



AGROMETEOROLOGICAL BULLETIN

March 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



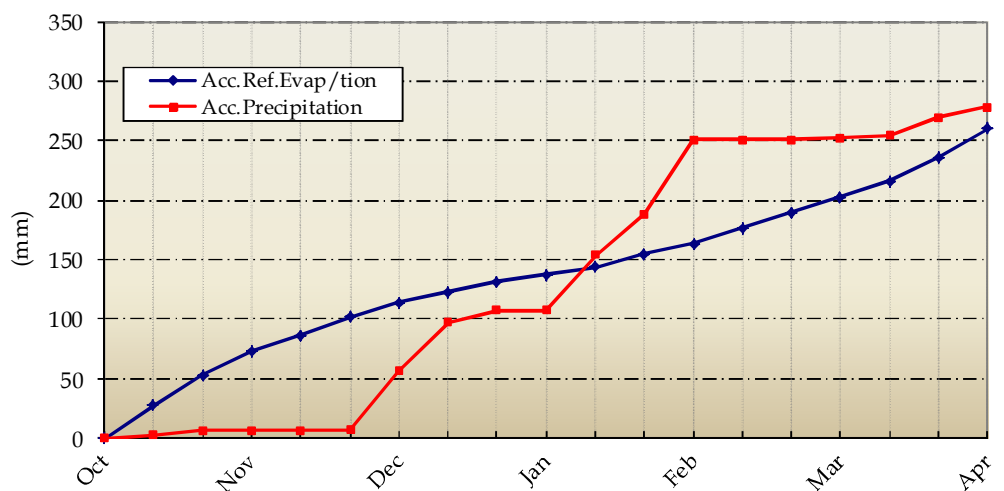
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Division of Climatology-Applications
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www.hnms.gr
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3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.2	13.2	15.4	17.6	16.0	19.0	18.4	14.4	11.4	12.8	17.0	15.8	15.1	14.5
	Min	5.0	9.8	7.8	2.6	3.2	7.8	6.8	6.0	3.2	-2.4	5.0	5.0	3.4	5.4
Relative Humidity	Max	97	87	92	91	93	92	94	92	84	88	89	91	86	89
	Min	46	64	67	52	66	55	73	57	23	30	61	54	44	52
Soil Temperature at 10 cm	06 UTC	10.4	11.6	11.2	10.0	10.6	12.4	12.4	12.6	9.4	8.8	10.4	10.9	8.0	9.3
	12 UTC	13.5	12.6	12.8	13.6	14.0	14.7	15.4	13.6	12.0	12.2	13.2	13.4	11.5	11.9
Sunshine Duration		7.7	0.6	1.4	10.5	10.6	6.6	8.0	3.4	11.6	11.1	7.9	7.2	8.0	6.3
Precipitation			0.0	0.0			0.0	3.9	5.0				8.9	0.0	14.5
Evaporation		1.4	1.6	2.1	2.3	4.4	2.2	1.9	3.8	0.0	0.0	2.2	21.9	19.3	35.0
Growing Degrees	5	6.6	6.5	6.6	5.1	4.6	8.4	7.6	5.2	2.3	0.2	6.0	59.1	46.7	49.5
	10	1.6	1.5	1.6	0.1	0.0	3.4	2.6	0.2	0.0	0.0	1.0	12.0	8.0	12.2

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.3	27.5	18.4
Precipitation - Reference Evapotranspiration	-15.4	-27.5	-3.9
Number of Rainy Days	2.0	0.0	2.5
Number of Dry Days	10.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



Agrometeorological Data

March 2023

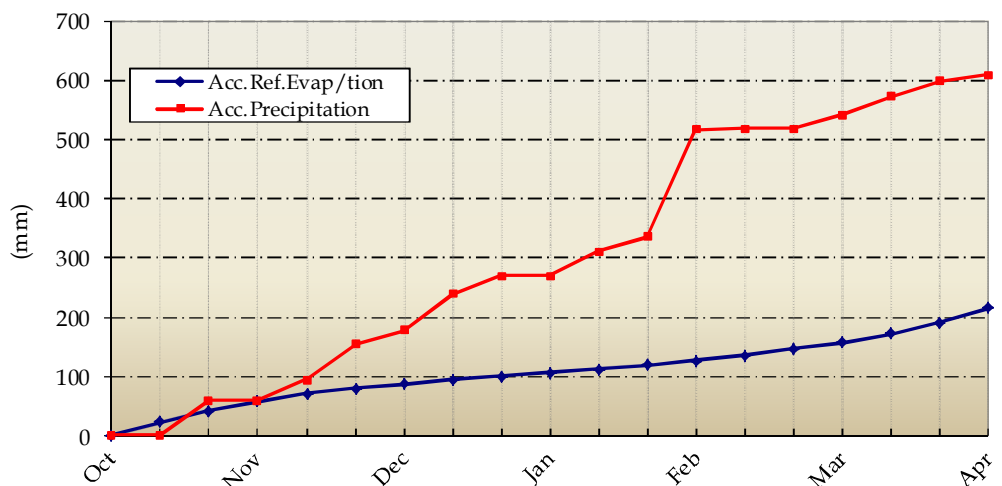
Andravida

3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	18.1	19.3	19.3	19.4	20.4	19.2	14.8	14.1	17.0	18.1	17.8	17.3	17.5
	Min	7.8	5.5	6.1	5.0	7.1	7.2	8.6	9.0	4.3	3.4	7.2	6.5	6.0	7.9
Relative Humidity	Max	96	97	96	97	98	98	98	94	84	94	94	95	89	91
	Min	63	62	58	55	63	58	58	37	36	51	61	55	40	50
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	12.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	15.7
Sunshine Duration		2.6	10.4	6.5	10.3	9.0	10.0	9.8	8.0	9.7	9.8	8.9	8.6	8.9	7.0
Precipitation									10.2				10.2	8.3	15.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	41.6
Growing Degrees	5	7.1	6.8	7.7	7.2	8.3	8.8	8.9	6.9	4.2	5.2	7.7	78.7	73.0	69.2
	10	2.1	1.8	2.7	2.2	3.3	3.8	3.9	1.9	0.0	0.2	2.7	24.5	24.9	25.6

3rd 10-day period (21-31/03/2023)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	25.1	24.8	16.7
Precipitation - Reference Evapotranspiration	-14.9	-16.5	-0.9
Number of Rainy Days	1.0	2.0	3.0
Number of Dry Days	10.0	18.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

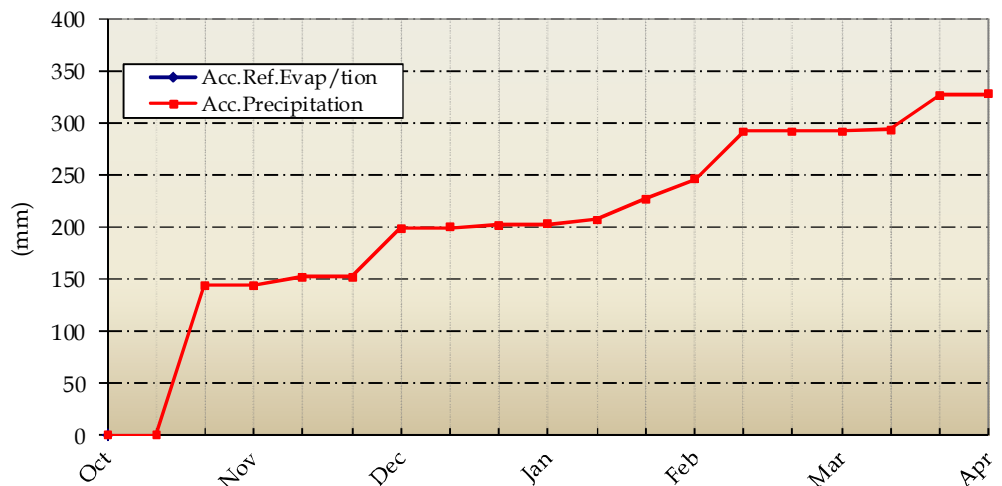


3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	18.6	17.4	17.8	18.2	19.8	20.0	19.2	13.4	16.4	18.8	17.9	16.2	18.2
	Min	9.4	12.6	14.8	14.0	10.4	12.0	11.4	12.6	11.4	5.8	7.8	11.1	8.9	10.8
Relative Humidity	Max	93	93	91	95	95	93	80	83	69	77	88	87	81	85
	Min	63	71	74	71	70	65	47	50	50	41	51	59	40	54
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.5	6.2	6.1	6.0	10.8	11.2	10.7	11.5	11.1	11.6	10.8	8.8	5.6	7.0
Precipitation			0.8		0.0					0.0			0.8	33.3	15.0
Evaporation		1.2	1.4	1.2	4.1	2.4	2.8	4.1	7.0	3.4	5.4	3.4	36.4	27.9	38.5
Growing Degrees	5	8.2	10.6	11.1	10.9	9.3	10.9	10.7	10.9	7.4	6.1	8.3	104.4	83.1	92.8
	10	3.2	5.6	6.1	5.9	4.3	5.9	5.7	5.9	2.4	1.1	3.3	49.4	32.0	44.1

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	1.0	4.0	2.9
Number of Dry Days	2.0	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



Agrometeorological Data

March 2023

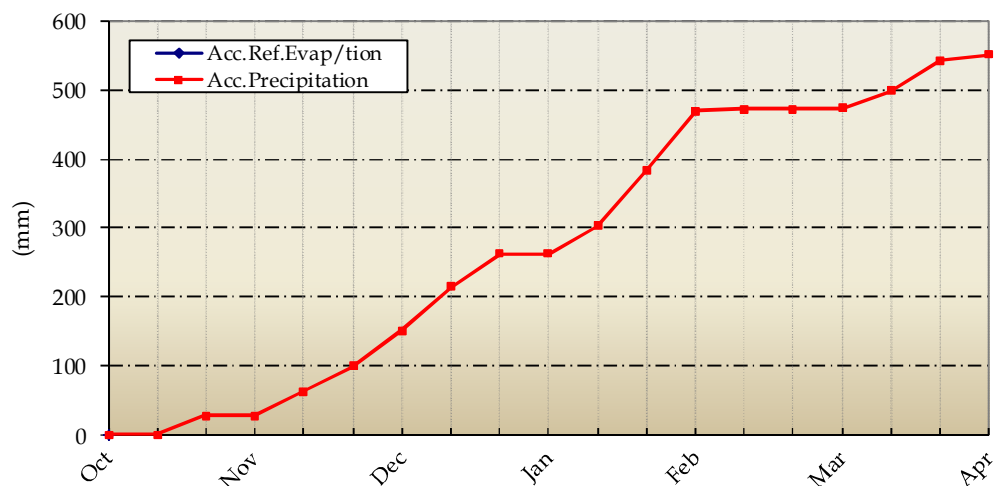
Ioannina

3rd 10-day period (21-31/03/2023)		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	17.9	20.1	21.4	20.9	21.1	16.6	12.1	13.5	17.0	17.8	17.5	16.9	15.5
	Min	6.2	5.9	1.5	0.8	1.0	2.5	3.3	5.0	-2.9	-3.1	1.8	2.0	1.9	4.2
Relative Humidity	Max	91	100	100	100	100	100	100	99	85	100	100	98	81	93
	Min	71	37	28	31	35	29	46	22	26	34	38	36	27	48
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0
Sunshine Duration		1.7	7.3	9.2	10.0	7.3	7.8	3.2	6.3	11.1	10.6	8.1	7.5	6.8	4.9
Precipitation		2.3						0.9	5.9				9.1	3.1	27.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	
Growing Degrees	5	5.0	6.9	5.8	6.1	6.0	6.8	5.0	3.6	0.3	2.0	4.8	52.1	48.4	44.4
	10	0.0	1.9	0.8	1.1	1.0	1.8	0.0	0.0	0.0	0.0	0.0	6.6	5.9	10.6

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	18.1
Precipitation - Reference Evapotranspiration	-	-	9.6
Number of Rainy Days	3.0	1.0	3.4
Number of Dry Days	4.0	21.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



Agrometeorological Data

March 2023

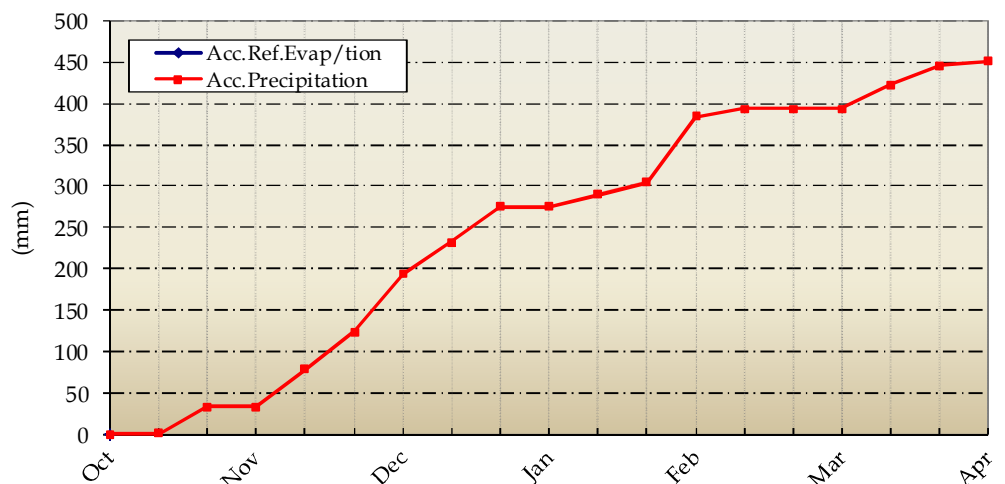
Kalamata

3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.9	20.8	19.7	19.5	23.5	25.4	19.9	17.6	17.0	19.6	21.2	20.2	17.9	18.1
	Min	6.9	6.8	7.4	8.6	8.0	11.0	7.9	6.7	1.0	3.6	6.4	6.8	5.9	7.4
Relative Humidity	Max	95	92	84	96	93	93	96	94	85	93	96	92	88	92
	Min	51	35	50	45	33	31	58	45	21	32	33	39	37	48
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.3	12.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	12.9	14.3
Sunshine Duration		1.6	10.3	7.5	9.8	10.0	11.3	8.4	8.7	11.2	11.2	9.1	9.0	7.8	7.1
Precipitation									5.0				5.0	1.8	21.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	41.1
Growing Degrees	5	7.4	8.8	8.6	9.1	10.8	13.2	8.9	7.2	4.0	6.6	8.8	93.2	75.9	75.0
	10	2.4	3.8	3.6	4.1	5.8	8.2	3.9	2.2	0.0	1.6	3.8	39.2	24.2	28.2

3rd 10-day period (21-31/03/2023)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	25.8
Precipitation - Reference Evapotranspiration	-	-4.1
Number of Rainy Days	1.0	3.6
Number of Dry Days	10.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

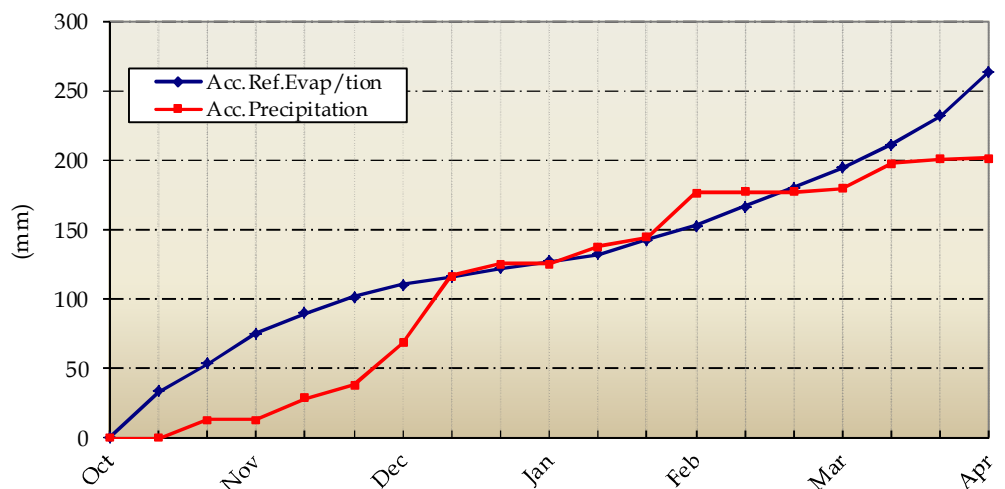


Larisa

3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.6	19.4	18.8	20.8	22.8	23.8	23.4	16.8	16.5	20.0	24.6	20.2	17.9	17.4
	Min	6.6	5.0	4.2	1.8	2.6	6.0	2.5	7.6	0.6	-2.1	3.0	3.4	2.0	5.0
Relative Humidity	Max	100	100	100	100	100	100	97	65	80	83	90	92	90	93
	Min	62	47	51	45	45	24	33	29	13	25	27	36	35	46
Soil Temperature at 10 cm	06 UTC	11.0	12.2	12.6	13.0	13.4	14.0	13.6	13.4	12.0	11.6	12.2	12.6	9.4	10.6
	12 UTC	12.6	12.8	13.0	13.6	14.0	14.8	14.8	14.4	14.8	13.2	13.0	13.7	10.3	11.7
Sunshine Duration		2.6	6.4	8.5	9.7	6.4	10.1	9.7	5.2	9.6	10.6	10.2	8.1	6.7	5.7
Precipitation		0.7	0.1						0.0				0.8	2.0	10.7
Evaporation		3.6	2.7	5.5	4.4	3.9	5.9	5.0	0.0	0.0	0.0	7.7	38.7	33.0	41.9
Growing Degrees	5	6.1	7.2	6.5	6.3	7.7	9.9	8.0	7.2	3.6	4.0	8.8	75.2	56.6	61.6
	10	1.1	2.2	1.5	1.3	2.7	4.9	3.0	2.2	0.0	0.0	3.8	22.7	11.9	19.2

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.8	28.4	27.9
Precipitation - Reference Evapotranspiration	-31.0	-26.4	-17.2
Number of Rainy Days	2.0	1.0	3.2
Number of Dry Days	3.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



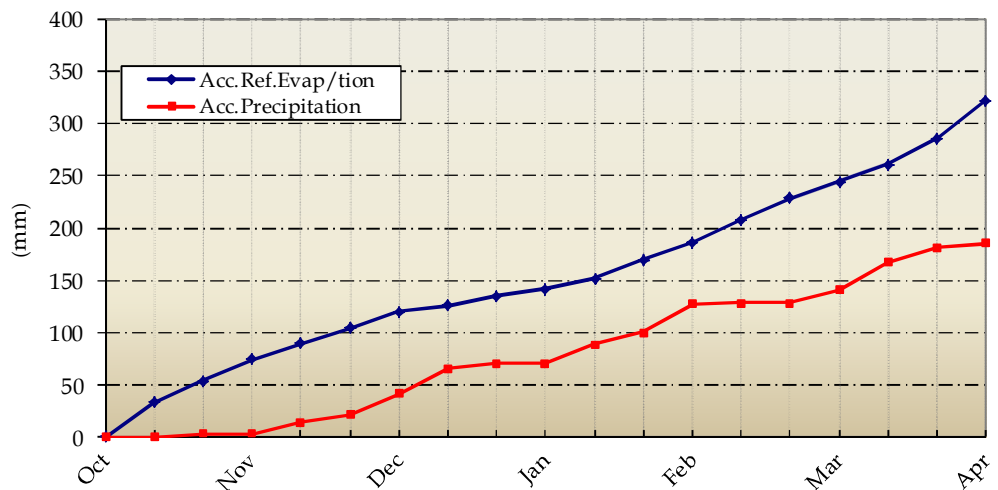
Mikra

3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.6	18.3	18.3	18.2	17.8	22.2	22.2	14.5	14.3	18.4	19.9	18.1	17.5	16.1
	Min	7.0	8.0	10.0	6.4	6.4	7.5	10.0	8.6	6.3	1.8	5.8	7.1	3.6	6.4
Relative Humidity	Max	100	100	100	100	100	100	98	66	62	74	94	90	91	88
	Min	76	50	57	56	68	24	33	32	24	24	39	44	39	48
Soil Temperature at 10 cm	06 UTC	11.0	11.6	12.4	12.0	12.2	12.8	12.8	12.0	9.2	9.0	11.2	11.5	9.0	10.6
	12 UTC	12.8	13.2	14.8	14.0	14.2	14.4	15.2	12.2	10.6	11.8	13.2	13.3	10.9	13.5
Sunshine Duration		3.0	4.6	9.9	10.7	7.5	11.2	7.9	9.6	12.0	10.0	10.4	8.8	7.7	6.0
Precipitation		0.4	1.8					1.8	0.0				4.0	0.1	10.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	35.3
Growing Degrees	5	5.8	8.2	9.2	7.3	7.1	9.9	11.1	6.6	5.3	5.1	7.9	83.3	61.4	59.3
	10	0.8	3.2	4.2	2.3	2.1	4.9	6.1	1.6	0.3	0.1	2.9	28.3	13.1	18.2

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.4	32.1	21.9
Precipitation - Reference Evapotranspiration	-32.4	-32.0	-11.6
Number of Rainy Days	3.0	1.0	2.9
Number of Dry Days	2.0	12.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



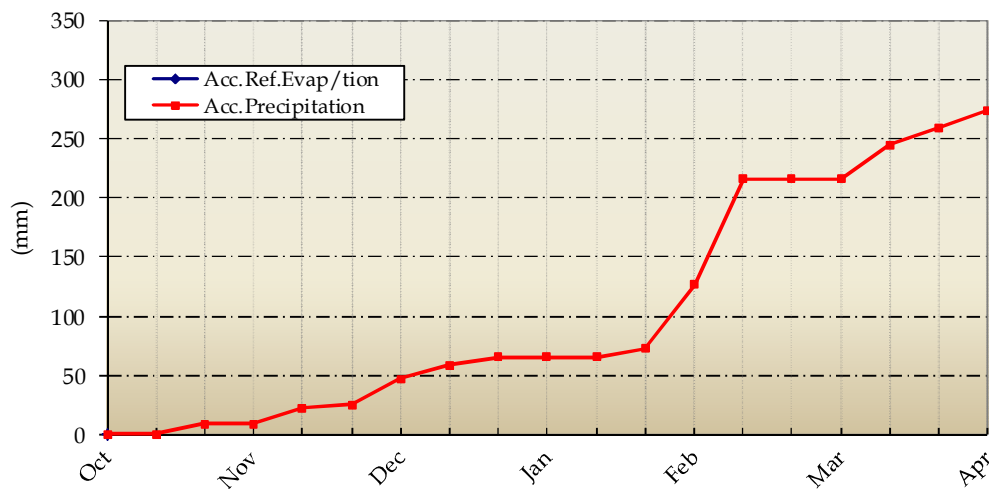
Tanagra

3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	16.2	17.1	18.9	23.2	21.6	23.6	16.6	13.0	18.3	21.9	18.9	15.8	16.5
	Min	3.9	5.6	4.4	4.6	4.7	10.1	6.2	8.8	4.5	0.7	5.4	5.4	4.9	6.2
Relative Humidity	Max	95	97	98	96	96	81	82	97	77	79	69	88	91	90
	Min	47	54	45	38	28	29	26	37	22	23	26	34	36	44
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.4	5.1	10.0	10.0	10.2	11.1	11.3	4.6	10.9	11.5	10.7	8.7	5.8	6.4
Precipitation		0.0							13.8	0.4			14.2	10.6	20.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	33.9
Growing Degrees	5	5.6	5.9	5.8	6.8	9.0	10.9	9.9	7.7	3.8	4.5	8.7	78.3	59.0	59.9
	10	0.6	0.9	0.8	1.8	4.0	5.9	4.9	2.7	0.0	0.0	3.7	25.0	14.6	19.0

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	2.0	3.0	2.9
Number of Dry Days	10.0	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



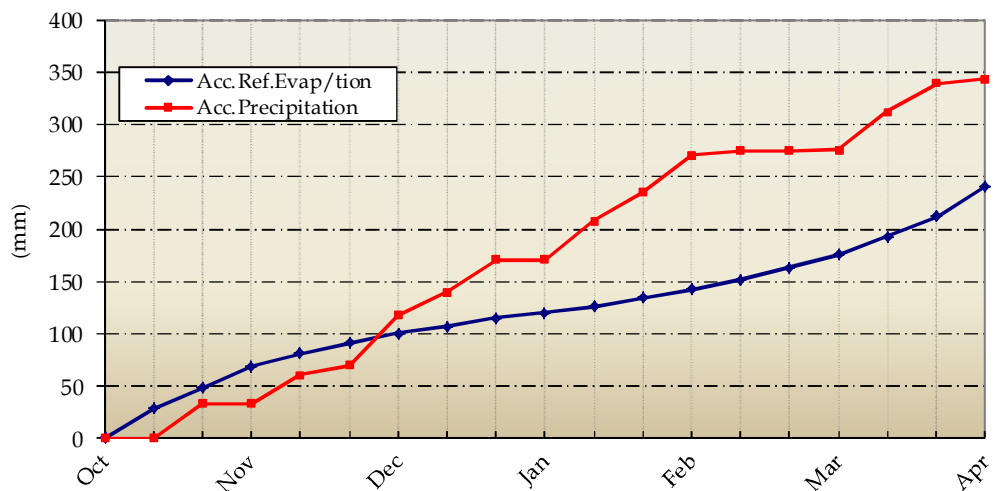
Tripoli

3rd 10-day period (21-31/03/2023)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.1	16.5	15.5	18.8	21.3	22.3	18.0	12.0	12.4	16.2	19.5	17.1	14.3	15.1
	Min	3.3	0.1	1.6	0.3	1.3	1.6	1.3	7.0	-2.4	-2.9	1.6	1.2	0.9	3.2
Relative Humidity	Max	100	100	98	98	93	95	98	82	85	94	94	94	95	90
	Min	42	41	38	31	34	13	30	36	14	26	25	30	31	44
Soil Temperature at 10 cm	06 UTC	8.8	7.2	8.0	8.0	8.8	9.4	9.4	9.8	6.8	6.8	8.6	8.3	-	8.5
	12 UTC	10.8	12.0	11.4	14.2	15.4	15.4	15.0	13.6	12.2	13.6	15.0	13.5	-	10.8
Sunshine Duration		0.0	6.9	7.1	9.8	9.6	10.4	9.3	8.8	10.5	10.6	10.0	8.5	6.9	6.3
Precipitation		0.6							2.9				3.5	9.6	28.1
Evaporation		0.9	0.8	1.6	4.3	3.5	4.3	5.7	3.1	1.8	2.8	4.0	32.8	-	35.0
Growing Degrees	5	4.2	3.3	3.6	4.6	6.3	7.0	4.7	4.5	0.0	1.7	5.6	45.2	32.1	42.6
	10	0.0	0.0	0.0	0.0	1.3	2.0	0.0	0.0	0.0	0.0	0.6	3.8	2.2	9.8

3rd 10-day period (21-31/03/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.9	25.5	25.0
Precipitation - Reference Evapotranspiration	-25.4	-15.9	3.1
Number of Rainy Days	2.0	3.0	3.8
Number of Dry Days	3.0	11.0	-

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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Helliniko, Athens



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Division of Climatology-Applications

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