



AGROMETEOROLOGICAL BULLETIN

*January 2016
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



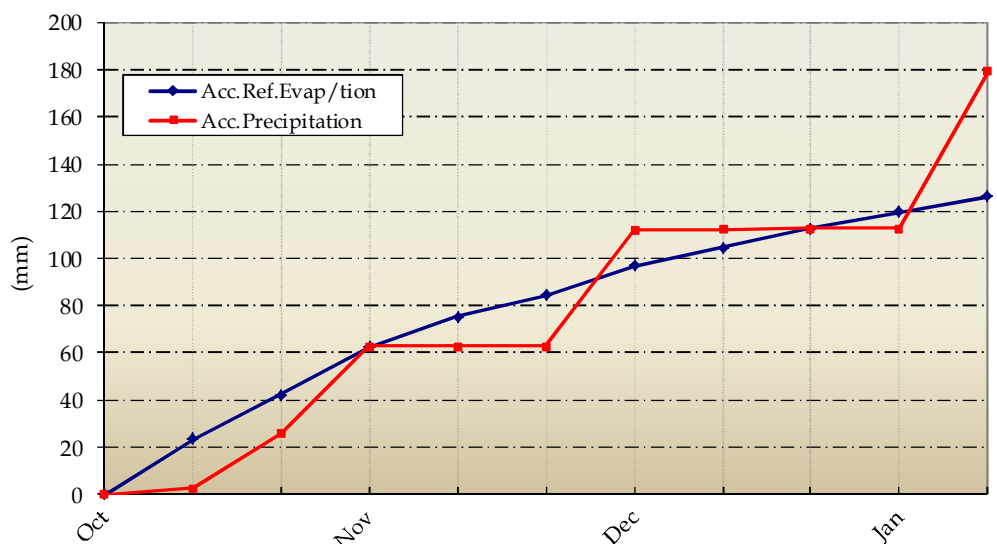
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www.hnms.gr
www.emy.gov.gr
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1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	3.2	3.2	0.4	3.8	6.0	15.0	16.0	12.4	14.2	14.8	8.9	5.0	8.9
	Min	-11.0	-6.4	-1.6	0.4	2.2	4.0	7.8	2.6	0.6	6.8	0.5	-4.2	1.5
Relative Humidity	Max	75	73	89	96	97	97	95	93	97	95	91	81	-
	Min	34	38	65	76	69	83	83	61	61	80	65	43	-
Soil Temperature at 10 cm	06 UTC	0.6	0.6	1.0	1.6	4.2	5.2	10.6	6.5	4.3	7.6	4.2	1.1	5.6
	12 UTC	0.4	0.6	1.4	3.4	4.7	7.0	10.4	8.4	7.6	9.2	5.3	1.9	6.6
Sunshine Duration		8.2	2.0	0.0	3.8	0.0	0.0	0.0	7.1	7.6	0.0	2.9	4.7	2.7
Precipitation				3.5	10.9	10.9	0.2	39.7	1.2		0.1	66.5	1.0	17.5
Evaporation		0.0	0.0	0.0	0.0	0.2	0.5	0.7	3.9	0.6	0.7	6.6	0.0	8.4
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	4.5	6.9	2.5	2.4	5.8	22.1	2.0	17.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.8	2.7	0.0	2.8

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.7	7.0	7.7
Precipitation - Reference Evapotranspiration	59.8	-6.0	9.8
Number of Rainy Days	7.0	1.0	2.8
Number of Dry Days	22.0	5.0	-

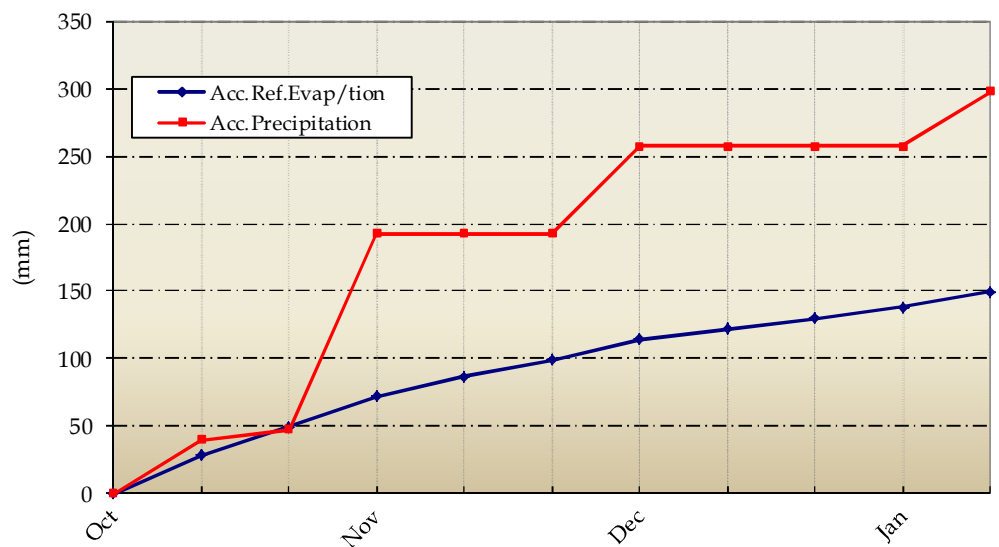
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.9	12.8	16.6	14.8	19.4	18.8	17.6	15.8	17.5	18.2	16.2	13.7	13.8
	Min	-1.9	6.4	6.4	10.0	12.6	15.8	9.0	8.4	7.6	11.9	8.6	1.5	5.4
Relative Humidity	Max	89	89	87	91	87	88	85	86	89	90	88	80	-
	Min	41	48	59	62	70	66	44	59	70	74	59	40	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	7.1	8.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	9.0	10.3
Sunshine Duration		6.6	8.3	0.0	1.0	2.0	1.5	4.5	4.6	3.2	0.9	3.3	6.3	4.5
Precipitation			1.0	11.3	5.6	4.6		13.6	0.9		3.4	40.4		38.0
Evaporation		4.0	0.3	1.2	0.0	1.0	9.6	3.1	6.8	0.0	2.4	28.4	22.5	17.8
Growing Degrees	5	0.0	4.6	6.5	7.4	11.0	12.3	8.3	7.1	7.6	10.1	74.8	30.0	46.8
	10	0.0	0.0	1.5	2.4	6.0	7.3	3.3	2.1	2.6	5.1	30.2	3.3	10.2

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.0	11.6	9.2
Precipitation - Reference Evapotranspiration	28.4	-11.6	28.8
Number of Rainy Days	7.0	0.0	4.0
Number of Dry Days	1.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

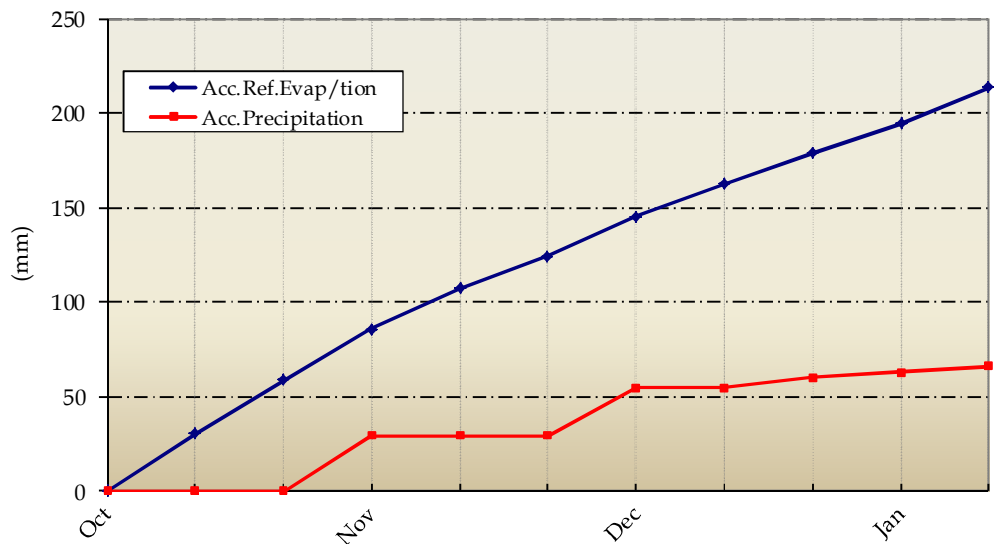


Iraklio

1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.0	10.0	17.6	19.0	22.8	23.6	17.0	17.6	19.4	18.4	17.4	11.4	15.3
	Min	5.0	3.6	6.6	15.0	14.8	17.0	17.0	13.0	10.0	13.0	11.5	7.0	9.3
Relative Humidity	Max	84	89	82	84	73	61	83	90	90	84	82	85	-
	Min	49	67	57	57	50	27	50	52	61	61	53	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		4.7	0.1	7.1	4.1	5.3	3.3	1.2	5.6	8.0	0.5	4.0	2.5	4.0
Precipitation		0.1	0.3		2.0			1.0		0.0		3.4	122.3	27.8
Evaporation		0.4	1.7	3.3	3.9	2.9	4.9	2.1	1.4	3.0	1.4	25.0	31.7	23.8
Growing Degrees	5	2.0	1.8	7.1	12.0	13.8	15.3	12.0	10.3	9.7	10.7	94.7	42.1	73.0
	10	0.0	0.0	2.1	7.0	8.8	10.3	7.0	5.3	4.7	5.7	50.9	5.3	25.4

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.6	15.5	-
Precipitation - Reference Evapotranspiration	-16.2	106.8	27.8
Number of Rainy Days	4.0	7.0	4.3
Number of Dry Days	0.0	0.0	-

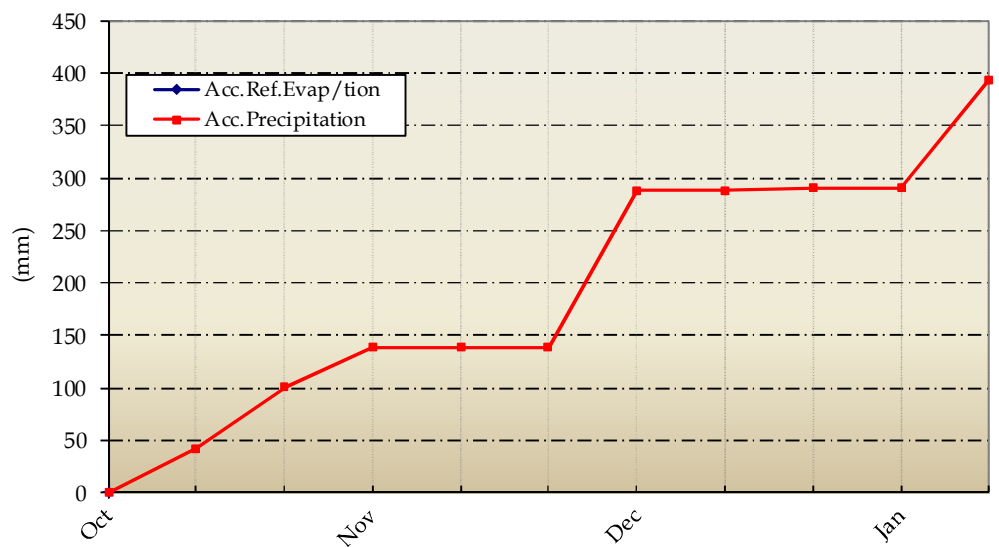
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.8	9.8	8.2	9.6	11.7	14.7	11.4	11.0	10.0	12.8	10.6	7.9	8.6
	Min	-9.8	-6.8	1.2	3.0	8.2	10.2	2.6	-1.6	3.9	8.6	2.0	-4.7	0.3
Relative Humidity	Max	80	98	100	100	100	100	100	96	100	100	97	98	-
	Min	26	40	97	84	90	83	58	59	79	82	70	27	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.3
Sunshine Duration		6.0	-	0.0	0.0	0.0	0.0	-	4.6	-	0.0	1.5	-	2.9
Precipitation				33.4	17.4	19.4	11.4	19.1		0.5	2.0	103.2	6.1	36.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	0.6
Growing Degrees	5	0.0	0.0	0.0	1.3	5.0	7.5	2.0	0.0	2.0	5.7	23.4	-	11.8
	10	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.7	3.2	-	0.3

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.1
Precipitation - Reference Evapotranspiration	-	-	30.1
Number of Rainy Days	7.0	1.0	4.0
Number of Dry Days	14.0	5.0	-

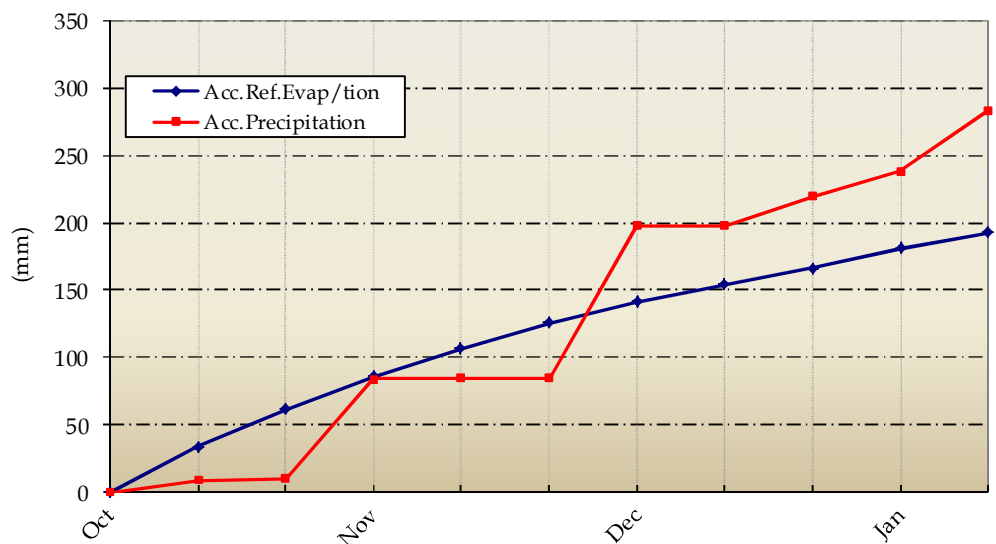
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.7	16.3	16.0	18.0	21.1	19.6	18.0	18.5	18.8	15.4	17.3	12.6	14.7
	Min	1.0	4.2	3.8	7.8	13.0	10.1	9.0	7.5	5.4	8.1	7.0	1.8	5.3
Relative Humidity	Max	93	94	93	94	92	95	91	91	93	95	93	79	-
	Min	39	49	78	55	66	63	53	45	55	85	59	37	-
Soil Temperature at 10 cm	06 UTC	9.2	9.6	10.0	10.6	12.0	11.8	13.4	12.0	11.4	11.2	11.1	7.7	9.3
	12 UTC	11.0	10.4	10.4	11.2	12.8	13.4	13.4	12.6	12.6	12.2	12.0	8.2	10.4
Sunshine Duration		5.1	3.8	0.0	2.8	2.3	4.7	3.7	5.8	6.2	0.0	3.4	5.8	4.5
Precipitation		0.0	3.0	20.6	4.6	3.2		8.4			5.6	45.4	0.7	30.6
Evaporation		0.8	2.2	1.0	0.6	2.2	0.7	2.0	0.7	1.6	0.0	11.8	-	22.0
Growing Degrees	5	1.4	5.3	4.9	7.9	12.1	9.9	8.5	8.0	7.1	6.8	71.7	24.3	49.2
	10	0.0	0.3	0.0	2.9	7.1	4.9	3.5	3.0	2.1	1.8	25.4	1.2	10.6

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	13.8	11.0
Precipitation - Reference Evapotranspiration	34.2	-13.1	19.6
Number of Rainy Days	6.0	2.0	4.0
Number of Dry Days	1.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

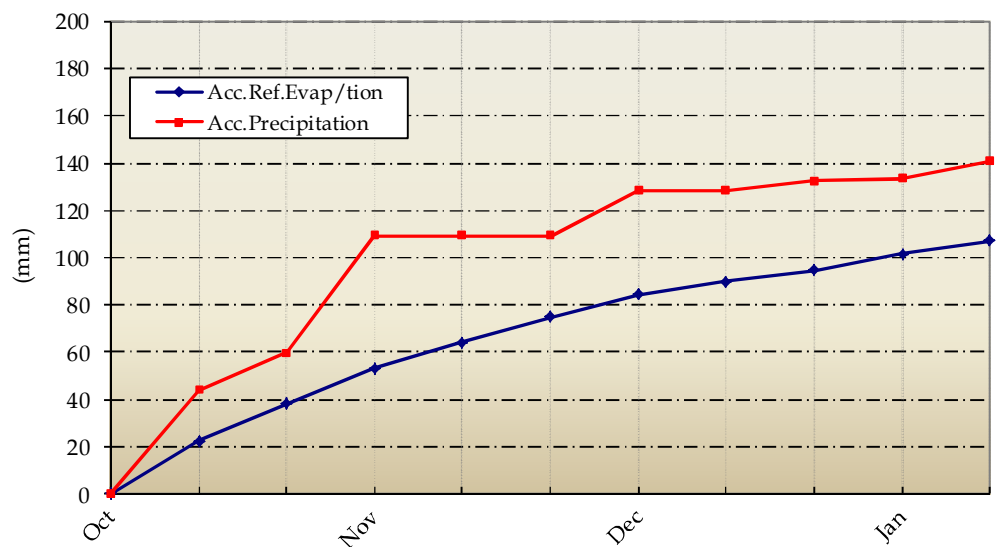


Larisa

1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	3.8	6.4	2.7	4.0	10.2	11.0	16.0	16.0	14.6	12.0	9.7	8.1	9.7
	Min	-7.6	-6.2	-2.4	0.2	3.0	6.3	8.4	7.4	0.2	5.6	1.5	-5.1	0.5
Relative Humidity	Max	100	100	100	100	100	100	100	99	100	100	100	86	-
	Min	32	45	78	99	85	99	30	28	46	76	62	29	-
Soil Temperature at 10 cm	06 UTC	6.0	5.4	5.2	5.4	6.2	7.0	8.0	8.0	8.0	8.0	6.7	-	5.3
	12 UTC	6.0	5.0	5.2	5.4	6.0	8.2	8.2	8.2	7.8	8.2	6.8	-	5.9
Sunshine Duration		6.5	5.6	0.0	0.0	1.8	0.0	5.3	7.2	3.8	0.0	3.0	5.4	3.9
Precipitation				4.3		0.1		3.0				7.4	0.1	11.6
Evaporation		0.0	0.0	0.0	0.2	0.1	0.2	1.1	1.8	0.0	1.7	5.1	0.0	5.2
Growing Degrees	5	0.0	0.0	0.0	0.0	1.6	3.7	7.2	6.7	2.4	3.8	25.4	3.0	13.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.7	0.0	0.0	3.9	0.0	1.0

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.5	8.6	6.2
Precipitation - Reference Evapotranspiration	1.9	-8.5	5.4
Number of Rainy Days	3.0	1.0	2.5
Number of Dry Days	3.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

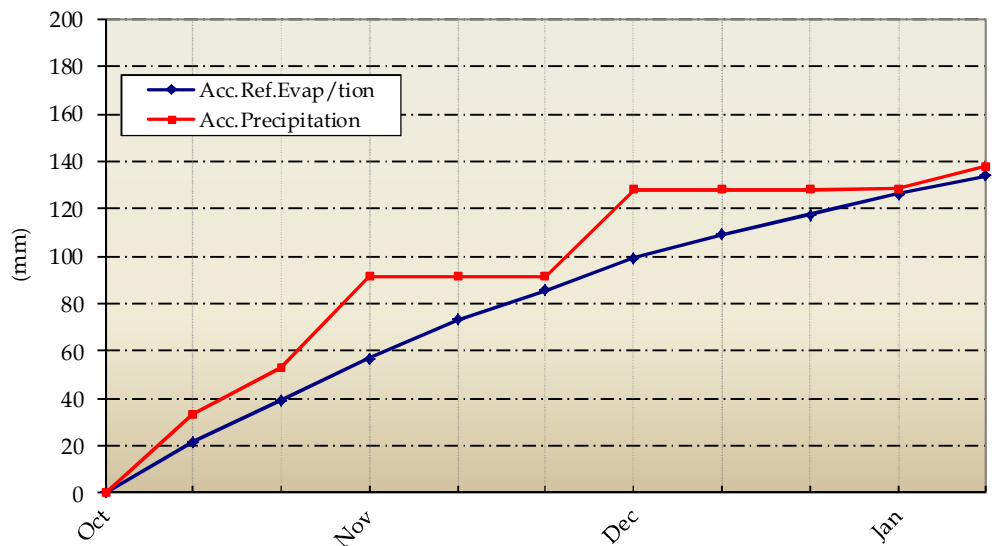


Mikra

1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	3.0	6.7	5.4	7.0	10.2	11.0	15.4	13.9	13.2	11.4	9.7	7.0	9.2
	Min	-8.2	-4.6	-1.8	4.2	6.0	8.2	8.8	5.8	2.8	6.0	2.7	-1.3	1.5
Relative Humidity	Max	79	83	95	97	97	97	97	78	91	95	91	68	-
	Min	32	32	73	82	89	92	43	30	54	77	60	34	-
Soil Temperature at 10 cm	06 UTC	2.2	1.6	3.8	5.2	6.4	8.2	9.2	7.2	6.8	8.0	5.9	2.1	4.9
	12 UTC	4.2	4.0	4.4	6.2	7.2	8.8	10.2	8.4	8.4	9.4	7.1	3.2	6.2
Sunshine Duration		8.5	7.7	0.0	0.0	0.0	0.2	5.5	0.0	7.0	0.0	2.9	6.0	3.7
Precipitation				5.9	0.5	0.2	1.7	1.3			0.0	9.6		14.1
Evaporation		0.0	0.0	2.3	0.2	0.3	1.7	0.9	1.8	6.0	0.2	13.4	10.2	8.7
Growing Degrees	5	0.0	0.0	0.0	0.6	3.1	4.6	7.1	4.9	3.0	3.7	27.0	5.3	16.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	2.1	0.0	1.6

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.6	16.9	8.8
Precipitation - Reference Evapotranspiration	2.0	-16.9	5.3
Number of Rainy Days	5.0	0.0	2.6
Number of Dry Days	3.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

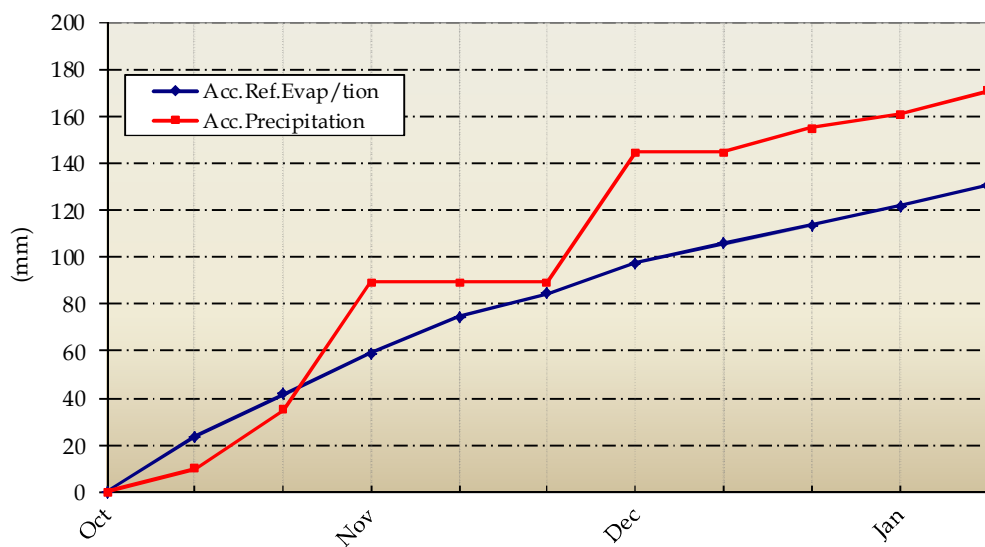


Tanagra

1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.1	9.8	13.6	15.6	20.7	21.0	16.0	16.0	17.1	13.6	14.8	7.6	12.2
	Min	-1.6	-3.1	-1.6	5.4	12.8	10.3	10.6	3.0	2.4	7.5	4.6	-0.3	3.9
Relative Humidity	Max	96	100	100	93	80	94	83	95	100	100	94	95	-
	Min	48	52	70	47	51	36	39	27	53	76	50	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.6	6.5	0.1	4.6	1.7	1.5	5.1	7.8	6.5	0.0	3.9	2.4	
Precipitation		0.2	0.0	3.3	0.0			4.1			2.1	9.7	1.9	18.0
Evaporation		0.5	1.2	1.7	3.6	3.0	0.0	3.0	4.5	2.5	1.3	21.3	16.8	
Growing Degrees	5	0.0	0.0	1.0	5.5	11.8	10.7	8.3	4.5	4.8	5.6	52.0	4.2	
	10	0.0	0.0	0.0	0.5	6.8	5.7	3.3	0.0	0.0	0.6	16.8	0.0	

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.9	9.2	
Precipitation - Reference Evapotranspiration	0.8	-7.3	18.0
Number of Rainy Days	4.0	4.0	4.4
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

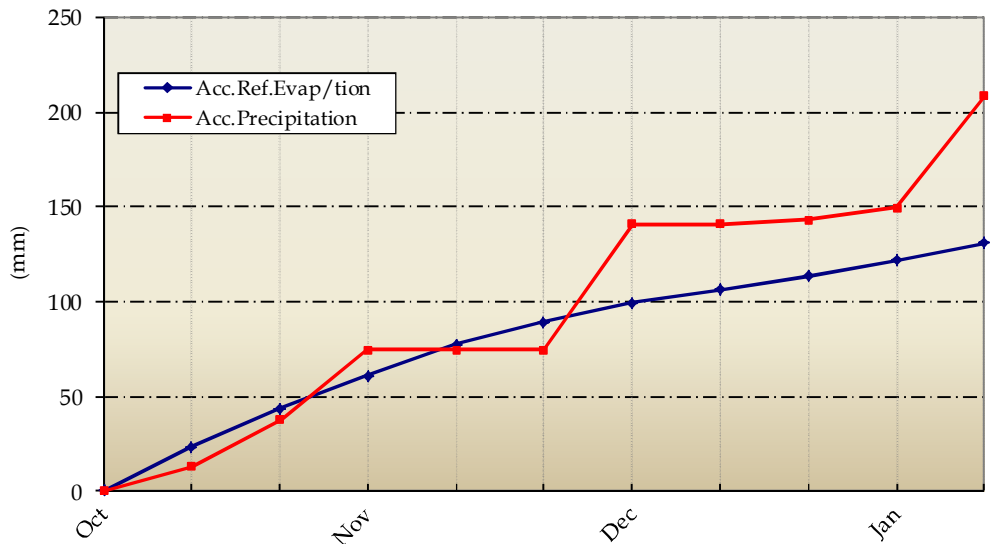


Tripoli

1st 10-day period (1-10/01/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	4.5	9.2	10.6	10.9	15.8	16.2	13.2	14.5	16.4	12.6	12.4	6.7	12.2
	Min	-7.1	-0.3	-1.3	7.1	8.4	10.3	5.6	5.6	-0.8	9.1	3.7	-5.3	3.9
Relative Humidity	Max	100	100	100	97	89	89	100	100	100	100	98	97	-
	Min	50	64	68	67	68	49	43	46	54	75	58	48	-
Soil Temperature at 10 cm	06 UTC	1.8	2.4	3.2	5.0	8.6	8.8	8.4	6.2	4.6	7.8	5.7	1.5	
	12 UTC	-	-	-	7.2	10.0	-	9.4	8.8	-	-	8.8	0.8	
Sunshine Duration		6.1	6.1	0.0	0.8	1.8	3.7	7.2	7.4	5.1	0.3	3.8	4.4	
Precipitation			3.7	21.8	4.5	4.1		19.1	0.3		5.5	59.0	1.9	18.0
Evaporation		0.0	0.0	0.0	0.2	0.3	2.1	4.0	1.0	0.3	0.0	7.9	0.1	
Growing Degrees	5	0.0	0.0	0.0	4.0	7.1	8.3	4.4	5.1	2.8	5.9	37.5	1.8	
	10	0.0	0.0	0.0	0.0	2.1	3.3	0.0	0.1	0.0	0.9	6.3	0.0	

1st 10-day period (1-10/01/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.9	6.6	
Precipitation - Reference Evapotranspiration	50.1	-4.7	18.0
Number of Rainy Days	7.0	2.0	4.4
Number of Dry Days	1.0	3.0	-

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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