



AGROMETEOROLOGICAL BULLETIN

July 2016
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



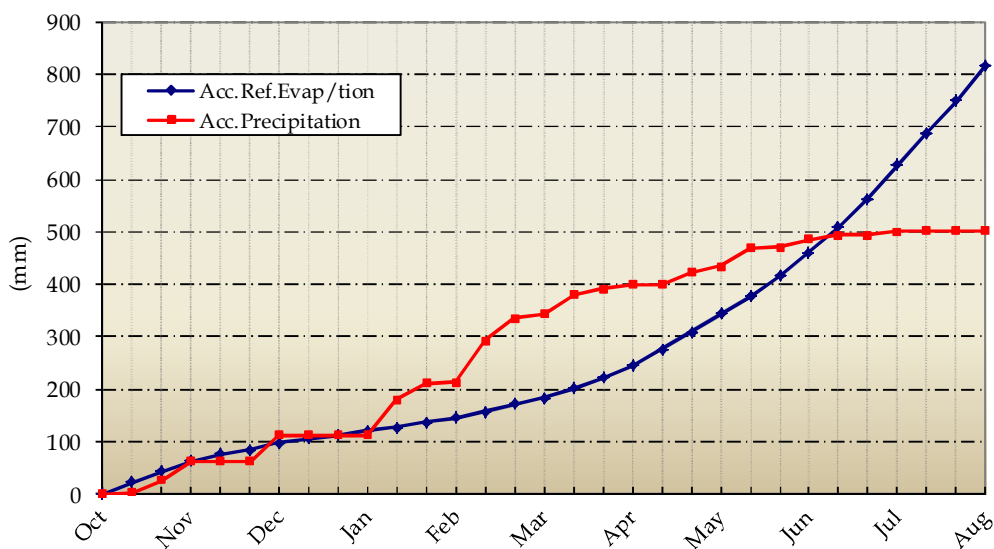
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3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	31.8	32.8	35.8	34.4	33.6	33.8	34.4	34.2	32.4	35.6	33.6	34.9	30.8
	Min	16.6	17.2	17.6	18.4	22.6	21.2	21.0	22.8	22.6	18.6	19.0	19.8	20.7	18.1
Relative Humidity	Max	72	76	83	70	68	70	71	70	70	74	71	72	82	-
	Min	30	32	29	20	23	32	30	32	26	31	20	28	33	-
Soil Temperature at 10 cm	06 UTC	26.8	27.0	27.6	27.2	29.0	28.8	28.6	28.8	29.0	28.4	28.3	28.1	28.3	24.5
	12 UTC	31.6	33.0	33.6	34.5	34.4	33.8	39.4	39.2	34.6	34.0	33.6	34.7	33.7	28.7
Sunshine Duration		11.0	12.7	13.4	12.8	13.3	13.4	12.7	12.7	12.6	12.4	13.1	12.7	12.9	10.3
Precipitation															5.5
Evaporation		4.1	10.1	9.3	12.7	12.2	9.8	13.0	8.2	13.7	9.3	9.2	111.6	131.0	104.4
Growing Degrees	5	18.9	19.5	20.2	22.1	23.5	22.4	22.4	23.6	23.4	20.5	22.3	238.8	250.6	213.8
	10	13.9	14.5	15.2	17.1	18.5	17.4	17.4	18.6	18.4	15.5	17.3	183.8	195.6	158.8

3rd 10-day period (21-31/07/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	68.9	71.1
Precipitation - Reference Evapotranspiration	-68.9	-71.1
Number of Rainy Days	0.0	1.1
Number of Dry Days	27.0	-

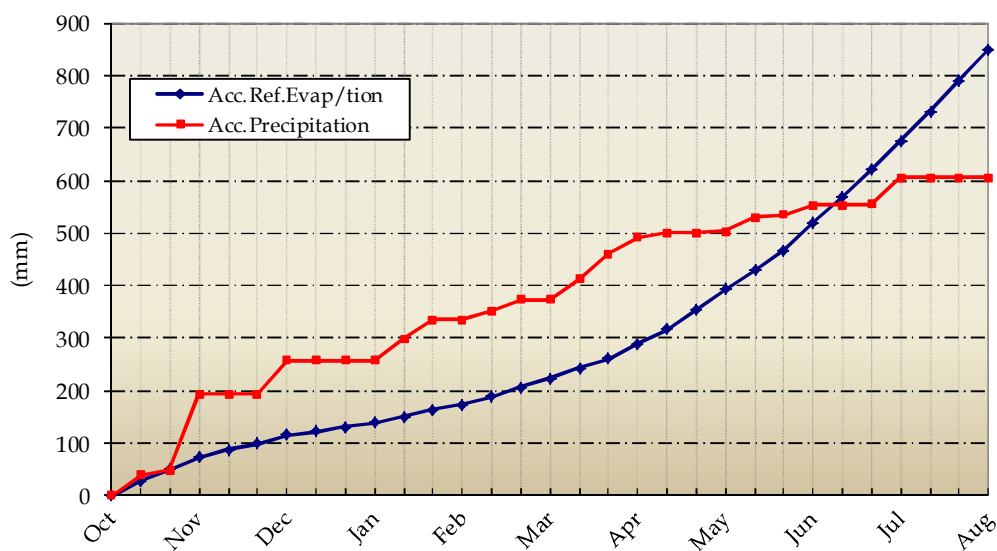
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.8	31.6	29.6	31.6	31.6	31.6	31.4	31.0	31.4	32.2	32.0	31.3	33.7	30.6
	Min	18.0	19.0	19.2	18.7	20.2	21.2	20.6	20.5	20.8	20.8	21.2	20.0	22.1	18.5
Relative Humidity	Max	86	85	85	87	89	88	88	88	88	88	86	87	84	-
	Min	31	41	44	46	46	44	37	41	49	42	47	43	36	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	27.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	31.9
Sunshine Duration		13.3	13.4	12.4	13.3	10.9	12.0	11.7	13.1	13.1	13.6	12.0	12.6	12.6	11.8
Precipitation															2.9
Evaporation		4.0	6.0	11.5	21.9	5.6	8.9	1.3	5.8	7.0	11.4	9.6	93.0	92.0	81.3
Growing Degrees	5	19.4	20.3	19.4	20.2	20.9	21.4	21.0	20.8	21.1	21.5	21.6	227.5	251.8	215.1
	10	14.4	15.3	14.4	15.2	15.9	16.4	16.0	15.8	16.1	16.5	16.6	172.5	196.8	160.1

3rd 10-day period (21-31/07/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.1	66.4
Precipitation - Reference Evapotranspiration	-60.1	-66.4
Number of Rainy Days	0.0	0.3
Number of Dry Days	35.0	34.0

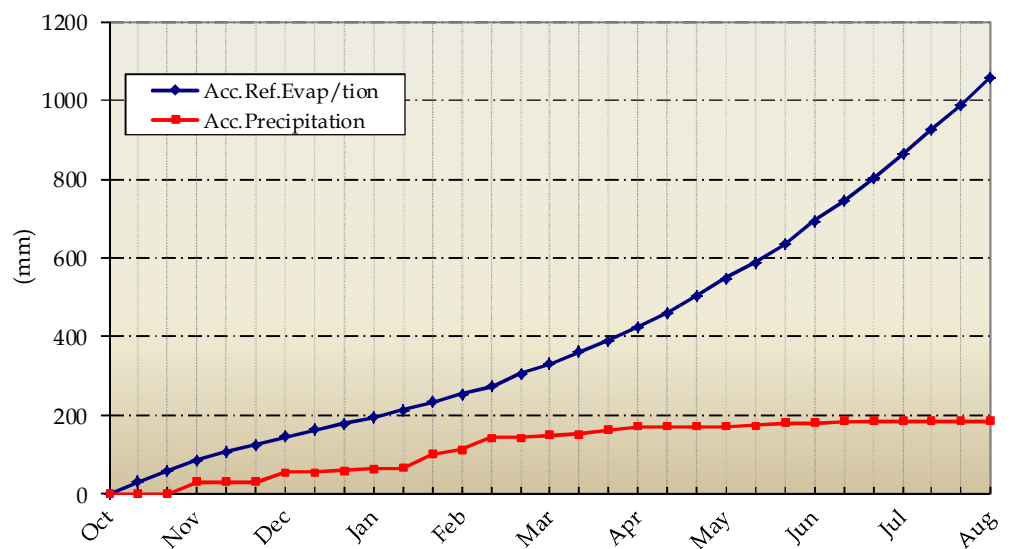
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	28.8	29.4	31.2	30.0	29.2	29.2	30.6	30.2	30.8	30.0	29.8	30.1	28.6
	Min	24.4	24.2	21.0	22.6	26.8	24.6	23.8	25.0	21.6	25.6	27.0	24.2	21.8	22.4
Relative Humidity	Max	74	80	79	71	75	88	86	86	86	76	82	80	85	-
	Min	61	60	60	58	64	65	63	59	60	58	62	61	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.1	13.1	13.1	12.9	13.0	12.9	12.5	13.1	12.7	12.7	12.8	12.9	12.5	11.6
Precipitation															0.4
Evaporation		10.4	4.9	7.4	10.6	5.9	9.9	5.7	7.6	10.9	9.0	8.0	90.3	63.9	102.1
Growing Degrees	5	21.3	21.5	20.2	21.9	23.4	21.9	21.5	22.8	20.9	23.2	23.5	242.1	230.5	225.3
	10	16.3	16.5	15.2	16.9	18.4	16.9	16.5	17.8	15.9	18.2	18.5	187.1	175.5	170.3

3rd 10-day period (21-31/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	68.5	61.4	-
Precipitation - Reference Evapotranspiration	-68.5	-61.4	0.4
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	53.0	63.0	-

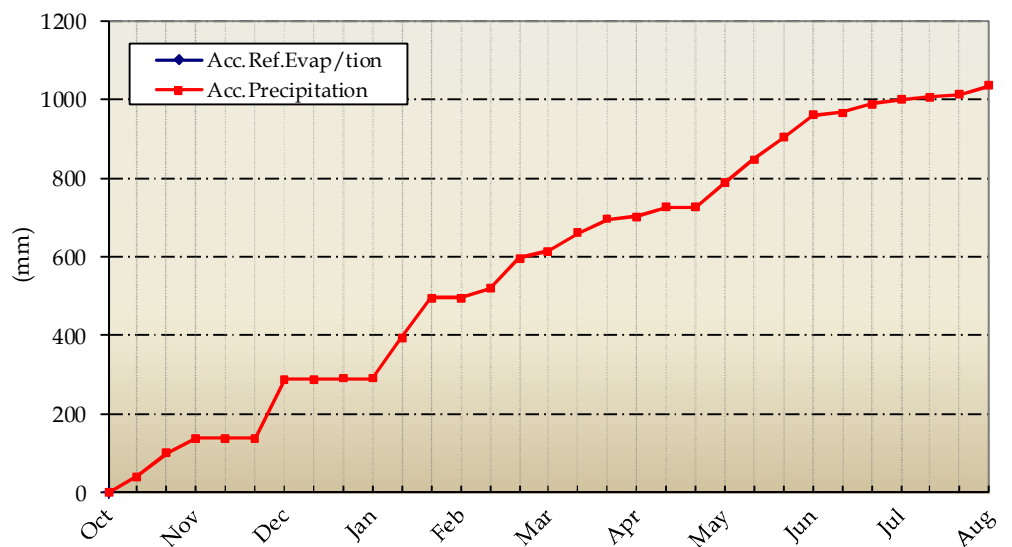
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.2	33.2	34.6	36.4	36.4	31.8	32.0	34.0	34.0	34.0	33.8	33.9	35.7	31.1
	Min	13.8	14.4	14.4	16.0	23.5	15.6	13.1	17.0	15.8	16.4	22.9	16.6	17.0	15.7
Relative Humidity	Max	96	98	95	99	98	95	100	100	98	100	94	98	95	-
	Min	25	26	26	22	32	29	29	23	37	24	28	27	21	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	23.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		12.5	12.4	12.4	12.0	10.0	8.1	9.0	11.0	12.0	9.4	9.7	10.8	11.3	10.1
Precipitation							23.4	0.0					23.4	6.9	10.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	85.3
Growing Degrees	5	18.0	18.8	19.5	21.2	25.0	18.7	17.6	20.5	19.9	20.2	23.4	222.7	235.0	197.9
	10	13.0	13.8	14.5	16.2	20.0	13.7	12.6	15.5	14.9	15.2	18.4	167.7	180.0	144.4

3rd 10-day period (21-31/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	55.8
Precipitation - Reference Evapotranspiration	-	-	-45.5
Number of Rainy Days	1.0	3.0	1.5
Number of Dry Days	9.0	13.0	-

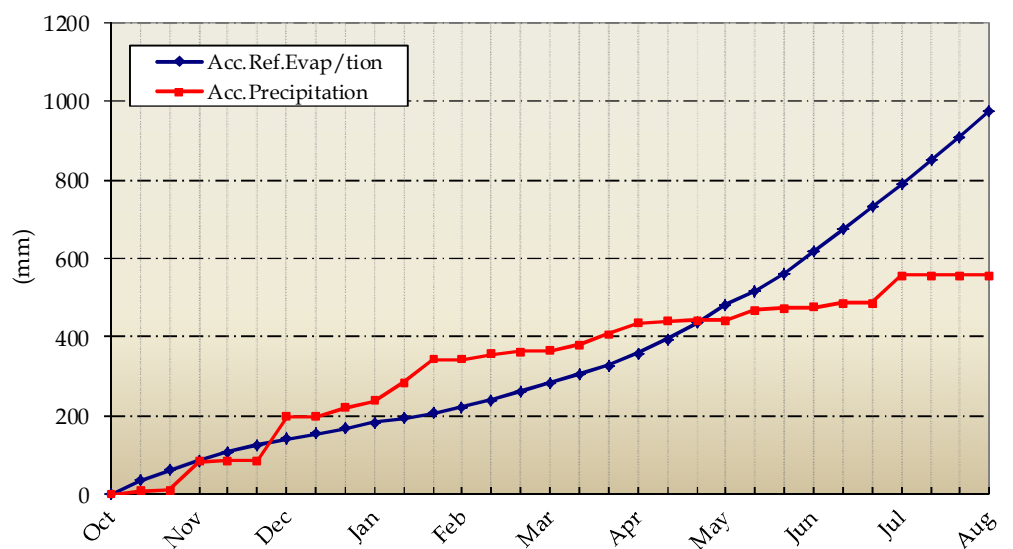
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	31.0	32.4	33.3	35.6	30.8	30.8	32.3	32.2	32.4	37.0	32.6	34.3	31.5
	Min	17.6	17.1	19.5	20.0	20.4	21.9	18.6	20.1	20.4	20.4	19.8	19.6	21.3	18.2
Relative Humidity	Max	88	88	84	79	89	91	92	84	82	81	80	85	91	-
	Min	30	37	34	29	24	47	42	31	40	37	21	34	33	-
Soil Temperature at 10 cm	06 UTC	24.8	25.6	25.0	26.0	26.0	27.0	26.6	26.6	27.0	26.0	27.0	26.1	26.0	26.0
	12 UTC	27.2	27.2	27.6	28.0	28.0	28.2	28.6	28.4	28.4	28.4	29.5	28.1	27.3	30.3
Sunshine Duration		12.5	12.5	12.5	12.2	10.4	12.0	10.6	12.1	12.3	11.3	11.3	11.8	12.1	11.2
Precipitation														5.6	0.9
Evaporation		5.0	7.2	7.4	5.0	4.6	10.4	8.6	6.2	5.4	9.0	4.4	73.2	-	90.1
Growing Degrees	5	19.0	19.1	21.0	21.7	23.0	21.4	19.7	21.2	21.3	21.4	23.4	232.0	250.7	218.3
	10	14.0	14.1	16.0	16.7	18.0	16.4	14.7	16.2	16.3	16.4	18.4	177.0	195.7	163.3

3rd 10-day period (21-31/07/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.8	69.6
Precipitation - Reference Evapotranspiration	-66.8	-64.0
Number of Rainy Days	0.0	1.0
Number of Dry Days	24.0	14.0

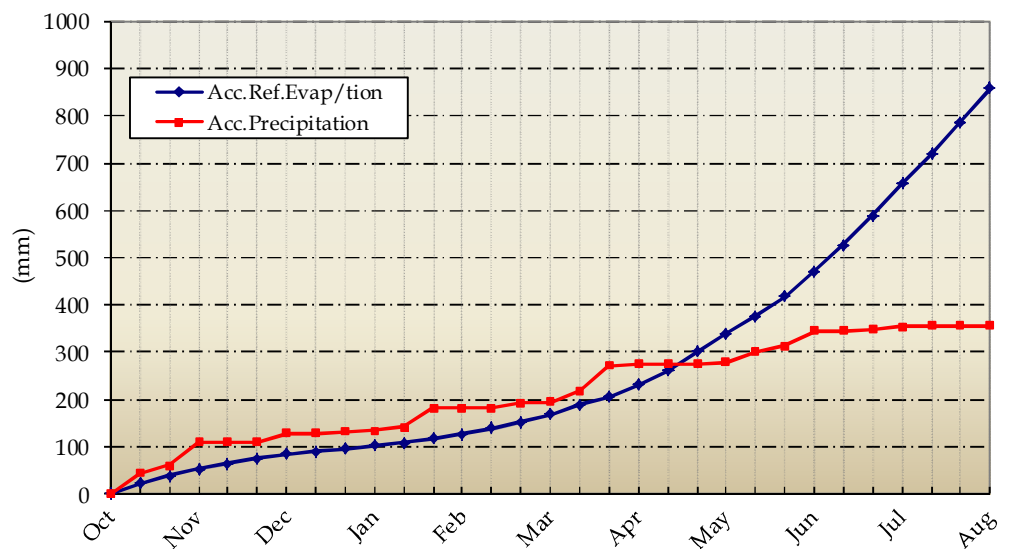
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.6	34.4	36.8	36.7	34.0	33.6	33.0	34.5	35.4	36.0	35.6	34.9	36.9	33.2
	Min	15.8	17.0	17.6	19.2	24.6	20.0	17.1	17.8	19.6	20.9	22.0	19.2	20.8	18.1
Relative Humidity	Max	75	74	76	67	57	100	100	76	65	69	59	74	76	-
	Min	22	21	18	19	21	27	22	23	24	20	19	21	21	-
Soil Temperature at 10 cm	06 UTC	27.6	28.2	28.2	28.4	29.0	29.2	28.8	28.4	28.8	29.2	29.4	28.7	29.4	26.9
	12 UTC	27.8	28.0	28.0	28.4	29.0	29.2	28.6	28.4	29.0	29.2	29.3	28.6	29.5	29.2
Sunshine Duration		12.0	11.7	11.6	11.7	10.6	7.2	8.6	9.9	9.8	10.5	11.6	10.5	11.4	10.7
Precipitation							0.8						0.8		4.4
Evaporation		9.8	15.6	13.5	14.7	13.2	10.4	7.7	10.4	14.6	9.6	16.1	135.6	138.4	104.1
Growing Degrees	5	19.7	20.7	22.2	23.0	24.3	21.8	20.1	21.2	22.5	23.5	23.8	242.6	262.1	227.1
	10	14.7	15.7	17.2	18.0	19.3	16.8	15.1	16.2	17.5	18.5	18.8	187.6	207.1	172.1

3rd 10-day period (21-31/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	70.7	75.8	66.2
Precipitation - Reference Evapotranspiration	-69.9	-75.8	-61.8
Number of Rainy Days	1.0	0.0	1.1
Number of Dry Days	18.0	31.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

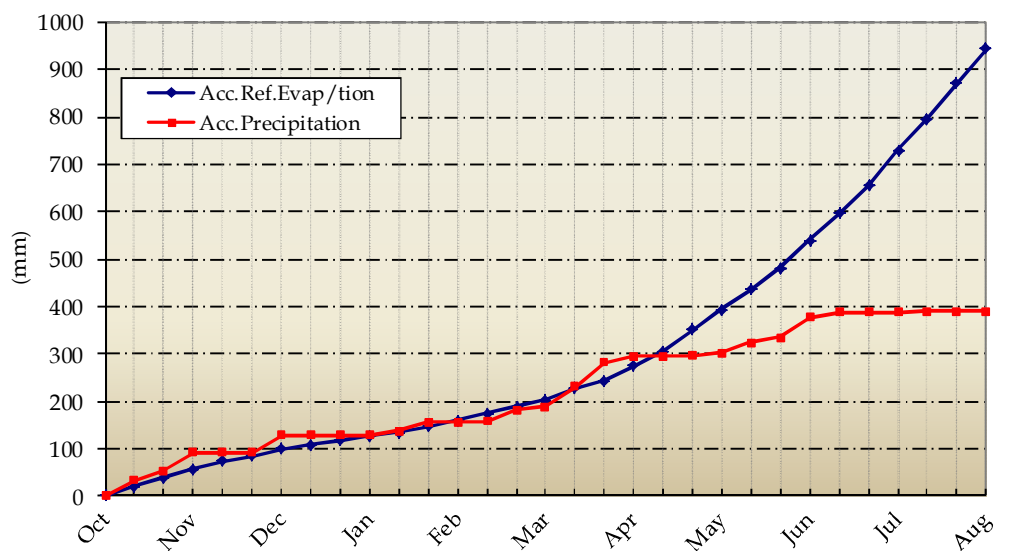


Mikra

3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.2	33.5	34.8	36.3	32.9	32.2	30.8	33.0	33.7	34.5	35.0	33.5	36.0	31.8
	Min	17.0	18.5	19.9	20.8	24.8	23.2	24.3	20.5	22.8	21.0	22.2	21.4	22.3	19.4
Relative Humidity	Max	76	70	71	69	71	67	72	73	71	76	64	71	70	-
	Min	32	25	22	21	31	36	29	28	29	26	23	27	23	-
Soil Temperature at 10 cm	06 UTC	28.2	29.2	30.0	30.2	31.4	31.2	31.0	30.2	30.8	30.8	31.0	30.4	30.1	26.8
	12 UTC	34.0	34.8	35.4	36.2	35.0	35.2	34.2	35.6	36.0	36.0	36.0	35.3	34.1	31.6
Sunshine Duration		12.8	12.9	12.5	12.4	9.9	7.3	9.1	11.6	12.4	10.3	10.8	11.1	11.9	10.5
Precipitation								0.2					0.2	0.0	9.4
Evaporation		13.8	10.4	12.0	11.6	8.6	6.9	13.1	10.7	11.5	10.0	10.4	119.0	120.0	101.0
Growing Degrees	5	19.6	21.0	22.4	23.6	23.9	22.7	22.6	21.8	23.3	22.8	23.6	247.0	265.7	226.2
	10	14.6	16.0	17.4	18.6	18.9	17.7	17.6	16.8	18.3	17.8	18.6	192.0	210.7	171.2

3rd 10-day period (21-31/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	73.6	76.6	65.4
Precipitation - Reference Evapotranspiration	-73.4	-76.6	-56.0
Number of Rainy Days	1.0	0.0	1.5
Number of Dry Days	19.0	21.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

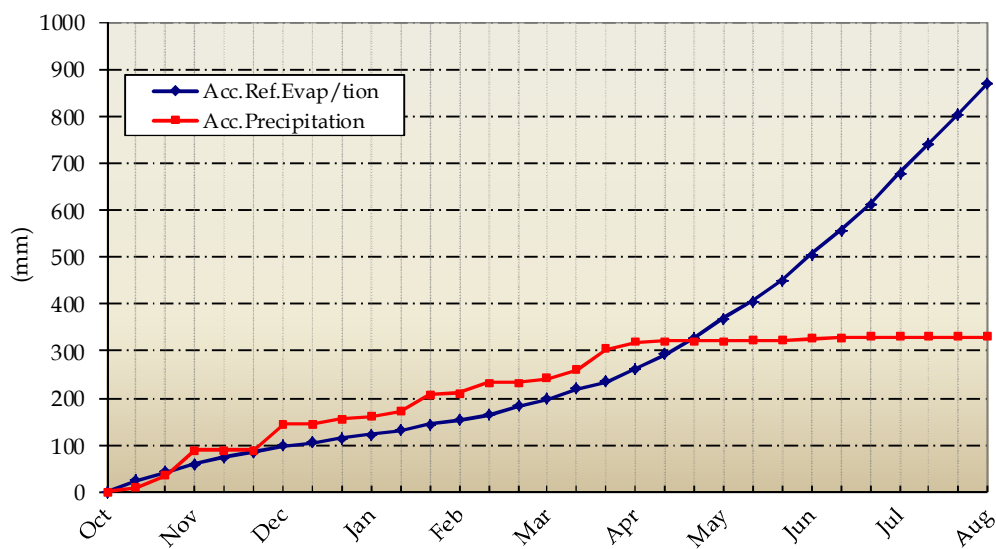


Tanagra

3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.8	33.7	34.6	34.5	32.1	32.0	30.9	32.8	33.1	34.7	33.5	33.0	34.9	32.0
	Min	18.3	17.6	18.2	20.2	22.6	21.0	21.8	21.0	21.0	20.3	20.6	20.2	21.8	18.6
Relative Humidity	Max	61	60	59	53	53	61	64	49	50	54	53	56	66	-
	Min	23	19	19	20	23	23	28	20	23	23	16	22	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.3	13.1	13.2	12.2	12.7	13.0	12.5	12.1	11.5	10.3	11.3	12.3	12.6	
Precipitation															1.3
Evaporation		8.9	9.4	9.9	11.0	10.5	0.0	9.0	11.0	9.0	10.0	11.2	99.9	112.0	
Growing Degrees	5	19.6	20.7	21.4	22.4	22.4	21.5	21.4	21.9	22.1	22.5	22.1	237.7	257.0	
	10	14.6	15.7	16.4	17.4	17.4	16.5	16.4	16.9	17.1	17.5	17.1	182.7	202.0	

3rd 10-day period (21-31/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.4	66.1	
Precipitation - Reference Evapotranspiration	-66.4	-66.1	1.3
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	33.0	30.0	-

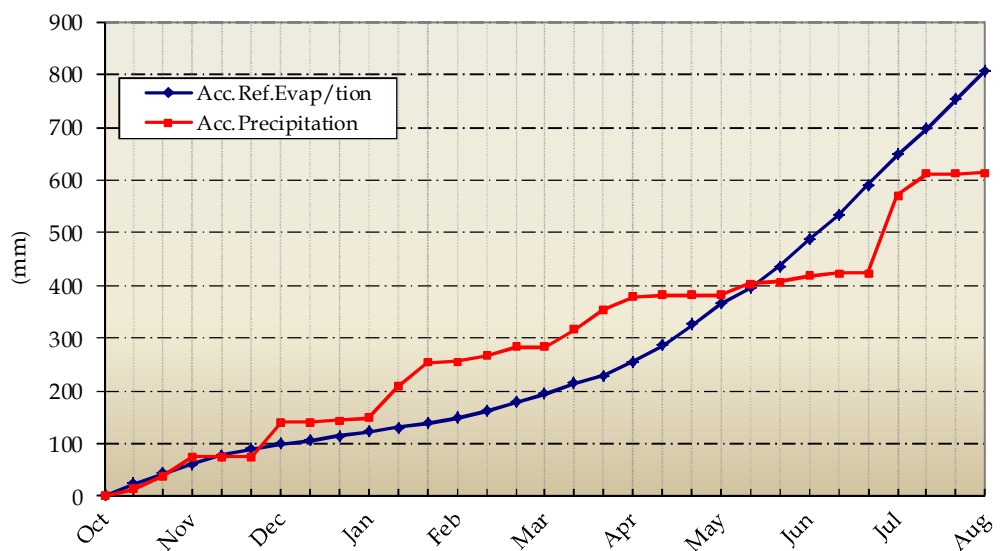
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2016)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.5	31.7	33.8	34.1	33.3	31.3	31.3	32.7	32.1	33.1	34.1	32.5	34.0	30.5
	Min	12.8	13.1	13.5	14.2	18.0	15.3	14.5	14.4	14.3	15.2	14.9	14.6	17.1	14.6
Relative Humidity	Max	95	96	89	83	74	89	95	92	100	100	97	92	87	-
	Min	24	24	17	22	25	25	26	21	26	25	23	23	22	-
Soil Temperature at 10 cm	06 UTC	24.4	25.0	25.8	26.4	27.6	27.0	26.6	26.0	26.2	25.2	25.8	26.0	27.5	25.8
	12 UTC	32.2	32.4	-	-	34.0	33.8	33.2	32.8	32.2	-	-	32.9	31.9	28.5
Sunshine Duration		10.9	11.5	12.9	12.8	9.7	8.9	8.2	8.8	8.4	9.1	11.8	10.3	11.4	10.6
Precipitation							0.0			0.8			0.8	4.7	4.2
Evaporation		7.0	7.1	9.2	9.8	7.3	8.6	5.4	8.0	4.0	6.6	9.2	82.2	97.3	71.9
Growing Degrees	5	16.7	17.4	18.7	19.2	20.7	18.3	17.9	18.6	18.2	19.2	19.5	204.1	226.5	192.7
	10	11.7	12.4	13.7	14.2	15.7	13.3	12.9	13.6	13.2	14.2	14.5	149.1	171.5	137.7

3rd 10-day period (21-31/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.2	62.2	58.9
Precipitation - Reference Evapotranspiration	-54.4	-57.5	-54.7
Number of Rainy Days	1.0	1.0	1.2
Number of Dry Days	22.0	29.0	-

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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