



AGROMETEOROLOGICAL BULLETIN

June 2019
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



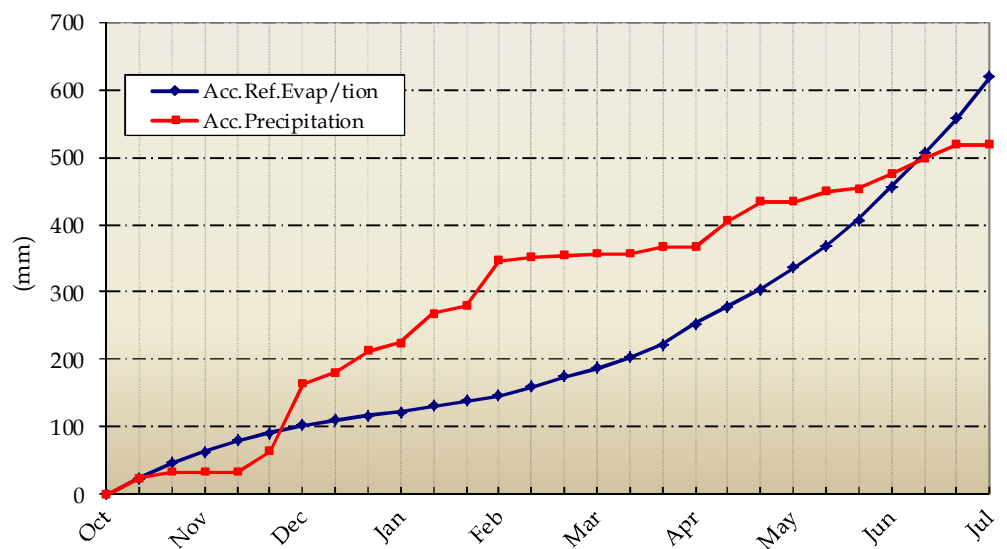
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3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	32.4	31.8	35.0	33.6	32.4	33.4	32.6	29.0	30.2	32.1	26.7	28.7
	Min	19.8	20.8	19.4	20.2	24.2	24.6	24.0	18.4	22.4	17.0	21.1	18.4	16.0
Relative Humidity	Max	92	82	94	77	64	65	70	78	66	64	75	86	-
	Min	45	37	52	24	35	39	30	38	30	26	36	45	-
Soil Temperature at 10 cm	06 UTC	25.4	25.6	24.6	26.4	27.6	27.8	28.2	27.6	27.4	25.8	26.6	22.9	23.1
	12 UTC	28.6	28.6	29.4	30.0	30.6	31.6	32.2	31.2	30.6	30.2	30.3	25.4	27.7
Sunshine Duration		9.4	3.6	12.6	12.4	12.5	13.3	13.4	9.2	13.3	12.7	11.2	7.4	10.9
Precipitation													67.5	4.4
Evaporation		10.5	3.3	10.0	13.6	10.8	10.6	10.8	7.7	8.0	9.0	94.3	68.6	85.9
Growing Degrees	5	20.1	21.6	20.6	22.6	23.9	23.5	23.7	20.5	20.7	18.6	215.8	175.3	173.3
	10	15.1	16.6	15.6	17.6	18.9	18.5	18.7	15.5	15.7	13.6	165.8	125.3	123.3

3rd 10-day period (21-30/06/2019)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	61.8	45.2	55.0
Precipitation - Reference Evapotranspiration	-61.8	22.3	-50.6
Number of Rainy Days	0.0	3.0	1.3
Number of Dry Days	15.0	5.0	-

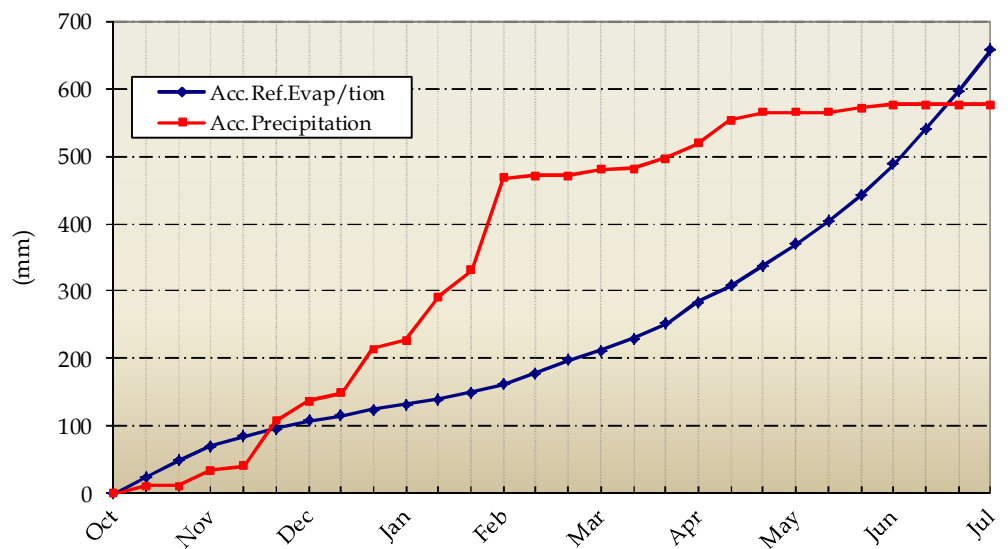
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.1	32.4	36.4	31.5	34.8	35.6	33.4	33.2	34.8	31.9	33.5	26.6	28.9
	Min	19.3	20.3	20.3	20.4	21.3	21.2	19.6	19.8	20.6	19.5	20.2	17.5	17.0
Relative Humidity	Max	93	88	90	77	90	73	83	85	87	76	84	90	-
	Min	37	45	23	41	30	27	33	33	29	26	32	51	-
Soil Temperature at 10 cm	06 UTC	27.3	27.4	28.0	28.1	28.4	28.4	28.2	28.2	28.8	28.5	28.1	24.8	25.9
	12 UTC	30.2	30.2	30.2	30.8	30.8	30.0	30.4	30.6	31.6	30.5	30.5	26.8	30.7
Sunshine Duration		13.3	13.5	12.1	13.3	10.9	12.8	13.6	13.5	10.8	13.5	12.7	9.3	12.3
Precipitation													98.0	1.3
Evaporation		9.0	9.5	5.2	8.8	5.0	9.9	10.0	6.5	9.0	8.6	81.5	52.0	74.3
Growing Degrees	5	20.2	21.4	23.4	21.0	23.1	23.4	21.5	21.5	22.7	20.7	218.7	170.2	179.7
	10	15.2	16.4	18.4	16.0	18.1	18.4	16.5	16.5	17.7	15.7	168.7	120.2	129.7

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.3	45.9	53.3
Precipitation - Reference Evapotranspiration	-62.3	52.1	-52.0
Number of Rainy Days	0.0	5.0	0.2
Number of Dry Days	14.0	6.0	-

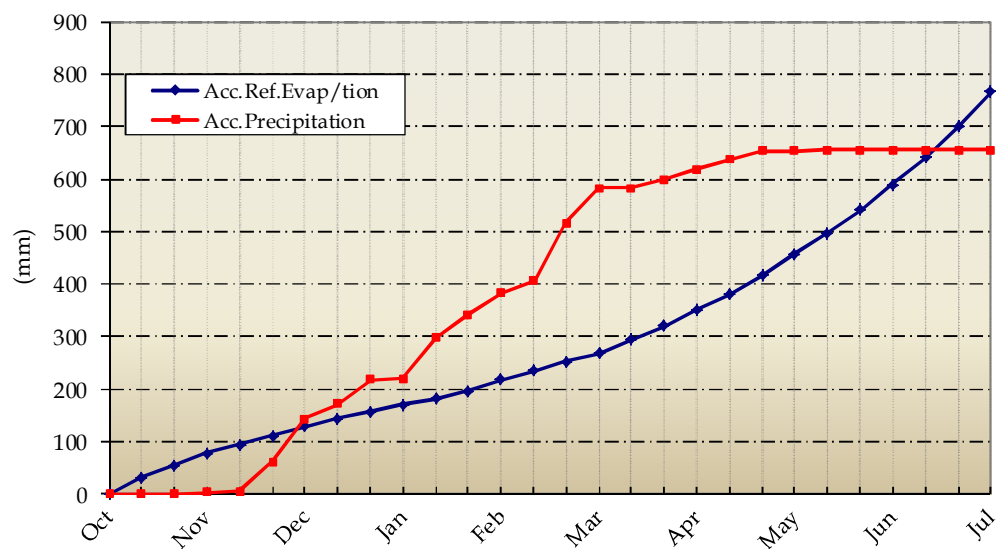
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.0	30.0	30.2	35.4	29.0	29.0	28.6	30.4	28.6	27.0	29.7	27.5	28.2
	Min	22.0	23.0	26.6	22.6	22.6	22.2	25.8	26.2	22.0	24.2	23.7	20.6	20.4
Relative Humidity	Max	82	83	62	59	76	80	76	67	87	71	74	84	-
	Min	47	51	50	29	59	65	62	44	58	43	51	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.7	13.0	12.8	12.7	12.3	12.6	12.5	12.8	13.7	12.9	12.8	11.8	12.3
Precipitation													0.0	0.0
Evaporation		6.0	9.8	8.1	7.2	6.1	6.9	8.9	10.2	7.3	8.7	79.2	63.4	89.0
Growing Degrees	5	20.5	21.5	23.4	24.0	20.8	20.6	22.2	23.3	20.3	20.6	217.2	190.7	193.1
	10	15.5	16.5	18.4	19.0	15.8	15.6	17.2	18.3	15.3	15.6	167.2	140.7	143.1

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.5	55.7	-
Precipitation - Reference Evapotranspiration	-66.5	-55.7	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	46.0	13.0	-

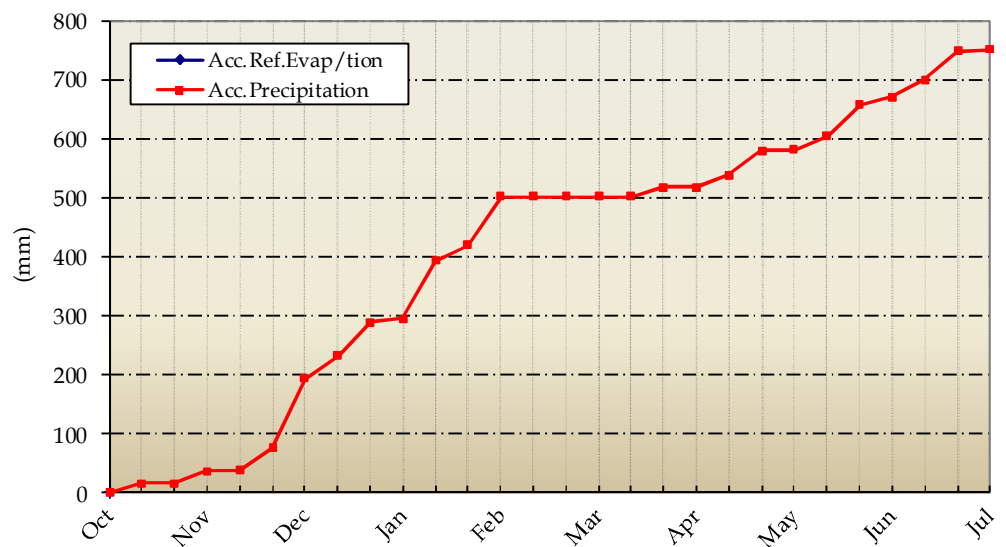
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	33.6	33.4	31.6	30.0	29.0	32.0	33.8	32.2	33.0	32.1	25.2	29.4
	Min	15.0	16.2	17.4	16.0	20.0	17.4	24.2	16.0	20.4	15.4	17.8	14.3	13.7
Relative Humidity	Max	100	80	100	78	100	70	100	84	100	81	89	99	-
	Min	34	36	44	43	39	42	32	30	29	30	36	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.9
Sunshine Duration		13.0	12.2	7.5	12.2	10.2	8.8	12.5	11.5	11.7	13.2	11.3	5.0	10.8
Precipitation										2.0		2.0	47.6	6.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	67.3
Growing Degrees	5	18.5	19.9	20.4	18.8	20.0	18.2	23.1	19.9	21.3	19.2	199.3	147.3	166.2
	10	13.5	14.9	15.4	13.8	15.0	13.2	18.1	14.9	16.3	14.2	149.3	97.3	116.2

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	50.2
Precipitation - Reference Evapotranspiration	-	-	-43.7
Number of Rainy Days	1.0	8.0	1.3
Number of Dry Days	11.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2019)		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	33.9	32.8	32.6	31.3	33.2	30.8	32.0	34.4	32.6	32.5	28.2	30.4
	Min	18.9	21.3	19.7	17.7	21.1	21.2	18.4	19.8	20.7	19.1	19.8	16.9	16.7
Relative Humidity	Max	86	86	83	78	80	87	88	88	70	70	82	91	-
	Min	34	29	35	34	38	30	44	36	30	22	33	44	-
Soil Temperature at 10 cm	06 UTC	26.4	29.6	26.8	27.2	28.0	27.8	28.0	28.0	28.2	26.4	27.6	23.6	24.2
	12 UTC	30.4	31.2	31.6	31.0	31.4	31.5	32.4	32.0	31.2	31.2	31.4	26.1	28.7
Sunshine Duration		12.2	12.2	11.3	12.0	9.6	11.8	10.3	11.4	6.5	12.2	11.0	8.9	11.8
Precipitation													58.1	0.4
Evaporation		9.6	8.2	7.3	6.5	9.8	11.0	9.0	11.5	7.5	12.9	93.3	53.6	88.4
Growing Degrees	5	20.4	22.6	21.3	20.2	21.2	22.2	19.6	20.9	22.6	20.9	211.7	175.4	185.7
	10	15.4	17.6	16.3	15.2	16.2	17.2	14.6	15.9	17.6	15.9	161.7	125.4	135.7

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.4	49.6	58.1
Precipitation - Reference Evapotranspiration	-62.4	8.5	-57.7
Number of Rainy Days	0.0	5.0	0.3
Number of Dry Days	15.0	1.0	-

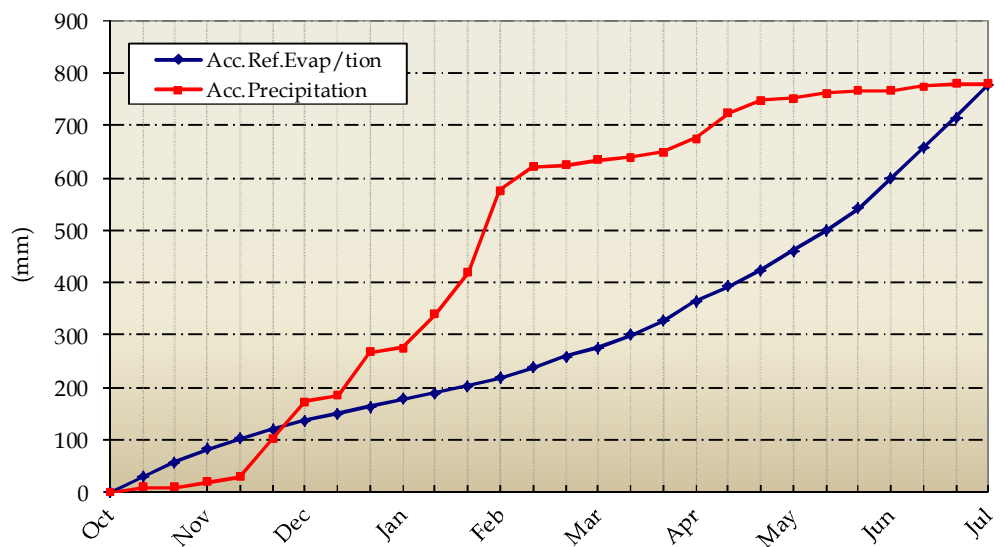


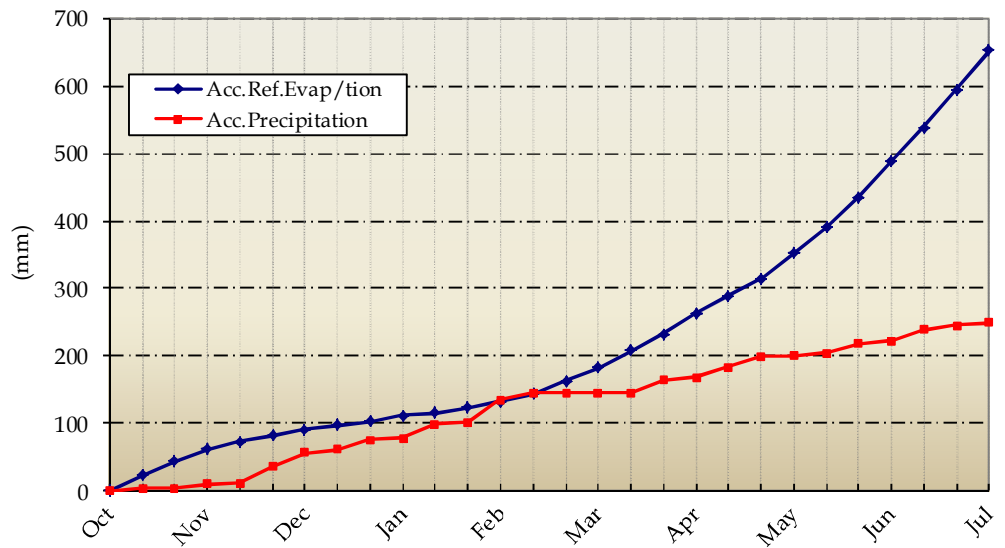
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

Larisa

3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.4	35.8	38.0	34.4	30.0	32.4	34.0	36.4	32.8	30.0	33.9	27.6	32.8
	Min	18.8	18.4	20.0	19.6	21.8	20.5	23.8	18.8	25.2	18.6	20.6	16.9	16.5
Relative Humidity	Max	87	77	84	88	87	81	64	74	71	93	81	90	-
	Min	25	24	23	34	41	36	26	28	27	31	30	44	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.7
Sunshine Duration		11.5	10.7	6.5	10.3	4.2	8.5	12.2	10.5	9.5	9.6	9.4	5.4	11.1
Precipitation						0.5	0.5				2.1	3.1	50.7	6.4
Evaporation		11.4	10.6	9.3	11.5	8.1	8.4	11.5	13.5	9.5	9.4	103.2	56.1	93.9
Growing Degrees	5	22.1	22.1	24.0	22.0	20.9	21.5	23.9	22.6	24.0	19.3	222.4	172.5	196.6
	10	17.1	17.1	19.0	17.0	15.9	16.5	18.9	17.6	19.0	14.3	172.4	122.5	146.6

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.8	40.3	61.9
Precipitation - Reference Evapotranspiration	-55.7	10.4	-55.5
Number of Rainy Days	3.0	6.0	0.9
Number of Dry Days	6.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

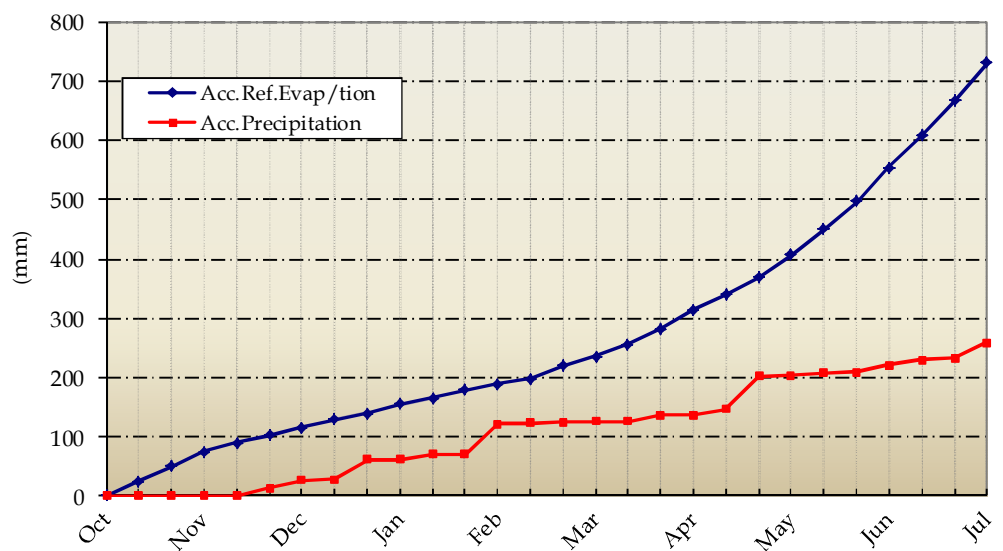


Mikra

3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.2	35.0	34.6	33.4	32.0	31.0	33.0	35.2	31.6	30.2	33.0	26.5	30.8
	Min	20.4	22.0	23.0	21.8	23.4	23.2	21.0	21.8	23.0	22.2	22.2	19.2	17.9
Relative Humidity	Max	84	78	80	85	88	92	91	70	79	79	83	79	-
	Min	32	29	29	36	46	43	35	30	29	31	34	42	-
Soil Temperature at 10 cm	06 UTC	24.0	27.4	28.0	27.8	26.4	28.0	22.0	25.4	26.0	24.0	25.9	23.0	25.3
	12 UTC	30.2	32.0	31.8	32.4	30.2	28.5	30.0	30.6	29.6	27.6	30.3	25.4	30.2
Sunshine Duration		13.4	13.3	9.0	8.2	9.5	7.5	13.5	13.2	10.6	11.7	11.0	6.5	11.0
Precipitation					5.1	0.0	19.8			1.3		26.2	50.6	4.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	59.8	93.3
Growing Degrees	5	22.3	23.5	23.8	22.6	22.7	22.1	22.0	23.5	22.3	21.2	226.0	178.2	193.2
	10	17.3	18.5	18.8	17.6	17.7	17.1	17.0	18.5	17.3	16.2	176.0	128.2	143.2

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	64.3	46.2	61.4
Precipitation - Reference Evapotranspiration	-38.1	4.4	-56.6
Number of Rainy Days	3.0	6.0	1.1
Number of Dry Days	4.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

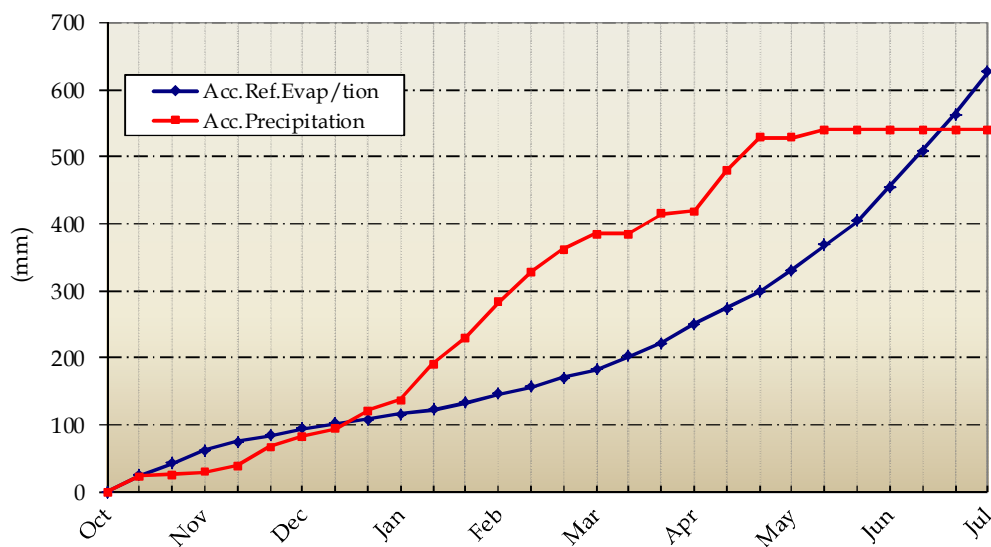


Tanagra

3rd 10-day period (21-30/06/2019)		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	33.3	36.1	35.0	31.4	30.2	31.2	34.3	29.8	28.4	32.3	27.8	31.5
	Min	19.4	18.6	18.2	18.8	23.4	24.1	23.0	19.0	21.4	21.0	20.7	17.7	17.1
Relative Humidity	Max	73	66	64	72	63	65	69	64	60	64	66	83	-
	Min	23	24	21	25	30	40	29	17	30	24	26	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.0	13.5	12.4	12.5	12.6	13.3	11.5	11.6	12.8	11.2	12.4	7.9	
Precipitation													27.3	2.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	21.5	21.0	22.2	21.9	22.4	22.2	22.1	21.7	20.6	19.7	215.1	177.8	
	10	16.5	16.0	17.2	16.9	17.4	17.2	17.1	16.7	15.6	14.7	165.1	127.8	

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.7	46.5	
Precipitation - Reference Evapotranspiration	-62.7	-19.2	2.6
Number of Rainy Days	0.0	3.0	0.8
Number of Dry Days	25.0	5.0	-

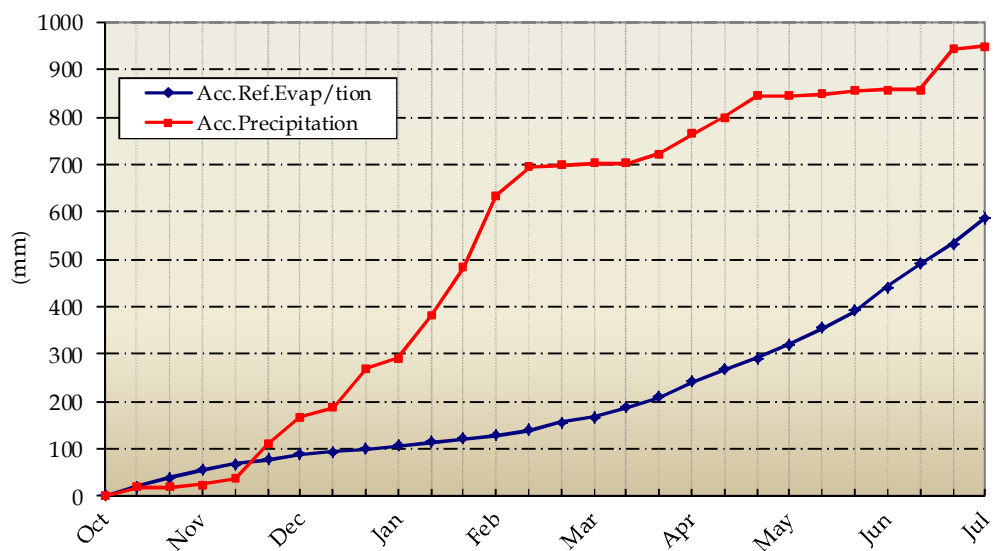
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.7	31.1	33.8	31.6	28.9	29.4	29.9	31.5	28.2	25.2	30.0	23.9	29.8
	Min	13.5	15.4	15.3	16.0	16.6	19.8	18.6	14.3	15.0	17.4	16.2	13.1	12.5
Relative Humidity	Max	100	100	97	94	95	68	85	92	90	71	89	97	-
	Min	30	29	23	23	38	36	32	26	35	30	30	47	-
Soil Temperature at 10 cm	06 UTC	20.4	21.8	22.8	23.4	-	24.2	25.0	24.4	-	-	23.1	19.2	24.0
	12 UTC	29.6	30.2	31.0	31.0	-	31.4	32.4	32.6	-	-	31.2	23.1	27.2
Sunshine Duration		9.1	11.8	12.6	11.7	11.7	11.8	10.4	11.2	8.8	11.7	11.1	6.6	11.1
Precipitation		4.1										4.1	90.1	5.4
Evaporation		5.1	8.7	5.5	-	-	7.7	6.8	-	-	-	-	-	65.6
Growing Degrees	5	17.1	18.3	19.6	18.8	17.8	19.6	19.3	17.9	16.6	16.3	181.1	135.2	161.5
	10	12.1	13.3	14.6	13.8	12.8	14.6	14.3	12.9	11.6	11.3	131.1	85.2	111.5

3rd 10-day period (21-30/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.6	36.8	53.9
Precipitation - Reference Evapotranspiration	-50.5	53.3	-48.5
Number of Rainy Days	1.0	7.0	0.7
Number of Dry Days	1.0	3.0	-

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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