



# AGROMETEOROLOGICAL BULLETIN

*January 2023  
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



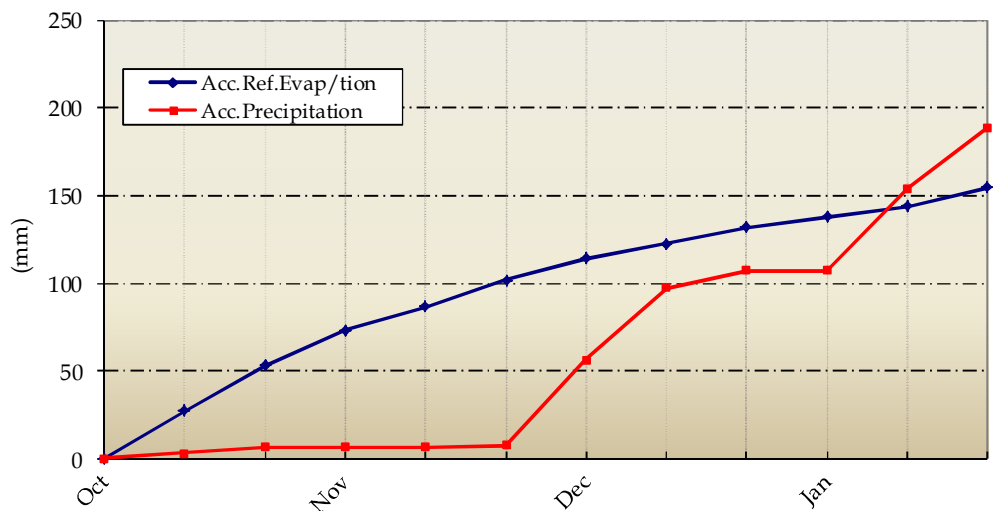
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2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.4	13.4	10.4	9.8	9.2	11.8	16.6	17.0	17.6	16.2	13.4	8.1	9.2
	Min	8.4	7.6	5.0	7.2	6.8	1.8	10.0	14.8	14.8	11.6	8.8	-1.8	1.5
Relative Humidity	Max	95	92	94	91	90	96	87	93	91	93	92	87	91
	Min	69	56	72	77	72	73	77	75	67	70	71	47	64
Soil Temperature at 10 cm	06 UTC	9.0	9.4	8.8	9.0	8.3	7.4	10.4	12.4	13.0	13.0	10.1	3.7	5.1
	12 UTC	9.6	10.2	9.4	9.4	8.9	10.0	11.6	13.2	13.8	13.0	10.9	4.9	6.1
Sunshine Duration		1.7	1.8	0.7	0.0	0.0	3.2	2.1	1.0	5.9	1.2	1.8	6.7	3.7
Precipitation		17.3		2.6	2.3						12.3	34.5	0.0	13.0
Evaporation		0.4	0.6	1.0	1.3	0.6	0.6	1.4	4.2	3.8	2.3	16.2	0.1	7.8
Growing Degrees	5	5.4	5.5	2.7	3.5	3.0	1.8	8.3	10.9	11.2	8.9	61.2	3.3	14.0
	10	0.4	0.5	0.0	0.0	0.0	0.0	3.3	5.9	6.2	3.9	20.2	0.0	1.1

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.5	10.4	7.0
Precipitation - Reference Evapotranspiration	24.0	-10.4	6.0
Number of Rainy Days	4.0	0.0	2.0
Number of Dry Days	0.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

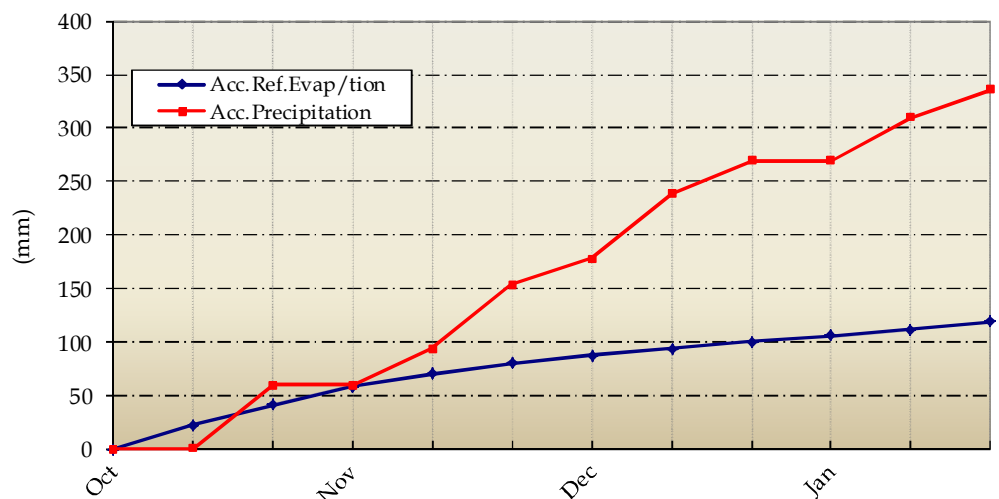


2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.0	13.2	14.2	15.3	15.8	16.2	17.4	19.1	18.8	14.9	15.9	13.6	14.3
	Min	7.0	4.4	3.6	3.1	2.2	6.0	12.8	15.1	16.0	9.0	7.9	2.9	5.4
Relative Humidity	Max	98	99	97	92	98	88	86	86	98	95	94	90	91
	Min	63	66	56	60	50	57	70	72	66	53	61	45	54
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	9.1	8.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	10.0	10.7
Sunshine Duration		6.4	3.0	6.0	5.1	6.1	3.0	1.2	0.0	0.6	4.2	3.6	6.2	4.6
Precipitation			2.5				0.3	0.9			22.4	26.1	3.1	26.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	9.5	30.8
Growing Degrees	5	5.5	3.8	3.9	4.2	4.0	6.1	10.1	12.1	12.4	7.0	69.1	33.3	40.4
	10	0.5	0.0	0.0	0.0	0.0	1.1	5.1	7.1	7.4	2.0	23.2	3.1	7.9

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.0	6.2	10.5
Precipitation - Reference Evapotranspiration	19.1	-3.1	15.9
Number of Rainy Days	4.0	2.0	2.8
Number of Dry Days	1.0	0.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



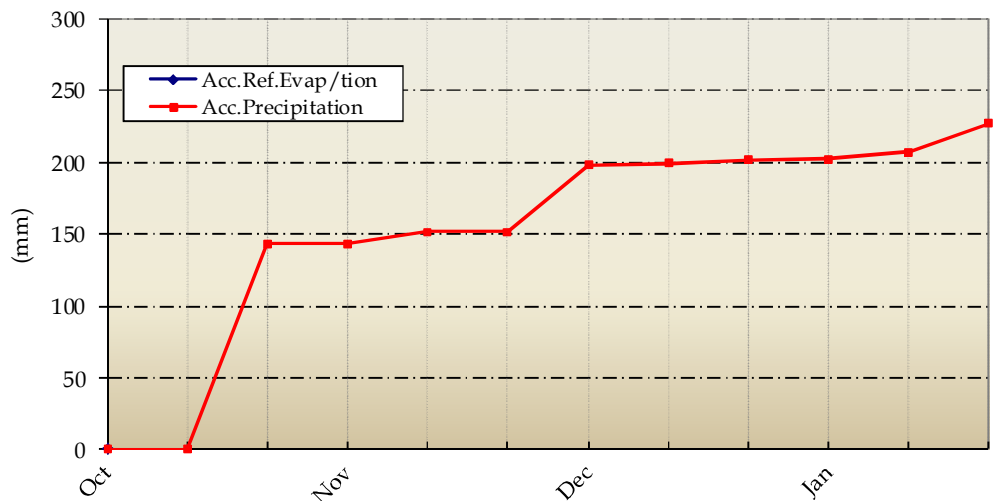
Iraklio

2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.8	15.4	13.2	15.4	14.4	16.0	19.0	19.4	18.8	18.2	16.6	13.0	15.6
	Min	12.2	8.4	8.8	11.8	7.2	9.2	10.6	14.8	15.2	15.4	11.4	8.1	9.5
Relative Humidity	Max	95	87	95	87	95	95	79	77	75	84	87	82	87
	Min	60	65	73	58	78	75	57	57	56	62	64	56	61
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.7	6.8	0.5	7.8	0.0	5.5	7.5	8.4	5.5	7.3	5.1	4.1	4.3
Precipitation		0.4	0.3	11.2	6.5	0.6	1.0					20.0	28.1	27.1
Evaporation		0.3	1.6	0.0	3.4	0.0	0.9	4.2	2.6	3.7	2.8	19.5	18.5	26.7
Growing Degrees	5	9.0	6.9	6.0	8.6	5.8	7.6	9.8	12.1	12.0	11.8	89.6	55.3	66.5
	10	4.0	1.9	1.0	3.6	0.8	2.6	4.8	7.1	7.0	6.8	39.6	9.3	23.6

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	6.0	6.0	4.0
Number of Dry Days	0.0	0.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

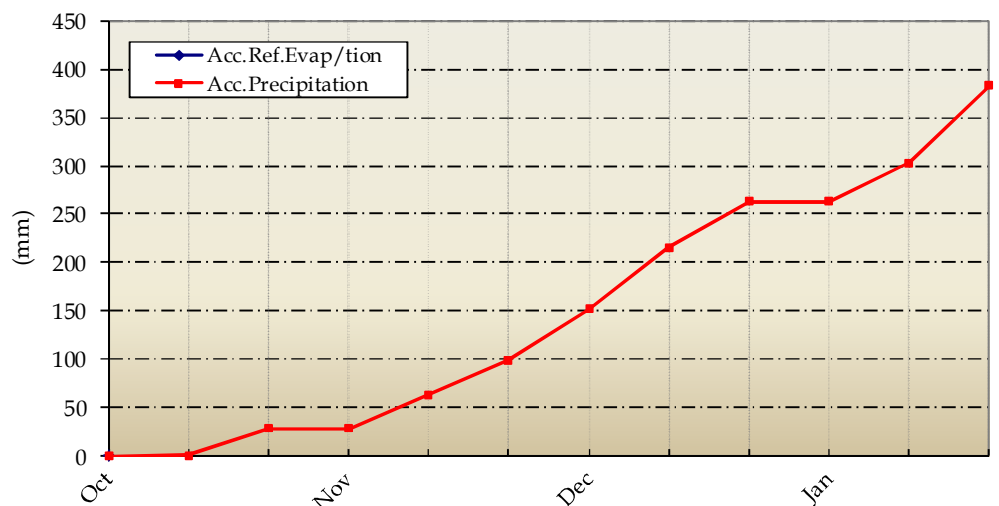


2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.8	7.0	7.9	11.8	12.5	9.5	10.8	13.9	14.0	6.7	10.4	10.6	9.5
	Min	-0.4	-0.7	-1.2	-2.7	-2.7	-2.8	8.4	10.2	11.4	3.3	2.3	-3.0	-0.3
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	99	100	88	94
	Min	73	91	98	41	42	71	85	68	68	77	71	34	58
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.9
Sunshine Duration		3.1	2.1	2.8	5.3	6.0	1.2	0.0	0.0	1.8	0.6	2.3	5.5	3.0
Precipitation		0.1					2.1	36.5	19.8	0.4	20.5	79.4	7.3	20.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	4.6	7.1	7.7	0.0	19.4	3.2	7.5
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.7	0.0	4.8	0.0	0.1

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	10.9
Precipitation - Reference Evapotranspiration	-	-	9.6
Number of Rainy Days	6.0	3.0	2.0
Number of Dry Days	0.0	0.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



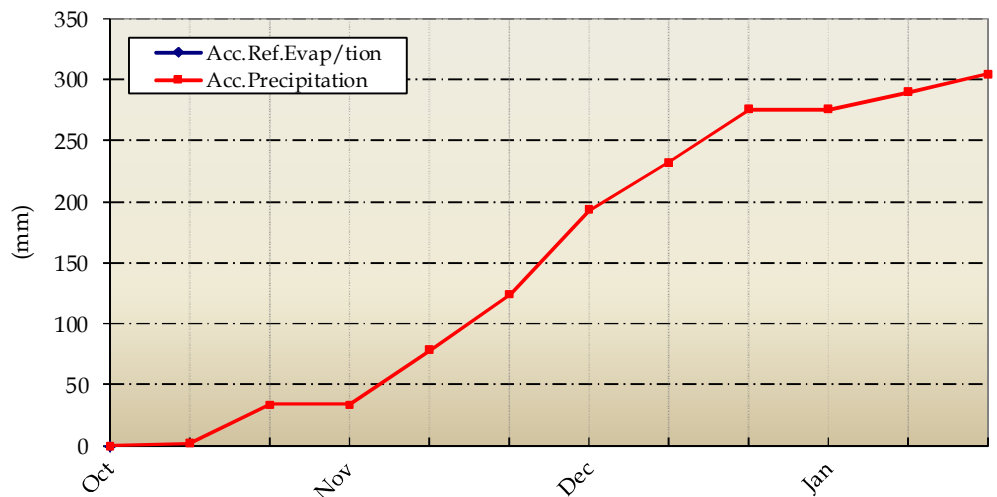
Kalamata

2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.3	16.3	16.9	17.4	18.4	16.9	19.6	19.9	18.6	16.9	17.7	15.2	15.3
	Min	7.1	3.9	4.2	2.8	6.3	2.4	11.4	15.0	16.4	7.6	7.7	4.4	5.5
Relative Humidity	Max	98	94	94	95	91	96	95	88	89	96	94	87	91
	Min	47	48	44	43	39	53	62	70	69	44	52	39	52
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	9.5	9.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	11.0	10.7
Sunshine Duration		7.4	5.0	7.4	7.6	6.1	7.0	6.0	5.9	0.6	5.5	5.8	6.8	4.9
Precipitation		6.3					0.3	1.9			6.0	14.5	25.1	31.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	20.5
Growing Degrees	5	6.7	5.1	5.6	5.1	7.4	4.7	10.5	12.5	12.5	7.3	77.2	47.7	47.9
	10	1.7	0.1	0.6	0.1	2.4	0.0	5.5	7.5	7.5	2.3	27.5	4.9	9.1

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	11.2
Precipitation - Reference Evapotranspiration	-	-	20.3
Number of Rainy Days	4.0	3.0	3.4
Number of Dry Days	0.0	0.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

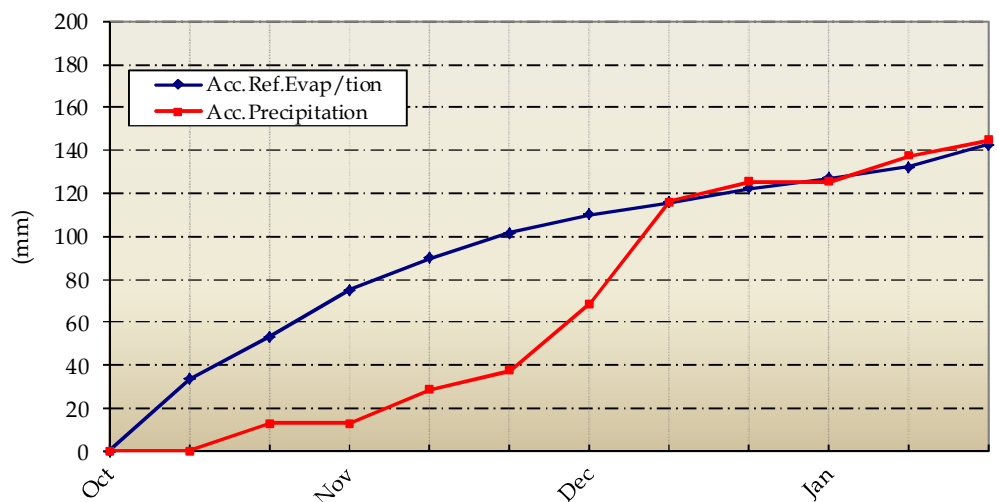


Larisa

2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	11.6	11.8	10.6	12.2	11.6	16.4	21.0	20.6	15.8	14.5	9.3	10.4
	Min	3.0	-0.4	-1.6	-1.3	0.2	-1.2	3.2	13.6	9.8	5.6	3.1	-1.4	0.6
Relative Humidity	Max	100	100	100	100	100	100	100	65	100	100	96	91	95
	Min	54	53	54	63	52	64	50	35	34	47	51	47	58
Soil Temperature at 10 cm	06 UTC	9.2	8.4	8.6	8.4	8.4	7.4	7.8	9.8	10.0	11.0	8.9	5.3	6.0
	12 UTC	9.2	9.2	9.6	6.2	7.0	7.6	8.4	9.0	10.6	11.2	8.8	5.9	6.6
Sunshine Duration		6.5	3.1	6.9	2.2	6.6	6.6	5.3	3.1	6.3	5.8	5.2	4.9	3.7
Precipitation		0.0									7.1	7.1	41.4	10.6
Evaporation		2.6	0.4	0.6	0.8	1.4	0.3	1.4	2.0	5.9	3.7	19.1	-	7.9
Growing Degrees	5	3.2	0.6	0.1	0.0	1.2	0.2	4.8	12.3	10.2	5.7	38.3	3.5	13.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	5.2	0.7	13.2	0.0	0.8

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.6	9.8	8.8
Precipitation - Reference Evapotranspiration	-3.5	31.6	1.8
Number of Rainy Days	1.0	1.0	2.2
Number of Dry Days	9.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





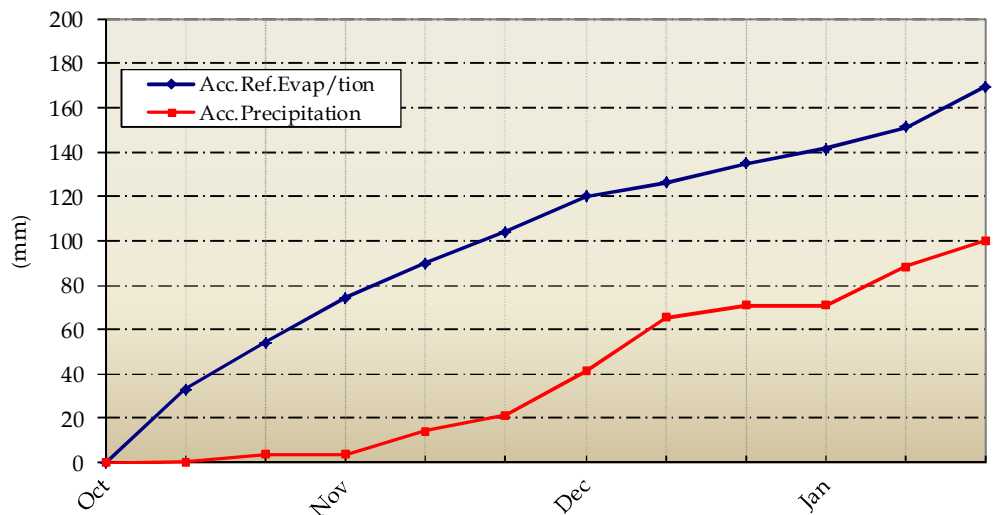
Mikra

2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	12.1	12.7	11.6	12.3	12.9	17.5	20.0	20.0	17.4	15.0	9.4	9.7
	Min	9.0	7.8	1.1	0.8	2.7	4.8	8.0	15.6	14.6	11.2	7.6	1.2	2.1
Relative Humidity	Max	67	71	100	100	100	100	97	63	95	98	89	81	87
	Min	57	55	54	63	57	63	55	45	44	40	53	47	57
Soil Temperature at 10 cm	06 UTC	9.6	8.0	8.2	7.6	8.2	8.4	9.6	11.4	12.2	12.3	9.6	6.2	5.3
	12 UTC	10.0	9.4	8.8	8.4	8.4	9.4	10.8	12.2	13.0	12.8	10.3	6.8	6.9
Sunshine Duration		7.6	8.3	7.1	2.8	7.2	3.6	2.4	3.8	6.6	4.1	5.4	6.4	4.1
Precipitation							0.0				11.5	11.5	5.3	8.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	20.6
Growing Degrees	5	6.0	5.0	1.9	1.2	2.5	3.9	7.8	12.8	12.3	9.3	62.6	10.4	15.8
	10	1.0	0.0	0.0	0.0	0.0	0.0	2.8	7.8	7.3	4.3	23.2	0.0	0.8

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.1	15.9	6.6
Precipitation - Reference Evapotranspiration	-6.6	-10.6	2.0
Number of Rainy Days	1.0	2.0	2.2
Number of Dry Days	9.0	0.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





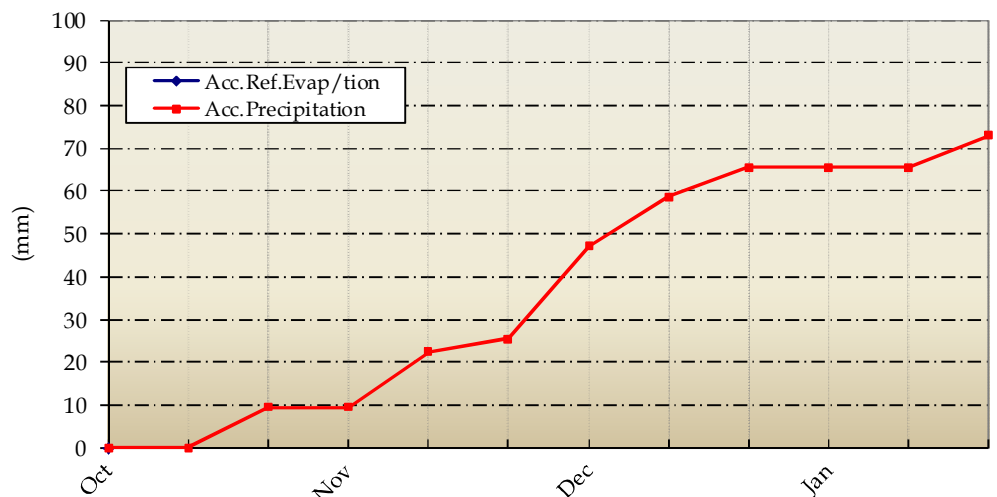
Tanagra

2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.5	11.4	11.8	13.4	10.4	15.5	18.8	19.5	18.6	13.6	14.6	9.7	11.4
	Min	4.0	5.8	5.4	2.0	4.2	-1.3	11.2	15.6	15.2	10.2	7.2	1.6	3.0
Relative Humidity	Max	93	92	82	95	97	99	63	64	62	85	83	90	-
	Min	55	53	51	49	69	37	42	41	50	49	50	49	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.0	2.7	3.7	4.9	0.0	7.3	2.7	5.6	7.5	4.4	4.4	4.4	
Precipitation				0.8							6.6	7.4	40.0	26.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	3.3	3.6	3.6	2.7	2.3	2.1	10.0	12.6	11.9	6.9	58.9	9.2	
	10	0.0	0.0	0.0	0.0	0.0	0.0	5.0	7.6	6.9	1.9	21.4	0.0	

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	26.0
Number of Rainy Days	2.0	4.0	4.7
Number of Dry Days	29.0	1.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



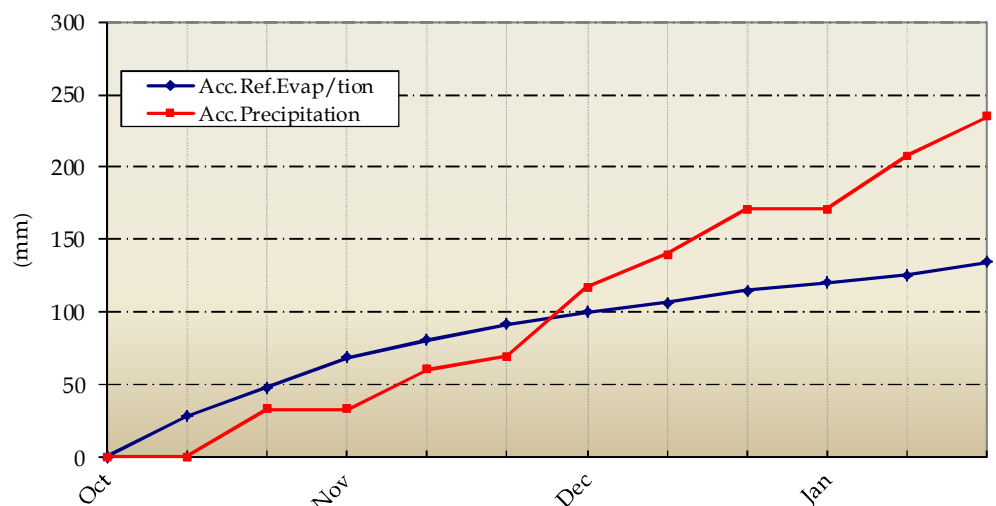
Tripoli

2nd 10-day period (11-20/01/2023)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.5	11.0	12.5	11.1	10.6	11.9	13.8	16.4	15.4	8.9	12.3	8.7	10.1
	Min	1.2	1.0	-2.2	-3.4	-1.5	-4.0	8.3	10.5	4.0	5.8	2.0	-2.4	0.1
Relative Humidity	Max	99	100	100	100	100	100	91	97	98	98	98	95	95
	Min	45	45	40	47	51	53	60	43	54	70	51	47	56
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.5
Sunshine Duration		5.8	4.0	5.8	3.7	5.0	4.9	4.7	6.8	5.8	2.6	4.9	5.1	4.0
Precipitation		2.2						3.7			21.3	27.2	15.1	26.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	4.8
Growing Degrees	5	1.4	1.0	0.2	0.0	0.0	0.0	6.1	8.5	4.7	2.4	24.1	0.3	9.2
	10	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.5	0.0	0.0	4.5	0.0	0.2

2nd 10-day period (11-20/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.8	8.6	6.7
Precipitation - Reference Evapotranspiration	18.4	6.5	19.4
Number of Rainy Days	3.0	3.0	2.6
Number of Dry Days	0.0	0.0	-

The missing info in the tables are due to the absence of data.

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.

**Past Years Mean Values 1991-2020** (Evaporation, Reference Evapotranspiration, Max and Min Relative Humidity 2005-2020)

### Mesurements 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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