	25.0	25.0	25.8	26.0	25.2	25.8	26.0	26.0	26.8	25.2	-	25.8
Sunshine Duration		8.7	12.3	12.4	11.3	10.2	10.9	13.0	8.1	11.3	12.8	12.3	11.2	10.4	10.2
Precipitation														18.6	6.8
Evaporation		4.0	18.0	4.4	3.6	11.0	2.8	3.2	1.0	9.0	7.5	3.5	68.0	55.4	63.7
Growing Degrees	5	14.6	15.0	15.4	15.3	15.4	14.4	12.7	16.3	16.1	14.9	14.6	164.5	165.7	161.7
	10	9.6	10.0	10.4	10.3	10.4	9.4	7.7	11.3	11.1	9.9	9.6	109.5	110.7	106.7

3rd 10-day period (21-31/05/2017)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.5	52.0
Precipitation - Reference Evapotranspiration	-55.5	-33.4
Number of Rainy Days	0.0	1.0
Number of Dry Days	14.0	0.0

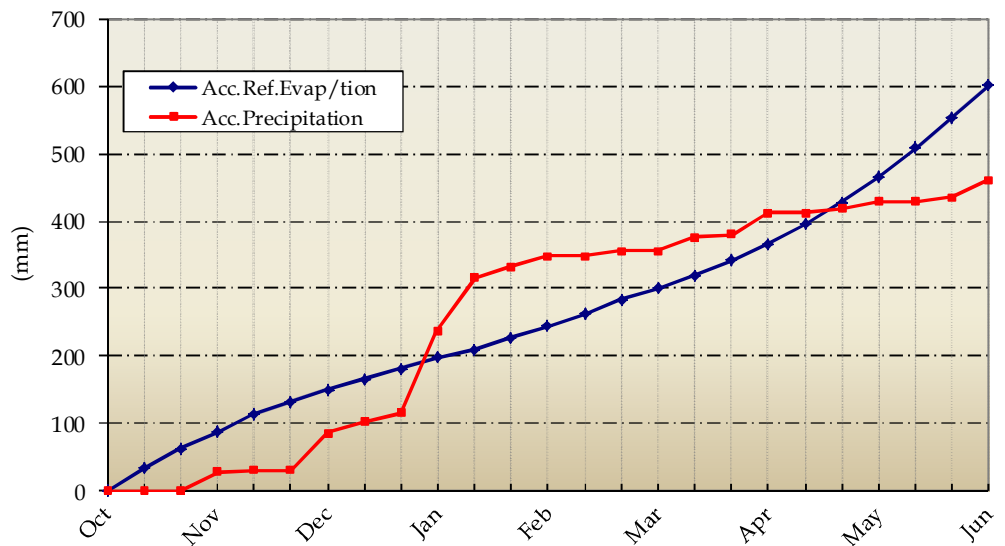
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.6	21.8	23.8	24.0	25.4	23.6	21.8	21.0	21.0	22.2	24.8	23.0	25.3	24.9
	Min	16.0	16.4	15.2	14.6	15.0	16.2	17.2	14.2	15.0	14.6	14.6	15.4	17.5	16.6
Relative Humidity	Max	89	88	80	81	90	93	89	93	93	93	84	88	79	-
	Min	64	64	58	50	46	59	61	73	76	73	46	61	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.5	7.1	12.7	11.7	11.1	9.2	7.5	6.4	4.2	11.6	12.8	9.7	11.9	10.1
Precipitation			1.5				2.6	6.3	3.6	10.4	1.3		25.7	1.0	4.4
Evaporation		2.2	5.0	5.5	6.6	1.3	4.5	3.6	0.3	0.0	3.9	5.3	38.2	65.0	74.4
Growing Degrees	5	14.8	14.1	14.5	14.3	15.2	14.9	14.5	12.6	13.0	13.4	14.7	156.0	180.5	173.1
	10	9.8	9.1	9.5	9.3	10.2	9.9	9.5	7.6	8.0	8.4	9.7	101.0	125.5	118.1

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.0	59.8	-
Precipitation - Reference Evapotranspiration	-21.3	-58.8	4.4
Number of Rainy Days	6.0	1.0	0.7
Number of Dry Days	3.0	5.0	-

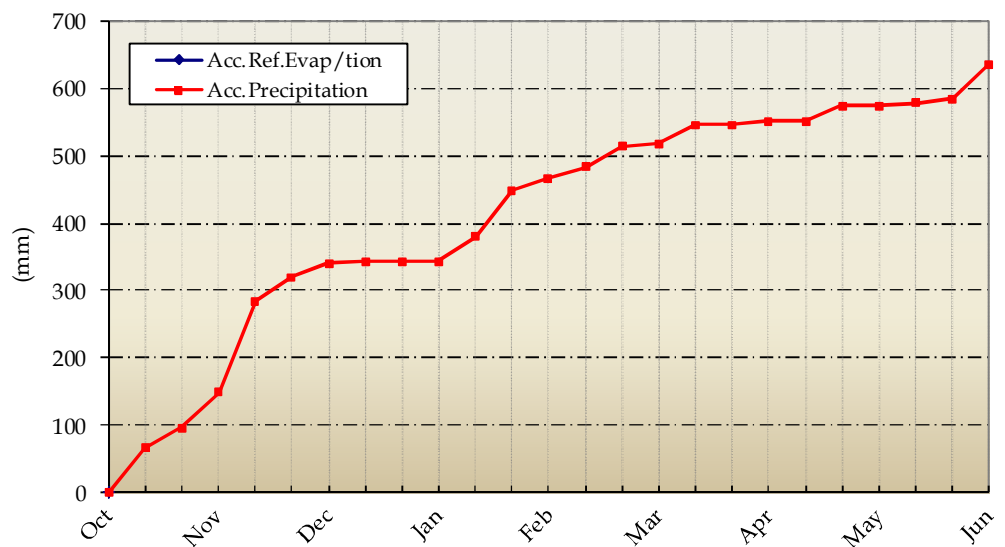
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.0	24.0	22.6	24.2	22.2	16.6	21.6	22.0	23.8	25.2	26.2	22.6	24.0	24.6
	Min	11.6	9.8	10.9	8.8	11.0	12.0	10.2	13.8	15.2	11.6	10.2	11.4	9.8	10.6
Relative Humidity	Max	98	100	100	100	100	100	100	68	100	100	100	97	97	-
	Min	70	37	-	46	51	64	53	37	34	44	42	48	44	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	17.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	21.4
Sunshine Duration		0.6	-	-	7.5	4.1	3.7	3.8	6.2	10.0	8.5	10.7	6.1	9.8	8.1
Precipitation		15.7	0.0	0.3	0.0	9.8	10.2	4.4	0.2	9.5	0.5	-	50.6	55.6	20.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	55.4
Growing Degrees	5	10.8	11.9	11.8	11.5	11.6	9.3	10.9	12.9	14.5	13.4	13.2	131.8	130.7	138.9
	10	5.8	6.9	6.8	6.5	6.6	4.3	5.9	7.9	9.5	8.4	8.2	76.8	75.7	83.9

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	42.6
Precipitation - Reference Evapotranspiration	-	-	-21.7
Number of Rainy Days	8.0	1.0	3.4
Number of Dry Days	3.0	0.0	-

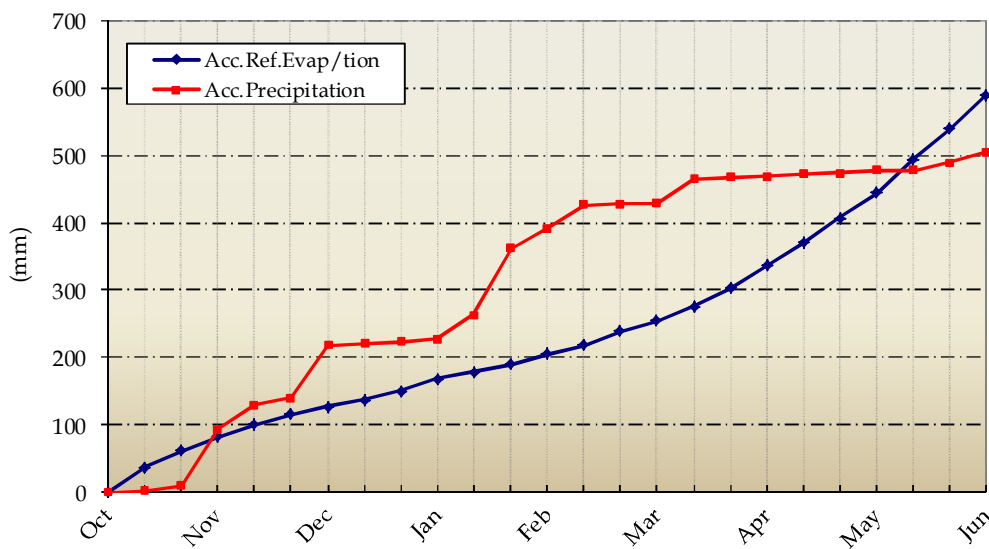
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.3	24.4	24.8	26.1	25.6	25.0	23.7	23.0	23.8	25.2	28.7	25.1	26.3	26.1
	Min	12.4	12.8	11.3	12.9	12.9	14.6	11.3	15.2	14.7	11.6	13.4	13.0	13.2	13.4
Relative Humidity	Max	93	80	91	91	90	93	91	89	91	92	88	90	91	-
	Min	35	36	37	38	40	40	41	54	39	43	33	40	36	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.7	20.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.4	24.4
Sunshine Duration		10.7	11.6	10.6	11.5	10.0	9.0	9.1	3.8	6.6	12.0	12.7	9.8	10.7	9.6
Precipitation						0.0	11.8	0.1	3.5	0.1			15.5	2.3	3.4
Evaporation		5.9	5.0	5.2	8.4	3.3	5.4	5.4	0.6	5.6	6.3	8.8	59.9	70.5	68.8
Growing Degrees	5	13.9	13.6	13.1	14.5	14.3	14.8	12.5	14.1	14.3	13.4	16.1	154.4	162.4	162.7
	10	8.9	8.6	8.1	9.5	9.3	9.8	7.5	9.1	9.3	8.4	11.1	99.4	107.4	107.7

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.3	55.8	49.3
Precipitation - Reference Evapotranspiration	-35.8	-53.5	-45.9
Number of Rainy Days	4.0	2.0	1.1
Number of Dry Days	8.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

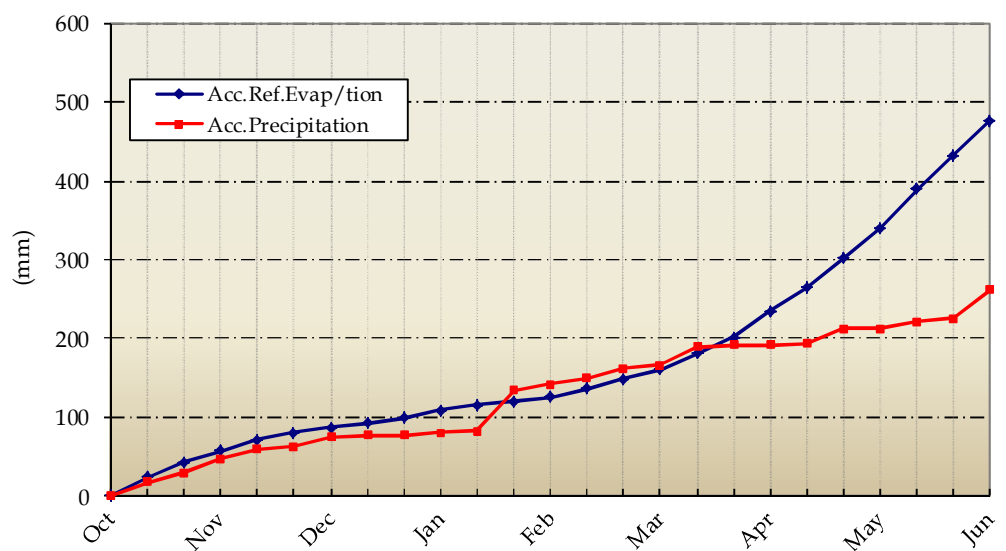


Larisa

3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	27.2	27.8	26.4	26.2	22.2	22.6	19.8	25.2	29.1	32.5	26.1	28.8	27.7
	Min	11.6	11.0	13.0	13.8	11.6	14.9	10.8	14.6	13.8	10.8	12.6	12.6	13.2	12.6
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	92	-
	Min	24	29	31	36	32	33	49	53	28	24	18	32	28	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.4	20.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.6	22.3
Sunshine Duration		7.6	8.7	7.1	6.9	6.7	6.1	4.3	0.4	11.0	10.1	12.0	7.4	9.5	8.8
Precipitation		1.2	0.6	0.1	0.6	19.8	9.2	0.5	3.6				35.6	31.6	17.2
Evaporation		7.9	5.2	0.4	10.5	3.7	2.4	2.2	2.1	8.7	5.2	8.1	56.4	88.8	67.8
Growing Degrees	5	14.8	14.1	15.4	15.1	13.9	13.6	11.7	12.2	14.5	15.0	17.6	157.8	176.1	166.2
	10	9.8	9.1	10.4	10.1	8.9	8.6	6.7	7.2	9.5	10.0	12.6	102.8	121.1	111.2

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.9	53.6	50.4
Precipitation - Reference Evapotranspiration	-9.3	-22.0	-33.2
Number of Rainy Days	8.0	3.0	3.0
Number of Dry Days	2.0	0.0	-

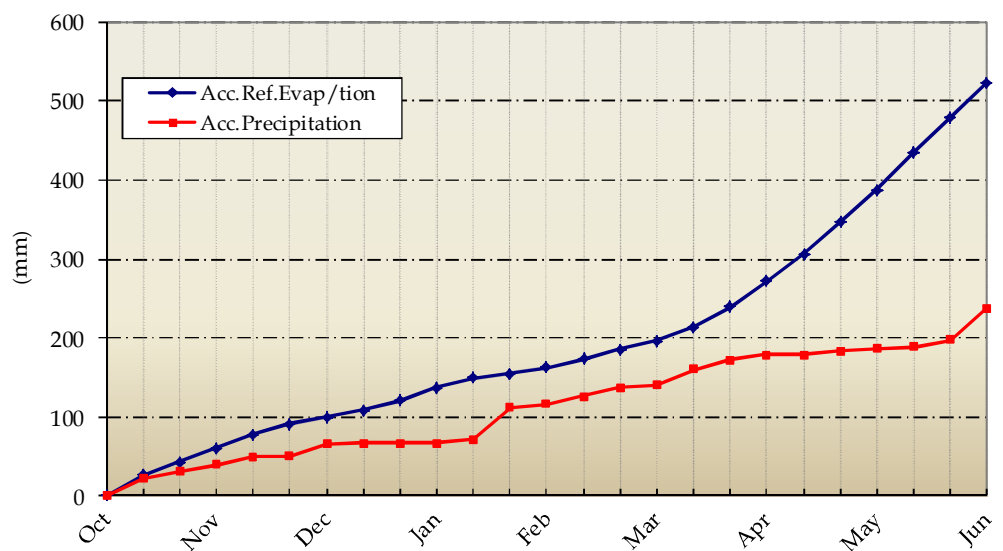
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.5	25.2	25.9	25.0	26.1	20.8	21.4	20.8	25.6	27.0	30.2	24.9	26.1	26.2
	Min	12.2	11.4	15.1	15.5	13.9	15.6	12.9	14.8	12.9	14.0	14.4	13.9	15.3	13.9
Relative Humidity	Max	91	95	89	89	90	94	92	93	92	89	79	90	80	-
	Min	37	47	41	38	34	59	59	50	34	31	28	42	36	-
Soil Temperature at 10 cm	06 UTC	21.0	20.0	20.4	22.0	21.5	22.6	20.0	19.6	18.9	20.8	22.0	20.8	20.6	20.7
	12 UTC	19.0	24.6	26.4	25.7	27.0	22.4	23.0	21.2	24.4	26.4	28.0	24.4	25.4	25.4
Sunshine Duration		6.8	6.7	9.8	6.3	7.6	0.4	3.6	0.0	8.4	13.6	13.5	7.0	10.1	8.3
Precipitation		3.4	8.0		0.0	0.1	22.9	4.7	1.0	0.7			40.8	41.8	16.2
Evaporation		3.6	2.3	7.8	7.1	12.0	0.2	1.9	6.1	2.4	10.4	7.8	61.6	85.7	70.6
Growing Degrees	5	13.9	13.3	15.5	15.3	15.0	13.2	12.2	12.8	14.3	15.5	17.3	158.1	172.5	165.0
	10	8.9	8.3	10.5	10.3	10.0	8.2	7.2	7.8	9.3	10.5	12.3	103.1	117.5	110.0

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.4	57.9	48.7
Precipitation - Reference Evapotranspiration	-3.6	-16.1	-32.5
Number of Rainy Days	7.0	2.0	2.9
Number of Dry Days	2.0	0.0	-

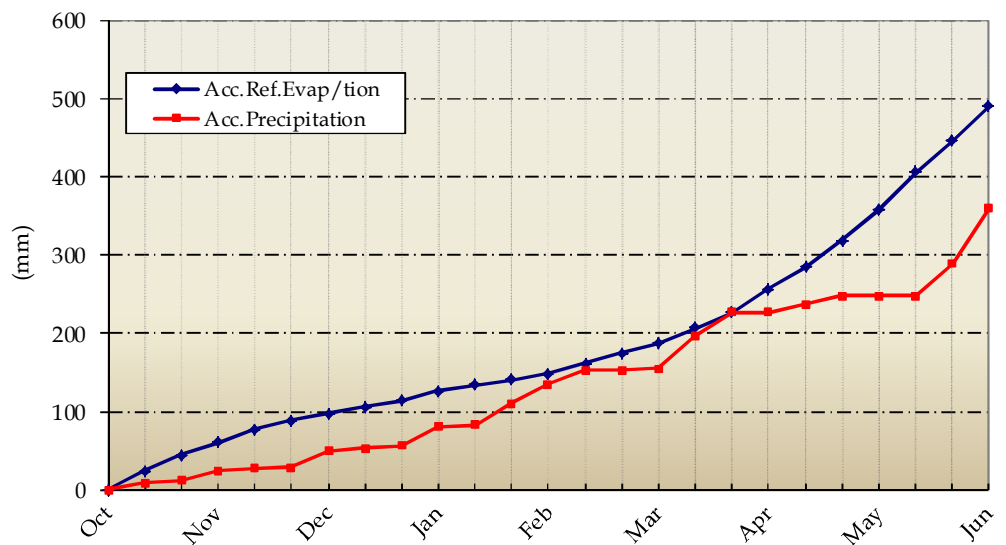
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.7	24.6	26.1	24.4	24.6	23.8	22.4	16.8	21.3	26.6	29.5	24.3	28.1	26.9
	Min	13.5	12.3	13.4	13.4	13.0	16.2	13.4	13.8	16.2	13.3	14.2	13.9	14.2	12.8
Relative Humidity	Max	100	100	82	97	98	94	100	100	76	78	82	92	77	-
	Min	29	25	32	45	44	36	47	72	52	31	25	40	27	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.0	12.4	11.9	6.9	6.7	4.8	6.7	0.0	5.3	12.7	13.5	8.1	9.4	
Precipitation		0.1	20.3		4.5	2.9	2.9	9.5	30.8	0.2			71.2	3.2	6.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	72.5	
Growing Degrees	5	15.1	13.5	14.8	13.9	13.8	15.0	12.9	10.3	13.8	15.0	16.9	154.8	177.6	
	10	10.1	8.5	9.8	8.9	8.8	10.0	7.9	5.3	8.8	10.0	11.9	99.8	122.6	

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.4	54.3	
Precipitation - Reference Evapotranspiration	26.8	-51.1	6.0
Number of Rainy Days	8.0	2.0	2.3
Number of Dry Days	2.0	15.0	-

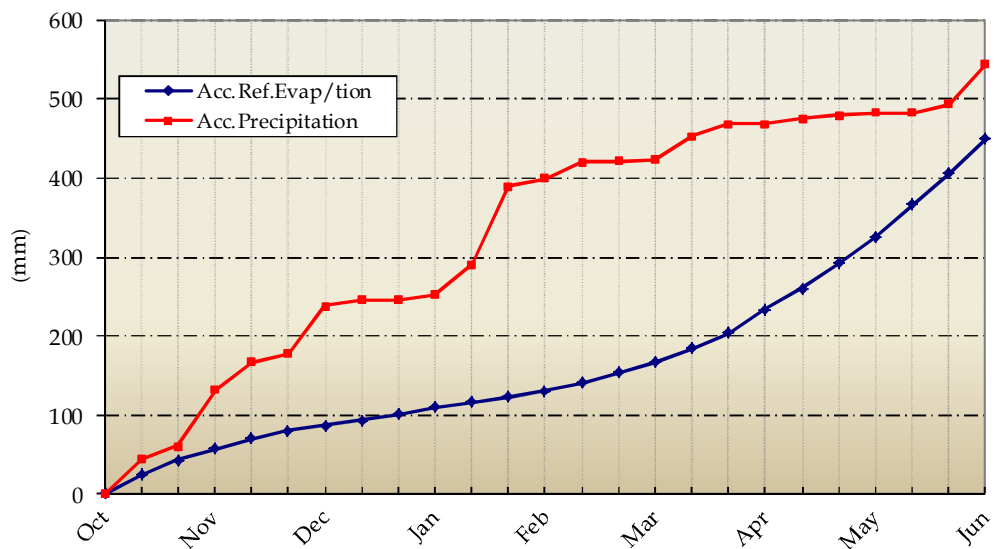
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/05/2017)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.9	24.5	24.5	22.0	22.4	20.7	22.8	19.5	22.5	23.6	25.5	22.7	25.6	24.8
	Min	8.5	9.3	8.2	8.4	8.4	11.5	7.3	11.8	12.4	7.9	7.7	9.2	9.1	9.2
Relative Humidity	Max	100	85	100	100	100	100	100	100	81	100	100	97	93	-
	Min	27	20	30	50	38	32	35	55	35	33	25	35	27	-
Soil Temperature at 10 cm	06 UTC	18.0	17.8	18.8	17.2	16.2	17.2	16.6	18.0	16.2	15.6	16.6	17.1	19.5	18.5
	12 UTC	-	-	25.6	20.8	22.2	23.8	-	-	19.0	23.2	26.0	22.9	27.1	21.5
Sunshine Duration		9.7	10.6	7.1	4.1	7.9	12.2	8.9	2.7	7.3	9.4	10.8	8.2	11.2	8.9
Precipitation				16.3	21.0	0.0	1.1	2.1	7.3		0.0	2.2	50.0	11.6	11.3
Evaporation		4.7	8.2	5.5	5.9	3.1	6.0	4.7	3.3	3.3	4.6	4.0	53.3	-	48.7
Growing Degrees	5	10.2	11.9	11.4	10.2	10.4	11.1	10.1	10.7	12.5	10.8	11.6	120.7	136.3	132.1
	10	5.2	6.9	6.4	5.2	5.4	6.1	5.1	5.7	7.5	5.8	6.6	65.7	81.3	77.1

3rd 10-day period (21-31/05/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.0	51.4	47.0
Precipitation - Reference Evapotranspiration	7.0	-39.8	-35.7
Number of Rainy Days	6.0	2.0	2.6
Number of Dry Days	4.0	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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