



AGROMETEOROLOGICAL BULLETIN

*January 2019
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



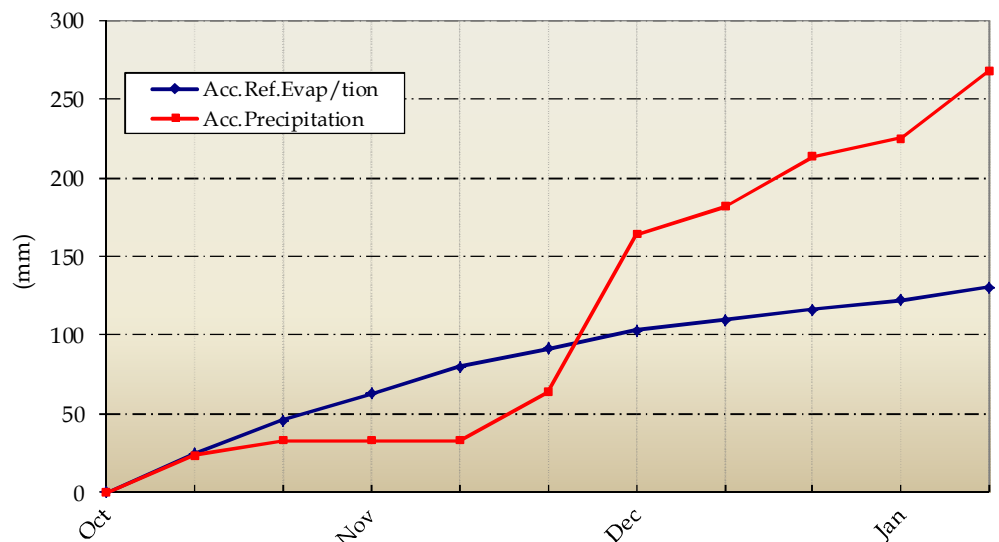
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1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.0	8.8	5.6	3.8	1.4	2.2	3.6	1.8	6.4	13.4	5.5	12.4	8.9
	Min	5.0	-1.4	0.8	1.0	-1.6	-8.0	-3.2	-8.4	-6.0	6.0	-1.6	3.4	1.5
Relative Humidity	Max	73	88	89	85	96	89	81	84	91	95	87	95	-
	Min	57	42	54	49	82	65	43	51	49	84	58	73	-
Soil Temperature at 10 cm	06 UTC	5.2	3.8	4.6	3.8	2.0	1.8	2.0	1.2	1.4	7.4	3.3	6.5	5.6
	12 UTC	6.0	6.0	4.8	4.0	2.2	2.4	2.0	1.4	2.0	8.6	3.9	8.5	6.6
Sunshine Duration		1.1	7.0	0.0	1.2	0.0	3.9	4.7	7.6	2.4	0.1	2.8	3.3	2.7
Precipitation				1.4	0.7	0.2				10.9	29.8	43.0	0.9	17.5
Evaporation		0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.2	5.0	8.4
Growing Degrees	5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	6.2	29.1	17.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.8

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.1	5.5	7.7
Precipitation - Reference Evapotranspiration	34.9	-4.6	9.8
Number of Rainy Days	5.0	1.0	2.8
Number of Dry Days	4.0	4.0	-

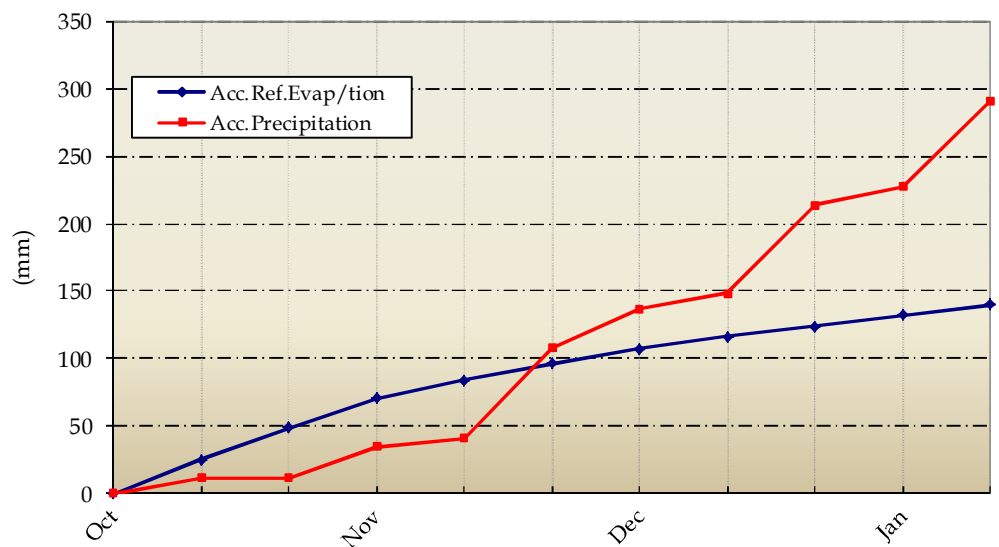
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.6	12.8	9.3	7.0	8.0	9.2	9.0	7.4	13.4	15.6	10.5	15.6	13.8
	Min	6.6	1.0	3.5	2.6	1.4	-1.5	-0.8	-3.7	0.6	9.8	2.0	7.3	5.4
Relative Humidity	Max	52	83	100	93	88	85	88	84	98	88	86	88	-
	Min	36	42	74	75	55	47	35	31	65	55	52	56	-
Soil Temperature at 10 cm	06 UTC	9.4	6.6	8.6	8.4	7.0	6.6	6.2	5.4	8.2	8.6	7.5	10.6	8.9
	12 UTC	10.0	9.2	9.6	7.6	8.0	9.6	6.6	6.2	7.0	8.6	8.2	11.6	10.3
Sunshine Duration		6.8	5.7	2.5	2.0	3.6	5.3	4.8	7.0	0.0	1.6	3.9	3.8	4.5
Precipitation				11.7	13.1	1.7				28.2	9.0	63.7	29.0	38.0
Evaporation		3.2	0.2	0.7	1.1	0.0	1.0	1.8	1.1	0.0	1.4	10.5	19.7	17.8
Growing Degrees	5	5.1	1.9	1.4	0.0	0.0	0.0	0.0	0.0	2.0	7.7	18.1	64.7	46.8
	10	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.8	16.5	10.2

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.0	8.0	9.2
Precipitation - Reference Evapotranspiration	55.7	21.0	28.8
Number of Rainy Days	5.0	3.0	4.0
Number of Dry Days	2.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

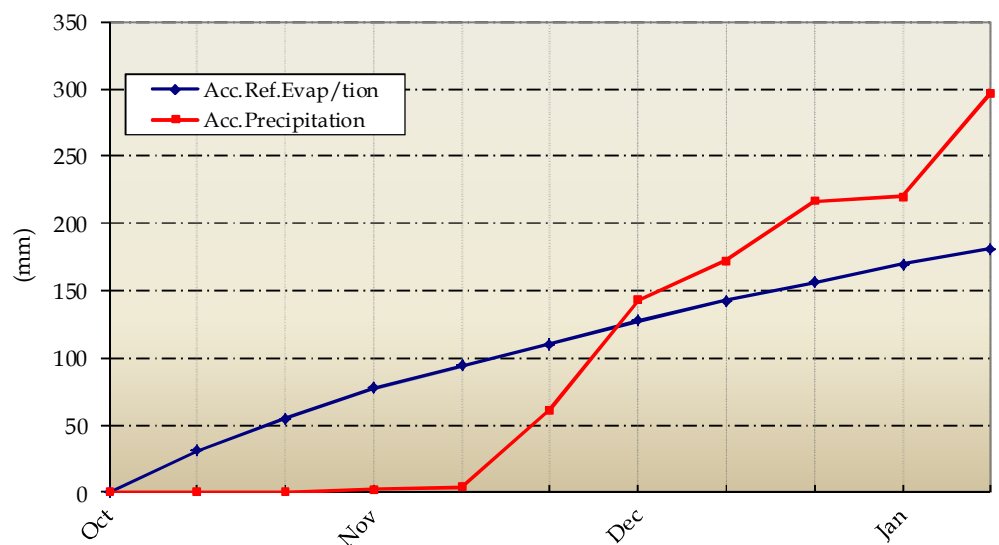


Iraklio

1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	12.2	15.8	13.0	11.2	12.0	11.0	7.2	15.0	16.8	12.9	16.6	15.3
	Min	10.0	8.0	8.4	8.0	5.8	4.4	6.0	4.2	3.0	11.8	7.0	9.7	9.3
Relative Humidity	Max	94	97	88	92	91	97	97	93	87	81	92	92	-
	Min	79	71	64	69	68	66	77	57	55	62	67	67	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		3.8	0.0	3.2	6.2	3.7	6.6	3.5	0.5	8.1	3.9	4.0	5.2	4.0
Precipitation		0.4	25.2	4.0	0.0	1.5	7.1	14.3	22.2		2.7	77.4	6.8	27.8
Evaporation		0.0	5.0	4.0	3.0	2.6	1.6	3.2	1.9	1.8	4.3	27.4	15.9	23.8
Growing Degrees	5	7.2	5.1	7.1	5.5	3.5	3.2	3.5	0.7	4.0	9.3	49.1	81.5	73.0
	10	2.2	0.1	2.1	0.5	0.0	0.0	0.0	0.0	0.0	4.3	9.2	31.5	25.4

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.8	12.9	-
Precipitation - Reference Evapotranspiration	65.6	-6.1	27.8
Number of Rainy Days	8.0	3.0	4.3
Number of Dry Days	0.0	2.0	-

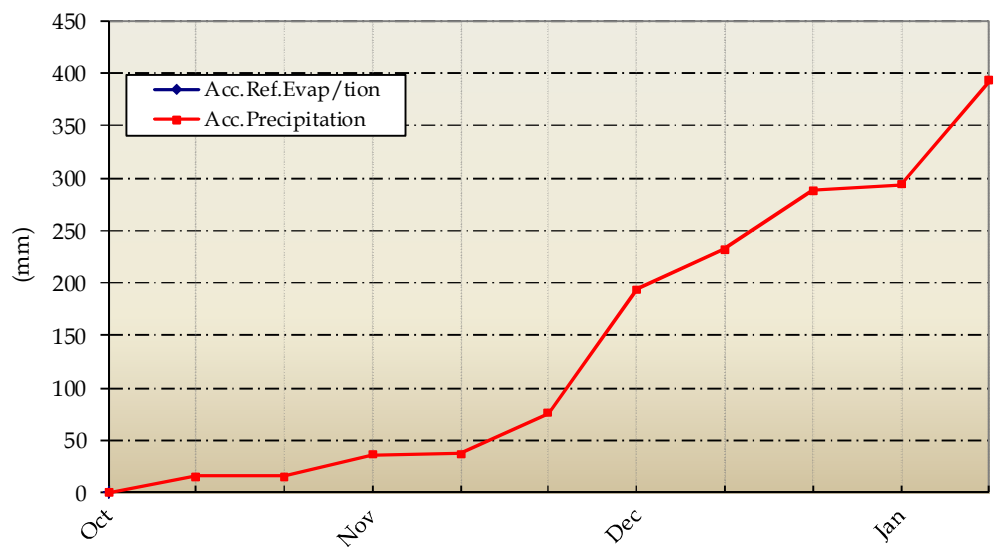
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.4	6.8	2.6	0.2	2.0	2.0	3.6	1.8	2.6	6.0	3.5	11.4	8.6
	Min	5.0	-5.4	0.2	-5.0	-10.0	-11.2	-9.0	-12.6	-9.0	2.2	-5.5	1.3	0.3
Relative Humidity	Max	100	95	96	100	95	100	95	93	100	100	97	99	-
	Min	35	35	82	96	64	64	47	41	96	96	66	66	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.3
Sunshine Duration		1.4	6.0	0.0	0.0	5.2	3.1	3.2	6.0	0.0	0.0	2.5	3.0	2.9
Precipitation				4.8	8.0	0.6				58.6	26.7	98.7	11.1	36.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	0.6
Growing Degrees	5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	15.8	11.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.1
Precipitation - Reference Evapotranspiration	-	-	30.1
Number of Rainy Days	5.0	3.0	4.0
Number of Dry Days	8.0	3.0	-

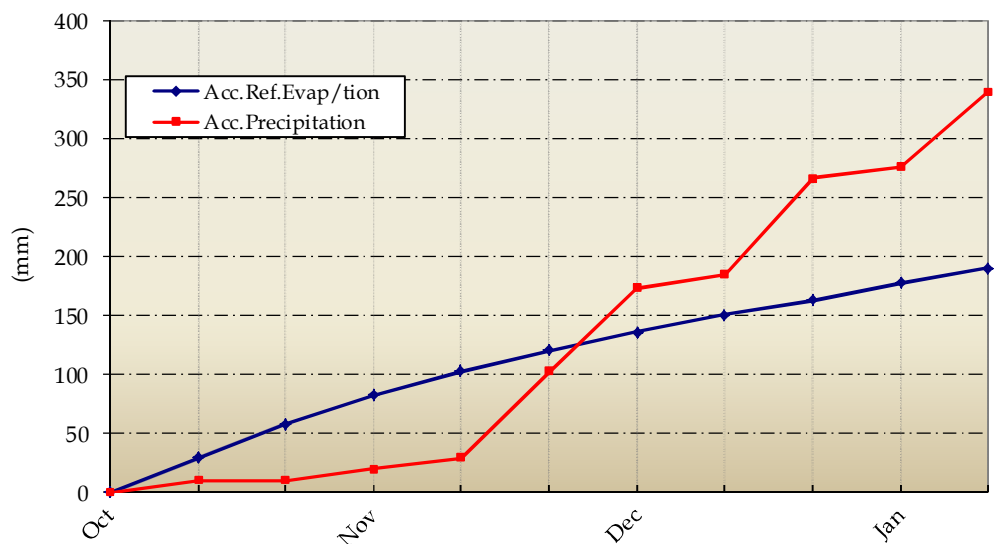
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	14.0	12.6	7.7	6.4	11.0	9.1	9.5	13.6	16.2	11.4	17.4	14.7
	Min	7.1	3.8	5.4	1.6	0.8	-1.6	-1.0	-0.7	-1.3	9.6	2.4	6.7	5.3
Relative Humidity	Max	49	90	91	93	94	86	89	82	93	84	85	91	-
	Min	38	35	61	65	69	36	33	24	69	53	48	50	-
Soil Temperature at 10 cm	06 UTC	10.2	9.2	10.0	9.0	8.2	6.2	7.0	6.2	6.2	8.6	8.1	-	9.3
	12 UTC	10.6	10.0	10.0	9.2	8.4	7.6	7.2	7.0	6.2	9.4	8.6	-	10.4
Sunshine Duration		6.4	6.8	3.1	2.6	1.9	7.0	2.7	8.1	0.0	2.5	4.1	4.9	4.5
Precipitation		3.1	0.1	8.0	4.7	7.0				8.5	32.5	63.9	24.1	30.6
Evaporation		2.7	1.0	0.2	0.5	2.2	0.0	0.0	2.4	0.9	0.1	10.0	12.8	22.0
Growing Degrees	5	5.3	3.9	4.0	0.0	0.0	0.0	0.0	0.0	1.2	7.9	22.2	70.5	49.2
	10	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	3.2	21.4	10.6

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.0	11.8	11.0
Precipitation - Reference Evapotranspiration	51.9	12.3	19.6
Number of Rainy Days	7.0	3.0	4.0
Number of Dry Days	0.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

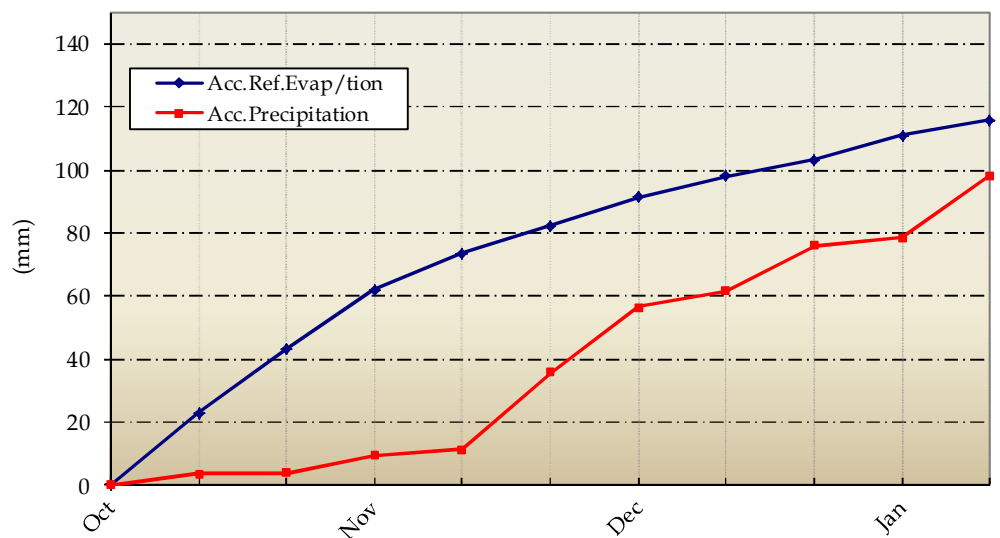


Larisa

1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.6	8.4	4.0	2.5	2.6	1.6	4.4	-0.8	-1.6	4.0	3.3	12.4	9.7
	Min	4.4	-4.4	-1.4	-0.7	-2.6	-9.0	-5.2	-9.4	-7.8	-1.8	-3.8	1.6	0.5
Relative Humidity	Max	88	95	98	98	98	91	89	95	97	99	95	99	-
	Min	51	49	71	88	67	58	48	52	75	92	65	64	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.9
Sunshine Duration		0.0	5.6	0.0	0.0	2.8	2.6	0.7	7.2	0.0	0.0	1.9	4.0	3.9
Precipitation		0.4		9.3	1.8	2.3				0.5	5.7	20.0	2.8	11.6
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	5.2
Growing Degrees	5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	19.7	13.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.0	5.8	6.2
Precipitation - Reference Evapotranspiration	15.0	-3.0	5.4
Number of Rainy Days	6.0	1.0	2.5
Number of Dry Days	0.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

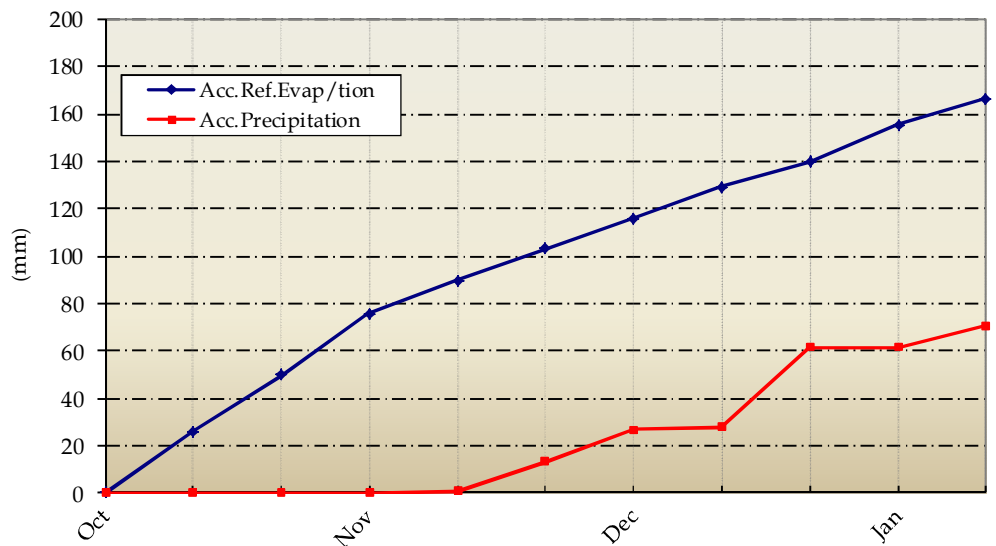


Mikra

1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.4	9.0	6.4	3.4	1.5	4.8	3.2	1.1	0.0	4.4	4.4	11.6	9.2
	Min	3.4	-3.1	2.4	-0.7	-2.2	-6.0	-0.4	-4.2	-5.4	-0.4	-1.7	3.4	1.5
Relative Humidity	Max	73	80	83	95	95	80	63	76	94	95	83	81	-
	Min	33	39	59	58	58	56	47	42	71	93	56	59	-
Soil Temperature at 10 cm	06 UTC	6.2	4.0	5.0	3.5	2.2	2.0	2.0	1.2	1.0	1.2	2.8	7.2	4.9
	12 UTC	8.6	9.5	5.0	3.4	4.4	2.4	2.5	1.0	1.0	2.0	4.0	8.0	6.2
Sunshine Duration		5.2	7.1	0.0	0.0	2.0	3.4	6.8	7.5	0.0	0.0	3.2	4.5	3.7
Precipitation				2.1	2.8	1.5				2.4	0.2	9.0	0.3	14.1
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	8.7
Growing Degrees	5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	25.4	16.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.0	7.0	8.8
Precipitation - Reference Evapotranspiration	-2.0	-6.7	5.3
Number of Rainy Days	5.0	1.0	2.6
Number of Dry Days	8.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

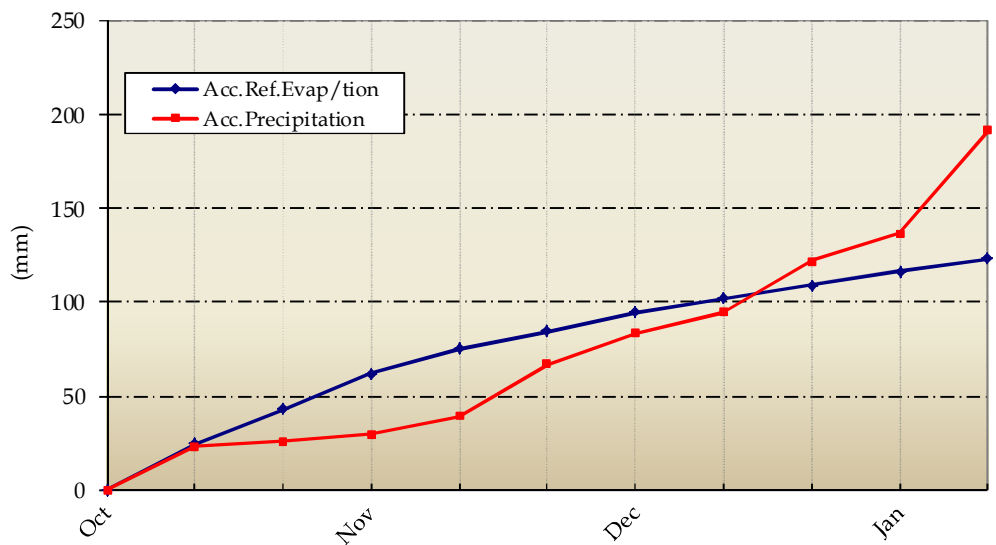


Tanagra

1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.9	9.0	4.4	5.2	3.3	6.9	3.8	3.3	11.0	15.0	6.9	14.3	12.2
	Min	5.8	5.7	-1.2	1.2	0.0	-2.6	-0.6	-3.4	-9.2	10.1	0.6	4.3	3.9
Relative Humidity	Max	100	100	100	100	92	74	100	100	100	66	93	99	-
	Min	73	57	94	81	62	37	58	48	59	49	62	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	1.4	0.0	0.6	2.9	7.6	0.1	4.0	0.8	4.8	2.2	4.1	
Precipitation		30.6	0.0	18.6	0.8	0.7		1.8	2.2			54.7	20.5	18.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	1.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	11.3	43.0	
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.6	4.4	

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.9	7.5	
Precipitation - Reference Evapotranspiration	47.8	13.0	18.0
Number of Rainy Days	6.0	2.0	4.4
Number of Dry Days	0.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

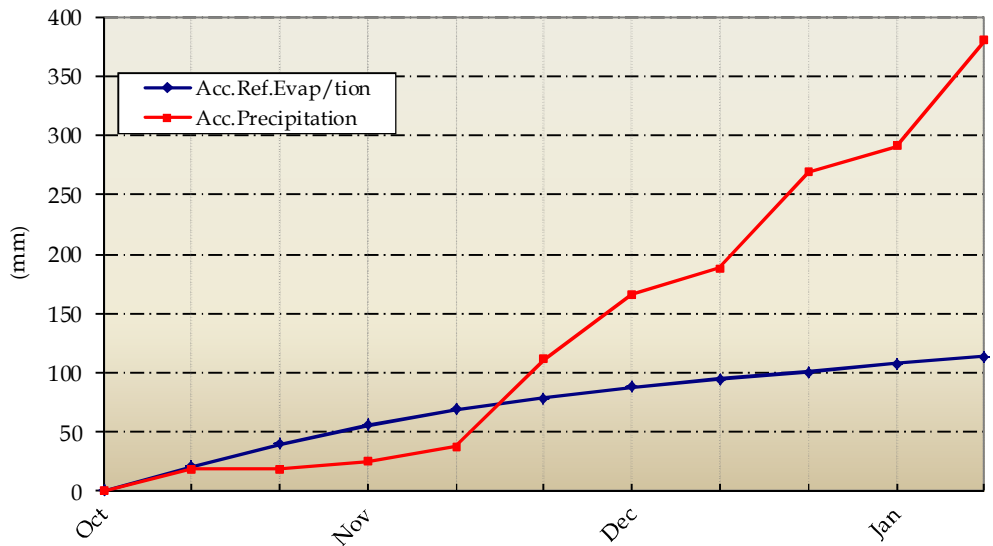


Tripoli

1st 10-day period (1-10/01/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.9	8.8	7.7	3.9	3.0	5.6	3.0	3.7	6.8	9.6	5.8	13.4	12.2
	Min	1.8	-2.0	0.2	-2.7	-3.1	-7.1	-6.6	-8.2	-6.3	5.0	-2.9	1.3	3.9
Relative Humidity	Max	94	100	100	100	99	98	99	91	100	99	98	100	-
	Min	69	40	63	66	60	39	59	32	79	71	58	51	-
Soil Temperature at 10 cm	06 UTC	4.0	2.8	3.8	2.6	-	-	1.2	0.6	0.2	4.0	2.4	4.9	
	12 UTC	-	5.2	5.2	4.2	-	-	1.2	1.0	0.2	6.2	3.3	7.0	
Sunshine Duration		4.3	8.0	3.1	1.1	5.0	5.7	1.5	7.3	0.0	1.2	3.7	5.0	
Precipitation		6.7	0.0	5.3	0.5	0.1		0.0		29.6	47.2	89.4	14.9	18.0
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-	2.5	
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.3	23.2	
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

1st 10-day period (1-10/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.4	7.0	
Precipitation - Reference Evapotranspiration	83.0	7.9	18.0
Number of Rainy Days	6.0	3.0	4.4
Number of Dry Days	0.0	2.0	-

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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