



# AGROMETEOROLOGICAL BULLETIN

*July 2016  
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



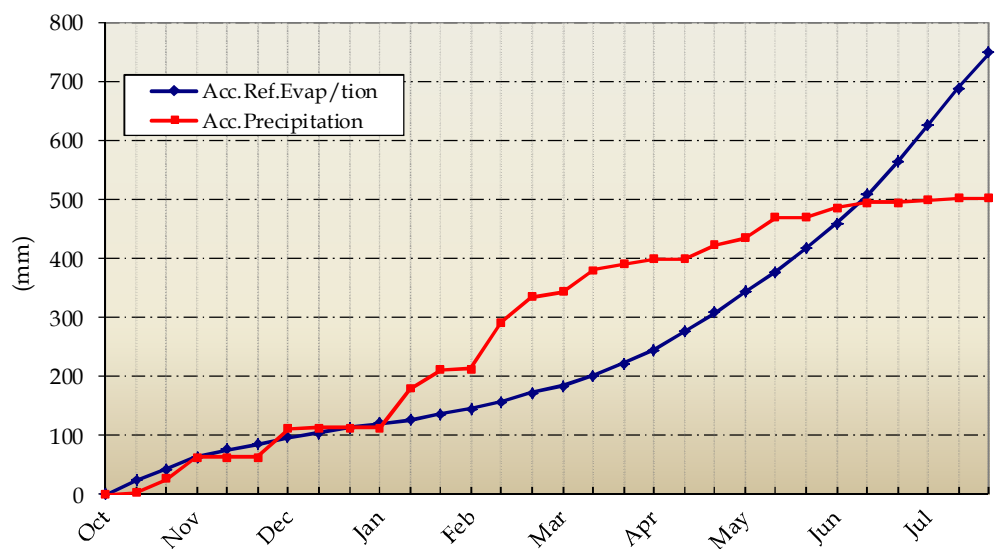
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2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	32.4	32.0	32.0	37.2	33.0	31.6	31.0	31.8	31.0	32.4	32.2	30.5
	Min	19.0	19.8	19.2	20.0	20.8	21.6	18.4	20.4	19.6	18.8	19.8	18.8	17.5
Relative Humidity	Max	67	73	83	85	87	86	77	85	56	69	77	76	-
	Min	28	32	36	43	31	42	45	35	28	23	34	30	-
Soil Temperature at 10 cm	06 UTC	27.6	27.8	28.0	28.6	29.4	29.5	28.6	29.0	28.6	27.8	28.5	25.4	24.2
	12 UTC	33.4	33.6	35.0	35.0	36.0	35.6	35.2	33.2	34.6	32.8	34.4	30.6	28.8
Sunshine Duration		13.3	13.3	13.3	13.1	12.9	13.3	13.2	10.5	11.2	11.9	12.6	12.9	11.2
Precipitation														5.1
Evaporation		14.6	10.9	10.5	9.6	11.4	6.7	10.6	10.9	9.4	8.2	102.8	122.0	98.7
Growing Degrees	5	20.5	21.1	20.6	21.0	24.0	22.3	20.0	20.7	20.7	19.9	210.8	205.1	190.1
	10	15.5	16.1	15.6	16.0	19.0	17.3	15.0	15.7	15.7	14.9	160.8	155.1	140.1

2nd 10-day period (11-20/07/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.2	61.7
Precipitation - Reference Evapotranspiration	-61.2	-61.7
Number of Rainy Days	0.0	0.0
Number of Dry Days	16.0	10.0

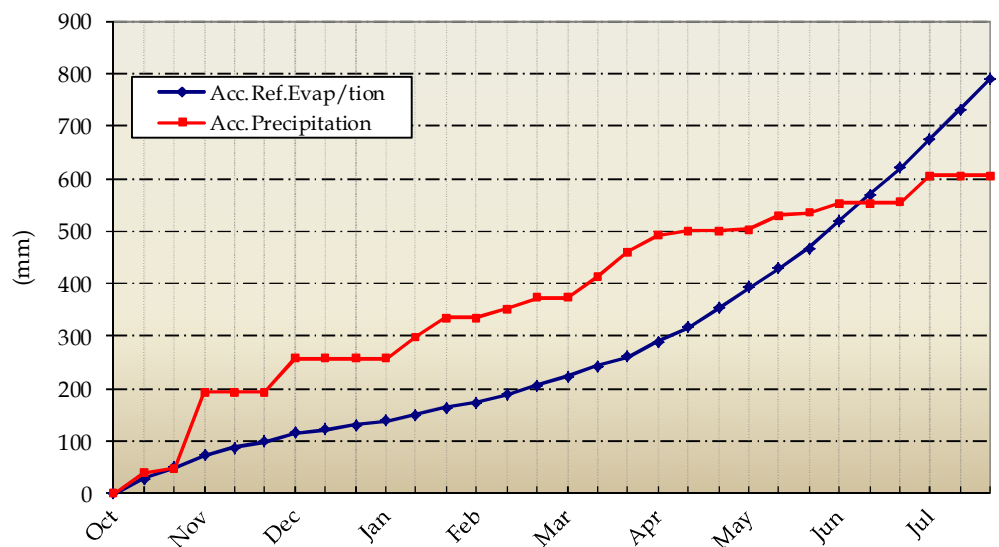
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.2	31.9	32.6	32.0	33.2	27.0	25.6	27.2	29.9	30.8	30.3	33.3	30.4
	Min	21.1	20.1	21.6	21.9	20.6	21.5	21.4	19.7	16.8	17.4	20.2	19.7	18.1
Relative Humidity	Max	84	89	87	89	91	65	68	83	88	84	83	79	-
	Min	36	35	36	40	45	39	48	48	35	33	40	32	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	31.8
Sunshine Duration		13.0	12.8	13.0	12.9	11.9	12.9	12.9	13.2	13.0	13.2	12.9	13.1	12.3
Precipitation														0.8
Evaporation		6.4	10.6	7.0	7.8	8.5	8.6	11.1	7.6	4.6	0.0	72.2	95.1	77.4
Growing Degrees	5	22.2	21.0	22.1	22.0	21.9	19.3	18.5	18.5	18.4	19.1	202.8	215.3	192.4
	10	17.2	16.0	17.1	17.0	16.9	14.3	13.5	13.5	13.4	14.1	152.8	165.3	142.4

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.7	64.6	55.3
Precipitation - Reference Evapotranspiration	-58.7	-64.6	-54.5
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	24.0	23.0	-

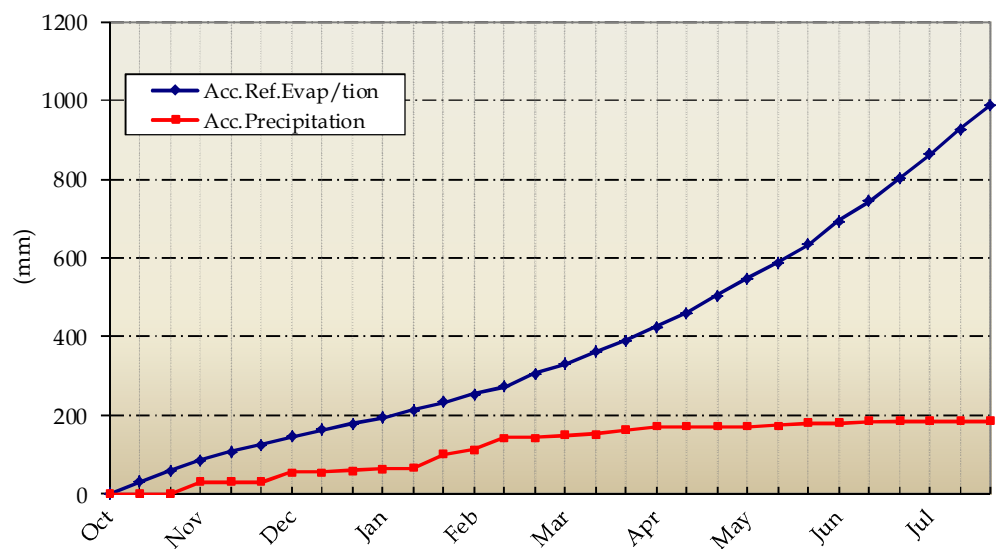
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.8	28.0	28.0	30.4	33.0	29.6	28.0	29.0	28.6	28.0	29.1	28.2	28.5
	Min	25.8	24.4	19.8	20.0	21.2	22.4	23.6	19.6	24.4	24.6	22.6	23.2	22.1
Relative Humidity	Max	73	85	85	86	79	72	85	84	85	78	81	74	-
	Min	48	51	63	46	41	47	61	69	65	66	56	53	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.3	13.2	12.7	13.3	13.2	13.3	13.2	13.2	12.7	13.5	13.2	12.7	12.1
Precipitation														0.0
Evaporation		8.9	10.0	2.7	7.5	5.4	8.0	6.7	8.2	12.4	7.5	77.3	74.5	93.8
Growing Degrees	5	22.3	21.2	18.9	20.2	22.1	21.0	20.8	19.3	21.5	21.3	208.6	206.7	203.0
	10	17.3	16.2	13.9	15.2	17.1	16.0	15.8	14.3	16.5	16.3	158.6	156.7	153.0

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.4	62.4	-
Precipitation - Reference Evapotranspiration	-62.4	-62.4	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	42.0	52.0	-

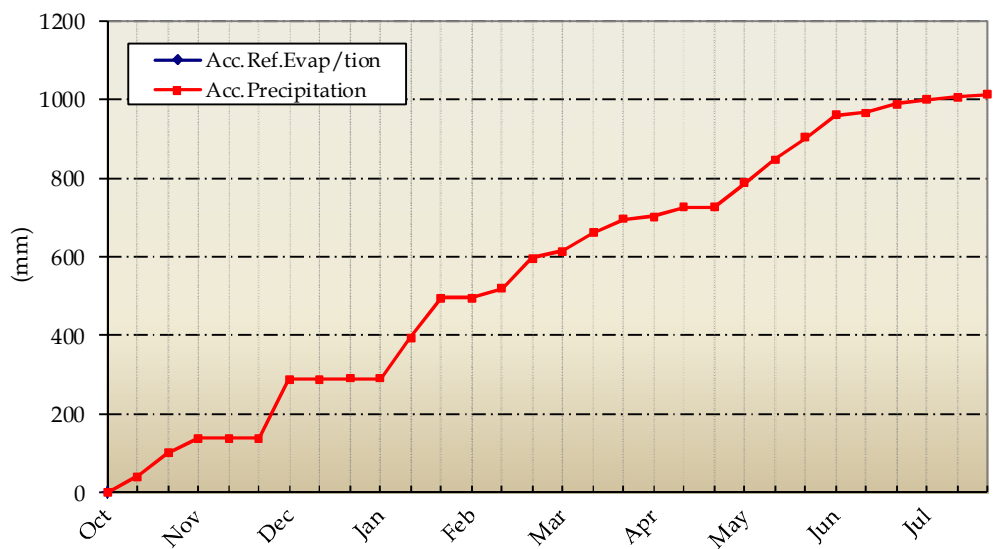
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	35.1	34.7	34.8	34.4	25.2	24.0	30.8	30.8	32.1	31.5	34.6	31.4
	Min	22.8	16.4	18.6	17.0	16.6	14.8	12.1	11.4	16.9	16.2	16.3	16.6	15.3
Relative Humidity	Max	100	90	99	98	100	100	92	100	70	86	94	90	-
	Min	28	35	37	26	23	40	50	25	28	22	31	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		8.4	11.7	12.6	12.7	11.2	8.9	9.7	12.8	11.7	10.3	11.0	11.9	10.3
Precipitation							6.6					6.6	0.0	13.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	83.3
Growing Degrees	5	22.9	20.8	21.7	20.9	20.5	15.0	13.1	16.1	18.9	19.2	188.9	206.2	178.2
	10	17.9	15.8	16.7	15.9	15.5	10.0	8.1	11.1	13.9	14.2	138.9	156.2	129.5

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	50.5
Precipitation - Reference Evapotranspiration	-	-	-37.2
Number of Rainy Days	1.0	0.0	1.6
Number of Dry Days	10.0	10.0	-

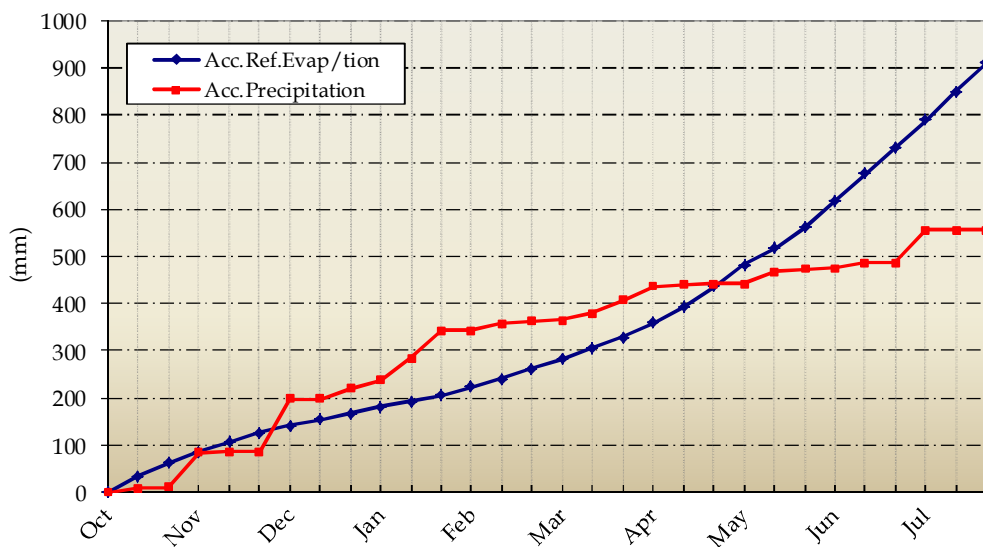
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2016)		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	30.2	29.4	35.4	33.7	30.8	28.8	31.8	30.8	33.6	31.6	32.7	31.2
	Min	18.6	17.6	18.7	20.4	19.0	20.5	17.7	19.8	18.8	17.6	18.9	19.1	17.8
Relative Humidity	Max	82	90	91	88	88	88	78	78	78	89	85	88	-
	Min	37	48	59	37	12	32	33	32	31	28	35	33	-
Soil Temperature at 10 cm	06 UTC	26.2	26.0	26.4	27.0	26.6	27.0	25.6	24.8	26.2	25.4	26.1	25.1	25.6
	12 UTC	28.0	28.0	28.0	28.8	28.6	28.6	28.4	27.6	27.2	27.6	28.1	26.4	30.0
Sunshine Duration		11.1	12.5	12.4	12.5	12.5	12.5	12.6	12.4	9.9	7.6	11.6	12.6	11.5
Precipitation													0.7	3.4
Evaporation		5.0	8.8	5.2	10.0	14.0	3.4	5.6	10.0	5.6	6.4	74.0	-	87.7
Growing Degrees	5	20.1	18.9	19.1	22.9	21.4	20.7	18.3	20.8	19.8	20.6	202.4	209.1	195.0
	10	15.1	13.9	14.1	17.9	16.4	15.7	13.3	15.8	14.8	15.6	152.4	159.1	145.0

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.9	62.1	57.1
Precipitation - Reference Evapotranspiration	-60.9	-61.4	-53.7
Number of Rainy Days	0.0	1.0	0.4
Number of Dry Days	13.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



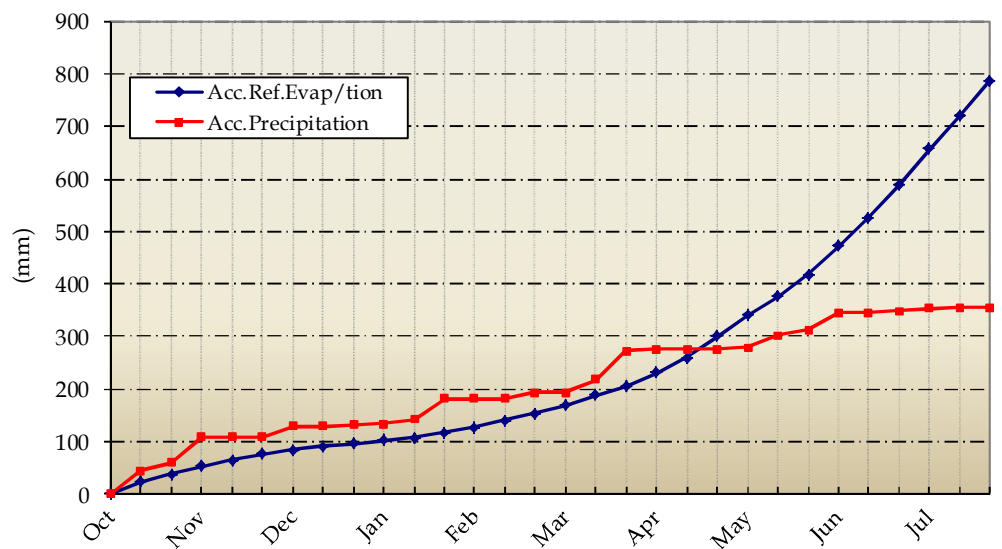


Larisa

2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	33.2	36.5	40.0	37.0	33.2	33.9	31.2	33.0	29.4	34.0	32.8	33.3
	Min	23.3	17.8	17.8	21.0	22.8	24.0	16.0	20.0	20.0	23.4	20.6	18.9	17.9
Relative Humidity	Max	68	80	83	84	93	43	66	55	51	70	69	80	-
	Min	28	28	22	16	29	17	15	24	20	33	23	28	-
Soil Temperature at 10 cm	06 UTC	27.8	27.8	27.6	28.2	28.2	28.6	28.4	28.4	28.2	28.2	28.1	27.8	26.6
	12 UTC	28.0	27.6	28.0	28.2	28.8	28.8	28.2	28.2	28.4	28.4	28.3	27.8	29.2
Sunshine Duration		11.9	11.4	11.8	11.7	11.8	11.5	10.6	12.1	9.2	4.2	10.6	10.4	11.0
Precipitation														9.9
Evaporation		16.0	11.4	11.9	9.5	13.2	15.4	11.3	10.5	11.6	8.7	119.5	115.0	96.3
Growing Degrees	5	23.2	20.5	22.2	25.5	24.9	23.6	20.0	20.6	21.5	21.4	223.3	208.5	205.9
	10	18.2	15.5	17.2	20.5	19.9	18.6	15.0	15.6	16.5	16.4	173.3	158.5	155.9

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	67.8	60.2	62.2
Precipitation - Reference Evapotranspiration	-67.8	-60.2	-52.3
Number of Rainy Days	0.0	0.0	1.2
Number of Dry Days	13.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

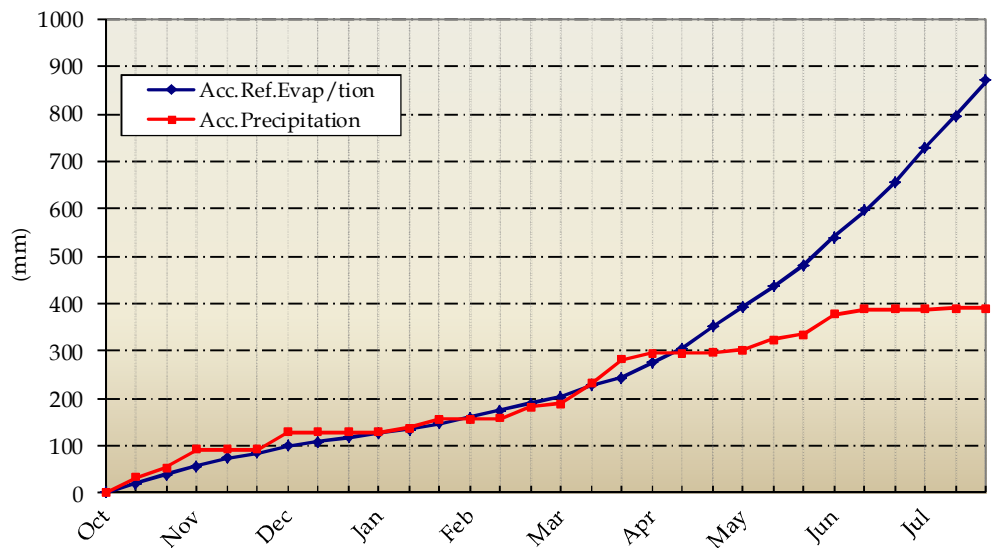


Mikra

2nd 10-day period (11-20/07/2016)		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	32.1	32.2	34.4	35.0	32.2	32.0	28.6	31.1	29.2	31.8	33.6	31.7
	Min	20.2	20.8	20.0	21.4	21.2	25.6	23.8	22.2	23.0	24.0	22.2	19.9	18.9
Relative Humidity	Max	69	78	79	83	71	72	54	52	53	68	68	75	-
	Min	34	30	38	28	32	20	28	35	32	33	31	28	-
Soil Temperature at 10 cm	06 UTC	30.0	29.0	30.0	30.6	30.9	32.0	30.4	28.6	28.2	29.4	29.9	28.1	26.6
	12 UTC	35.0	35.0	35.2	34.8	35.0	35.0	34.8	32.8	34.2	32.0	34.4	32.6	31.5
Sunshine Duration		13.3	13.2	13.2	13.3	10.6	12.4	12.6	13.2	9.5	7.1	11.8	13.5	10.8
Precipitation														4.3
Evaporation		8.0	12.0	9.6	11.6	16.6	12.9	14.8	13.5	10.6	8.0	117.6	84.9	94.9
Growing Degrees	5	20.7	21.5	21.1	22.9	23.1	23.9	22.9	20.4	22.1	21.6	220.1	217.6	203.4
	10	15.7	16.5	16.1	17.9	18.1	18.9	17.9	15.4	17.1	16.6	170.1	167.6	153.4

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	73.7	68.4	60.5
Precipitation - Reference Evapotranspiration	-73.7	-68.4	-56.2
Number of Rainy Days	0.0	0.0	1.4
Number of Dry Days	13.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

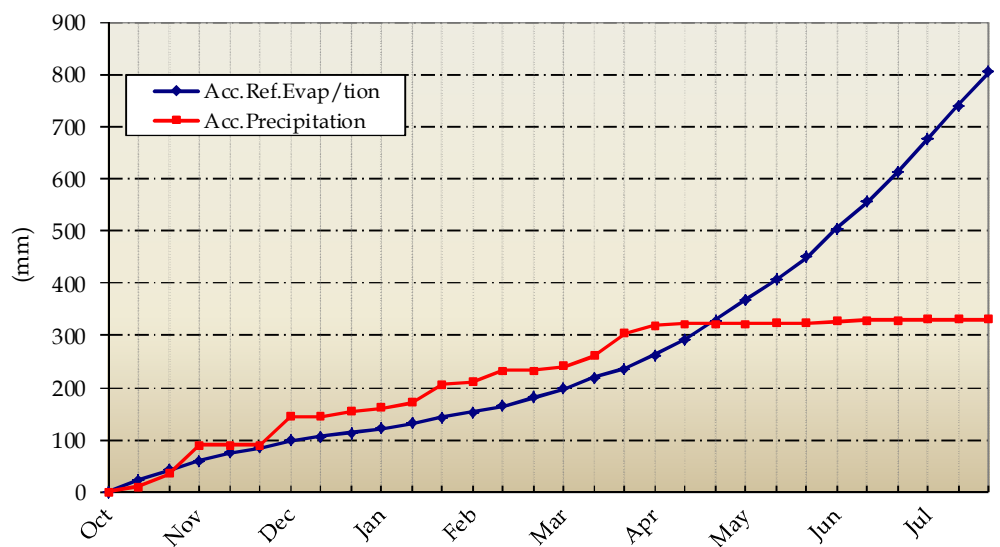




2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	30.8	34.4	36.6	37.1	34.0	32.8	29.8	28.8	28.6	32.4	31.2	32.1
	Min	19.6	20.5	18.9	18.0	22.8	22.8	19.0	19.8	23.7	21.0	20.6	19.7	18.3
Relative Humidity	Max	57	61	72	75	59	62	59	59	56	59	62	67	-
	Min	23	27	23	21	23	16	17	10	29	28	22	26	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.2	13.6	13.2	12.9	12.7	12.8	13.4	12.8	10.6	10.8	12.6	12.8	
Precipitation														2.0
Evaporation		10.0	10.0	8.5	13.0	15.0	12.5	10.0	10.5	9.2	8.3	107.0	96.5	
Growing Degrees	5	20.3	20.7	21.7	22.3	25.0	23.4	20.9	19.8	21.3	19.8	215.0	204.4	
	10	15.3	15.7	16.7	17.3	20.0	18.4	15.9	14.8	16.3	14.8	165.0	154.4	

2nd 10-day period (11-20/07/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.6	60.4
Precipitation - Reference Evapotranspiration	-63.6	-60.4
Number of Rainy Days	0.0	0.4
Number of Dry Days	22.0	19.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

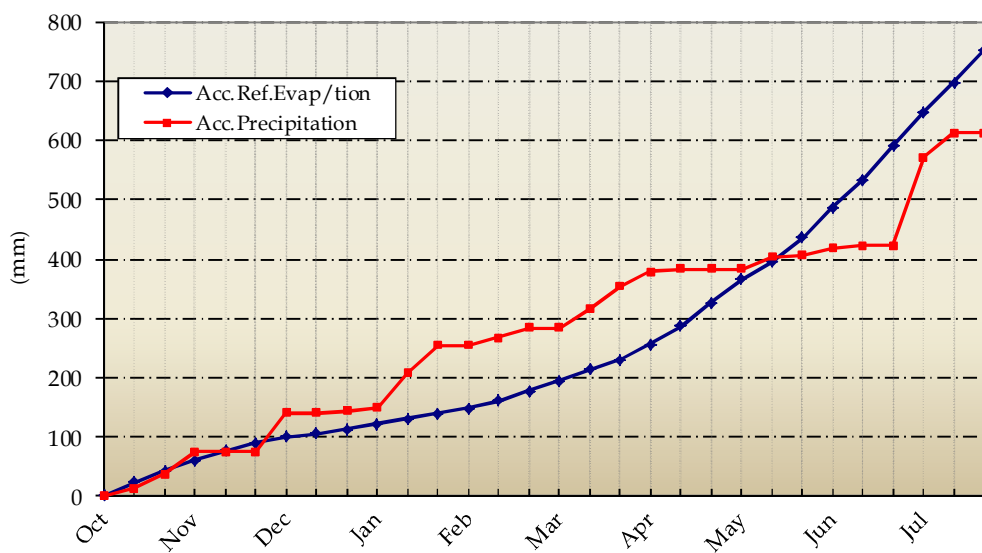


Tripoli

2nd 10-day period (11-20/07/2016)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.3	32.2	32.5	33.4	34.0	26.8	27.8	29.1	29.7	27.9	30.6	31.7	30.6
	Min	15.6	14.5	14.3	16.2	16.1	18.1	11.6	12.5	15.4	14.9	14.9	17.2	14.1
Relative Humidity	Max	95	90	99	100	96	79	90	94	82	85	91	78	-
	Min	28	24	26	24	11	31	30	32	28	36	27	25	-
Soil Temperature at 10 cm	06 UTC	24.6	24.8	25.2	26.2	26.6	26.8	25.2	25.0	25.8	25.4	25.6	25.6	25.3
	12 UTC	29.0	29.2	30.0	30.6	30.8	-	-	32.2	31.2	29.6	30.3	29.8	28.3
Sunshine Duration		12.7	13.1	13.0	13.1	13.0	13.1	13.1	11.3	12.0	8.8	12.3	12.0	10.5
Precipitation														9.1
Evaporation		8.7	9.0	7.5	8.9	8.9	10.7	9.4	3.9	7.2	5.6	79.8	96.1	63.7
Growing Degrees	5	19.0	18.4	18.4	19.8	20.1	17.5	14.7	15.8	17.6	16.4	177.5	194.8	173.2
	10	14.0	13.4	13.4	14.8	15.1	12.5	9.7	10.8	12.6	11.4	127.5	144.8	123.2

2nd 10-day period (11-20/07/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.4	60.5	53.3
Precipitation - Reference Evapotranspiration	-55.4	-60.5	-44.2
Number of Rainy Days	0.0	0.0	1.4
Number of Dry Days	14.0	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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