



AGROMETEOROLOGICAL BULLETIN

*January 2023
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



Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

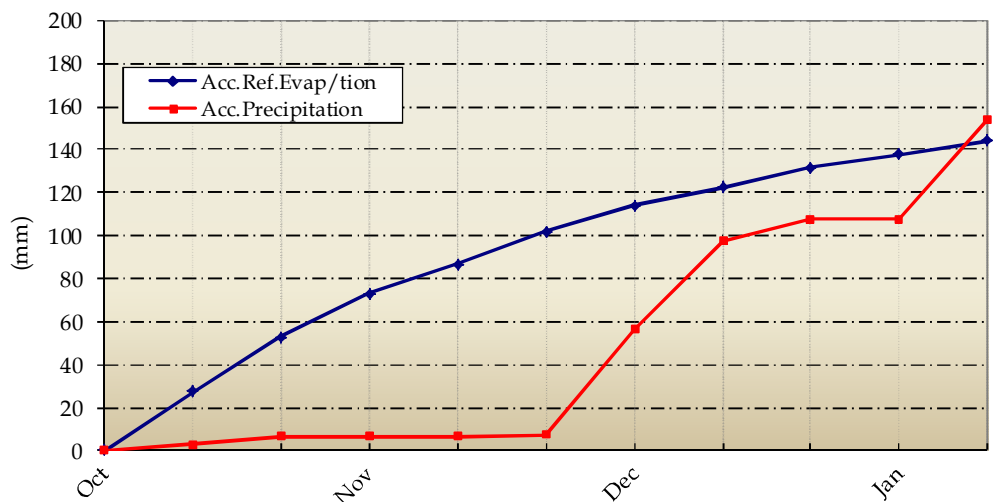
Web adresses of HNMS
www.emy.gr
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Alexandroupoli

1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.0	13.4	12.0	14.2	13.0	16.0	14.8	13.4	12.0	13.4	13.4	13.6	8.8
	Min	-0.6	-2.0	-1.6	0.0	3.2	6.0	1.4	-1.0	-2.0	3.8	0.7	6.4	1.4
Relative Humidity	Max	96	96	97	93	93	94	94	96	97	95	95	94	90
	Min	69	59	81	61	65	60	47	50	65	77	63	77	62
Soil Temperature at 10 cm	06 UTC	7.6	5.4	6.2	6.4	7.4	9.2	8.0	6.8	5.8	9.2	7.2	8.9	5.2
	12 UTC	9.0	8.0	7.4	8.2	8.4	10.4	9.2	8.2	7.4	10.0	8.6	10.4	6.3
Sunshine Duration		7.8	7.3	0.5	7.5	5.4	6.7	7.4	7.6	5.4	0.0	5.6	3.2	3.5
Precipitation											46.7	46.7	5.3	19.7
Evaporation		0.0	0.0	0.0	0.5	0.1	0.8	0.0	0.0	0.0	0.2	1.6	9.9	5.3
Growing Degrees	5	0.7	0.7	0.2	2.1	3.1	6.0	3.1	1.2	0.0	3.6	20.7	49.7	16.8
	10	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	9.3	2.6

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.4	6.9	7.8
Precipitation - Reference Evapotranspiration	40.3	-1.6	11.9
Number of Rainy Days	1.0	3.0	2.4
Number of Dry Days	25.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

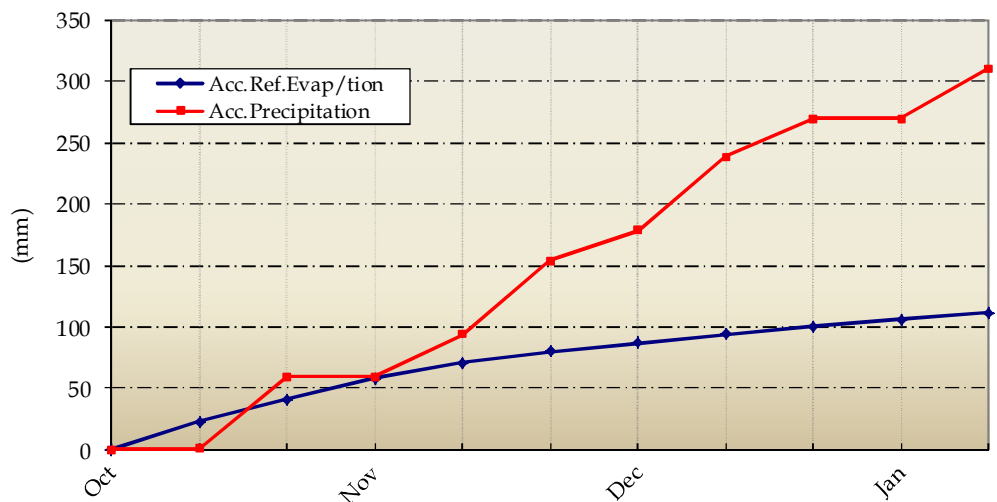


1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.6	17.3	17.0	17.4	16.0	16.8	18.7	17.0	17.8	15.2	17.1	16.8	14.0
	Min	2.8	3.1	6.4	9.8	3.5	9.6	4.0	4.7	7.0	11.2	6.2	8.4	5.4
Relative Humidity	Max	97	89	90	94	96	95	98	98	94	98	95	94	90
	Min	61	52	72	67	75	63	53	61	59	77	64	59	55
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	11.4	9.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	12.3	10.8
Sunshine Duration		5.8	6.9	2.3	4.6	0.2	5.5	4.6	5.9	5.3	0.5	4.2	3.6	4.5
Precipitation		0.0									40.5	40.5	22.0	29.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	9.7	39.2
Growing Degrees	5	5.2	5.2	6.7	8.6	4.8	8.2	6.4	5.9	7.4	8.2	66.5	75.8	41.6
	10	0.2	0.2	1.7	3.6	0.0	3.2	1.4	0.9	2.4	3.2	16.7	25.8	9.5

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.9	6.3	9.2
Precipitation - Reference Evapotranspiration	34.6	15.7	20.2
Number of Rainy Days	1.0	3.0	3.0
Number of Dry Days	26.0	7.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



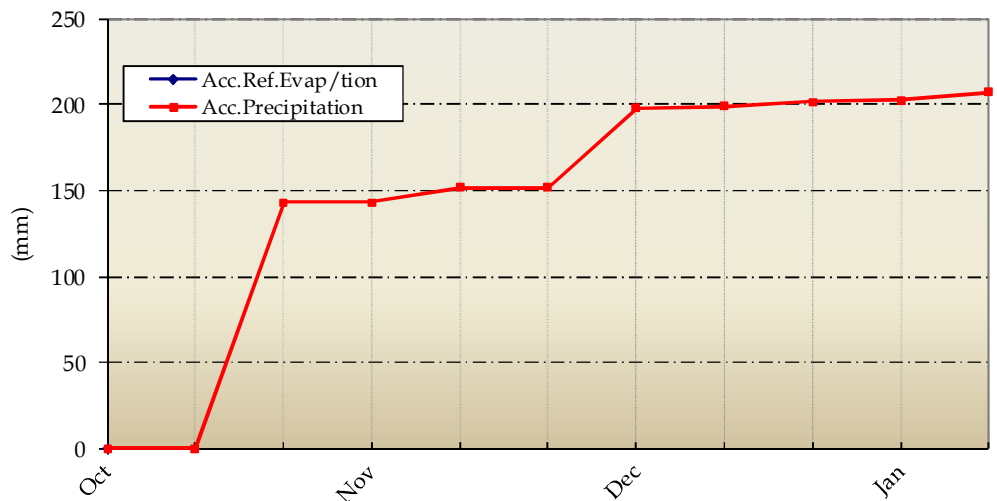
Iraklio

1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.8	17.2	16.4	16.6	17.4	18.0	17.0	16.2	16.6	18.4	17.0	17.1	15.4
	Min	9.6	11.2	9.2	7.4	12.6	9.4	11.0	9.2	9.0	11.0	10.0	11.6	9.2
Relative Humidity	Max	93	92	95	91	92	95	95	92	92	88	92	89	86
	Min	75	77	74	66	70	64	70	66	68	62	69	64	60
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.8	1.9	6.3	7.8	3.2	7.1	6.7	6.7	8.0	3.9	5.2	4.8	3.6
Precipitation		2.3									2.3	4.6	7.0	31.8
Evaporation		2.9	1.0	0.7	0.6	2.6	0.9	0.4	1.9	1.7	1.0	13.7	10.8	32.4
Growing Degrees	5	7.7	9.2	7.8	7.0	10.0	8.7	9.0	7.7	7.8	9.7	84.6	93.8	64.4
	10	2.7	4.2	2.8	2.0	5.0	3.7	4.0	2.7	2.8	4.7	34.6	43.8	23.4

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	2.0	2.0	4.1
Number of Dry Days	6.0	8.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

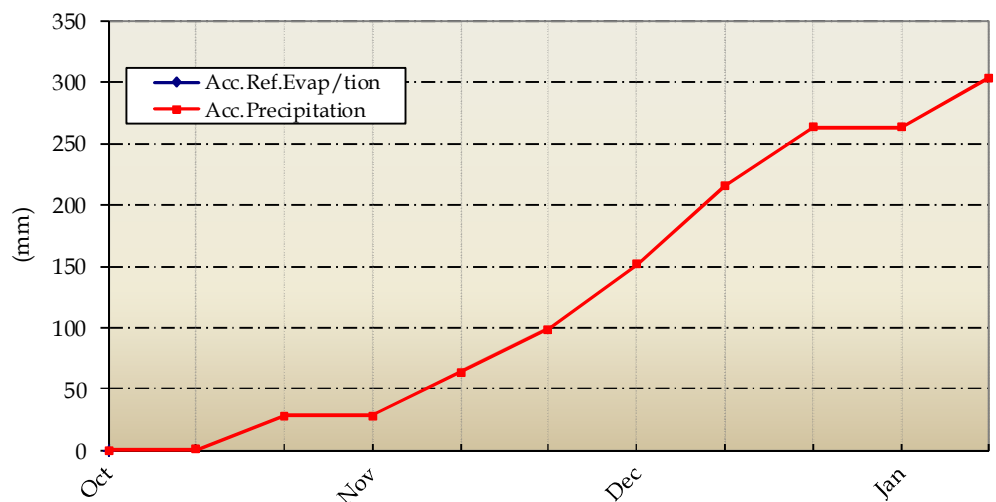


1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.9	13.4	11.8	11.6	9.9	10.0	12.1	13.7	9.7	7.9	11.1	12.8	9.1
	Min	1.1	-0.8	-1.0	0.3	-0.3	-0.3	-1.6	-2.9	-0.5	6.8	0.1	3.5	-0.1
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	99	94
	Min	91	57	66	69	77	73	62	61	85	93	73	66	61
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.5
Sunshine Duration		3.4	5.2	4.7	3.3	2.8	3.0	4.1	4.9	0.1	0.0	3.2	3.0	2.9
Precipitation		0.0			0.0	0.0	0.0			1.4	38.6	40.0	7.5	28.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	
Growing Degrees	5	1.0	1.3	0.4	1.0	0.0	0.0	0.3	0.4	0.0	2.4	6.7	31.4	10.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.7

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	15.2
Precipitation - Reference Evapotranspiration	-	-	12.8
Number of Rainy Days	2.0	4.0	2.9
Number of Dry Days	24.0	8.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

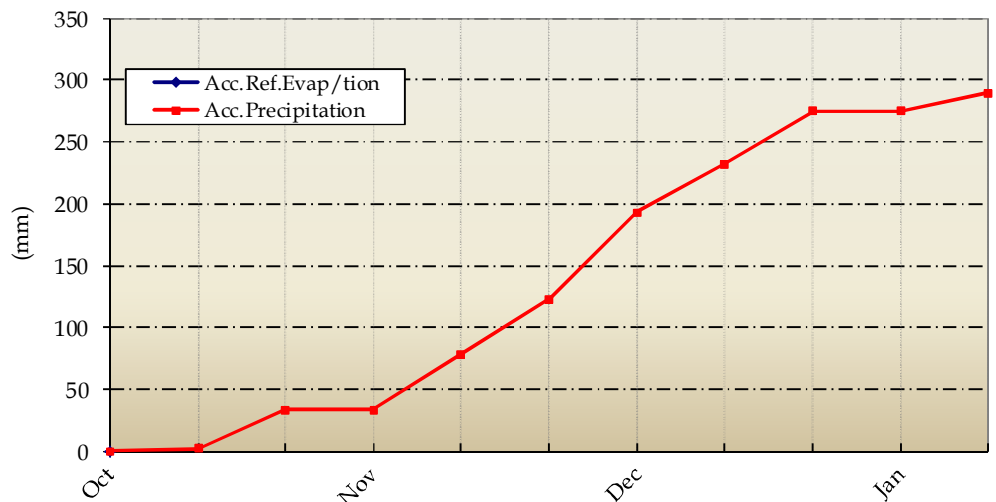


1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.7	19.6	18.4	20.2	18.5	19.4	19.6	20.1	19.2	16.5	19.1	17.3	15.1
	Min	6.4	3.6	3.4	6.3	4.4	6.2	5.6	5.3	4.9	8.9	5.5	7.2	5.3
Relative Humidity	Max	93	95	96	98	98	97	97	95	97	98	96	95	90
	Min	41	33	53	44	50	47	45	48	49	61	47	64	52
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	12.1	9.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	12.6	10.7
Sunshine Duration		7.4	7.4	7.3	7.4	6.2	7.3	6.7	7.4	7.4	2.1	6.7	4.5	5.0
Precipitation											14.5	14.5	54.0	31.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	21.9
Growing Degrees	5	8.1	6.6	5.9	8.3	6.5	7.8	7.6	7.7	7.1	7.7	73.1	72.8	48.1
	10	3.1	1.6	0.9	3.3	1.5	2.8	2.6	2.7	2.1	2.7	23.1	23.7	10.6

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	9.4
Precipitation - Reference Evapotranspiration	-	-	22.3
Number of Rainy Days	1.0	4.0	3.2
Number of Dry Days	26.0	7.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

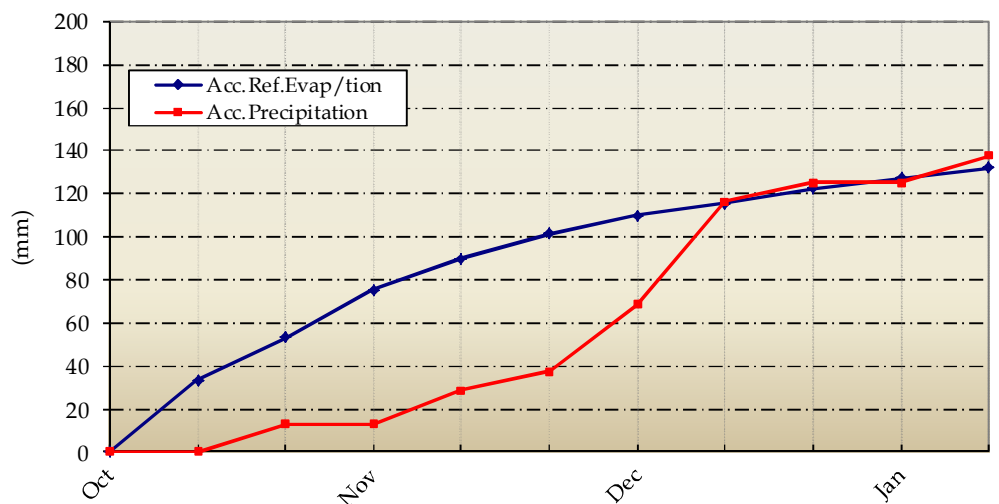


Larisa

1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.0	5.7	5.6	10.8	14.2	14.3	14.8	13.8	13.4	12.4	11.1	14.7	10.0
	Min	3.2	0.8	0.4	0.4	1.4	-0.6	-0.8	-1.6	0.4	7.4	1.1	2.8	0.2
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	99	95
	Min	100	99	99	85	65	61	44	53	64	76	75	62	58
Soil Temperature at 10 cm	06 UTC	8.8	8.4	7.8	8.6	8.4	7.4	7.2	7.6	7.6	9.2	8.1	7.8	6.0
	12 UTC	9.2	8.6	8.8	8.6	9.0	9.4	8.0	8.4	8.0	9.6	8.8	8.6	6.6
Sunshine Duration		0.0	0.0	0.2	3.5	7.0	4.3	7.2	6.8	4.9	0.0	3.4	5.0	3.7
Precipitation											12.2	12.2	4.4	13.3
Evaporation		0.2	0.0	0.0	0.1	1.1	1.1	1.2	1.8	0.2	0.1	5.8	10.4	8.7
Growing Degrees	5	0.0	0.0	0.0	0.6	2.8	1.9	2.0	1.1	1.9	4.9	15.2	37.3	13.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.0	6.4	8.2
Precipitation - Reference Evapotranspiration	7.2	-2.0	5.1
Number of Rainy Days	1.0	2.0	2.2
Number of Dry Days	21.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



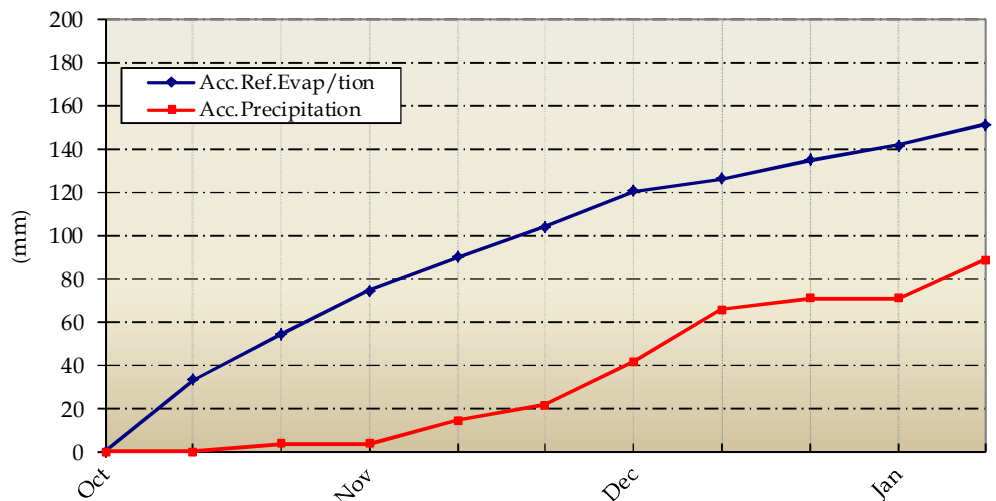
Mikra

1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.0	14.0	13.8	16.9	14.2	16.0	14.8	12.9	14.8	13.4	14.6	13.7	9.5
	Min	2.5	2.8	2.0	2.0	5.8	3.2	2.4	1.4	7.2	10.0	3.9	4.9	2.0
Relative Humidity	Max	100	100	100	100	100	100	100	100	99	100	100	99	86
	Min	61	64	63	51	60	46	43	72	65	61	59	69	56
Soil Temperature at 10 cm	06 UTC	9.2	9.2	8.6	6.2	9.4	9.0	8.6	8.0	9.0	9.6	8.7	9.0	5.3
	12 UTC	12.4	10.0	10.2	9.2	9.6	10.0	10.0	8.6	10.0	11.0	10.1	9.5	6.8
Sunshine Duration		7.0	7.5	7.8	7.5	7.1	8.2	8.5	8.2	3.2	0.7	6.6	4.0	4.1
Precipitation										0.0	17.8	17.8	17.6	9.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	12.1
Growing Degrees	5	3.8	3.4	2.9	4.5	5.0	4.6	3.6	2.2	6.0	6.7	42.6	42.8	17.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.7	2.7	1.8	2.0

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.0	7.2	7.0
Precipitation - Reference Evapotranspiration	7.8	10.4	2.8
Number of Rainy Days	1.0	3.0	2.2
Number of Dry Days	20.0	9.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



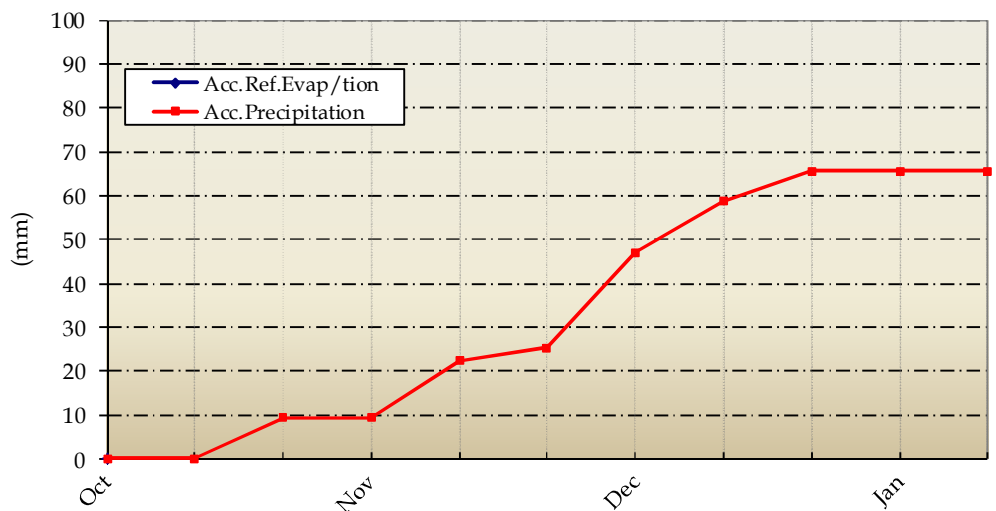
Tanagra

1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.0	17.2	17.4	16.6	15.6	16.9	16.6	15.4	17.6	15.2	16.4	16.0	11.8
	Min	3.5	2.6	1.8	1.8	4.9	2.2	3.0	1.5	1.4	8.7	3.1	5.7	3.3
Relative Humidity	Max	100	99	99	99	98	99	94	98	99	90	98	96	92
	Min	50	44	47	48	57	36	41	48	36	51	46	58	54
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.4	7.5	7.3	7.2	6.5	7.6	7.3	7.6	6.7	0.9	6.6	4.9	3.4
Precipitation											0.0	0.0	18.0	13.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	19.5
Growing Degrees	5	4.8	4.9	4.6	4.2	5.3	4.6	4.8	3.5	4.5	7.0	48.0	58.7	28.5
	10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	2.0	2.2	11.0	5.0

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	-
Number of Rainy Days	0.0	3.0	2.8
Number of Dry Days	27.0	6.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



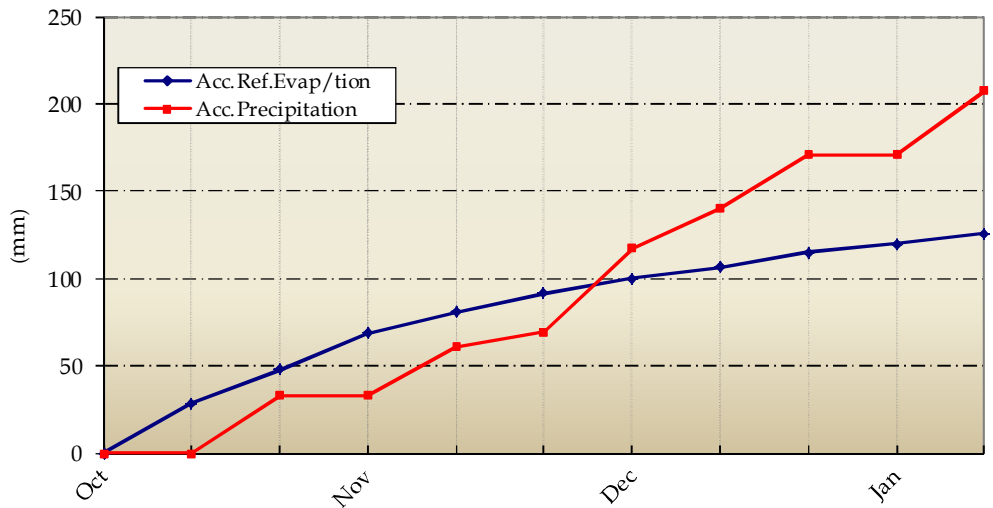
Tripoli

1st 10-day period (1-10/01/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.3	15.5	15.8	16.8	14.8	15.6	14.0	14.5	14.0	10.2	14.6	13.4	10.1
	Min	-2.3	-3.2	-4.9	-4.6	-2.6	-3.2	-3.3	-4.0	-3.8	7.2	-2.5	1.6	-0.3
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	98	100	99	95
	Min	40	28	26	32	49	34	41	44	44	77	42	53	57
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.8
Sunshine Duration		6.8	6.7	6.5	6.7	6.7	7.0	6.8	6.5	6.8	0.6	6.1	4.9	4.0
Precipitation		0.0					0.0				37.1	37.1	6.1	21.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	5.5
Growing Degrees	5	1.0	1.2	0.5	1.1	1.1	1.2	0.4	0.3	0.1	3.7	10.4	24.9	11.9
	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	0.9

1st 10-day period (1-10/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.6	-	5.4
Precipitation - Reference Evapotranspiration	31.5	-	15.6
Number of Rainy Days	1.0	4.0	2.6
Number of Dry Days	22.0	6.0	-

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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