



AGROMETEOROLOGICAL BULLETIN

July 2019
1st 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



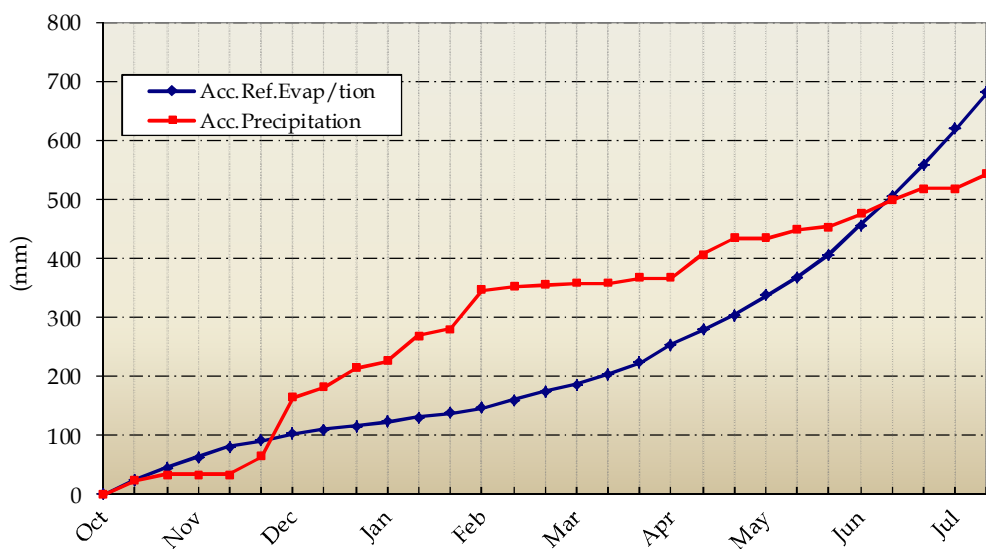
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1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	35.6	36.6	34.8	33.0	31.6	31.4	31.4	33.4	29.8	33.1	31.4	29.3
	Min	19.0	20.2	22.4	23.8	22.0	18.6	19.4	19.4	22.4	20.6	20.8	19.2	17.0
Relative Humidity	Max	79	60	75	80	95	92	81	90	67	95	81	86	-
	Min	32	20	27	24	40	46	36	47	34	51	36	40	-
Soil Temperature at 10 cm	06 UTC	25.8	26.6	27.6	28.6	29.0	26.0	26.2	26.8	27.4	27.6	27.2	25.8	23.7
	12 UTC	30.2	31.2	32.6	32.8	30.6	29.6	30.6	31.0	31.6	29.4	31.0	29.1	28.2
Sunshine Duration		13.4	13.8	13.6	12.8	8.6	13.0	13.3	9.6	12.3	10.9	12.1	11.7	10.3
Precipitation						5.0					19.5	24.5	0.6	12.1
Evaporation		12.0	13.0	12.2	9.9	9.2	7.7	4.0	12.0	5.5	4.0	89.5	87.6	85.9
Growing Degrees	5	21.0	22.9	24.5	24.3	22.5	20.1	20.4	20.4	22.9	20.2	219.2	202.9	181.3
	10	16.0	17.9	19.5	19.3	17.5	15.1	15.4	15.4	17.9	15.2	169.2	152.9	131.3

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.4	55.4	56.1
Precipitation - Reference Evapotranspiration	-36.9	-54.8	-44.0
Number of Rainy Days	2.0	1.0	2.2
Number of Dry Days	19.0	9.0	-

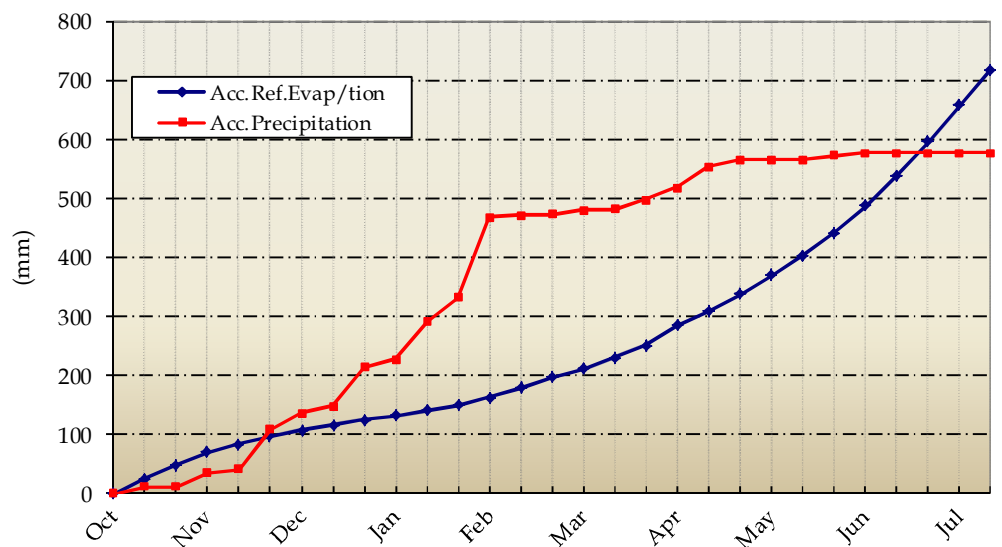
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.8	32.2	32.4	34.6	34.4	32.8	33.0	34.1	34.4	35.8	33.8	29.7	29.5
	Min	19.9	17.2	18.8	18.0	18.5	19.1	21.4	20.5	20.3	21.6	19.5	18.7	17.7
Relative Humidity	Max	73	86	95	90	89	91	90	99	99	96	91	91	-
	Min	22	29	35	30	31	39	41	27	34	31	32	44	-
Soil Temperature at 10 cm	06 UTC	27.4	27.0	28.0	28.4	28.8	28.6	28.8	29.6	29.6	30.0	28.6	26.4	26.9
	12 UTC	31.0	30.0	32.0	32.2	31.3	31.4	31.2	32.2	33.4	32.6	31.7	29.6	31.6
Sunshine Duration		13.8	13.6	13.4	13.4	13.3	12.6	13.2	13.1	13.0	11.7	13.1	12.9	12.0
Precipitation														0.7
Evaporation		11.2	10.0	9.0	9.6	10.0	8.6	10.7	9.0	13.3	9.0	100.4	63.0	75.0
Growing Degrees	5	21.9	19.7	20.6	21.3	21.5	21.0	22.2	22.3	22.4	23.7	216.4	191.9	186.1
	10	16.9	14.7	15.6	16.3	16.5	16.0	17.2	17.3	17.4	18.7	166.4	141.9	136.1

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.4	55.9	53.6
Precipitation - Reference Evapotranspiration	-59.4	-55.9	-52.9
Number of Rainy Days	0.0	0.0	0.3
Number of Dry Days	24.0	11.0	-

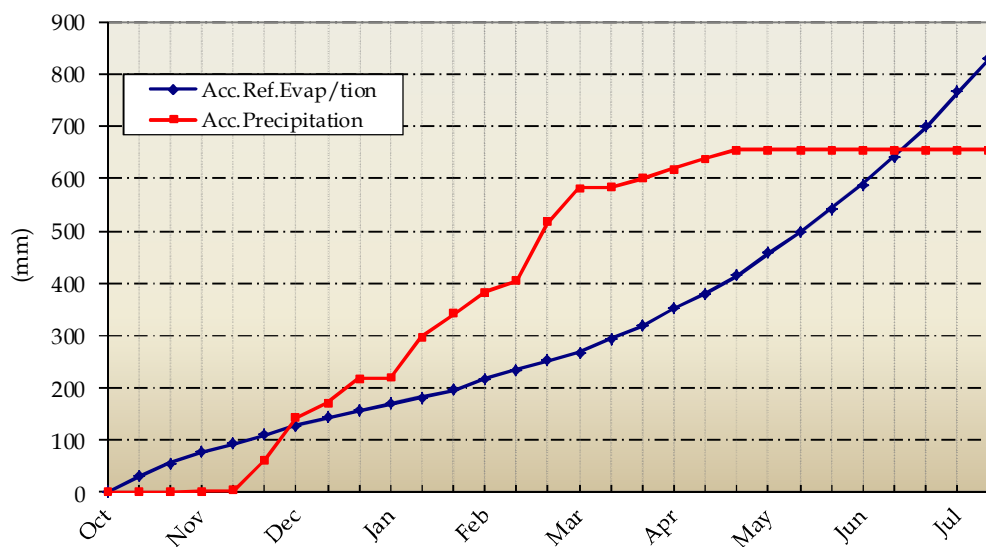
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.2	28.0	29.0	30.0	29.4	30.2	30.4	32.2	32.2	31.0	30.0	29.8	28.4
	Min	23.6	18.6	19.4	19.6	22.6	22.6	25.6	22.6	22.2	23.0	22.0	22.3	21.3
Relative Humidity	Max	69	78	82	77	76	74	65	61	90	74	75	85	-
	Min	43	45	52	42	52	53	47	37	40	35	45	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.8	13.0	13.0	12.9	12.9	12.9	12.9	13.0	12.7	12.4	12.8	12.4	12.1
Precipitation														0.7
Evaporation		9.9	4.4	8.7	6.1	8.1	6.4	7.8	4.1	7.1	4.9	67.5	69.8	92.1
Growing Degrees	5	20.4	18.3	19.2	19.8	21.0	21.4	23.0	22.4	22.2	22.0	209.7	210.4	198.6
	10	15.4	13.3	14.2	14.8	16.0	16.4	18.0	17.4	17.2	17.0	159.7	160.4	148.6

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.5	57.9	-
Precipitation - Reference Evapotranspiration	-62.5	-57.9	0.7
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	56.0	23.0	-

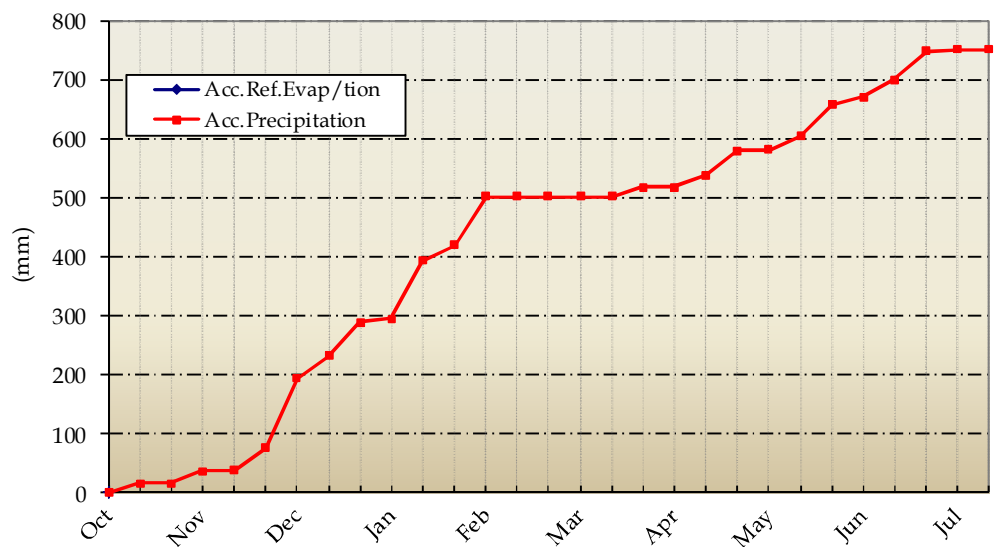
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	35.6	35.6	35.6	36.0	34.6	35.6	34.0	34.0	32.6	34.6	31.4	30.4
	Min	15.2	16.2	15.8	16.0	16.4	16.2	17.6	16.0	17.0	16.4	16.3	15.7	14.5
Relative Humidity	Max	100	89	100	79	100	75	100	79	100	81	90	96	-
	Min	32	22	20	20	19	26	26	29	30	34	26	41	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.2
Sunshine Duration		12.8	13.0	12.5	13.0	12.3	12.1	12.8	13.0	12.2	7.6	12.1	12.0	10.5
Precipitation											0.0	0.0	2.8	6.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	72.0
Growing Degrees	5	18.6	20.9	20.7	20.8	21.2	20.4	21.6	20.0	20.5	19.5	204.2	185.9	168.8
	10	13.6	15.9	15.7	15.8	16.2	15.4	16.6	15.0	15.5	14.5	154.2	135.9	120.3

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	51.3
Precipitation - Reference Evapotranspiration	-	-	-44.7
Number of Rainy Days	0.0	2.0	1.5
Number of Dry Days	11.0	9.0	-

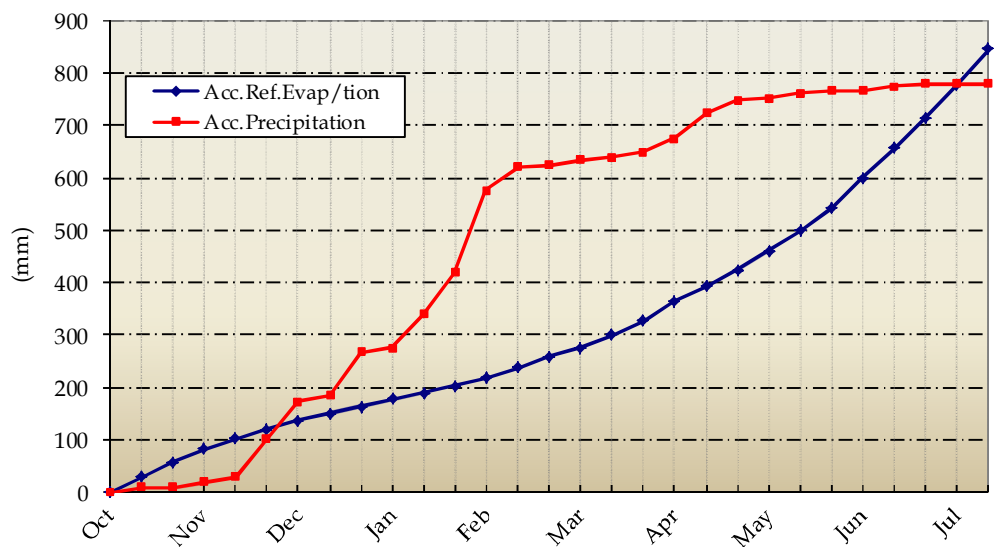
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.5	30.2	29.8	33.0	32.7	33.2	33.1	37.8	34.6	39.0	33.5	32.3	30.8
	Min	22.9	16.9	18.0	19.2	18.5	19.8	19.0	20.4	22.2	22.5	19.9	19.4	17.6
Relative Humidity	Max	82	86	85	77	87	88	83	81	75	70	81	85	-
	Min	24	35	40	24	37	29	28	15	27	16	28	35	-
Soil Temperature at 10 cm	06 UTC	26.8	27.2	26.2	27.4	27.6	28.0	28.4	28.4	28.8	29.2	27.8	25.3	25.3
	12 UTC	31.0	29.2	31.4	32.0	34.6	33.2	32.2	32.4	32.8	29.4	31.8	27.6	29.5
Sunshine Duration		12.3	12.3	12.6	12.7	12.5	12.1	12.5	12.5	12.5	11.9	12.4	12.8	11.4
Precipitation														1.0
Evaporation		8.6	10.9	8.6	8.6	11.0	7.8	9.4	10.6	8.2	11.8	95.5	90.1	89.7
Growing Degrees	5	22.2	18.6	18.9	21.1	20.6	21.5	21.1	24.1	23.4	25.8	217.2	208.2	191.7
	10	17.2	13.6	13.9	16.1	15.6	16.5	16.1	19.1	18.4	20.8	167.2	158.2	141.7

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	68.8	65.3	56.4
Precipitation - Reference Evapotranspiration	-68.8	-65.3	-55.4
Number of Rainy Days	0.0	0.0	0.3
Number of Dry Days	25.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

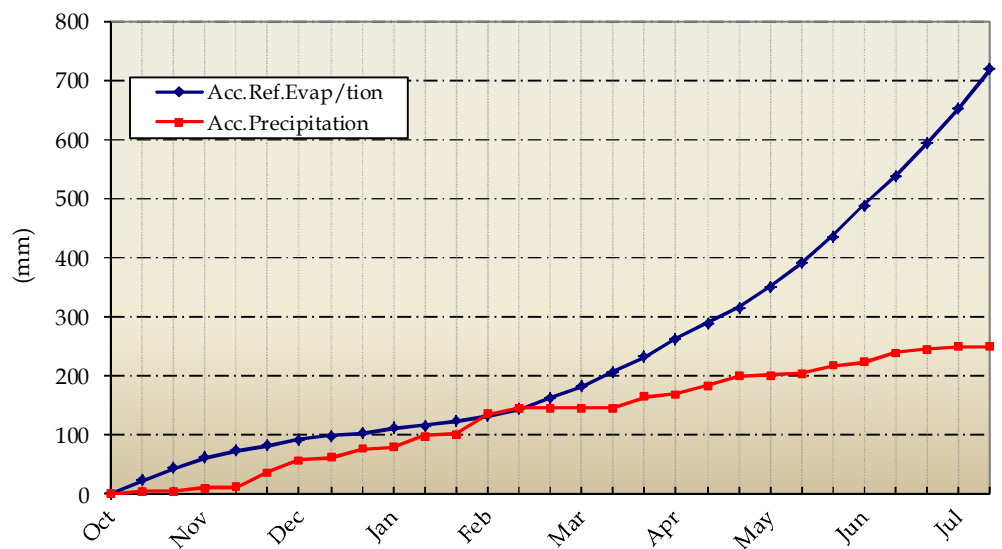


Larisa

1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.8	34.6	37.2	36.6	35.4	35.4	37.8	39.4	37.6	36.4	36.3	32.9	32.9
	Min	17.4	16.4	17.4	24.0	20.3	19.6	18.4	18.8	27.4	21.1	20.1	19.2	17.5
Relative Humidity	Max	77	74	80	61	78	86	79	55	89	88	77	89	-
	Min	27	30	74	22	26	26	21	48	24	29	33	33	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	26.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.7
Sunshine Duration		12.0	12.0	9.3	11.2	9.6	11.7	12.1	11.4	9.7	6.6	10.6	10.4	10.7
Precipitation						0.0	0.0					0.0	11.3	5.5
Evaporation		10.2	11.3	2.3	13.1	12.1	9.7	12.6	0.4	14.3	8.5	94.5	90.0	95.9
Growing Degrees	5	20.1	20.5	22.3	25.3	22.9	22.5	23.1	24.1	27.5	23.8	232.0	210.5	202.1
	10	15.1	15.5	17.3	20.3	17.9	17.5	18.1	19.1	22.5	18.8	182.0	160.5	152.1

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	65.8	59.0	62.4
Precipitation - Reference Evapotranspiration	-65.8	-47.7	-56.9
Number of Rainy Days	0.0	3.0	1.4
Number of Dry Days	10.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

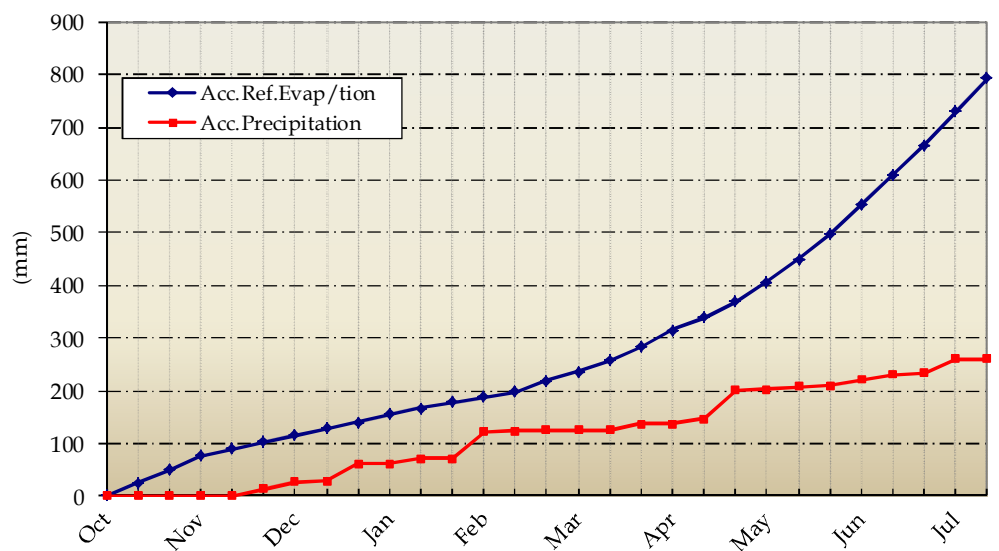


Mikra

1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.4	34.6	36.4	34.8	33.6	34.2	35.2	36.4	34.4	31.8	34.4	31.9	31.1
	Min	20.0	21.2	21.4	22.6	22.0	23.0	22.8	23.4	24.2	25.0	22.6	20.9	18.5
Relative Humidity	Max	71	70	80	67	73	76	76	66	76	92	75	75	-
	Min	39	25	26	32	27	30	26	30	34	36	30	32	-
Soil Temperature at 10 cm	06 UTC	20.4	27.0	27.4	28.0	28.2	28.6	28.0	28.8	30.0	29.8	27.6	25.6	26.2
	12 UTC	30.8	31.4	32.6	32.4	32.6	32.4	33.2	34.0	33.8	33.6	32.7	29.4	30.9
Sunshine Duration		13.0	13.4	13.3	11.8	13.0	13.0	13.6	12.7	13.1	8.2	12.5	12.2	10.7
Precipitation													4.9	8.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	93.1	95.7
Growing Degrees	5	21.2	22.9	23.9	23.7	22.8	23.6	24.0	24.9	24.3	23.4	234.7	214.1	198.0
	10	16.2	17.9	18.9	18.7	17.8	18.6	19.0	19.9	19.3	18.4	184.7	164.1	148.0

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.5	64.2	61.2
Precipitation - Reference Evapotranspiration	-62.5	-59.3	-52.5
Number of Rainy Days	0.0	4.0	1.7
Number of Dry Days	11.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

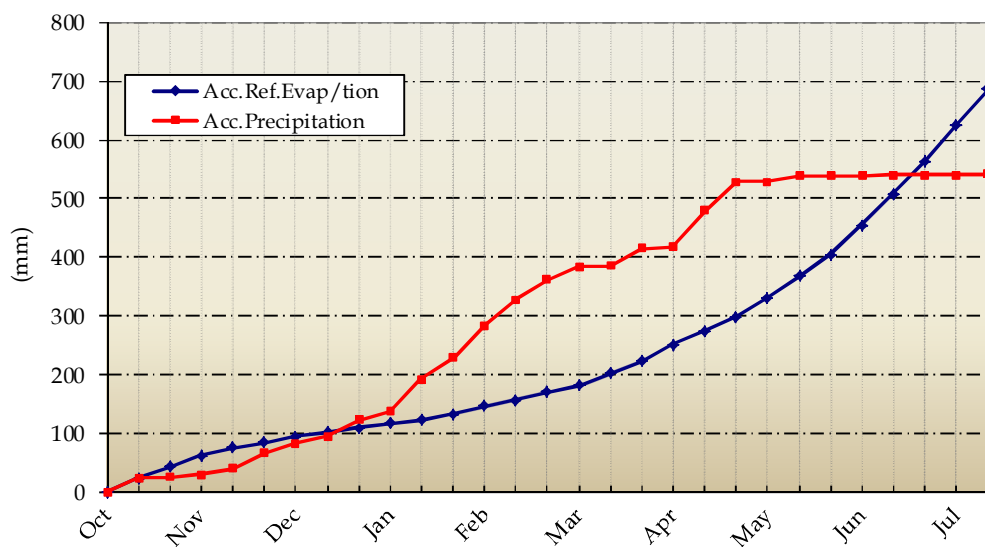


Tanagra

1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.8	31.7	34.8	34.8	35.0	33.7	36.1	39.1	36.4	37.9	34.9	33.4	31.6
	Min	17.7	19.8	16.0	16.8	18.4	20.4	19.0	23.0	21.1	22.2	19.4	19.8	17.5
Relative Humidity	Max	64	59	60	51	56	65	59	62	72	73	62	79	-
	Min	25	19	13	19	24	21	15	10	21	16	18	25	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.1	13.5	13.4	13.1	12.0	13.3	13.2	12.8	11.1	8.7	12.4	12.2	
Precipitation											1.7	1.7	0.0	3.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	18.8	20.8	20.4	20.8	21.7	22.1	22.6	26.1	23.8	25.1	221.9	215.8	
	10	13.8	15.8	15.4	15.8	16.7	17.1	17.6	21.1	18.8	20.1	171.9	165.8	

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.0	59.3	
Precipitation - Reference Evapotranspiration	-58.3	-59.3	3.9
Number of Rainy Days	1.0	0.0	1.2
Number of Dry Days	34.0	13.0	-

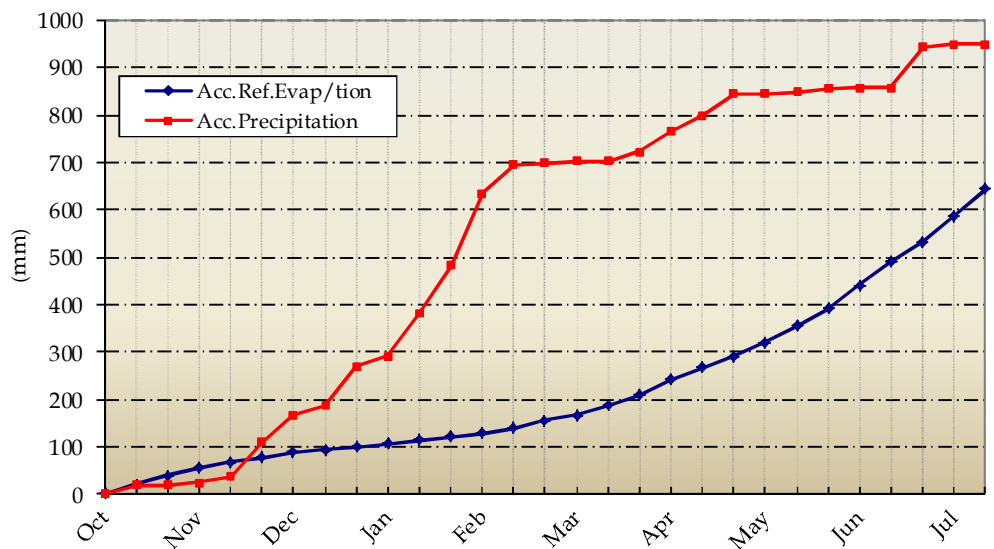
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.1	29.8	32.1	33.2	34.0	31.1	32.0	35.2	35.4	35.4	32.4	30.5	30.2
	Min	17.8	18.2	11.7	11.6	13.4	14.0	15.2	14.3	15.3	16.0	14.8	14.4	13.4
Relative Humidity	Max	52	86	91	93	-	90	94	92	86	77	85	95	-
	Min	37	22	14	13	-	28	27	15	17	16	21	27	-
Soil Temperature at 10 cm	06 UTC	24.0	24.4	24.4	25.0	25.6	-	-	25.8	26.6	27.2	25.4	24.7	25.0
	12 UTC	30.2	31.8	31.4	33.2	33.8	-	-	34.2	34.8	35.4	33.1	32.5	28.1
Sunshine Duration		13.4	13.3	13.1	13.2	12.2	11.0	0.0	13.2	12.8	12.7	11.5	12.1	10.6
Precipitation							0.0					0.0	0.0	7.1
Evaporation		15.2	10.1	8.4	11.6	8.4	11.6	-	8.7	9.9	8.7	-	-	64.6
Growing Degrees	5	17.0	19.0	16.9	17.4	18.7	17.6	18.6	19.8	20.4	20.7	185.9	174.4	167.9
	10	12.0	14.0	11.9	12.4	13.7	12.6	13.6	14.8	15.4	15.7	135.9	124.4	117.9

1st 10-day period (1-10/07/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.4	51.6	53.2
Precipitation - Reference Evapotranspiration	-56.4	-51.6	-46.1
Number of Rainy Days	0.0	0.0	1.3
Number of Dry Days	19.0	11.0	-

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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