



# AGROMETEOROLOGICAL BULLETIN

*June 2018*  
*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



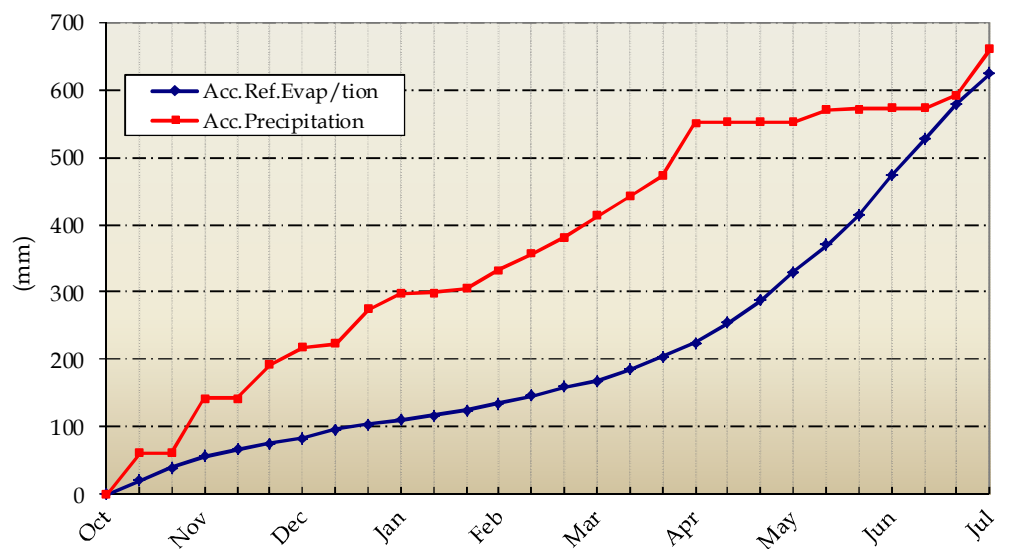
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3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.4	27.4	28.8	21.2	28.0	25.4	27.8	24.6	26.6	27.8	26.7	31.8	28.7
	Min	18.0	19.0	20.6	18.8	17.2	19.4	15.8	18.4	17.4	19.0	18.4	18.3	16.0
Relative Humidity	Max	59	74	95	74	86	94	97	94	96	95	86	88	-
	Min	25	48	36	40	36	52	46	64	55	52	45	43	-
Soil Temperature at 10 cm	06 UTC	23.8	23.6	24.8	23.8	21.2	24.0	21.6	22.4	21.0	22.4	22.9	-	23.1
	12 UTC	26.0	27.6	27.2	23.4	25.6	25.8	24.4	24.4	23.8	25.4	25.4	-	27.7
Sunshine Duration		3.2	9.5	7.4	3.6	12.8	3.3	10.0	6.5	9.9	7.3	7.4	12.4	10.9
Precipitation		0.0		0.0	0.2			61.0	6.3			67.5	0.3	4.4
Evaporation		4.3	5.5	11.0	2.5	11.7	7.0	8.7	4.1	8.4	5.4	68.6	80.1	85.9
Growing Degrees	5	18.7	18.2	19.7	15.0	17.6	17.4	16.8	16.5	17.0	18.4	175.3	200.3	173.3
	10	13.7	13.2	14.7	10.0	12.6	12.4	11.8	11.5	12.0	13.4	125.3	150.3	123.3

3rd 10-day period (21-30/06/2018)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.2	56.0
Precipitation - Reference Evapotranspiration	22.3	-55.7
Number of Rainy Days	3.0	1.0
Number of Dry Days	5.0	1.0

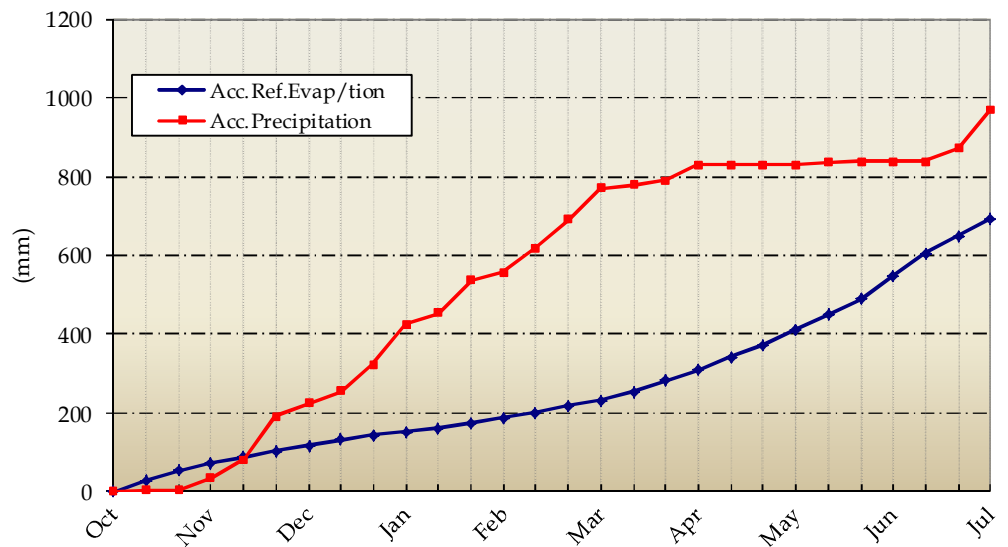
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.4	28.7	28.7	28.2	26.4	22.8	25.8	23.0	26.3	26.4	26.6	32.0	28.9
	Min	17.8	19.3	19.3	18.4	16.6	11.7	18.2	17.8	17.4	18.1	17.5	18.7	17.0
Relative Humidity	Max	82	87	92	89	98	98	90	88	88	91	90	85	-
	Min	33	39	40	50	66	76	50	62	41	53	51	33	-
Soil Temperature at 10 cm	06 UTC	25.4	25.0	26.5	26.6	25.4	23.2	23.2	24.0	23.8	25.0	24.8	28.6	25.9
	12 UTC	27.0	28.4	28.0	29.6	26.2	25.2	25.0	24.6	26.0	28.4	26.8	32.0	30.7
Sunshine Duration		12.8	13.1	13.0	12.3	3.2	0.0	6.8	6.1	12.1	13.4	9.3	12.4	12.3
Precipitation						36.5	36.3	6.6	10.9	7.7		98.0		1.3
Evaporation		8.0	8.0	6.0	0.5	2.5	0.0	5.3	9.7	6.0	6.0	52.0	75.0	74.3
Growing Degrees	5	18.6	19.0	19.0	18.3	16.5	12.3	17.0	15.4	16.9	17.3	170.2	203.6	179.7
	10	13.6	14.0	14.0	13.3	11.5	7.3	12.0	10.4	11.9	12.3	120.2	153.6	129.7

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.9	58.0	53.3
Precipitation - Reference Evapotranspiration	52.1	-58.0	-52.0
Number of Rainy Days	5.0	0.0	0.2
Number of Dry Days	6.0	12.0	-

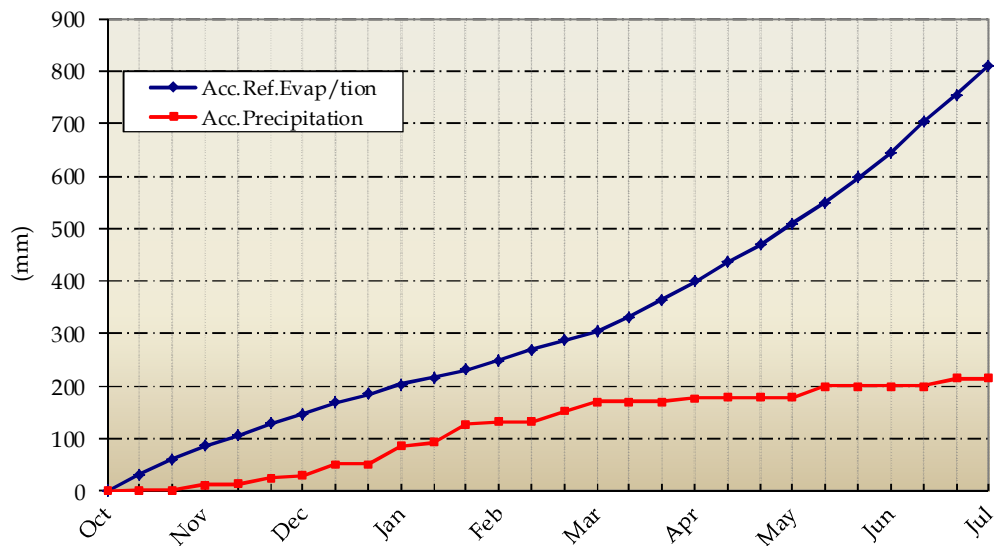
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.0	27.6	27.4	26.4	28.0	28.2	27.0	27.2	27.4	27.5	30.5	28.2
	Min	19.4	20.0	20.8	21.0	23.0	20.8	20.0	20.4	20.6	20.2	20.6	21.7	20.4
Relative Humidity	Max	84	89	90	90	87	87	83	81	68	85	84	76	-
	Min	62	49	63	73	66	48	58	56	43	47	56	47	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.8	12.9	11.9	12.7	12.0	6.9	11.7	11.0	13.0	12.9	11.8	12.7	12.3
Precipitation							0.0					0.0		0.0
Evaporation		6.1	7.1	6.7	4.4	8.8	4.8	5.3	7.2	7.7	5.3	63.4	65.7	89.0
Growing Degrees	5	18.7	19.0	19.2	19.2	19.7	19.4	19.1	18.7	18.9	18.8	190.7	211.2	193.1
	10	13.7	14.0	14.2	14.2	14.7	14.4	14.1	13.7	13.9	13.8	140.7	161.2	143.1

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.7	58.7	-
Precipitation - Reference Evapotranspiration	-55.7	-58.7	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	13.0	22.0	-

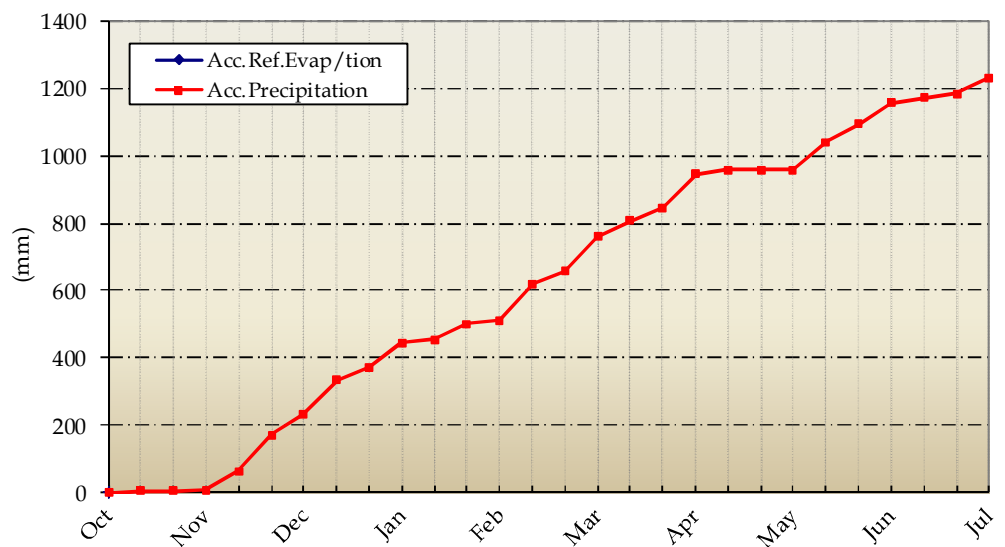
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2018)		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	28.6	28.0	25.8	24.0	21.4	23.4	21.0	24.2	27.0	25.2	34.2	29.4
	Min	15.0	15.6	14.5	15.4	13.5	14.2	14.0	14.5	12.6	13.6	14.3	16.3	13.7
Relative Humidity	Max	100	100	100	100	100	100	100	98	100	96	99	90	-
	Min	46	51	51	60	59	59	59	71	56	53	56	26	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.9
Sunshine Duration		4.8	11.3	3.9	6.7	1.2	0.3	0.3	1.1	8.4	12.5	5.0	11.1	10.8
Precipitation		11.4	0.2	0.5	12.6	5.3	5.3	8.2	4.1	0.0		47.6	22.0	6.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	67.3
Growing Degrees	5	16.6	17.1	16.3	15.6	13.8	12.8	13.7	12.8	13.4	15.3	147.3	202.2	166.2
	10	11.6	12.1	11.3	10.6	8.8	7.8	8.7	7.8	8.4	10.3	97.3	152.2	116.2

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	50.2
Precipitation - Reference Evapotranspiration	-	-	-43.7
Number of Rainy Days	8.0	2.0	1.3
Number of Dry Days	1.0	5.0	-

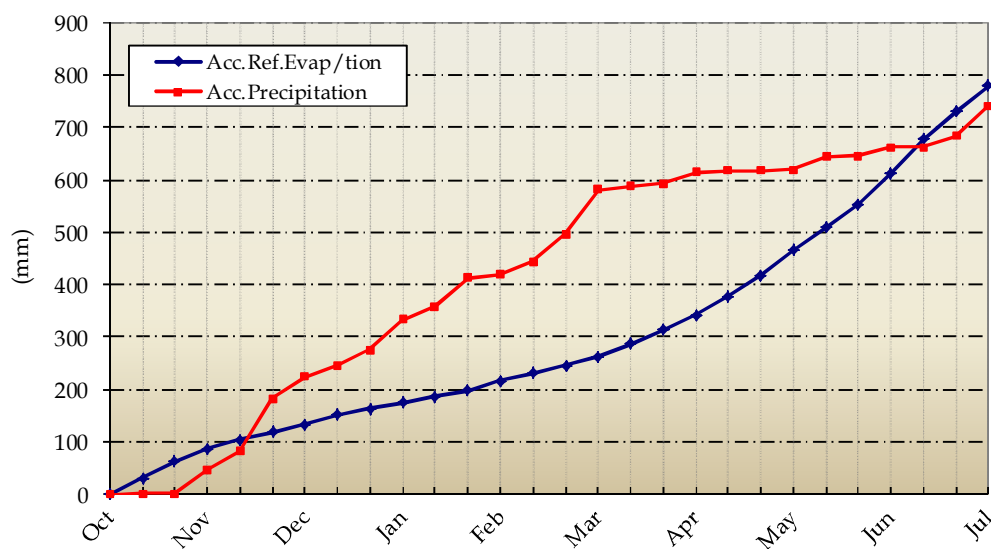
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.4	30.8	31.2	27.5	26.9	25.2	26.8	26.0	28.5	29.2	28.2	34.1	30.4
	Min	15.4	15.7	17.6	17.9	19.2	17.9	18.3	16.3	15.2	15.7	16.9	18.2	16.7
Relative Humidity	Max	89	90	90	91	92	92	91	92	92	91	91	79	-
	Min	33	33	31	59	53	64	53	46	35	34	44	28	-
Soil Temperature at 10 cm	06 UTC	22.8	23.6	24.3	25.2	25.2	24.4	22.6	22.6	22.2	22.6	23.6	-	24.2
	12 UTC	29.0	27.0	27.2	27.6	26.0	23.8	24.0	24.2	27.0	25.2	26.1	-	28.7
Sunshine Duration		9.4	10.6	12.6	10.2	4.2	3.6	6.3	7.1	12.5	12.8	8.9	12.2	11.8
Precipitation			0.5		0.0	3.9	31.9	19.0	2.8			58.1	0.0	0.4
Evaporation		5.4	6.5	9.0	4.3	7.0	0.5	3.5	2.0	6.4	9.0	53.6	94.4	88.4
Growing Degrees	5	17.4	18.3	19.4	17.7	18.1	16.6	17.6	16.2	16.9	17.5	175.4	211.1	185.7
	10	12.4	13.3	14.4	12.7	13.1	11.6	12.6	11.2	11.9	12.5	125.4	161.1	135.7

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.6	64.8	58.1
Precipitation - Reference Evapotranspiration	8.5	-64.8	-57.7
Number of Rainy Days	5.0	0.0	0.3
Number of Dry Days	1.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

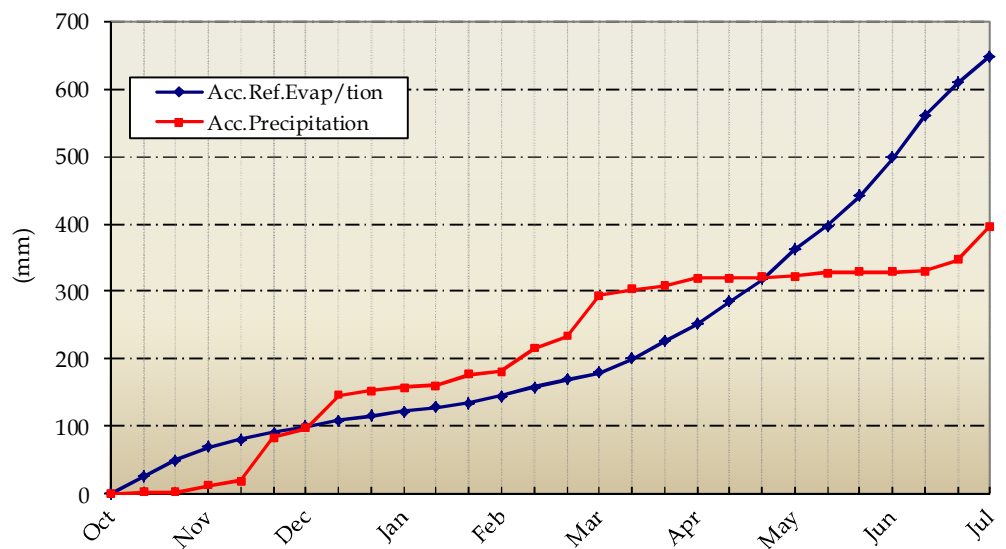


Larisa

3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.8	35.0	30.9	22.0	23.0	20.8	23.8	26.0	30.6	32.0	27.6	37.4	32.8
	Min	19.4	17.6	18.2	16.4	17.6	16.0	16.6	14.9	15.2	17.2	16.9	19.6	16.5
Relative Humidity	Max	78	84	87	92	92	97	96	98	95	81	90	82	-
	Min	21	19	36	58	59	77	58	47	30	31	44	22	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.7
Sunshine Duration		7.8	9.2	6.3	0.0	0.7	0.0	1.1	6.9	11.4	10.4	5.4	10.7	11.1
Precipitation				2.7	2.7		32.0	6.5	2.7	4.1		50.7		6.4
Evaporation		9.7	9.8	5.0	1.3	3.7	0.0	2.9	4.9	8.2	10.6	56.1	119.0	93.9
Growing Degrees	5	20.6	21.3	19.6	14.2	15.3	13.4	15.2	15.5	17.9	19.6	172.5	235.2	196.6
	10	15.6	16.3	14.6	9.2	10.3	8.4	10.2	10.5	12.9	14.6	122.5	185.2	146.6

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.3	62.9	61.9
Precipitation - Reference Evapotranspiration	10.4	-62.9	-55.5
Number of Rainy Days	6.0	0.0	0.9
Number of Dry Days	3.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

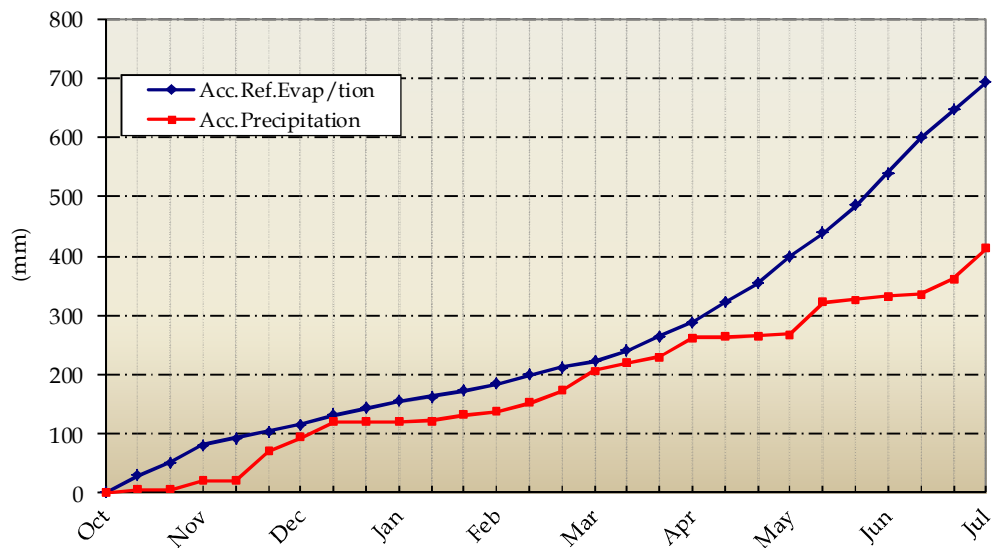


Mikra

3rd 10-day period (21-30/06/2018)		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	32.0	25.2	24.4	24.0	23.0	22.0	24.7	27.8	29.4	26.5	35.3	30.8
	Min	21.9	20.0	20.1	18.9	19.4	17.2	17.8	18.0	20.4	18.0	19.2	20.0	17.9
Relative Humidity	Max	66	79	60	73	73	93	91	89	80	87	79	69	-
	Min	20	27	34	46	52	54	62	55	35	40	42	24	-
Soil Temperature at 10 cm	06 UTC	25.0	25.0	22.5	23.8	24.4	23.5	20.6	21.0	21.6	23.0	23.0	28.5	25.3
	12 UTC	28.6	28.2	27.0	25.0	25.2	23.0	22.4	22.6	25.0	26.6	25.4	33.3	30.2
Sunshine Duration		12.6	11.1	10.3	1.4	1.2	0.2	0.0	4.4	10.4	13.7	6.5	12.7	11.0
Precipitation			0.1	0.1	0.0	0.5	24.6	21.9	3.4			50.6		4.8
Evaporation		10.2	15.2	7.7	2.5	1.8	0.0	0.0	6.1	5.9	10.4	59.8	98.5	93.3
Growing Degrees	5	22.1	21.0	17.7	16.7	16.7	15.1	14.9	16.4	19.1	18.7	178.2	226.8	193.2
	10	17.1	16.0	12.7	11.7	11.7	10.1	9.9	11.4	14.1	13.7	128.2	176.8	143.2

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.2	69.2	61.4
Precipitation - Reference Evapotranspiration	4.4	-69.2	-56.6
Number of Rainy Days	6.0	0.0	1.1
Number of Dry Days	2.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

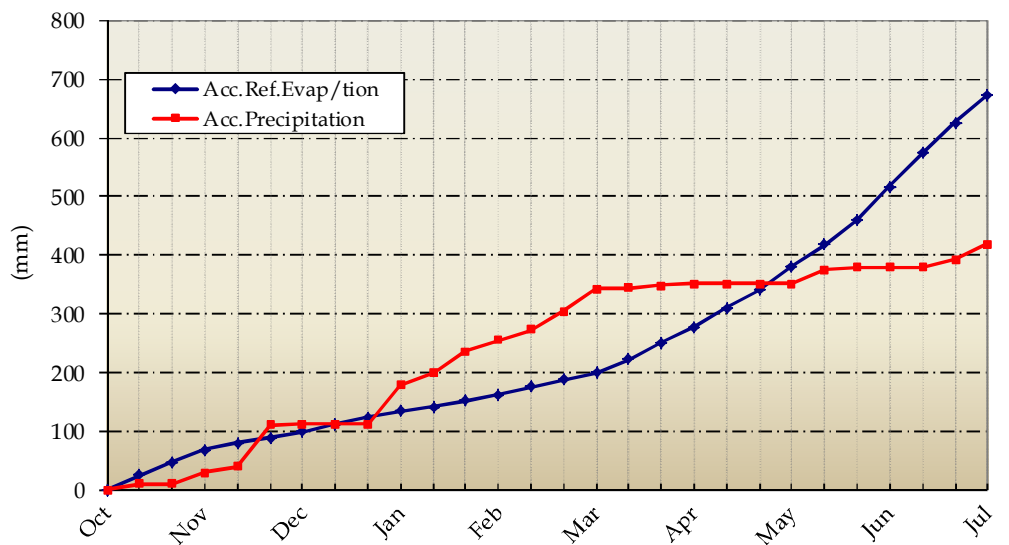




3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	32.7	30.8	25.0	27.3	26.2	19.6	26.8	29.2	30.6	27.8	35.1	31.5
	Min	19.0	18.5	19.8	17.4	16.3	18.9	17.6	16.9	15.6	17.2	17.7	19.6	17.1
Relative Humidity	Max	59	61	93	94	89	100	100	76	80	74	83	74	-
	Min	19	20	30	45	32	38	95	37	29	26	37	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.9	8.7	10.8	2.0	8.0	1.3	0.0	11.2	11.9	12.6	7.9	13.0	
Precipitation				0.8			3.8	22.7				27.3		2.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	19.6	20.6	20.3	16.2	16.8	17.6	13.6	16.9	17.4	18.9	177.8	223.4	
	10	14.6	15.6	15.3	11.2	11.8	12.6	8.6	11.9	12.4	13.9	127.8	173.4	

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.5	59.7	
Precipitation - Reference Evapotranspiration	-19.2	-59.7	2.6
Number of Rainy Days	3.0	0.0	0.8
Number of Dry Days	5.0	12.0	-

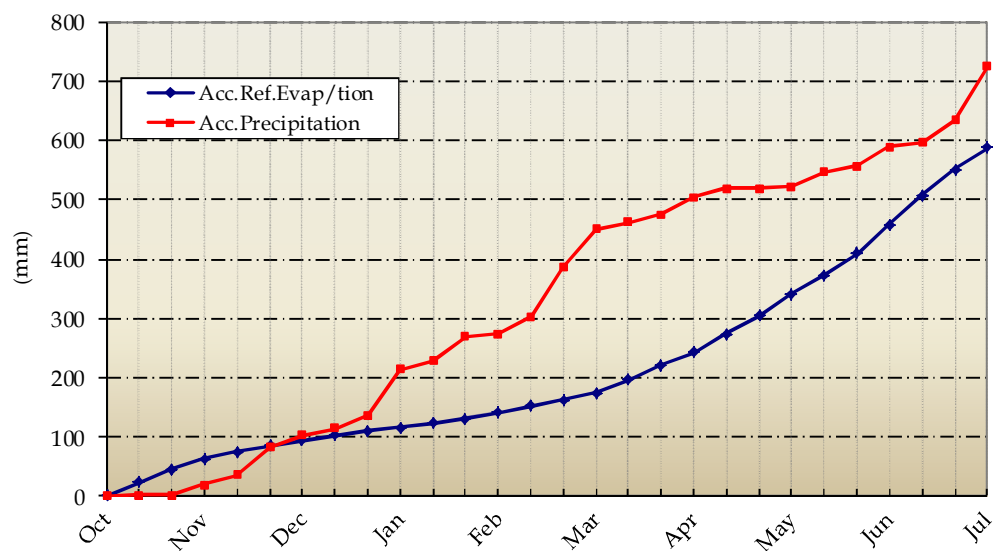
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	27.6	27.5	25.4	21.2	19.3	19.7	19.8	24.2	27.7	23.9	33.8	29.8
	Min	12.2	12.2	12.3	13.3	14.2	14.5	14.0	12.7	12.8	12.9	13.1	13.5	12.5
Relative Humidity	Max	97	99	100	100	100	100	100	95	83	97	97	96	-
	Min	29	28	39	47	60	68	66	63	36	31	47	19	-
Soil Temperature at 10 cm	06 UTC	20.4	20.4	-	-	21.2	18.8	18.8	18.0	17.2	18.8	19.2	23.8	24.0
	12 UTC	25.6	26.8	-	-	22.8	21.0	21.2	21.2	23.4	-	23.1	30.4	27.2
Sunshine Duration		5.8	12.9	9.2	6.0	1.6	1.3	0.4	5.1	11.2	12.7	6.6	11.0	11.1
Precipitation		0.0		3.0	18.8	4.0	49.4	12.4	2.4	0.1		90.1	1.6	5.4
Evaporation		3.6	-	-	0.0	2.5	0.0	0.8	1.7	5.9	6.8	-	68.8	65.6
Growing Degrees	5	14.5	14.9	14.9	14.4	12.7	11.9	11.9	11.3	13.5	15.3	135.2	186.4	161.5
	10	9.5	9.9	9.9	9.4	7.7	6.9	6.9	6.3	8.5	10.3	85.2	136.4	111.5

3rd 10-day period (21-30/06/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.8	52.1	53.9
Precipitation - Reference Evapotranspiration	53.3	-50.5	-48.5
Number of Rainy Days	7.0	2.0	0.7
Number of Dry Days	3.0	7.0	-

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<sub>n</sub> 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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