



# AGROMETEOROLOGICAL BULLETIN

*November 2017*  
*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



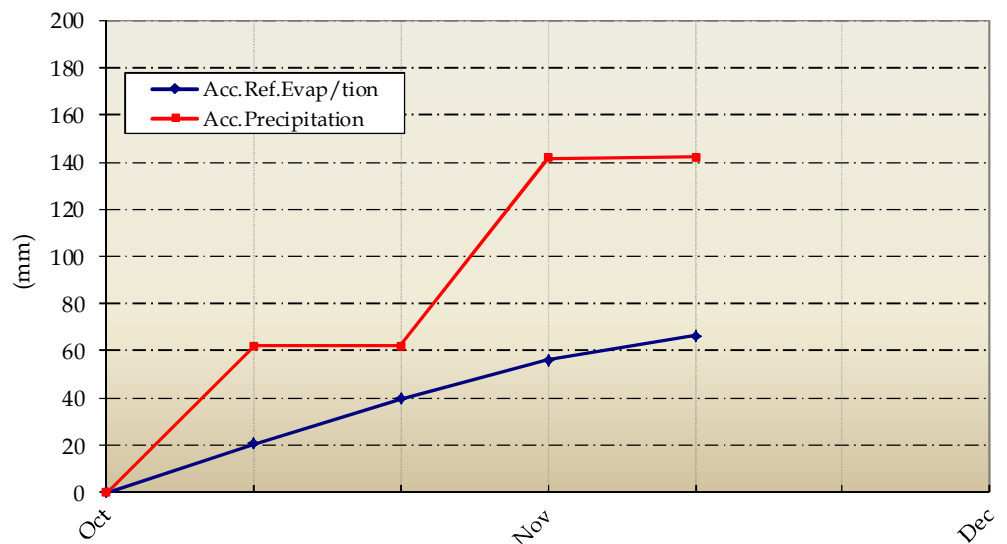
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1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.6	14.0	17.0	17.0	16.8	16.8	17.6	17.2	17.8	18.0	16.5	18.9	15.8
	Min	5.2	-0.6	2.8	10.0	6.0	3.6	5.2	9.0	7.0	4.0	5.2	10.1	7.1
Relative Humidity	Max	90	93	93	91	87	97	97	92	97	97	93	88	-
	Min	47	40	64	73	47	61	61	67	74	65	60	56	-
Soil Temperature at 10 cm	06 UTC	9.4	7.2	8.4	11.2	10.4	10.0	10.0	11.6	12.0	11.0	10.1	15.0	11.0
	12 UTC	10.6	11.0	12.0	13.4	13.4	13.0	13.0	14.8	14.0	14.0	12.9	17.6	12.9
Sunshine Duration		3.5	8.8	5.0	5.3	9.2	8.8	7.8	4.2	8.0	8.7	6.9	4.2	4.1
Precipitation									0.2			0.2	35.9	19.0
Evaporation		0.6	1.7	2.3	2.0	3.5	0.5	1.3	2.5	0.7	2.4	17.5	29.2	25.4
Growing Degrees	5	3.9	1.7	4.9	8.5	6.4	5.2	6.4	8.1	7.4	6.0	58.5	95.2	64.9
	10	0.0	0.0	0.0	3.5	1.4	0.2	1.4	3.1	2.4	1.0	13.0	49.3	23.3

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.3	16.7	14.9
Precipitation - Reference Evapotranspiration	-10.1	19.2	4.1
Number of Rainy Days	1.0	5.0	1.9
Number of Dry Days	9.0	12.0	-

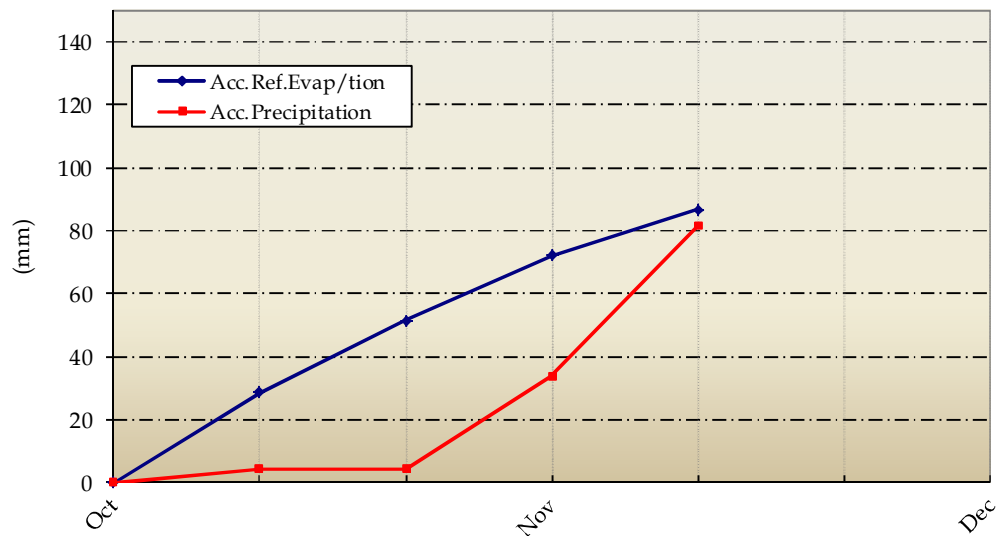
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	20.0	20.8	20.8	21.6	20.0	22.4	20.8	20.2	20.6	20.6	21.6	20.0
	Min	13.4	11.7	10.7	11.4	7.3	8.0	10.8	12.3	11.9	9.7	10.7	13.4	10.4
Relative Humidity	Max	90	91	90	91	84	89	85	91	88	86	88	87	-
	Min	56	48	44	34	33	52	45	54	59	45	47	52	-
Soil Temperature at 10 cm	06 UTC	16.0	17.0	16.0	16.6	15.0	14.4	15.0	15.6	15.4	15.0	15.6	-	14.3
	12 UTC	18.2	18.4	19.0	17.5	17.0	17.2	16.5	17.0	17.2	16.5	17.4	-	16.6
Sunshine Duration		2.4	8.3	6.8	8.2	8.8	2.7	6.2	4.5	5.0	8.9	6.2	4.6	6.0
Precipitation		1.8			19.9		3.9		22.1			47.7	78.2	45.1
Evaporation		1.0	1.0	1.0	5.0	2.0	0.5	0.9	3.5	0.5	3.0	18.4	34.0	25.9
Growing Degrees	5	11.2	10.9	10.8	11.1	9.5	9.0	11.6	11.6	11.1	10.2	106.7	124.7	101.6
	10	6.2	5.9	5.8	6.1	4.5	4.0	6.6	6.6	6.1	5.2	56.7	74.7	52.1

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.5	16.4	14.3
Precipitation - Reference Evapotranspiration	33.2	61.8	30.8
Number of Rainy Days	4.0	3.0	3.2
Number of Dry Days	1.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

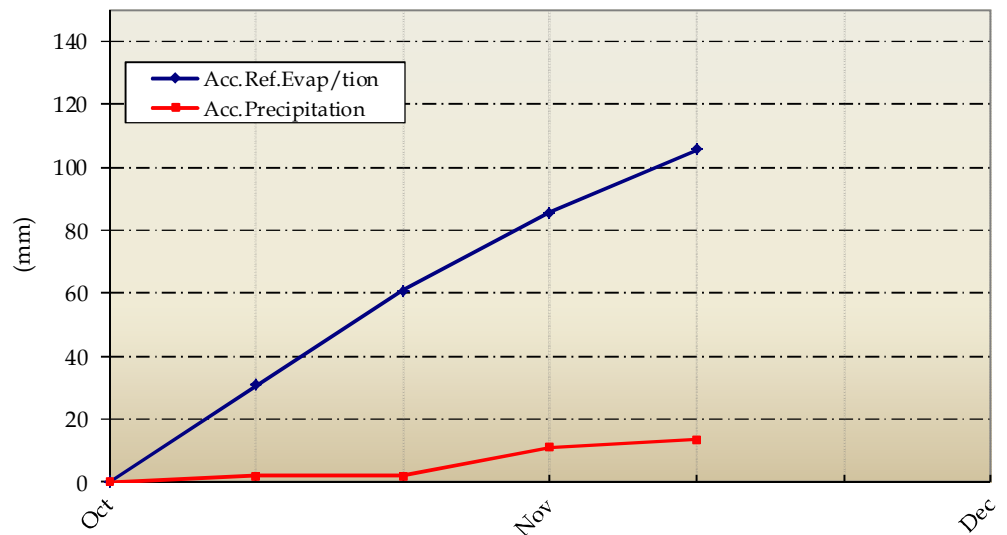


Iraklio

1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.4	17.6	20.2	20.0	18.4	20.0	20.2	25.8	21.4	20.0	20.2	22.9	20.4
	Min	16.0	15.0	10.2	13.8	16.4	11.6	10.4	14.0	13.0	15.2	13.6	15.5	14.3
Relative Humidity	Max	73	82	88	89	74	86	89	91	90	89	85	82	-
	Min	60	59	60	62	63	59	52	40	55	64	57	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		4.6	3.1	7.9	2.4	5.9	7.8	7.9	7.7	6.7	7.3	6.1	7.2	5.0
Precipitation					2.3							2.3	2.1	20.0
Evaporation		4.4	2.1	3.5	2.0	2.9	4.7	2.8	1.7	2.0	1.3	27.4	36.3	39.9
Growing Degrees	5	12.2	11.3	10.2	11.9	12.4	10.8	10.3	14.9	12.2	12.6	118.8	141.9	123.4
	10	7.2	6.3	5.2	6.9	7.4	5.8	5.3	9.9	7.2	7.6	68.8	91.9	73.4

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.1	27.2	-
Precipitation - Reference Evapotranspiration	-17.8	-25.1	20.0
Number of Rainy Days	1.0	2.0	2.6
Number of Dry Days	5.0	8.0	-

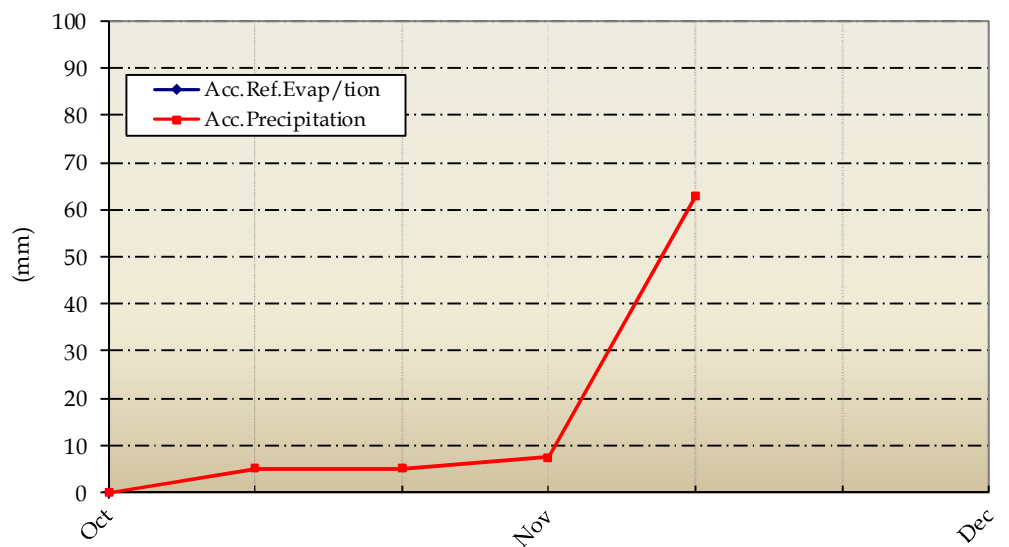
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	17.8	17.4	16.4	17.2	16.2	15.0	13.6	14.8	16.2	16.1	17.2	16.0
	Min	4.0	1.0	1.2	5.0	-2.0	-1.8	10.0	9.6	8.0	4.4	3.9	7.1	5.4
Relative Humidity	Max	100	100	100	100	100	100	98	100	100	100	100	100	-
	Min	58	37	41	31	33	49	75	78	70	60	53	62	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.8
Sunshine Duration		4.7	6.7	4.7	6.3	6.3	4.0	0.0	1.2	2.8	3.1	4.0	2.9	4.1
Precipitation					0.0			23.0	31.6	0.7	0.1	55.4	135.8	40.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	16.8
Growing Degrees	5	5.1	4.4	4.3	5.7	2.6	2.2	7.5	6.6	6.4	5.3	50.1	71.6	57.3
	10	0.1	0.0	0.0	0.7	0.0	0.0	2.5	1.6	1.4	0.3	6.6	28.3	16.4

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	10.7
Precipitation - Reference Evapotranspiration	-	-	29.4
Number of Rainy Days	4.0	6.0	3.4
Number of Dry Days	9.0	9.0	-

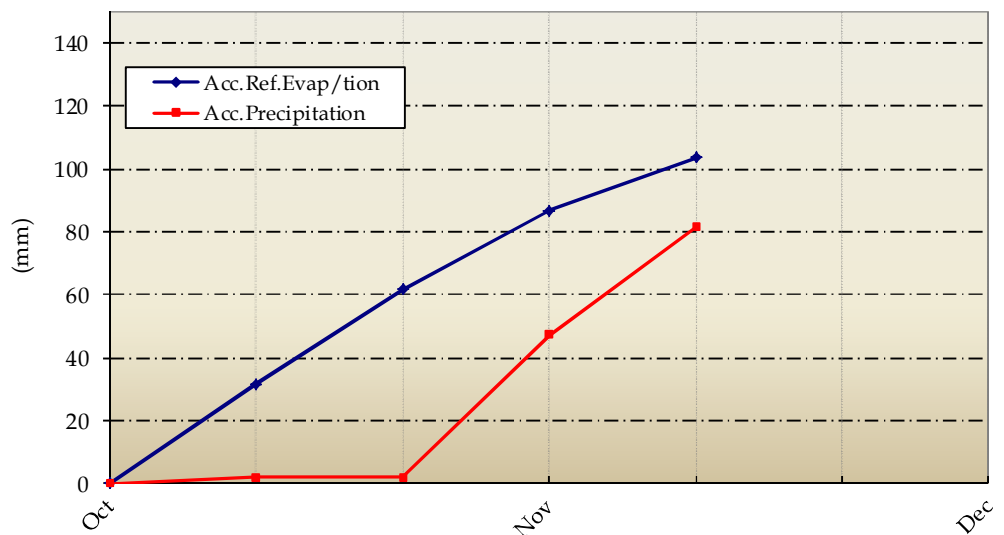
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	18.4	22.2	23.0	22.0	18.0	21.8	21.0	21.8	23.0	20.8	22.5	21.0
	Min	12.6	11.3	8.9	9.3	7.6	11.7	10.5	11.4	10.2	8.9	10.2	12.9	10.2
Relative Humidity	Max	91	93	93	91	87	91	90	92	92	90	91	92	-
	Min	79	58	25	38	36	68	51	49	39	31	47	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	15.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.9
Sunshine Duration		0.2	1.8	8.8	7.5	7.1	7.1	8.4	5.3	7.6	7.8	6.2	5.2	5.6
Precipitation		3.7	0.6				0.3		29.5			34.1	35.4	35.3
Evaporation		0.0	5.2	2.7	1.1	2.8	1.7	1.9	0.6	3.8	2.4	22.2	21.4	30.4
Growing Degrees	5	9.7	9.9	10.6	11.2	9.8	9.9	11.2	11.2	11.0	11.0	105.2	126.8	105.8
	10	4.7	4.9	5.6	6.2	4.8	4.9	6.2	6.2	6.0	6.0	55.2	76.8	55.9

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.0	18.5	16.4
Precipitation - Reference Evapotranspiration	17.1	16.9	18.9
Number of Rainy Days	4.0	3.0	3.1
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

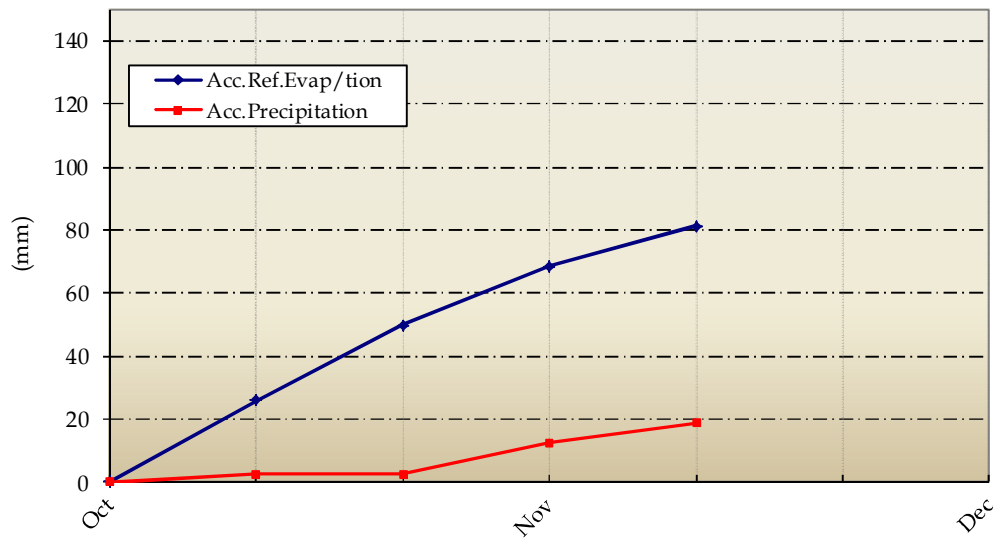


Larisa

1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	17.1	17.6	17.4	18.0	18.0	17.4	16.0	15.4	17.8	17.1	20.9	17.2
	Min	7.8	-0.4	1.7	7.2	6.0	2.0	11.8	10.6	5.8	3.6	5.6	7.9	6.7
Relative Humidity	Max	82	91	84	81	93	95	81	99	99	100	90	99	-
	Min	26	29	34	43	45	46	66	80	83	61	51	44	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	16.0	12.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	16.2	13.2
Sunshine Duration		6.1	6.3	2.2	2.2	4.7	4.9	0.0	1.3	2.2	5.6	3.6	4.7	4.1
Precipitation									6.4			6.4	12.4	20.6
Evaporation		4.9	1.6	1.6	2.7	3.2	2.9	1.3	0.0	2.9	1.3	22.4	22.5	17.6
Growing Degrees	5	7.1	3.4	4.7	7.3	7.0	5.0	9.6	8.3	5.6	5.7	63.6	93.8	69.6
	10	2.1	0.0	0.0	2.3	2.0	0.0	4.6	3.3	0.6	0.7	15.6	44.5	25.7

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.5	14.1	11.7
Precipitation - Reference Evapotranspiration	-6.1	-1.7	8.9
Number of Rainy Days	1.0	2.0	2.7
Number of Dry Days	12.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

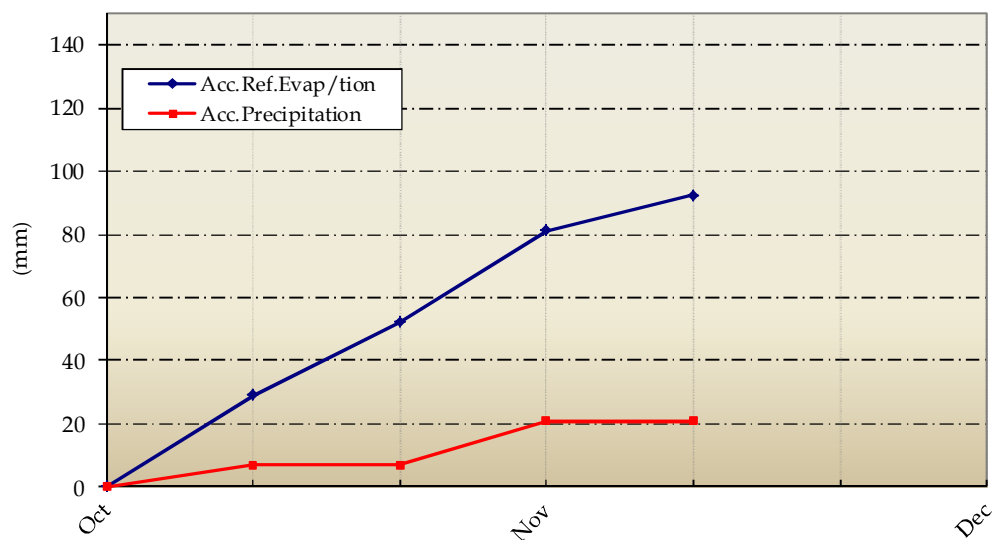


Mikra

1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.1	16.0	15.0	16.4	16.2	17.8	18.0	17.1	17.4	18.0	16.7	20.2	16.5
	Min	2.4	1.3	3.6	8.2	5.6	7.8	10.5	10.9	8.2	4.7	6.3	9.6	7.9
Relative Humidity	Max	76	87	73	77	87	77	87	92	93	90	84	87	-
	Min	25	27	46	50	49	46	44	54	66	45	45	46	-
Soil Temperature at 10 cm	06 UTC	12.2	11.5	11.6	13.0	12.6	13.2	14.2	14.4	13.8	12.8	12.9	14.2	11.5
	12 UTC	13.9	13.4	13.4	13.6	14.0	15.0	15.0	15.0	15.0	14.4	14.3	15.3	13.8
Sunshine Duration		8.7	8.9	1.3	2.5	6.2	3.6	0.0	0.3	4.0	8.1	4.4	5.8	4.0
Precipitation					0.0				0.0			0.0	9.3	18.1
Evaporation		3.6	2.0	1.2	1.9	0.6	3.4	0.4	0.2	1.8	0.0	15.1	36.2	22.5
Growing Degrees	5	3.8	3.7	4.3	7.3	5.9	7.8	9.3	9.0	7.8	6.4	65.1	98.7	72.4
	10	0.0	0.0	0.0	2.3	0.9	2.8	4.3	4.0	2.8	1.4	18.4	48.7	27.9

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	17.6	13.6
Precipitation - Reference Evapotranspiration	-11.2	-8.3	4.5
Number of Rainy Days	0.0	2.0	2.5
Number of Dry Days	13.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



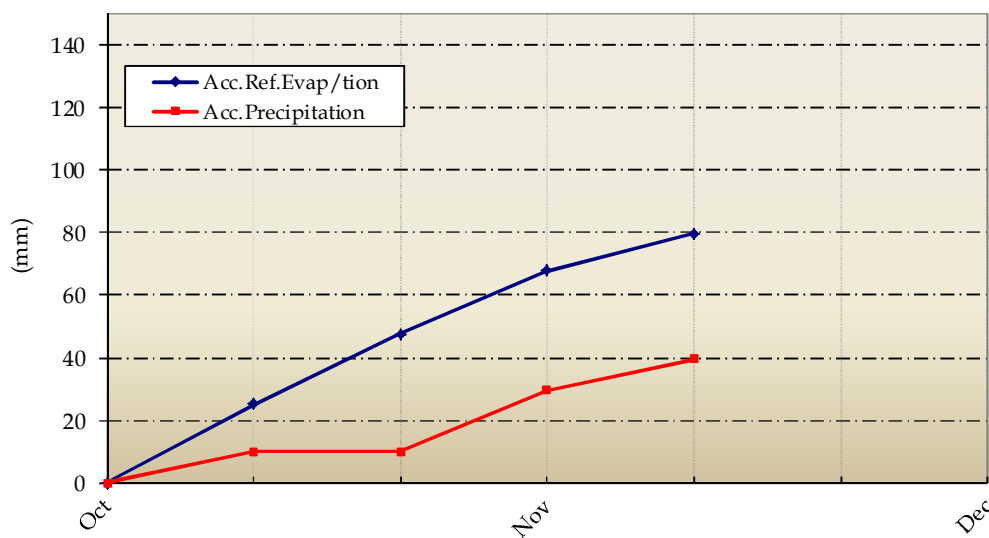


Tanagra

1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.4	16.5	20.6	12.7	16.0	17.5	19.0	16.1	19.8	19.2	17.3	22.4	19.0
	Min	11.5	6.9	4.9	10.5	10.8	5.8	8.7	8.2	6.8	9.6	8.4	11.3	9.1
Relative Humidity	Max	74	79	83	95	98	99	99	100	100	100	93	87	-
	Min	37	36	33	74	52	45	62	10	47	54	45	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		3.0	8.3	7.6	0.0	7.2	7.7	5.1	2.2	6.6	5.0	5.3	6.0	
Precipitation					3.8	1.9			4.3			10.0	3.2	19.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	8.5	6.7	7.8	6.6	8.4	6.7	8.9	7.2	8.3	9.4	78.3	118.6	
	10	3.5	1.7	2.8	1.6	3.4	1.7	3.9	2.2	3.3	4.4	28.3	68.6	

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.8	17.4	
Precipitation - Reference Evapotranspiration	-1.8	-14.2	19.6
Number of Rainy Days	3.0	1.0	3.1
Number of Dry Days	5.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

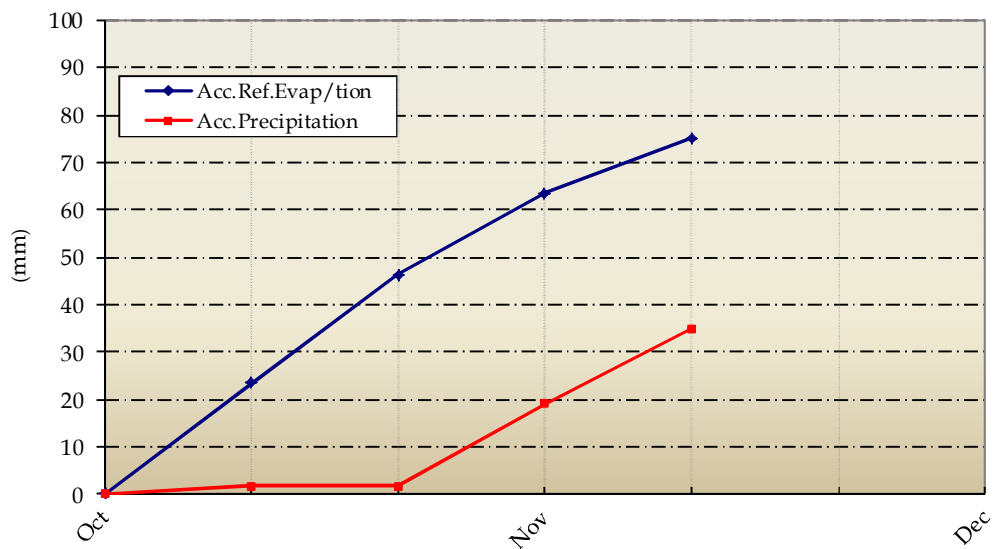


Tripoli

1st 10-day period (1-10/11/2017)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.5	17.5	18.3	15.6	15.4	14.7	17.0	16.9	17.6	17.3	16.1	18.4	16.5
	Min	9.4	9.0	0.6	6.5	1.9	4.7	5.8	6.3	3.4	1.6	4.9	6.8	5.2
Relative Humidity	Max	91	100	100	96	97	96	100	100	100	100	98	100	-
	Min	76	49	35	51	46	67	58	52	45	36	52	54	-
Soil Temperature at 10 cm	06 UTC	13.4	12.6	10.6	11.4	10.0	10.4	12.2	12.0	10.2	10.2	11.3	11.8	11.0
	12 UTC	13.4	14.6	13.0	-	-	12.4	14.2	-	12.6	12.8	13.3	14.1	12.3
Sunshine Duration		0.0	6.5	8.4	5.9	7.4	1.3	7.0	4.3	6.7	7.0	5.4	5.9	5.1
Precipitation		0.6							15.3			15.9	36.0	28.3
Evaporation		1.3	0.4	2.4	1.3	1.3	0.5	1.7	1.1	1.6	1.2	12.8	20.6	18.0
Growing Degrees	5	5.0	8.3	4.5	6.1	3.7	4.7	6.4	6.6	5.5	4.5	55.0	76.0	58.6
	10	0.0	3.3	0.0	1.1	0.0	0.0	1.4	1.6	0.5	0.0	7.8	26.0	17.0

1st 10-day period (1-10/11/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.6	12.8	13.6
Precipitation - Reference Evapotranspiration	4.3	23.2	14.7
Number of Rainy Days	2.0	4.0	2.6
Number of Dry Days	0.0	4.0	-

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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