



# AGROMETEOROLOGICAL BULLETIN

*October 2018*  
*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



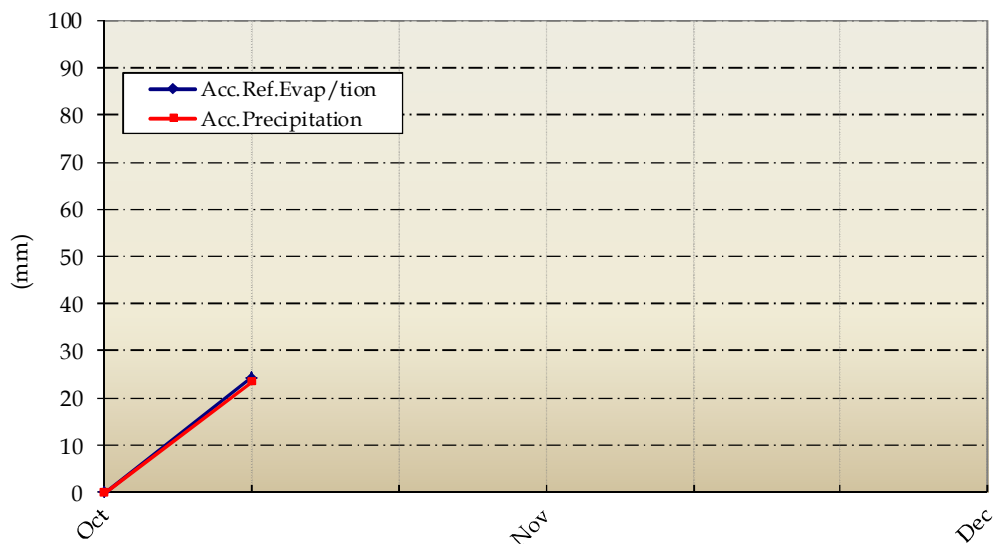
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1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	24.2	22.4	22.2	22.6	22.4	24.4	24.0	22.4	23.6	22.8	20.7	22.8
	Min	15.2	13.0	12.0	16.0	11.2	13.0	9.8	13.0	13.0	13.4	13.0	9.5	11.7
Relative Humidity	Max	94	97	98	80	76	90	88	89	80	70	86	96	-
	Min	86	63	68	35	35	40	38	40	35	39	48	56	-
Soil Temperature at 10 cm	06 UTC	17.0	17.0	17.6	18.6	15.0	15.6	16.0	15.6	17.4	16.6	16.6	15.1	17.4
	12 UTC	18.0	21.4	20.6	19.4	19.6	20.0	21.0	21.4	21.0	20.8	20.3	18.0	20.5
Sunshine Duration		0.0	7.6	8.4	7.1	10.0	10.3	10.3	9.8	8.9	10.4	8.3	7.7	6.7
Precipitation		20.2	3.3									23.5	61.9	17.2
Evaporation		0.1	3.8	1.1	4.6	4.4	6.2	8.8	6.2	1.9	1.6	38.7	25.5	48.1
Growing Degrees	5	12.3	13.6	12.2	14.1	11.9	12.7	12.1	13.5	12.7	13.5	128.6	100.8	122.8
	10	7.3	8.6	7.2	9.1	6.9	7.7	7.1	8.5	7.7	8.5	78.6	50.8	73.0

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.4	20.5	27.4
Precipitation - Reference Evapotranspiration	-0.9	41.4	-10.2
Number of Rainy Days	2.0	3.0	1.6
Number of Dry Days	0.0	0.0	-

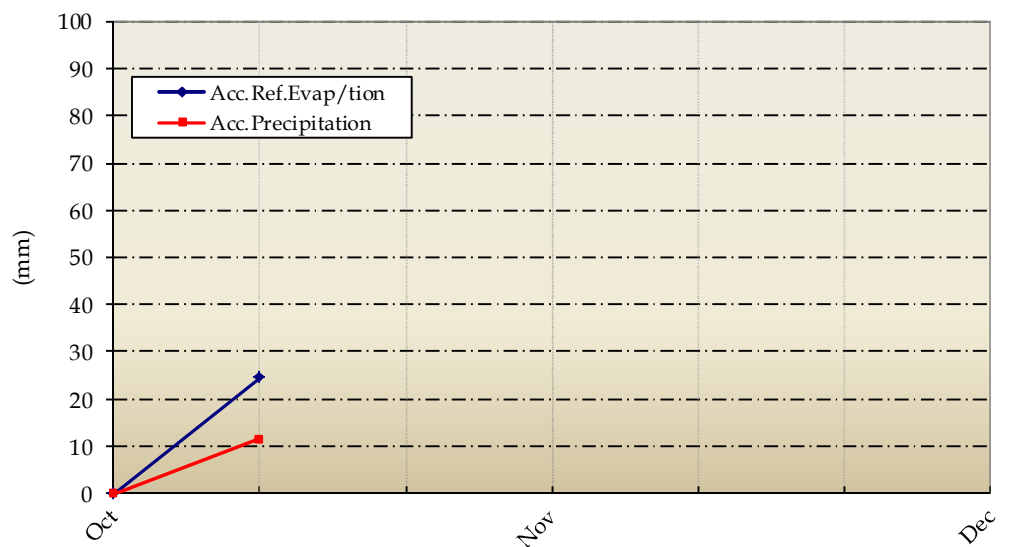
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	26.6	24.9	29.6	28.2	27.8	26.2	25.8	27.2	26.0	26.7	24.4	25.6
	Min	16.0	14.6	18.1	15.7	18.4	5.0	13.6	16.4	13.8	12.6	14.4	12.4	14.3
Relative Humidity	Max	100	91	100	96	86	95	98	100	95	83	94	83	-
	Min	32	48	56	40	42	34	50	48	31	28	41	34	-
Soil Temperature at 10 cm	06 UTC	21.5	21.0	22.0	21.2	22.5	23.0	21.4	21.4	21.0	20.4	21.5	20.3	20.5
	12 UTC	24.2	22.6	23.0	25.8	25.6	26.0	24.2	24.6	24.4	23.8	24.4	23.0	23.8
Sunshine Duration		9.2	7.4	1.4	9.0	7.1	9.4	8.2	8.6	9.2	10.0	8.0	8.9	7.7
Precipitation				9.2					2.3			11.5	4.4	23.2
Evaporation		5.4	4.8	3.4	2.0	4.0	4.0	2.7	7.4	3.2	3.0	39.9	47.4	42.9
Growing Degrees	5	15.2	15.6	16.5	17.7	18.3	11.4	14.9	16.1	15.5	14.3	155.5	133.8	149.6
	10	10.2	10.6	11.5	12.7	13.3	6.4	9.9	11.1	10.5	9.3	105.5	83.8	99.6

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.6	28.5	26.8
Precipitation - Reference Evapotranspiration	-13.1	-24.1	-3.6
Number of Rainy Days	2.0	1.0	2.2
Number of Dry Days	2.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

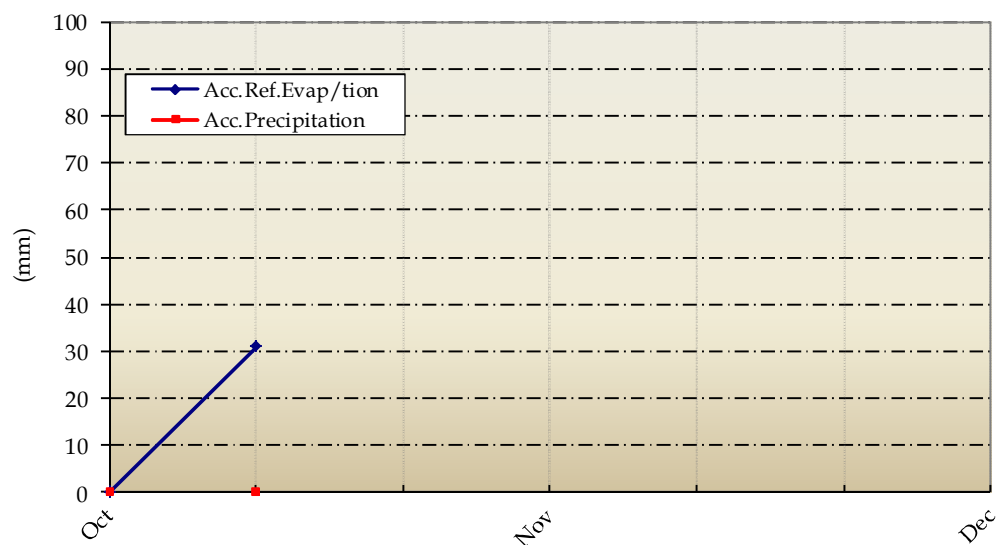


Iraklio

1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.0	26.6	27.0	26.2	24.6	23.2	22.8	24.0	23.2	22.8	24.6	23.4	24.6
	Min	19.4	18.2	18.0	18.6	20.2	20.0	18.6	16.6	16.6	20.0	18.6	17.9	17.5
Relative Humidity	Max	84	90	92	92	92	81	91	90	87	83	88	82	-
	Min	65	58	58	74	67	63	69	62	63	68	65	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.2	9.1	9.4	9.0	8.7	7.2	9.5	9.6	9.0	6.6	8.6	6.9	7.9
Precipitation											0.0	0.0	1.9	6.0
Evaporation		3.8	4.5	1.2	4.4	4.0	4.4	4.7	2.1	4.4	2.6	36.1	42.5	53.7
Growing Degrees	5	17.7	17.4	17.5	17.4	17.4	16.6	15.7	15.3	14.9	16.4	166.3	156.8	160.1
	10	12.7	12.4	12.5	12.4	12.4	11.6	10.7	10.3	9.9	11.4	116.3	106.8	110.1

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.0	30.8	-
Precipitation - Reference Evapotranspiration	-31.0	-28.9	6.0
Number of Rainy Days	0.0	2.0	0.9
Number of Dry Days	11.0	0.0	-

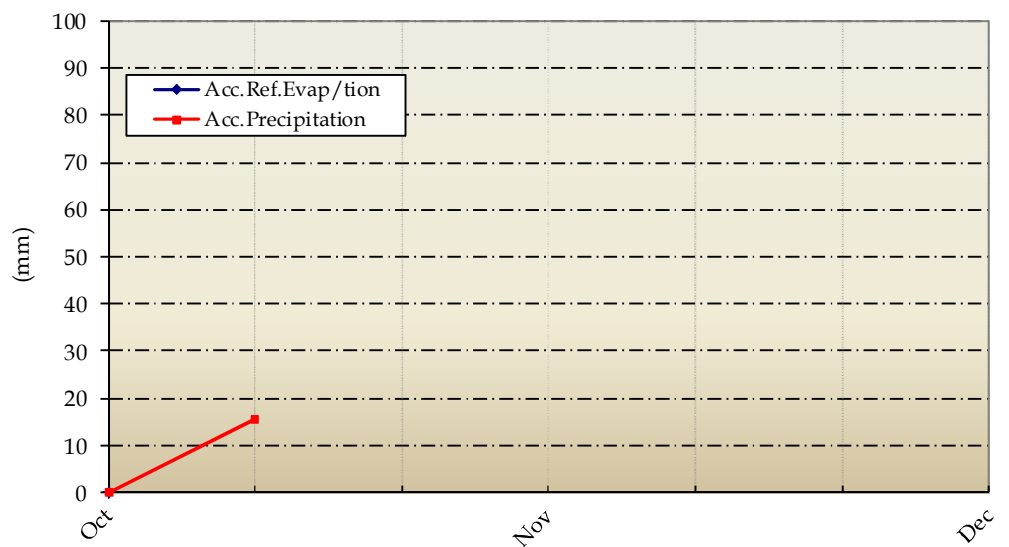
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.4	21.4	22.0	25.0	25.6	26.0	22.0	22.0	23.4	27.0	23.6	22.9	22.8
	Min	13.0	6.6	8.0	12.4	11.4	10.4	11.8	10.2	11.0	12.4	10.7	5.3	10.0
Relative Humidity	Max	100	100	100	96	100	98	93	100	100	98	98	100	-
	Min	45	45	45	49	39	45	58	50	43	21	44	33	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	15.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.3
Sunshine Duration		3.8	3.1	1.6	6.2	5.9	7.9	4.6	4.1	5.6	12.2	5.5	7.3	5.7
Precipitation		0.3	0.1	0.4		0.2	9.0	0.1	5.5			15.6	5.0	25.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	32.1
Growing Degrees	5	12.2	9.0	10.0	13.7	13.5	13.2	11.9	11.1	12.2	14.7	121.5	91.0	114.5
	10	7.2	4.0	5.0	8.7	8.5	8.2	6.9	6.1	7.2	9.7	71.5	41.0	64.7

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	21.0
Precipitation - Reference Evapotranspiration	-	-	4.8
Number of Rainy Days	7.0	1.0	2.6
Number of Dry Days	0.0	9.0	-

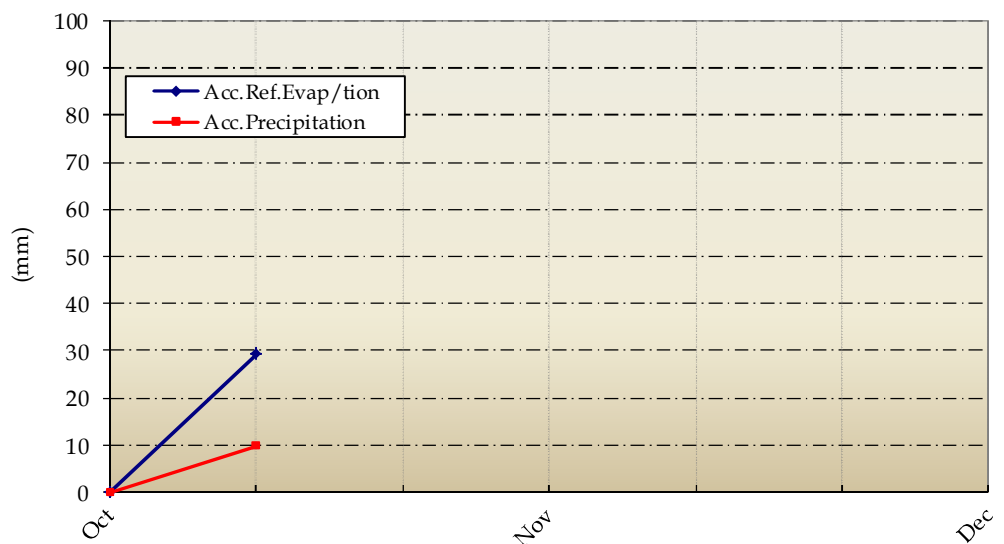
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	25.2	24.6	30.0	29.8	27.1	26.4	26.2	25.8	24.6	26.6	24.9	26.1
	Min	14.8	12.5	16.6	18.1	20.4	15.5	15.2	16.1	15.0	13.6	15.8	11.8	13.8
Relative Humidity	Max	90	90	90	79	75	91	91	91	91	87	88	85	-
	Min	30	52	55	30	39	38	54	54	48	37	44	36	-
Soil Temperature at 10 cm	06 UTC	20.4	19.4	20.4	21.0	22.0	21.0	21.4	21.0	20.8	20.4	20.8	-	20.0
	12 UTC	22.4	21.4	21.6	23.8	23.0	23.2	23.6	23.0	22.8	22.8	22.8	-	22.6
Sunshine Duration		8.8	2.6	2.7	9.1	5.0	8.5	7.6	7.5	8.5	10.0	7.0	8.6	7.4
Precipitation			0.1	2.6			0.1	3.4	0.6	3.0		9.8	1.8	17.8
Evaporation		4.6	0.2	2.5	6.7	4.8	2.5	0.1	4.6	3.6	4.4	34.0	35.6	46.9
Growing Degrees	5	15.6	13.9	15.6	19.1	20.1	16.3	15.8	16.2	15.4	14.1	162.0	133.6	149.4
	10	10.6	8.9	10.6	14.1	15.1	11.3	10.8	11.2	10.4	9.1	112.0	83.6	99.4

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.4	31.5	28.3
Precipitation - Reference Evapotranspiration	-19.6	-29.7	-10.5
Number of Rainy Days	6.0	2.0	2.3
Number of Dry Days	1.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

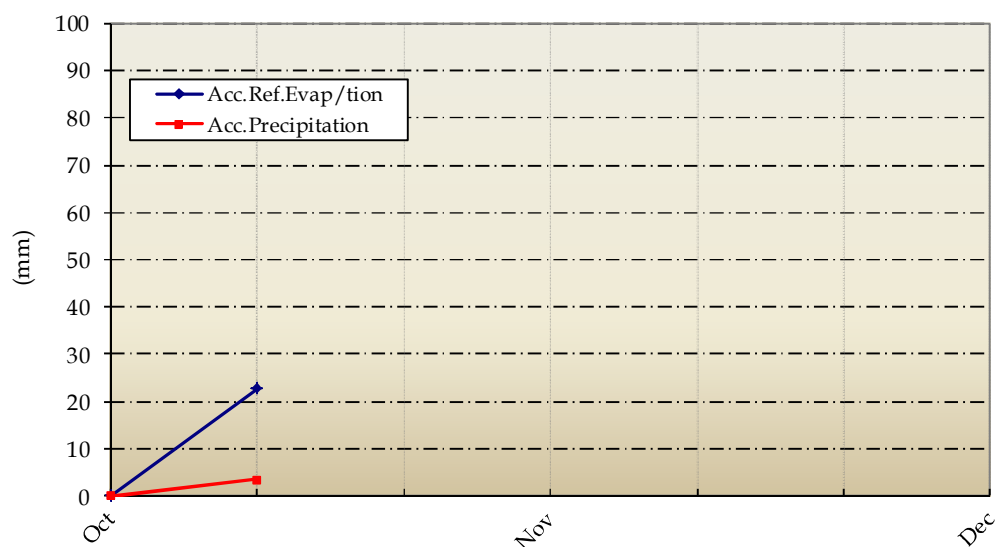


Larisa

1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	26.3	23.2	24.2	21.5	21.6	24.4	25.0	23.8	23.6	23.9	24.5	25.0
	Min	13.5	10.6	11.6	14.2	13.8	8.8	8.6	10.8	10.0	7.7	11.0	9.2	11.6
Relative Humidity	Max	98	94	97	98	91	96	98	94	93	91	95	88	-
	Min	49	35	63	40	53	50	38	38	44	27	44	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.9
Sunshine Duration		7.4	6.1	0.3	2.8	0.3	1.3	7.6	7.5	6.8	7.9	4.8	6.4	6.2
Precipitation		3.3		0.1	0.1							3.5	2.3	10.5
Evaporation		4.1	5.2	0.2	4.0	2.1	2.1	6.6	5.0	5.0	3.9	38.2	42.5	41.2
Growing Degrees	5	14.3	13.5	12.4	14.2	12.7	10.2	11.5	12.9	11.9	10.7	124.1	118.4	133.0
	10	9.3	8.5	7.4	9.2	7.7	5.2	6.5	7.9	6.9	5.7	74.1	68.4	83.0

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.7	25.7	26.4
Precipitation - Reference Evapotranspiration	-19.2	-23.4	-15.9
Number of Rainy Days	3.0	3.0	2.1
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

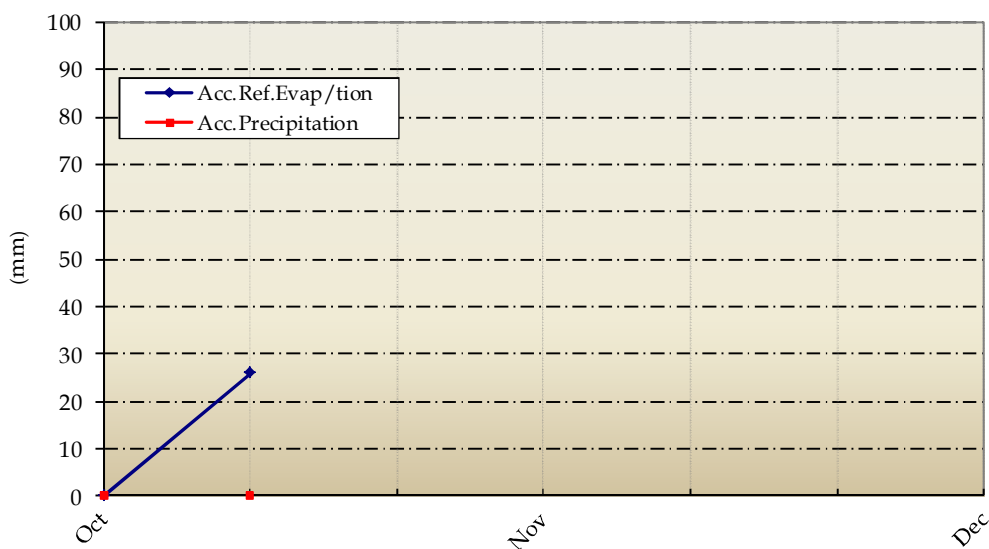


Mikra

1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.2	24.6	24.3	24.8	21.3	22.4	23.0	24.2	23.4	24.4	23.7	22.9	23.5
	Min	16.0	12.6	12.9	18.0	15.2	12.1	10.7	12.0	15.6	10.3	13.5	11.6	12.8
Relative Humidity	Max	87	89	87	78	83	79	79	85	80	74	82	75	-
	Min	40	50	47	32	53	45	46	43	44	23	42	36	-
Soil Temperature at 10 cm	06 UTC	18.4	19.0	19.8	20.4	20.2	18.6	19.5	19.0	20.2	19.0	19.4	18.4	18.4
	12 UTC	24.0	24.0	22.6	22.2	21.4	22.0	22.2	21.8	22.5	22.2	22.5	20.7	21.9
Sunshine Duration		7.2	8.8	4.9	5.5	1.1	9.4	9.6	9.4	6.4	9.4	7.2	8.1	6.2
Precipitation		0.1										0.1	6.9	9.7
Evaporation		4.0	2.8	2.2	6.8	8.1	6.8	3.2	6.6	3.0	6.8	50.3	48.7	40.2
Growing Degrees	5	15.1	13.6	13.6	16.4	13.3	12.3	11.9	13.1	14.5	12.4	136.0	122.1	131.6
	10	10.1	8.6	8.6	11.4	8.3	7.3	6.9	8.1	9.5	7.4	86.0	72.1	81.6

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.1	29.2	25.5
Precipitation - Reference Evapotranspiration	-26.0	-22.3	-15.8
Number of Rainy Days	1.0	1.0	1.7
Number of Dry Days	0.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



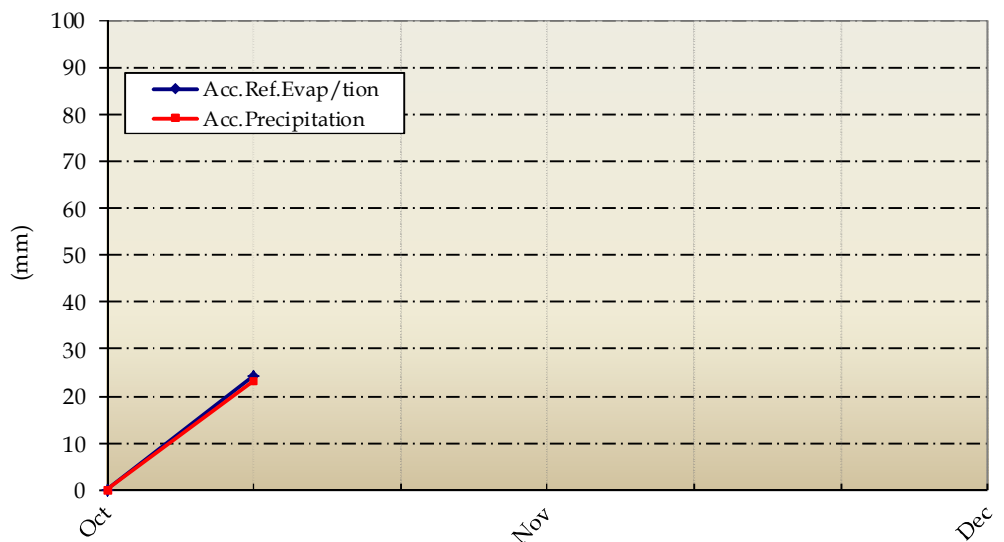


Tanagra

1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	26.6	23.4	23.4	21.8	21.2	23.1	23.4	22.2	21.6	23.0	23.3	24.7
	Min	14.5	12.0	13.5	17.0	15.0	12.5	11.2	11.3	12.6	13.7	13.3	11.2	12.9
Relative Humidity	Max	99	97	100	100	99	95	96	96	98	75	96	89	-
	Min	44	28	60	57	34	45	36	40	43	34	42	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.0	8.4	2.7	3.2	8.2	9.5	9.8	9.9	9.1	9.7	7.6	8.2	
Precipitation		23.3										23.3	10.0	9.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	14.0	14.3	13.5	15.2	13.4	11.9	12.2	12.4	12.4	12.7	131.7	122.6	
	10	9.0	9.3	8.5	10.2	8.4	6.9	7.2	7.4	7.4	7.7	81.7	72.6	

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.3	25.1	
Precipitation - Reference Evapotranspiration	-1.0	-15.1	9.2
Number of Rainy Days	1.0	1.0	2.1
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

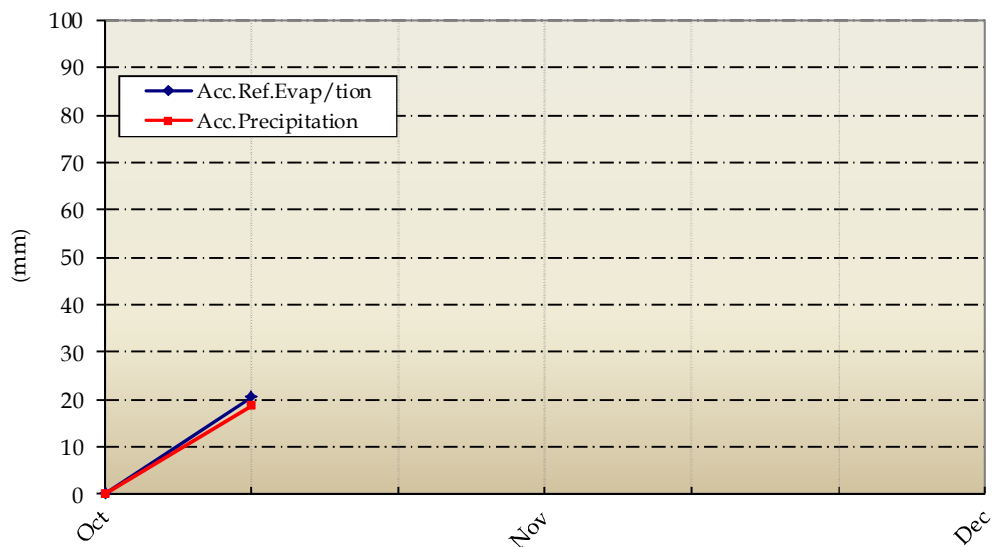


Tripoli

1st 10-day period (1-10/10/2018)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.8	22.6	19.6	23.5	20.0	21.9	24.0	22.5	20.4	20.1	21.6	22.0	23.3
	Min	13.4	6.4	11.8	11.3	16.3	8.9	8.2	9.5	8.1	6.8	10.1	6.4	9.0
Relative Humidity	Max	100	99	100	100	96	97	100	100	100	98	99	97	-
	Min	28	38	66	49	62	34	48	49	45	42	46	31	-
Soil Temperature at 10 cm	06 UTC	16.8	14.4	16.8	16.6	18.8	-	-	16.0	15.4	14.4	16.2	15.8	17.3
	12 UTC	19.8	18.8	18.8	21.0	19.0	-	-	19.8	19.2	18.8	19.4	18.9	19.3
Sunshine Duration		8.5	7.1	1.8	7.7	3.0	8.5	5.8	4.1	6.8	9.3	6.3	8.4	7.4
Precipitation		1.7		6.8		0.1		7.2	2.9			18.7	1.8	9.7
Evaporation		3.7	1.3	0.8	2.2	-	-	-	0.9	1.8	3.2	-	-	32.6
Growing Degrees	5	12.6	9.5	10.7	12.4	13.2	10.4	11.1	11.0	9.3	8.5	108.6	91.9	111.8
	10	7.6	4.5	5.7	7.4	8.2	5.4	6.1	6.0	4.3	3.5	58.6	41.9	62.0

1st 10-day period (1-10/10/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.6	23.5	25.4
Precipitation - Reference Evapotranspiration	-1.9	-21.7	-15.7
Number of Rainy Days	5.0	1.0	2.0
Number of Dry Days	0.0	7.0	-

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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