



AGROMETEOROLOGICAL BULLETIN

July 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



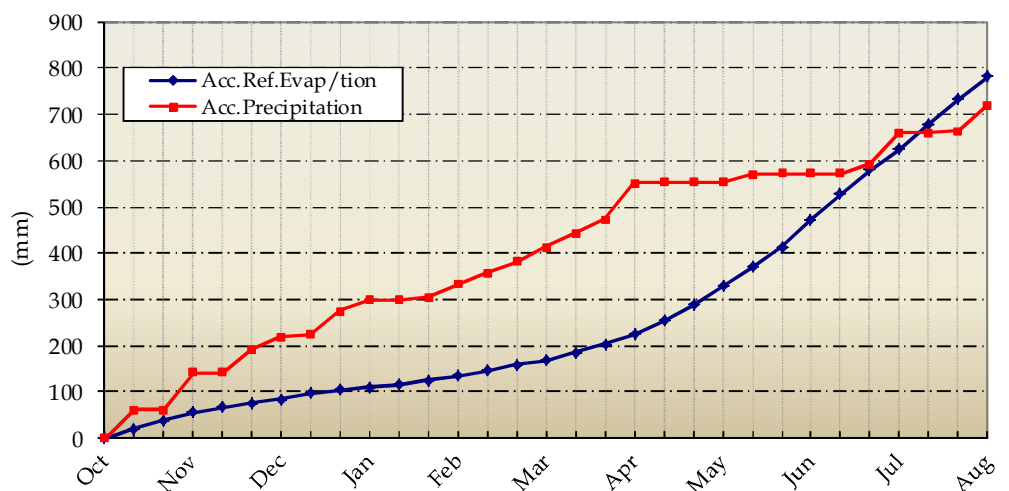
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3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.4	32.8	32.2	27.6	29.2	29.8	27.2	28.4	30.2	31.2	32.6	30.2	32.2	30.8
	Min	19.4	18.4	20.0	19.4	19.8	18.8	19.0	19.0	20.0	18.6	20.6	19.4	18.1	18.1
Relative Humidity	Max	84	81	99	89	96	96	97	94	91	97	93	92	86	-
	Min	34	45	43	56	53	46	62	66	54	54	49	51	39	-
Soil Temperature at 10 cm	06 UTC	26.6	27.4	27.4	27.2	24.2	23.4	23.6	23.0	23.8	22.6	23.6	24.8	24.4	24.5
	12 UTC	30.4	31.2	31.4	28.4	26.6	25.4	24.6	25.4	26.0	26.2	27.4	27.5	28.1	28.7
Sunshine Duration		11.6	13.3	10.7	4.1	5.9	7.0	4.5	9.5	5.7	7.4	8.1	8.0	12.0	10.3
Precipitation				0.0	9.2	0.3	43.0	3.7	0.3	0.2	0.0		56.7	23.8	5.5
Evaporation		11.0	6.7	9.3	0.5	4.1	3.6	3.9	7.7	3.6	4.5	5.3	60.2	99.8	104.4
Growing Degrees	5	20.4	20.6	21.1	18.5	19.5	19.3	18.1	18.7	20.1	19.9	21.6	217.8	221.2	213.8
	10	15.4	15.6	16.1	13.5	14.5	14.3	13.1	13.7	15.1	14.9	16.6	162.8	166.2	158.8

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.0	61.1	64.5
Precipitation - Reference Evapotranspiration	8.7	-37.3	-59.0
Number of Rainy Days	6.0	2.0	1.1
Number of Dry Days	5.0	8.0	-

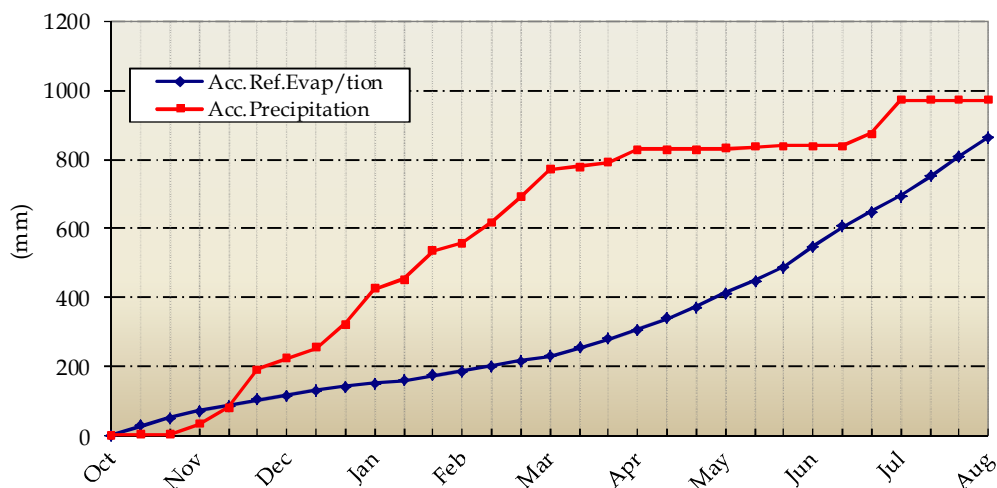
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	32.8	30.7	27.8	29.7	29.6	29.1	29.2	29.8	31.4	31.4	30.2	31.5	30.6
	Min	18.0	19.2	20.9	21.4	18.0	20.2	21.4	19.6	20.0	20.0	21.0	20.0	19.7	18.5
Relative Humidity	Max	86	86	92	85	86	87	90	90	89	86	87	88	85	-
	Min	42	23	42	47	45	52	50	48	41	36	45	43	38	-
Soil Temperature at 10 cm	06 UTC	27.0	27.4	27.6	27.0	27.4	27.0	27.6	27.0	27.6	27.5	28.4	27.4	27.3	27.4
	12 UTC	29.0	30.0	30.6	28.0	28.0	29.0	30.0	30.0	32.0	32.4	32.0	30.1	29.8	31.9
Sunshine Duration		13.1	10.3	0.6	13.0	12.6	9.3	9.4	12.9	12.7	11.5	11.7	10.6	12.1	11.8
Precipitation														29.9	2.9
Evaporation		7.4	7.0	5.0	6.0	8.0	3.2	5.0	6.0	7.2	7.0	8.0	69.8	80.9	81.3
Growing Degrees	5	19.1	21.0	20.8	19.6	18.9	19.9	20.3	19.4	19.9	20.7	21.2	220.7	226.4	215.1
	10	14.1	16.0	15.8	14.6	13.9	14.9	15.3	14.4	14.9	15.7	16.2	165.7	171.4	160.1

3rd 10-day period (21-31/07/2018)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.0	61.9
Precipitation - Reference Evapotranspiration	-56.0	-32.0
Number of Rainy Days	0.0	1.0
Number of Dry Days	32.0	9.0

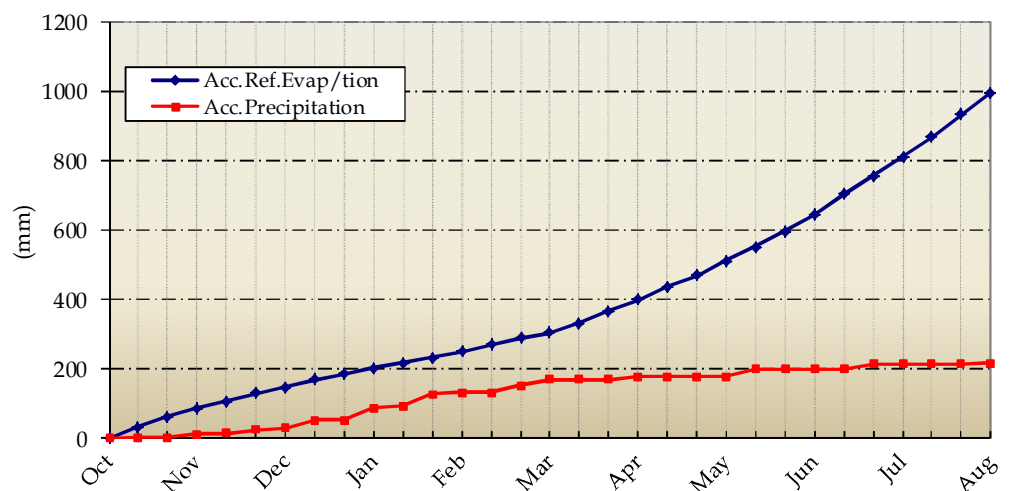
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	30.4	36.2	30.2	29.0	30.0	29.0	29.2	29.6	28.4	30.0	30.2	30.3	28.6
	Min	25.8	24.0	25.0	26.0	24.6	22.0	22.4	22.2	22.6	23.6	23.0	23.7	23.7	22.4
Relative Humidity	Max	82	71	70	79	84	91	85	88	88	86	84	83	73	-
	Min	49	48	27	62	64	65	68	63	67	69	63	59	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.9	12.8	11.4	10.7	12.2	9.2	12.3	12.5	12.6	7.6	11.3	11.4	12.4	11.6
Precipitation							1.1				0.2		1.3		0.4
Evaporation		6.0	7.6	4.5	11.1	6.2	1.5	6.4	7.9	3.0	6.8	4.6	65.6	85.4	102.1
Growing Degrees	5	23.0	22.2	25.6	23.1	21.8	21.0	20.7	20.7	21.1	21.0	21.5	241.7	241.9	225.3
	10	18.0	17.2	20.6	18.1	16.8	16.0	15.7	15.7	16.1	16.0	16.5	186.7	186.9	170.3

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.0	70.1	-
Precipitation - Reference Evapotranspiration	-61.7	-70.1	0.4
Number of Rainy Days	2.0	0.0	0.1
Number of Dry Days	38.0	13.0	-

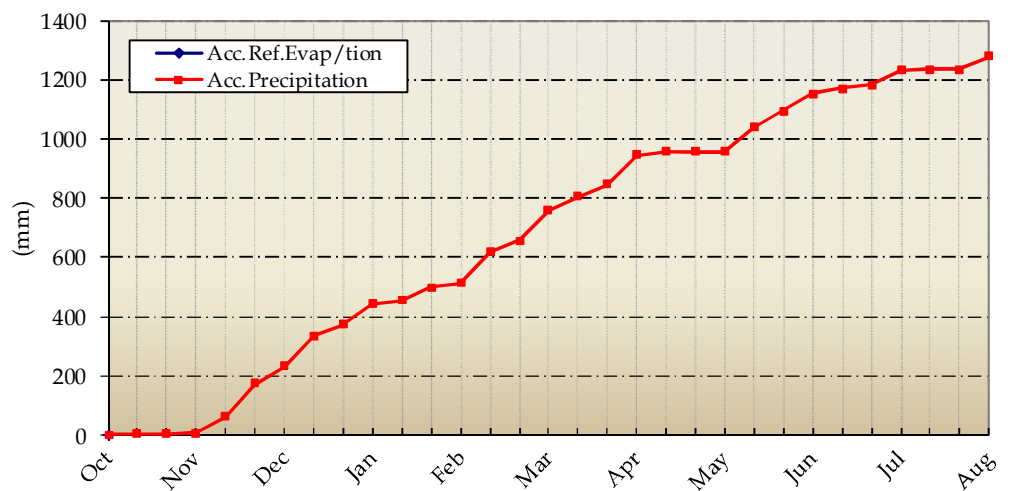
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.8	33.8	33.0	30.0	31.0	30.2	30.4	31.0	28.8	31.8	32.4	31.5	33.9	31.1
	Min	16.2	17.0	16.5	15.0	16.0	15.0	17.5	17.2	15.5	17.0	15.2	16.2	16.3	15.7
Relative Humidity	Max	100	97	100	100	100	100	100	100	100	100	96	99	89	-
	Min	32	38	45	43	40	46	51	45	42	46	42	43	26	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	23.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		12.3	11.3	8.8	9.3	7.9	2.8	6.6	10.7	9.7	7.3	9.3	8.7	11.7	10.1
Precipitation						10.2	7.3	21.3	0.0	3.3	0.3	3.3	45.7		10.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	85.3
Growing Degrees	5	20.0	20.4	19.8	17.5	18.5	17.6	19.0	19.1	17.2	19.4	18.8	207.2	221.1	197.9
	10	15.0	15.4	14.8	12.5	13.5	12.6	14.0	14.1	12.2	14.4	13.8	152.2	166.1	144.4

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	55.8
Precipitation - Reference Evapotranspiration	-	-	-45.5
Number of Rainy Days	6.0	0.0	1.5
Number of Dry Days	15.0	14.0	-

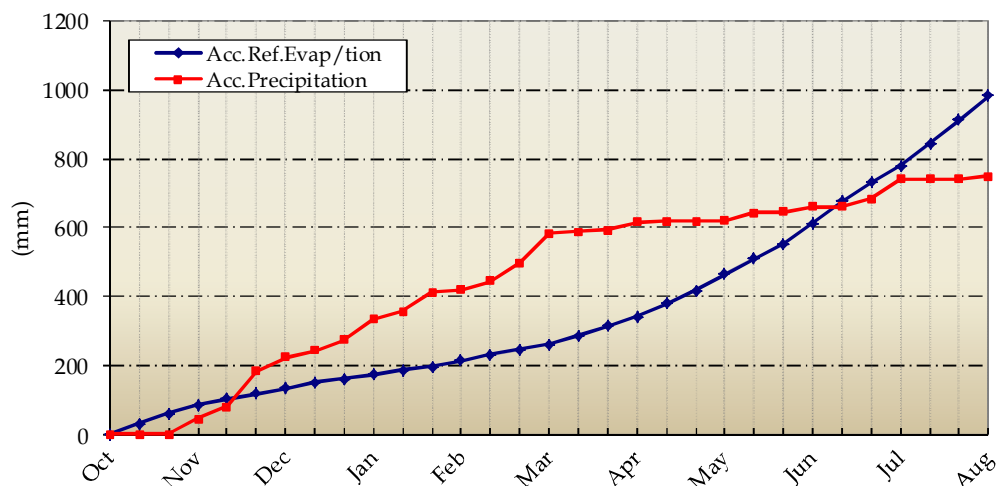
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.4	38.6	36.2	32.4	31.2	32.0	31.0	33.2	32.6	31.2	31.1	33.0	32.8	31.5
	Min	19.6	19.4	17.5	18.2	18.8	20.3	20.4	19.4	19.8	18.8	20.3	19.3	18.4	18.2
Relative Humidity	Max	82	75	80	82	86	88	91	89	88	82	85	84	83	-
	Min	28	13	27	29	39	42	37	34	27	41	43	33	30	-
Soil Temperature at 10 cm	06 UTC	27.0	27.4	27.4	27.4	27.4	27.4	28.4	26.2	26.6	26.8	27.4	27.2	-	26.0
	12 UTC	31.2	31.4	31.0	30.4	30.6	31.0	29.6	29.6	30.0	30.6	21.0	29.7	-	30.3
Sunshine Duration		12.7	12.3	11.3	12.5	11.1	11.5	9.9	12.5	12.5	11.1	11.7	11.7	12.2	11.2
Precipitation								5.8			0.0		5.8	6.7	0.9
Evaporation		8.0	10.0	8.4	10.2	6.8	10.1	4.7	9.4	9.0	22.4	7.8	106.8	79.5	90.1
Growing Degrees	5	21.5	24.0	21.9	20.3	20.0	21.2	20.7	21.3	21.2	20.0	20.7	232.7	226.9	218.3
	10	16.5	19.0	16.9	15.3	15.0	16.2	15.7	16.3	16.2	15.0	15.7	177.7	171.9	163.3

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	69.0	67.3	62.2
Precipitation - Reference Evapotranspiration	-63.2	-60.6	-61.3
Number of Rainy Days	1.0	1.0	0.4
Number of Dry Days	28.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

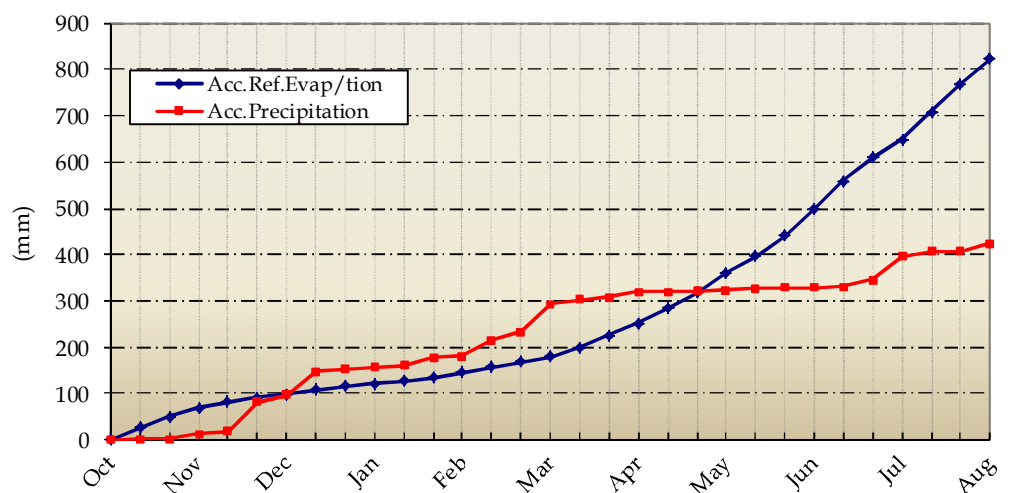


Larisa

3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.6	38.6	36.6	30.2	32.0	30.0	31.4	33.0	29.4	32.4	32.0	32.8	33.7	33.2
	Min	20.2	19.0	21.8	19.0	19.2	19.2	18.4	19.7	21.2	19.2	20.0	19.7	18.7	18.1
Relative Humidity	Max	78	79	91	91	89	93	94	94	88	91	91	89	87	-
	Min	33	26	22	40	38	45	41	37	47	44	44	38	29	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	26.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	29.2
Sunshine Duration		11.8	11.5	8.9	9.2	8.9	3.8	6.6	11.6	3.2	7.3	8.8	8.3	11.7	10.7
Precipitation					5.1		7.8				2.7		15.6	4.9	4.4
Evaporation		10.8	15.6	9.6	6.0	8.1	2.5	4.6	8.4	6.3	6.4	7.5	85.8	122.9	104.1
Growing Degrees	5	22.9	23.8	24.2	19.6	20.6	19.6	19.9	21.4	20.3	20.8	21.0	234.1	233.0	227.1
	10	17.9	18.8	19.2	14.6	15.6	14.6	14.9	16.4	15.3	15.8	16.0	179.1	178.0	172.1

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.6	65.2	66.2
Precipitation - Reference Evapotranspiration	-39.0	-60.3	-61.8
Number of Rainy Days	3.0	1.0	1.1
Number of Dry Days	14.0	9.0	-

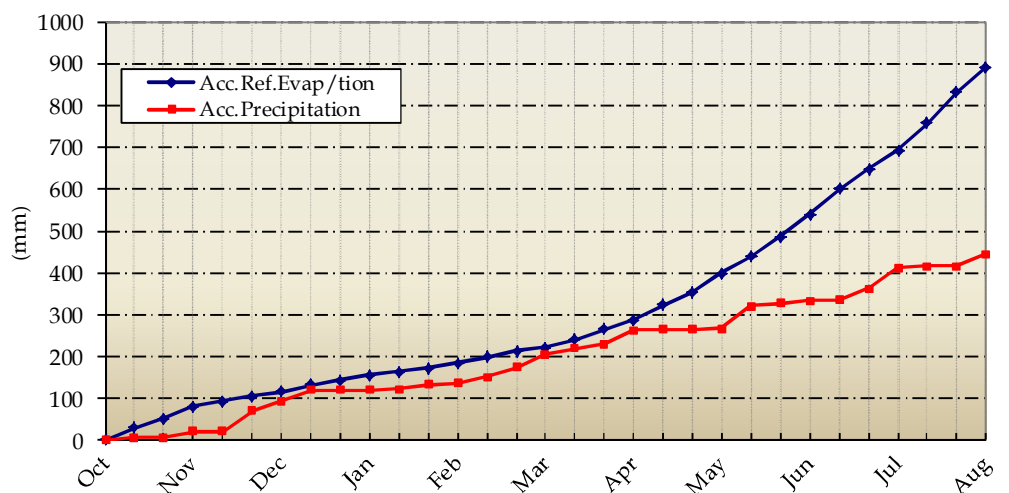
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	36.0	34.3	28.2	31.0	31.0	29.6	31.7	31.8	32.0	31.6	31.8	33.2	31.8
	Min	23.2	19.8	20.2	21.4	22.3	20.2	19.8	20.6	22.2	21.1	21.4	21.1	20.0	19.4
Relative Humidity	Max	63	70	79	65	79	90	91	85	84	85	89	80	68	-
	Min	27	21	26	42	39	50	46	38	42	43	40	38	26	-
Soil Temperature at 10 cm	06 UTC	28.2	28.0	28.6	25.2	24.8	25.0	24.6	25.6	26.6	25.4	25.6	26.1	28.1	26.8
	12 UTC	30.6	30.8	33.0	28.0	29.1	26.2	28.0	29.0	29.0	30.0	29.8	29.4	32.6	31.6
Sunshine Duration		13.5	12.6	9.0	10.4	10.3	6.9	7.1	12.5	7.5	7.5	8.2	9.6	12.2	10.5
Precipitation				5.3	4.0	11.1	0.8	0.2		0.0	2.7	5.0	29.1		9.4
Evaporation		12.0	13.5	5.7	4.5	9.6	5.2	6.8	8.2	6.5	3.3	8.2	83.5	108.5	101.0
Growing Degrees	5	23.1	22.9	22.3	19.8	21.7	20.6	19.7	21.2	22.0	21.6	21.5	236.2	237.6	226.2
	10	18.1	17.9	17.3	14.8	16.7	15.6	14.7	16.2	17.0	16.6	16.5	181.2	182.6	171.2

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.7	71.6	65.4
Precipitation - Reference Evapotranspiration	-30.6	-71.6	-56.0
Number of Rainy Days	7.0	0.0	1.5
Number of Dry Days	13.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

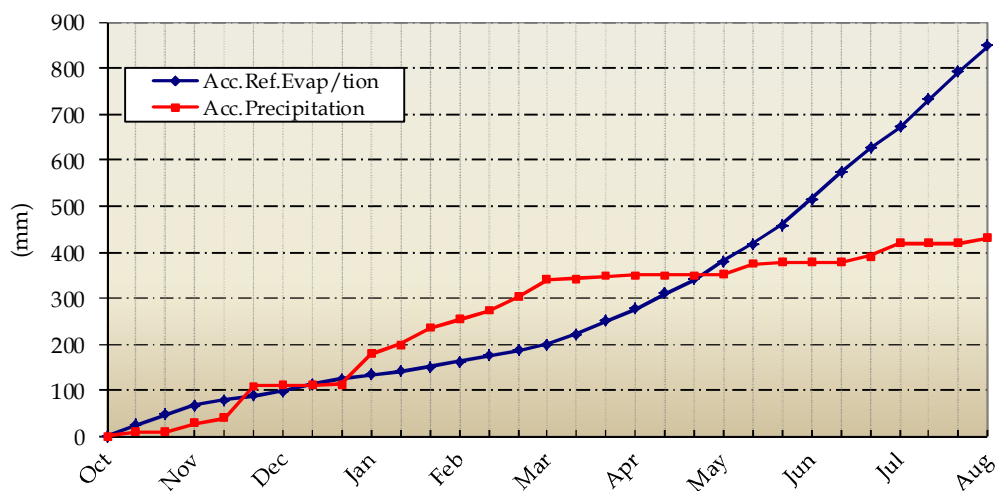


Tanagra

3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.4	39.4	37.6	29.8	32.4	30.0	30.2	31.1	31.2	32.3	32.2	32.8	32.7	32.0
	Min	21.4	19.7	24.2	21.7	20.0	20.2	18.6	20.3	21.0	20.3	21.7	20.8	19.0	18.6
Relative Humidity	Max	60	69	60	77	84	99	93	95	79	80	98	81	72	-
	Min	24	13	16	32	27	37	17	36	40	31	35	28	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.8	11.3	9.7	7.4	9.1	3.5	10.3	10.0	6.9	12.5	11.1	9.5	12.3	
Precipitation					0.1		5.7		5.4			1.7	12.9	0.1	1.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	22.9	24.6	25.9	20.8	21.2	20.1	19.4	20.7	21.1	21.3	22.0	239.9	229.7	
	10	17.9	19.6	20.9	15.8	16.2	15.1	14.4	15.7	16.1	16.3	17.0	184.9	174.7	

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.0	65.2	
Precipitation - Reference Evapotranspiration	-44.1	-65.1	1.3
Number of Rainy Days	4.0	1.0	0.7
Number of Dry Days	26.0	9.0	-

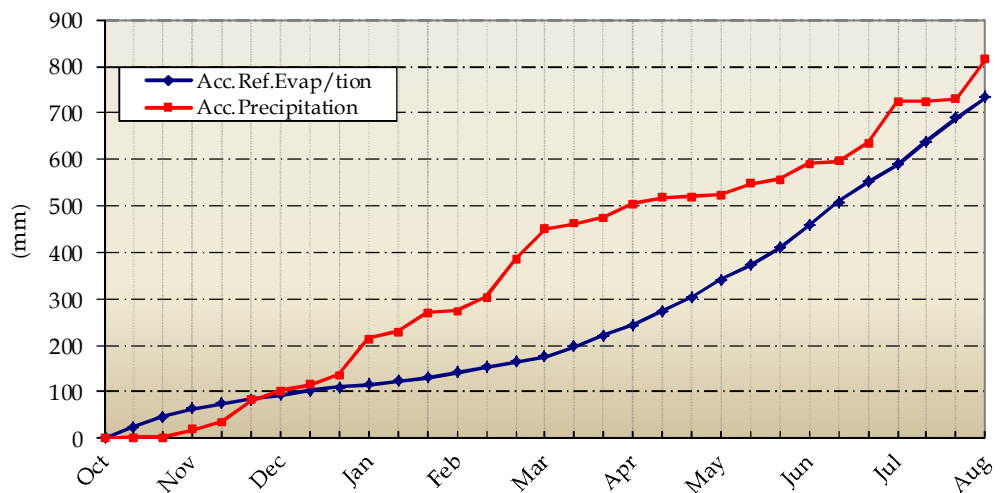
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.5	35.2	33.2	26.4	28.0	26.9	24.9	28.4	29.4	29.6	28.0	29.2	32.3	30.5
	Min	15.3	15.0	15.6	14.9	14.4	15.0	16.1	13.7	13.8	14.3	15.3	14.9	14.8	14.6
Relative Humidity	Max	99	95	77	100	100	100	100	100	100	100	100	97	86	-
	Min	26	15	19	44	33	47	47	39	33	37	40	35	21	-
Soil Temperature at 10 cm	06 UTC	24.4	25.0	25.8	25.8	22.4	21.8	21.6	-	21.0	21.4	22.2	23.1	25.2	25.8
	12 UTC	-	-	31.2	28.8	27.2	26.2	23.8	-	-	27.0	27.2	27.3	29.7	28.5
Sunshine Duration		10.7	11.6	10.4	5.3	6.2	4.3	7.9	8.1	10.1	7.8	5.8	8.0	12.2	10.6
Precipitation					15.7	37.4	13.7	3.9	11.0	0.9	0.5	2.2	85.3	0.9	4.2
Evaporation		12.0	10.2	9.3	2.2	-	3.3	-	3.0	4.7	4.8	3.5	-	-	71.9
Growing Degrees	5	18.4	20.1	19.4	15.7	16.2	16.0	15.5	16.1	16.6	17.0	16.7	187.5	204.3	192.7
	10	13.4	15.1	14.4	10.7	11.2	11.0	10.5	11.1	11.6	12.0	11.7	132.5	149.3	137.7

3rd 10-day period (21-31/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.6	60.4	58.9
Precipitation - Reference Evapotranspiration	39.7	-59.5	-54.7
Number of Rainy Days	8.0	1.0	1.2
Number of Dry Days	3.0	9.0	-

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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