



AGROMETEOROLOGICAL BULLETIN

*January 2023
3rd 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



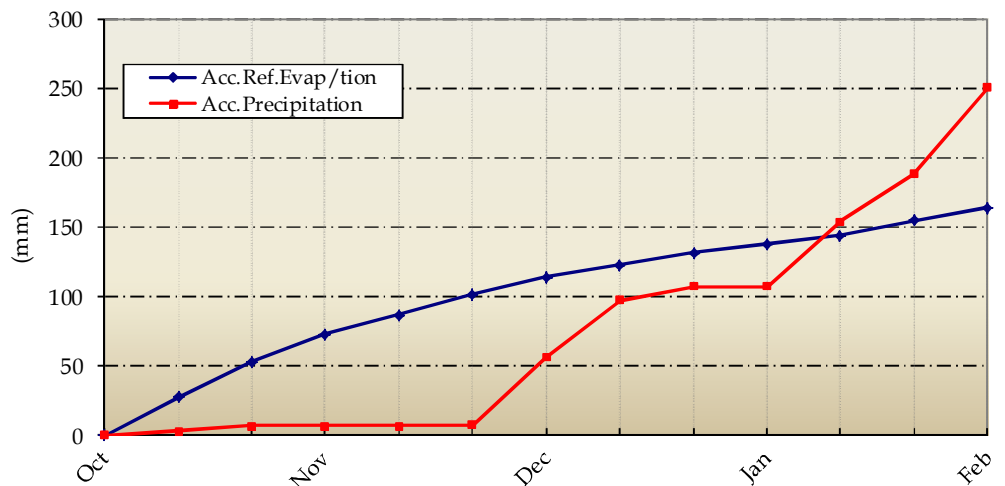
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Web addresses of HNMS
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www.emy.gov.gr
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3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	15.6	12.0	9.0	7.4	8.4	11.0	9.6	6.2	4.4	6.4	9.5	6.8	8.9
	Min	7.4	11.2	8.8	5.4	2.8	2.8	7.0	5.2	3.6	2.6	-0.2	5.1	-3.1	1.4
Relative Humidity	Max	89	95	92	87	87	94	97	97	84	89	93	91	84	90
	Min	80	69	75	77	58	69	83	59	67	73	67	71	43	60
Soil Temperature at 10 cm	06 UTC	10.4	11.6	10.6	9.0	7.4	7.0	8.0	8.2	7.4	7.0	5.2	8.3	2.5	5.3
	12 UTC	10.6	12.0	11.0	9.4	7.8	7.4	8.6	9.4	8.0	6.8	6.4	8.9	3.9	6.2
Sunshine Duration		2.9	2.0	0.0	0.0	0.9	0.0	0.0	3.2	1.4	0.0	1.2	1.1	5.4	3.6
Precipitation		2.9	15.1				10.0	25.9	7.9			0.3	62.1	6.7	25.0
Evaporation		2.1	0.9	2.0	1.5	1.5	1.6	1.0	5.2	1.0	0.0	0.0	16.8	0.0	22.5
Growing Degrees	5	5.9	8.4	5.4	2.2	0.1	0.6	4.0	2.4	0.0	0.0	0.0	29.0	1.1	19.0
	10	0.9	3.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	3.2

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.2	10.1	8.4
Precipitation - Reference Evapotranspiration	52.9	-3.4	16.6
Number of Rainy Days	6.0	2.0	2.9
Number of Dry Days	0.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

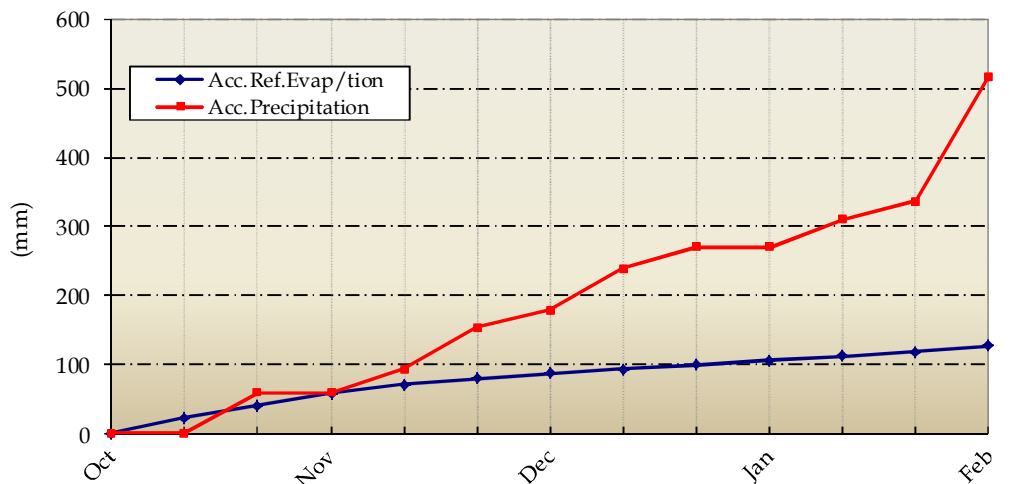


3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	16.8	14.2	15.8	11.7	14.0	13.0	13.6	13.8	12.7	11.8	14.0	10.8	13.6
	Min	9.0	8.2	10.4	8.4	7.6	9.0	7.2	5.7	6.8	1.7	7.1	7.4	1.8	5.3
Relative Humidity	Max	94	97	98	96	98	99	97	97	98	98	98	97	89	91
	Min	63	58	74	63	79	67	65	61	61	54	62	64	45	56
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.2	8.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.2	10.8
Sunshine Duration		0.5	4.7	0.2	5.9	0.0	2.7	0.0	6.2	3.3	5.6	1.9	2.8	6.1	4.0
Precipitation		19.1	1.7	29.2	1.8	55.9	51.1	7.2	0.8	3.0		10.8	180.6	28.5	33.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	9.1	36.6
Growing Degrees	5	7.6	7.5	7.3	7.1	4.7	6.5	5.1	4.7	5.3	2.2	4.5	62.4	20.7	40.9
	10	2.6	2.5	2.3	2.1	0.0	1.5	0.1	0.0	0.3	0.0	0.0	11.4	0.7	7.6

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.2	7.8	9.6
Precipitation - Reference Evapotranspiration	172.4	20.7	23.5
Number of Rainy Days	10.0	3.0	3.8
Number of Dry Days	0.0	3.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



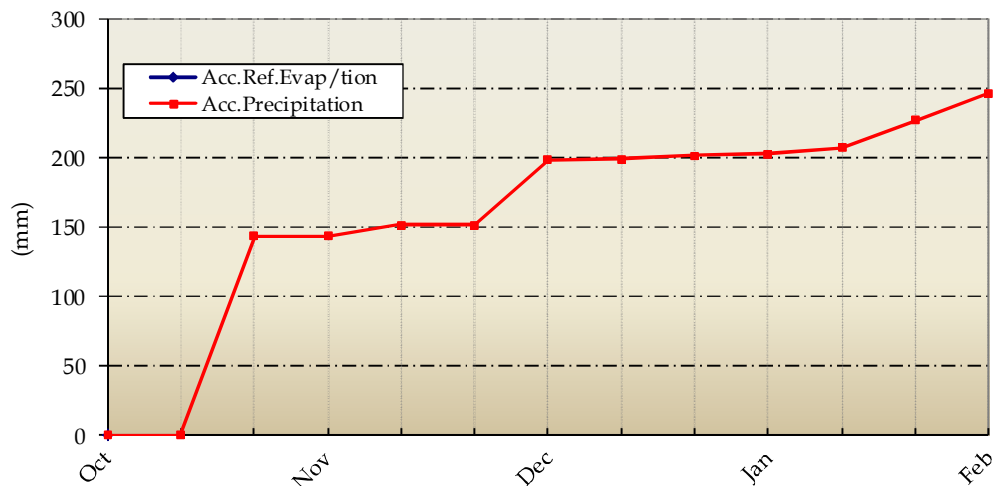
Iraklio

3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.2	19.4	17.8	17.6	17.0	19.4	18.2	17.2	15.4	10.8	14.0	16.8	11.9	15.2
	Min	9.2	12.2	10.0	10.4	9.6	11.4	10.2	10.4	9.2	7.2	8.2	9.8	6.4	9.0
Relative Humidity	Max	80	76	87	95	97	88	90	87	94	95	94	89	89	83
	Min	57	46	64	73	74	53	49	60	65	79	67	62	58	56
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.4	8.5	5.7	8.4	3.3	7.3	5.3	7.7	5.1	0.1	3.5	5.8	2.9	4.5
Precipitation								0.1	0.5	2.8	9.1	6.7	19.2	55.9	25.4
Evaporation		2.5	2.6	1.7	0.8	0.2	1.7	3.5	1.0	1.7	0.2	3.7	19.6	29.1	35.6
Growing Degrees	5	8.7	10.8	8.9	9.0	8.3	10.4	9.2	8.8	7.3	4.0	6.1	91.5	45.6	68.6
	10	3.7	5.8	3.9	4.0	3.3	5.4	4.2	3.8	2.3	0.0	1.1	37.5	9.9	22.3

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	-
Number of Rainy Days	5.0	10.0	4.5
Number of Dry Days	10.0	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



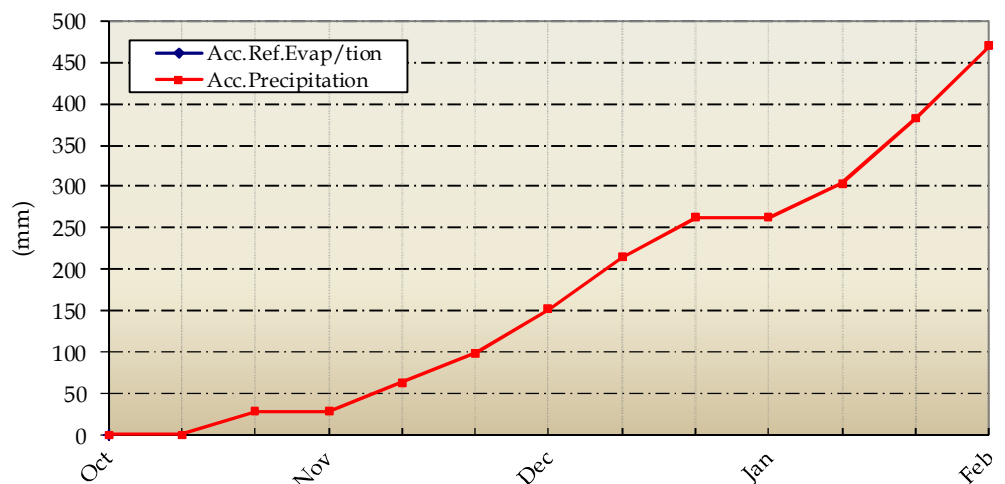
Ioannina

3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.7	12.2	7.4	13.1	9.4	11.0	9.1	9.8	10.5	10.7	10.2	10.2	7.8	9.1
	Min	5.3	4.3	6.4	4.8	0.2	3.9	-1.0	-0.5	-2.3	-4.2	-1.0	1.4	-4.7	0.0
Relative Humidity	Max	99	100	100	100	100	100	100	100	100	99	97	100	86	97
	Min	70	53	85	66	64	48	64	58	46	45	34	58	32	62
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5
Sunshine Duration		0.0	5.2	0.0	6.0	0.0	3.1	3.0	2.9	6.0	7.0	3.4	3.3	6.5	2.5
Precipitation		19.7	0.8	46.0	6.6	3.1	9.3	1.8					87.3	15.3	37.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	
Growing Degrees	5	2.0	3.3	1.9	4.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	13.6	1.5	9.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2

3rd 10-day period (21-31/01/2023)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	6.8
Precipitation - Reference Evapotranspiration	-	31.1
Number of Rainy Days	7.0	3.7
Number of Dry Days	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

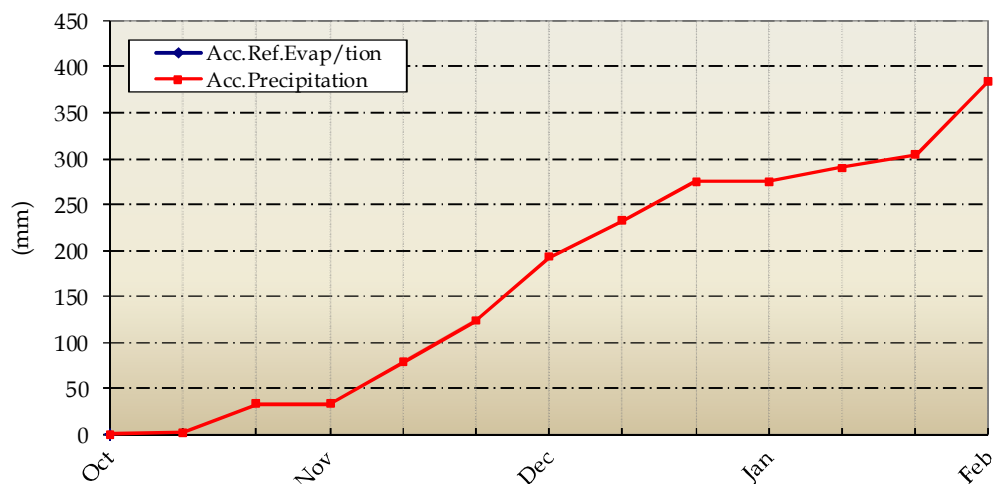


3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	16.9	18.5	17.8	16.8	15.2	14.9	16.1	15.4	16.6	13.7	16.0	12.3	14.7
	Min	6.7	7.6	11.8	8.2	8.3	8.2	7.2	4.8	5.8	4.4	5.4	7.1	1.7	5.3
Relative Humidity	Max	97	98	95	96	92	99	99	97	96	91	97	96	79	91
	Min	44	67	57	53	65	69	59	48	55	42	51	55	38	53
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.6	9.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.8	10.5
Sunshine Duration		0.0	3.2	5.0	6.2	0.1	2.1	4.6	6.1	2.4	5.9	2.4	3.5	6.6	4.4
Precipitation		14.4	5.5	0.7	4.8		47.8	2.7	0.1	1.6		2.1	79.7	30.8	43.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	26.0
Growing Degrees	5	5.6	7.3	10.2	8.0	7.6	6.7	6.1	5.5	5.6	5.5	4.6	72.4	25.4	49.8
	10	0.6	2.3	5.2	3.0	2.6	1.7	1.1	0.5	0.6	0.5	0.0	17.8	1.2	9.2

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	12.3
Precipitation - Reference Evapotranspiration	-	-	31.4
Number of Rainy Days	9.0	3.0	4.7
Number of Dry Days	0.0	2.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

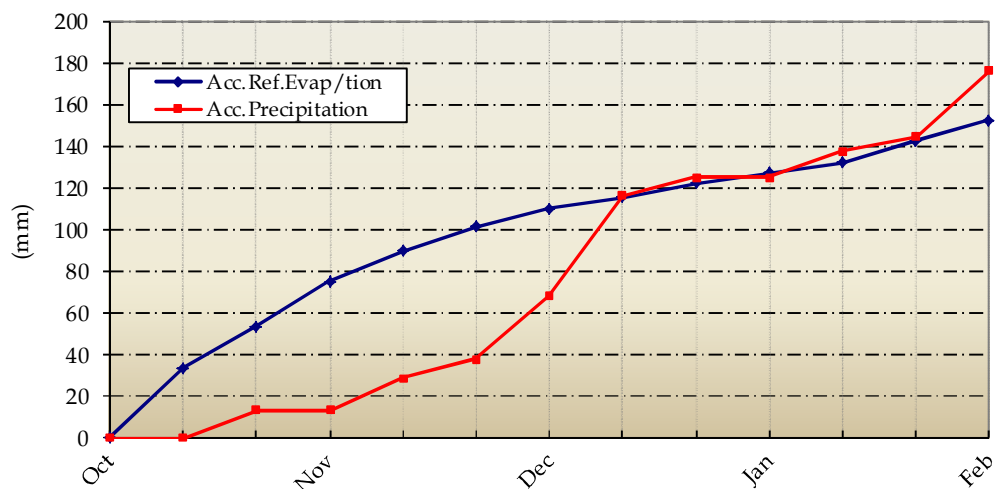


Larisa

3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.8	15.4	15.4	13.6	10.0	7.4	9.0	10.8	9.2	10.4	8.6	11.2	9.1	10.5
	Min	2.4	1.5	9.0	6.4	7.0	4.8	3.4	-0.8	3.7	3.6	-0.2	3.7	-3.7	0.9
Relative Humidity	Max	100	100	100	100	100	100	100	100	92	100	100	99	83	96
	Min	64	52	58	60	88	93	77	60	56	43	55	64	33	56
Soil Temperature at 10 cm	06 UTC	9.6	9.8	10.6	10.4	10.2	9.8	8.8	8.6	8.4	8.8	8.4	9.4	3.3	5.9
	12 UTC	11.4	11.6	10.6	11.0	11.2	9.6	11.0	9.0	9.0	9.2	9.0	10.2	4.4	6.6
Sunshine Duration		1.4	6.0	1.3	1.7	0.0	0.0	0.8	7.2	0.2	5.3	0.0	2.2	6.7	3.9
Precipitation		1.5		0.1	6.3	3.2	20.7	0.1					31.9	0.9	12.9
Evaporation		0.1	1.5	0.0	2.8	0.1	0.0	0.0	0.0	1.2	2.2	0.0	7.9	1.8	13.3
Growing Degrees	5	3.1	3.5	7.2	5.0	3.5	1.1	1.2	0.0	1.5	2.0	0.0	28.0	7.2	16.6
	10	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	1.2

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.8	13.0	10.9
Precipitation - Reference Evapotranspiration	22.1	-12.1	2.0
Number of Rainy Days	6.0	1.0	3.3
Number of Dry Days	0.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



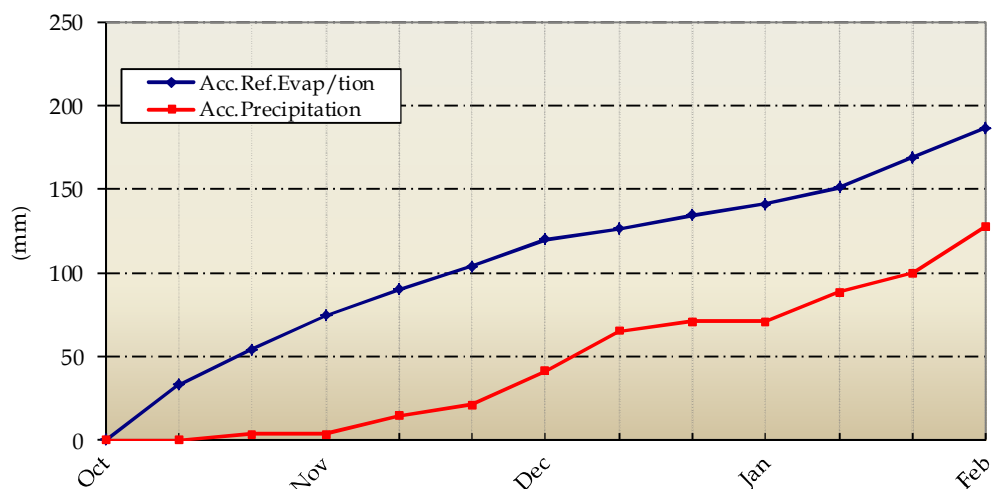
Mikra

3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.8	15.9	17.4	13.6	9.4	8.2	8.9	9.8	9.3	8.8	10.0	11.6	7.6	9.7
	Min	7.8	6.6	7.0	8.7	8.0	5.1	4.0	5.1	3.9	1.9	4.0	5.6	-1.7	1.9
Relative Humidity	Max	88	95	84	100	99	100	100	69	71	58	71	85	76	89
	Min	58	47	57	79	70	63	65	46	55	46	45	57	38	55
Soil Temperature at 10 cm	06 UTC	10.6	9.4	11.2	11.2	10.4	9.4	8.4	7.2	6.8	6.8	6.6	8.9	3.2	5.5
	12 UTC	12.0	13.0	12.4	11.2	10.6	9.4	9.2	7.5	7.4	7.2	7.2	9.7	4.3	7.0
Sunshine Duration		3.0	8.9	4.3	0.0	0.9	0.0	0.0	8.5	7.4	8.4	4.4	4.2	6.1	4.1
Precipitation					23.1		4.0	0.5					27.6		14.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	17.6
Growing Degrees	5	6.8	6.3	7.2	6.2	3.7	1.7	1.5	2.5	1.6	0.4	2.0	39.6	2.6	18.6
	10	1.8	1.3	2.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	1.6

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.3	19.8	7.7
Precipitation - Reference Evapotranspiration	10.3	-19.8	7.2
Number of Rainy Days	3.0	0.0	3.3
Number of Dry Days	3.0	19.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



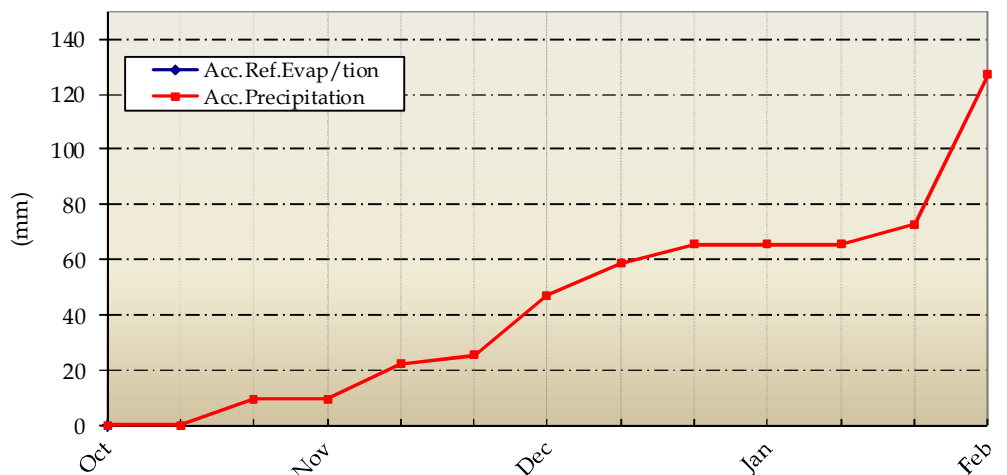
Tanagra

3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.6	17.7	18.0	16.0	9.8	10.2	10.3	12.8	9.5	9.3	8.6	12.7	5.9	11.5
	Min	3.0	3.8	6.9	6.3	9.2	7.8	4.4	4.0	4.0	5.6	0.6	5.1	-1.3	3.4
Relative Humidity	Max	85	96	97	94	80	100	100	97	87	98	97	94	93	94
	Min	45	43	40	50	64	73	77	46	54	61	48	55	51	55
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.6	7.6	5.9	5.1	0.0	0.0	3.3	7.8	1.7	2.4	0.0	3.6	4.6	3.9
Precipitation				1.2	0.0		50.6	2.4			0.0	0.0	54.2	37.6	25.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	24.6
Growing Degrees	5	5.3	5.8	7.5	6.2	4.5	4.0	2.4	3.4	1.8	2.5	0.0	43.1	5.0	28.3
	10	0.3	0.8	2.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	4.5

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	3.0	6.0	3.9
Number of Dry Days	2.0	5.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



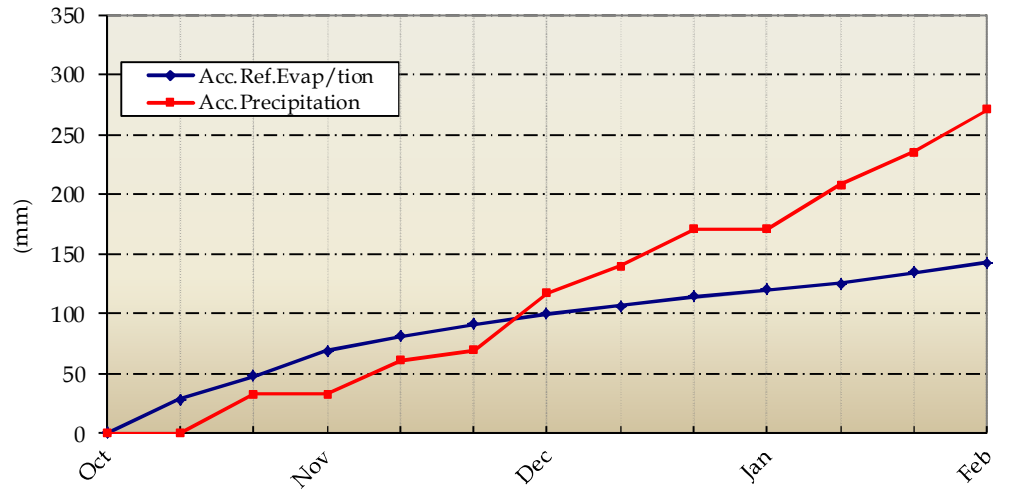
Tripoli

3rd 10-day period (21-31/01/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.5	11.8	13.7	14.0	8.2	6.6	8.6	9.4	7.6	9.6	7.8	9.6	6.8	9.6
	Min	4.2	3.2	2.5	2.0	3.9	6.2	2.0	1.0	1.0	0.8	-0.8	2.4	-4.3	0.2
Relative Humidity	Max	99	99	99	100	98	100	100	100	100	100	100	100	97	95
	Min	77	61	50	49	84	93	74	66	78	51	51	67	41	56
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5
Sunshine Duration		0.0	3.0	5.3	3.9	0.0	0.0	3.5	4.7	0.5	6.4	1.6	2.6	5.6	4.0
Precipitation		6.7	3.9	1.0	1.2	0.1	12.6	4.9	0.3	0.5		4.4	35.6	14.7	36.0
Evaporation		-	-	-	-	-	-	-	1.4	-	2.8	0.0	-	-	5.6
Growing Degrees	5	1.4	2.5	3.1	3.0	1.1	1.4	0.3	0.2	0.0	0.2	0.0	13.1	1.3	11.0
	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	0.0	0.6

3rd 10-day period (21-31/01/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.0	9.2	6.0
Precipitation - Reference Evapotranspiration	27.6	5.5	30.0
Number of Rainy Days	10.0	5.0	4.2
Number of Dry Days	0.0	7.0	-

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)

UTC (Universal Time coordinates) in Greece

- ◆ Winter : Time(UTC) = Local time - 2
- ◆ Summer : Time(UTC) = Local time - 3

Mesurements Units

- ◆ Temperature : °C
- ◆ Relative Humidity : %
- ◆ Soil Temperature : °C
- ◆ Sunshine Duration : Hours
- ◆ Precipitation : mm
- ◆ Evaporation (Pan) : mm
- ◆ Growing Degrees : °C

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**ΕΘΝΙΚΗ
ΜΕΤΕΩΡΟΛΟΓΙΚΗ
ΥΠΗΡΕΣΙΑ**

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