



# AGROMETEOROLOGICAL BULLETIN

*July 2018*  
*2nd 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



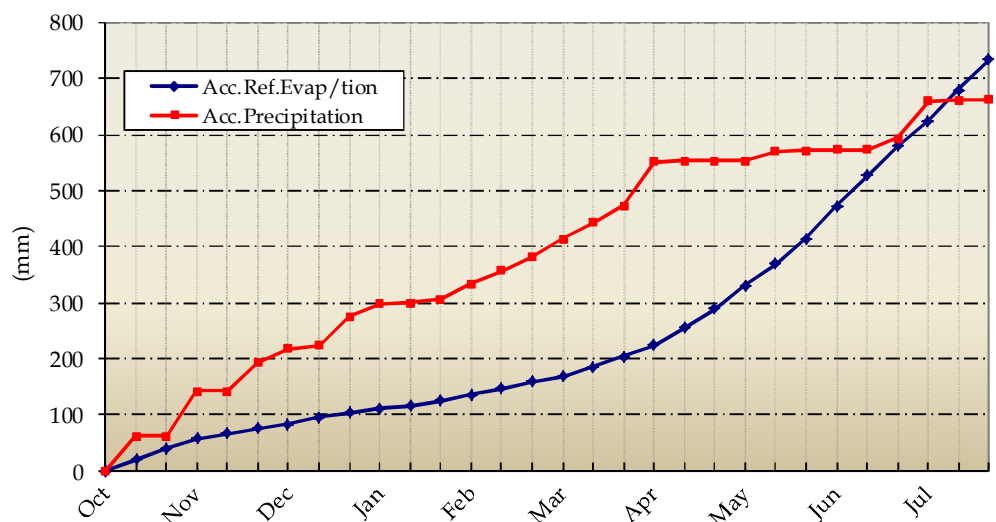
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2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	32.0	32.2	32.6	32.2	30.4	31.6	30.0	29.6	30.6	31.3	31.3	30.5
	Min	18.0	19.4	20.0	19.6	19.6	19.6	18.0	20.2	18.6	22.0	19.5	18.9	17.5
Relative Humidity	Max	97	87	97	80	81	90	81	92	81	97	88	80	-
	Min	43	39	47	31	35	36	39	54	38	48	41	35	-
Soil Temperature at 10 cm	06 UTC	26.4	27.2	27.2	27.4	26.6	27.0	27.0	25.8	25.4	26.0	26.6	21.6	24.2
	12 UTC	30.4	30.4	30.6	30.0	30.2	30.0	29.6	28.4	27.8	29.0	29.6	24.6	28.8
Sunshine Duration		12.7	13.6	11.9	13.2	13.3	10.7	10.7	8.4	6.6	9.2	11.0	10.8	11.2
Precipitation								0.6	2.2			2.8	3.0	5.1
Evaporation		8.1	8.9	9.2	8.3	8.5	7.5	9.5	2.2	4.6	8.5	75.3	-	98.7
Growing Degrees	5	19.8	20.7	21.1	21.1	20.9	20.0	19.8	20.1	19.1	21.3	203.9	200.6	190.1
	10	14.8	15.7	16.1	16.1	15.9	15.0	14.8	15.1	14.1	16.3	153.9	150.6	140.1

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.3	60.1	60.3
Precipitation - Reference Evapotranspiration	-50.5	-57.1	-55.2
Number of Rainy Days	2.0	1.0	0.9
Number of Dry Days	8.0	25.0	-

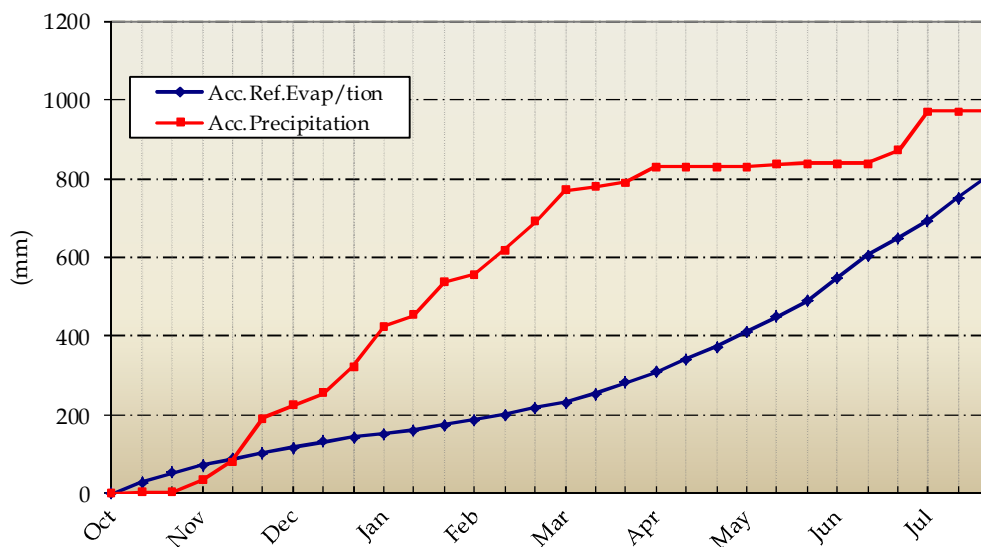
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.8	31.0	30.6	33.2	31.9	32.1	28.0	29.9	31.0	30.4	31.9	30.4
	Min	17.7	18.2	19.0	19.1	19.6	19.0	19.4	21.2	19.1	19.1	19.1	19.3	18.1
Relative Humidity	Max	91	93	86	84	86	90	90	90	88	85	88	86	-
	Min	41	49	36	40	32	32	34	55	42	35	40	35	-
Soil Temperature at 10 cm	06 UTC	26.4	24.8	27.0	27.0	26.2	27.0	27.5	28.0	27.8	27.5	26.9	29.1	27.1
	12 UTC	28.0	28.4	29.0	28.6	29.0	29.0	29.0	28.8	29.0	29.0	28.8	31.5	31.8
Sunshine Duration		13.5	12.9	13.3	13.2	12.3	12.4	12.4	12.9	12.5	13.0	12.8	11.8	12.3
Precipitation													56.3	0.8
Evaporation		6.0	8.0	7.0	6.0	8.0	7.0	6.3	5.0	8.0	7.0	68.3	80.7	77.4
Growing Degrees	5	17.9	18.5	20.0	19.9	21.4	20.5	20.8	19.6	19.5	20.1	198.0	205.9	192.4
	10	12.9	13.5	15.0	14.9	16.4	15.5	15.8	14.6	14.5	15.1	148.0	155.9	142.4

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.5	57.8	55.3
Precipitation - Reference Evapotranspiration	-57.5	-1.5	-54.5
Number of Rainy Days	0.0	2.0	0.1
Number of Dry Days	21.0	27.0	-

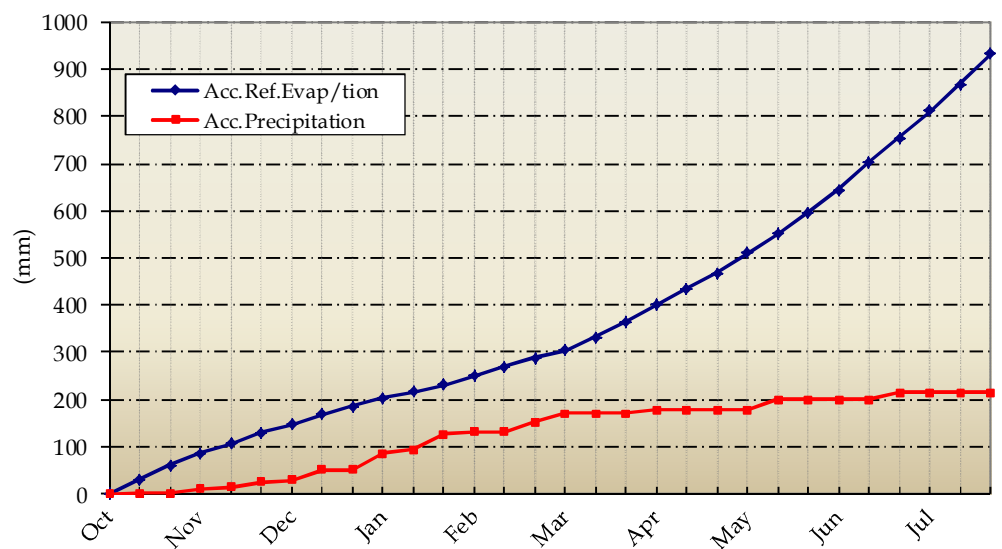
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	29.0	31.0	30.0	29.4	30.0	32.0	30.2	30.0	29.6	29.9	29.2	28.5
	Min	21.0	21.2	26.0	25.4	25.8	25.6	23.0	25.6	23.6	22.0	23.9	23.1	22.1
Relative Humidity	Max	87	89	77	70	77	79	79	88	89	76	81	77	-
	Min	63	50	50	59	51	47	49	55	53	55	53	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.5	12.8	12.7	12.6	12.6	12.7	12.5	12.6	12.5	12.6	12.6	11.5	12.1
Precipitation													0.6	0.0
Evaporation		7.8	7.9	9.9	10.8	7.2	7.0	6.2	8.6	5.4	9.3	80.1	68.9	93.8
Growing Degrees	5	19.6	20.1	23.5	22.7	22.6	22.8	22.5	22.9	21.8	20.8	219.3	211.7	203.0
	10	14.6	15.1	18.5	17.7	17.6	17.8	17.5	17.9	16.8	15.8	169.3	161.7	153.0

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.7	59.1	-
Precipitation - Reference Evapotranspiration	-63.7	-58.5	0.0
Number of Rainy Days	0.0	2.0	0.0
Number of Dry Days	33.0	38.0	-

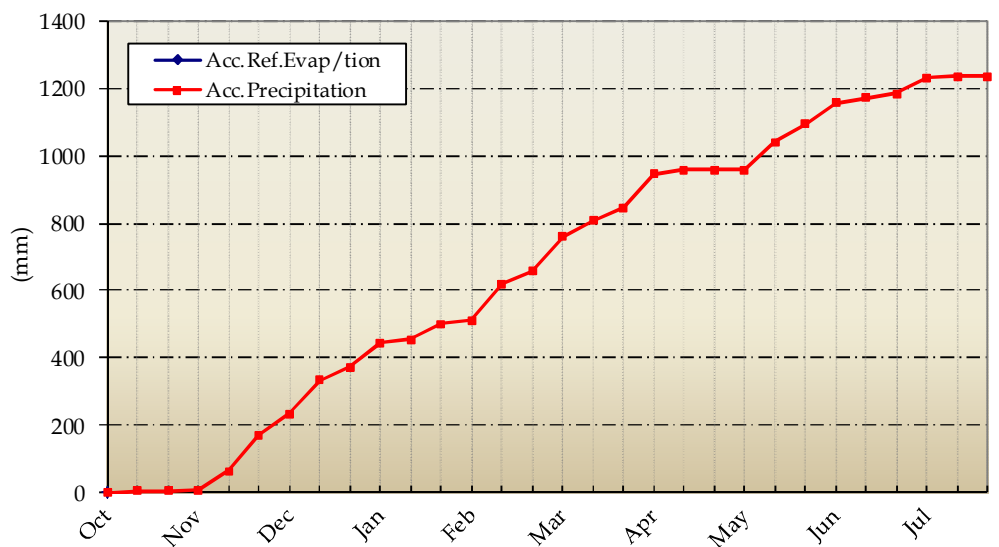
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	32.0	32.4	33.0	33.2	34.0	33.2	31.6	31.2	32.2	32.3	33.2	31.4
	Min	14.0	14.0	15.4	15.4	17.8	16.0	16.5	18.0	15.0	17.4	16.0	16.6	15.3
Relative Humidity	Max	100	98	100	89	96	84	100	100	100	100	97	88	-
	Min	41	39	34	32	35	32	35	40	31	34	35	30	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		12.9	13.0	12.8	12.8	12.5	11.8	10.8	12.9	12.8	12.8	12.5	10.2	10.3
Precipitation													20.1	13.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	83.3
Growing Degrees	5	17.0	18.0	18.9	19.2	20.5	20.0	19.9	19.8	18.1	19.8	191.2	198.9	178.2
	10	12.0	13.0	13.9	14.2	15.5	15.0	14.9	14.8	13.1	14.8	141.2	148.9	129.5

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	50.5
Precipitation - Reference Evapotranspiration	-	-	-37.2
Number of Rainy Days	0.0	2.0	1.6
Number of Dry Days	11.0	20.0	-

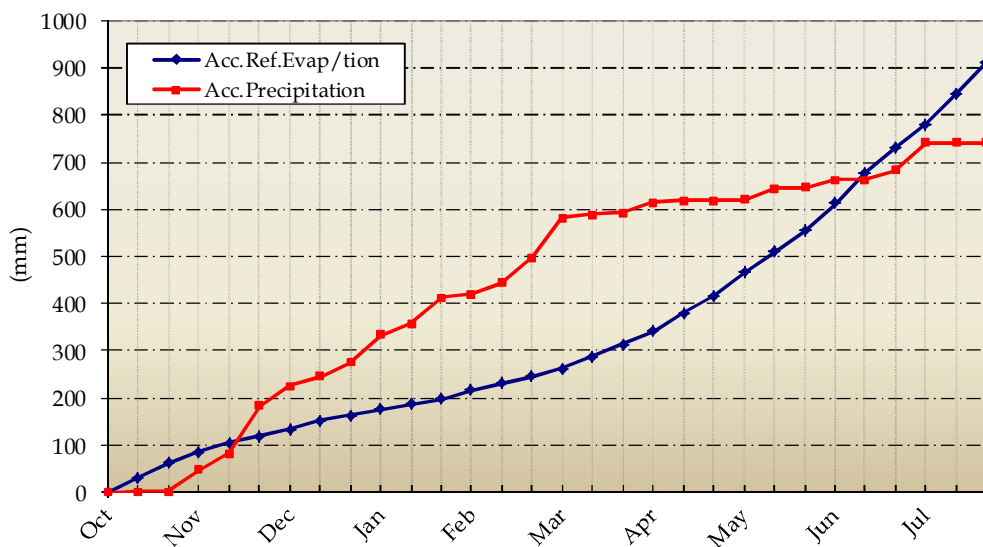
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	31.8	35.6	31.2	31.2	32.1	35.7	32.2	33.8	31.1	32.7	31.9	31.2
	Min	18.2	19.0	21.2	20.0	18.8	18.8	19.8	21.4	20.3	20.6	19.8	18.6	17.8
Relative Humidity	Max	81	80	74	87	87	89	87	86	79	80	83	85	-
	Min	28	40	21	31	45	39	26	40	22	31	32	36	-
Soil Temperature at 10 cm	06 UTC	25.8	26.2	26.6	26.8	27.0	27.0	26.8	27.4	27.0	27.0	26.8	-	25.6
	12 UTC	27.8	28.2	28.6	28.8	28.8	29.4	29.0	29.0	29.2	30.4	28.9	-	30.0
Sunshine Duration		12.8	12.7	12.8	12.8	12.4	12.4	12.7	12.7	12.7	12.8	12.7	11.4	11.5
Precipitation													52.6	3.4
Evaporation		9.0	10.0	11.0	7.0	10.0	8.9	9.1	11.0	7.8	8.2	92.0	73.5	87.7
Growing Degrees	5	20.4	20.4	23.4	20.6	20.0	20.5	22.8	21.8	22.1	20.9	212.7	202.6	195.0
	10	15.4	15.4	18.4	15.6	15.0	15.5	17.8	16.8	17.1	15.9	162.7	152.6	145.0

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	67.0	59.0	57.1
Precipitation - Reference Evapotranspiration	-67.0	-6.4	-53.7
Number of Rainy Days	0.0	1.0	0.4
Number of Dry Days	22.0	27.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

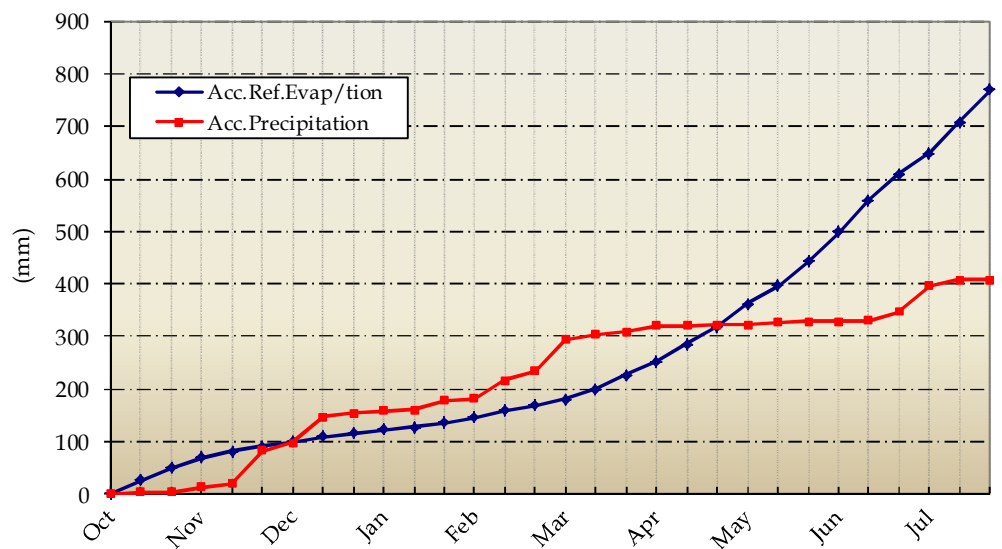


Larisa

2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	34.8	35.0	34.0	34.6	35.0	37.6	33.8	33.8	33.4	34.4	31.4	33.3
	Min	18.8	17.8	20.2	21.0	21.4	18.8	18.8	22.4	21.4	20.0	20.1	18.4	17.9
Relative Humidity	Max	90	88	84	82	72	74	79	70	65	78	78	86	-
	Min	30	27	29	31	23	29	17	27	26	32	27	38	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	26.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	29.2
Sunshine Duration		10.9	11.6	11.4	11.7	11.7	11.1	11.5	11.2	11.2	11.5	11.4	9.2	11.0
Precipitation													100.0	9.9
Evaporation		9.0	10.5	11.2	9.3	9.5	11.2	13.2	11.1	10.0	10.2	105.2	90.9	96.3
Growing Degrees	5	20.2	21.3	22.6	22.5	23.0	21.9	23.2	23.1	22.6	21.7	222.1	199.1	205.9
	10	15.2	16.3	17.6	17.5	18.0	16.9	18.2	18.1	17.6	16.7	172.1	149.1	155.9

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.8	55.0	62.2
Precipitation - Reference Evapotranspiration	-60.8	45.0	-52.3
Number of Rainy Days	0.0	2.0	1.2
Number of Dry Days	11.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

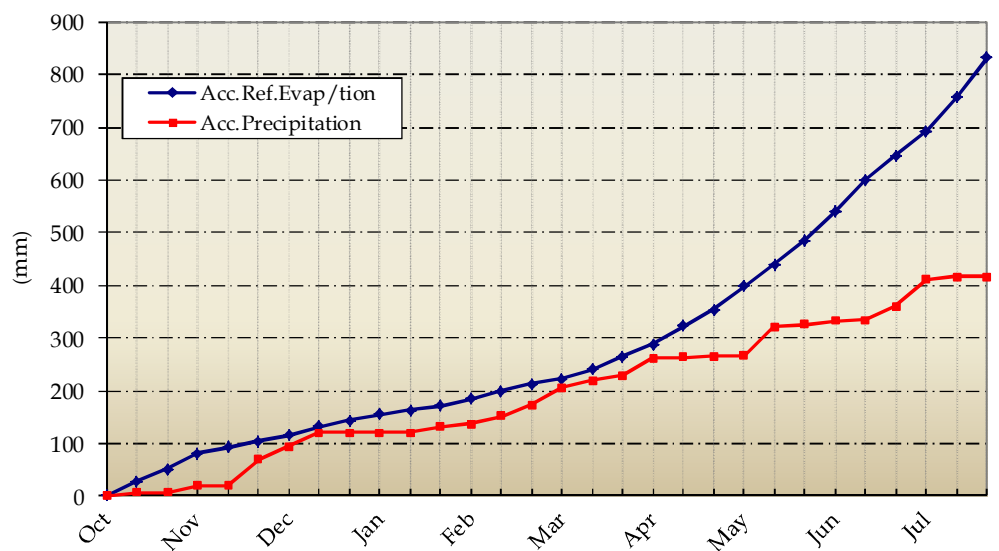


Mikra

2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	33.7	34.3	33.0	32.8	34.0	36.0	31.8	30.2	31.8	32.9	30.7	31.7
	Min	17.6	19.4	21.4	21.6	24.2	24.0	21.0	24.6	24.2	23.2	22.1	20.1	18.9
Relative Humidity	Max	78	68	72	76	59	63	61	55	55	63	65	78	-
	Min	32	29	31	29	26	26	20	29	31	36	29	35	-
Soil Temperature at 10 cm	06 UTC	24.6	25.6	26.2	28.0	27.5	27.8	28.0	27.8	27.2	27.4	27.0	28.5	26.6
	12 UTC	28.0	28.6	30.4	30.8	31.0	31.0	31.4	30.3	30.3	30.6	30.2	31.4	31.5
Sunshine Duration		13.7	13.5	12.6	13.5	13.4	13.4	9.6	13.1	10.4	12.9	12.6	9.2	10.8
Precipitation													78.5	4.3
Evaporation		7.2	9.5	7.6	15.4	10.2	10.4	10.2	11.2	10.7	6.8	99.2	78.7	94.9
Growing Degrees	5	19.4	21.6	22.9	22.3	23.5	24.0	23.5	23.2	22.2	22.5	225.0	204.1	203.4
	10	14.4	16.6	17.9	17.3	18.5	19.0	18.5	18.2	17.2	17.5	175.0	154.1	153.4

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	74.4	55.9	60.5
Precipitation - Reference Evapotranspiration	-74.4	22.6	-56.2
Number of Rainy Days	0.0	3.0	1.4
Number of Dry Days	11.0	29.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

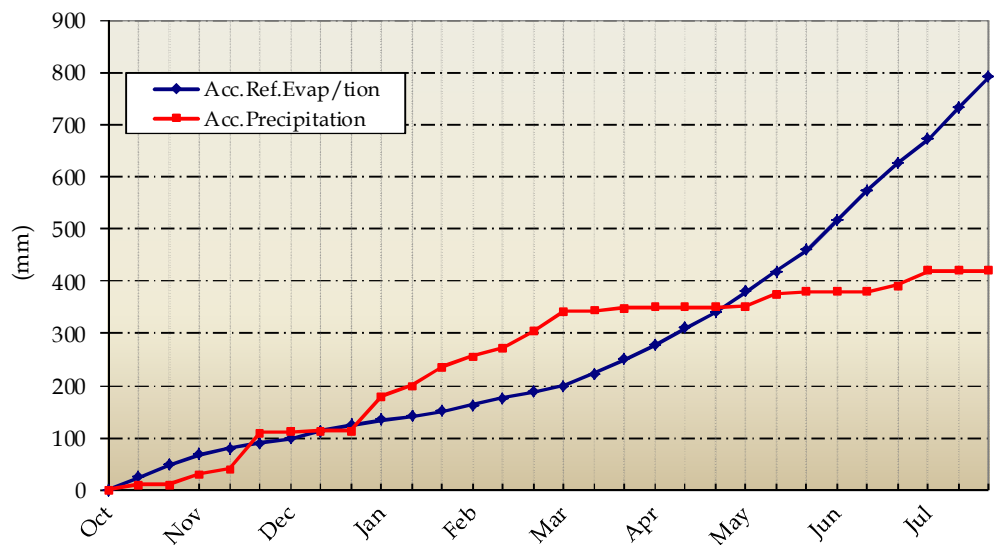




2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.4	33.8	34.1	32.5	32.4	35.2	38.8	32.2	34.5	32.5	33.8	31.2	32.1
	Min	18.6	19.5	19.0	20.6	21.6	19.1	20.7	22.8	21.2	21.0	20.4	19.4	18.3
Relative Humidity	Max	76	72	65	66	58	65	66	69	56	70	66	72	-
	Min	24	21	25	25	18	20	13	24	15	29	21	31	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.5	13.4	13.2	12.8	12.9	13.0	10.8	11.4	12.8	12.9	12.6	10.8	
Precipitation													68.1	2.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	20.5	21.7	21.6	21.6	22.0	22.2	24.8	22.5	22.9	21.8	221.3	202.8	
	10	15.5	16.7	16.6	16.6	17.0	17.2	19.8	17.5	17.9	16.8	171.3	152.8	

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.5	54.5	
Precipitation - Reference Evapotranspiration	-60.5	13.6	2.0
Number of Rainy Days	0.0	1.0	0.4
Number of Dry Days	23.0	28.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

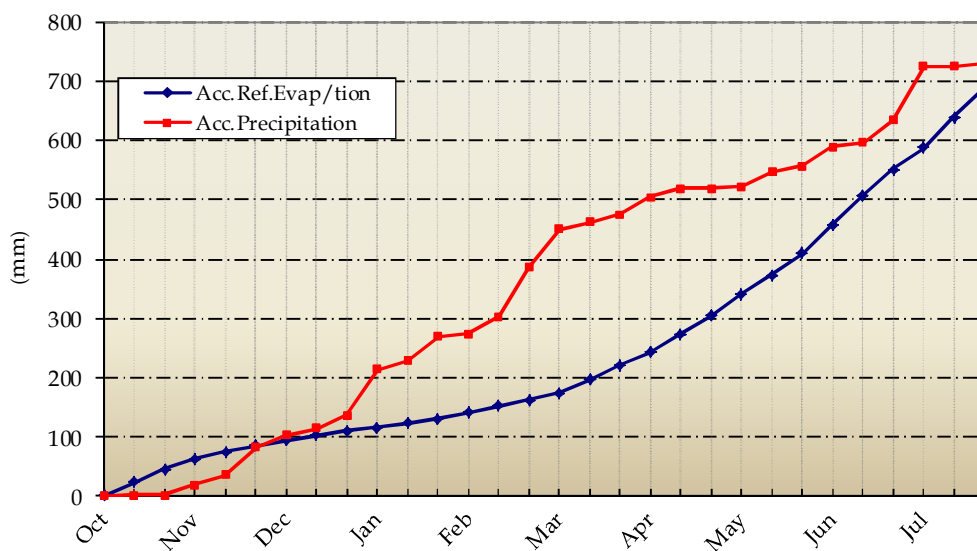


Tripoli

2nd 10-day period (11-20/07/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.1	30.9	32.4	31.2	32.1	32.4	33.1	29.2	30.2	29.6	31.0	32.0	30.6
	Min	13.0	14.0	15.2	15.0	15.9	15.8	15.1	16.5	16.0	14.3	15.1	15.0	14.1
Relative Humidity	Max	96	93	94	88	95	92	85	92	93	96	92	91	-
	Min	31	26	24	32	29	29	20	36	21	33	28	29	-
Soil Temperature at 10 cm	06 UTC	25.8	26.2	26.8	27.0	26.8	27.4	27.0	27.8	27.6	26.2	26.9	25.7	25.3
	12 UTC	32.2	32.8	32.6	-	-	33.4	33.2	32.8	31.0	31.6	32.4	30.5	28.3
Sunshine Duration		10.3	11.2	12.0	8.6	12.4	11.9	12.5	10.3	10.4	7.9	10.8	10.1	10.5
Precipitation											5.9	5.9	37.1	9.1
Evaporation		8.0	7.1	7.1	7.5	9.4	7.8	9.6	6.0	6.8	0.7	70.0	72.1	63.7
Growing Degrees	5	16.1	17.5	18.8	18.1	19.0	19.1	19.1	17.9	18.1	17.0	180.5	185.5	173.2
	10	11.1	12.5	13.8	13.1	14.0	14.1	14.1	12.9	13.1	12.0	130.5	135.5	123.2

2nd 10-day period (11-20/07/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.5	51.1	53.3
Precipitation - Reference Evapotranspiration	-43.6	-14.0	-44.2
Number of Rainy Days	1.0	1.0	1.4
Number of Dry Days	20.0	19.0	-

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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