



# AGROMETEOROLOGICAL BULLETIN

*December 2022*  
*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



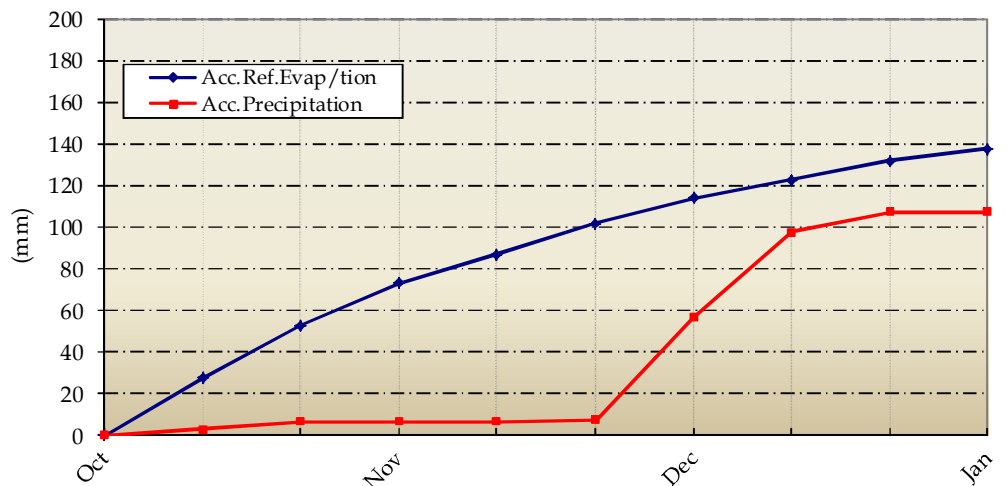
Hellenic National Meteorological Service  
Division of Climatology-Applications  
El. Venizelou Street 14, 16777  
Helliniko, Athens

*Web addresses of HNMS*  
[www.hnms.gr](http://www.hnms.gr)  
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[www.meteo.gov.gr](http://www.meteo.gov.gr)  
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3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.4	12.4	12.8	13.2	17.4	14.4	17.0	14.0	13.4	14.0	14.0	13.9	11.3	9.9
	Min	4.0	-2.0	-1.4	-0.8	5.0	0.6	7.8	4.0	3.6	3.8	2.8	2.5	3.8	2.3
Relative Humidity	Max	93	96	89	93	94	96	94	97	94	94	97	94	90	90
	Min	50	58	59	71	43	59	64	57	42	64	71	58	64	61
Soil Temperature at 10 cm	06 UTC	8.0	6.6	7.0	6.2	8.6	7.4	9.8	9.2	8.4	8.6	8.6	8.0	6.6	6.1
	12 UTC	9.3	8.8	8.6	8.4	10.0	9.2	11.5	10.2	9.6	10.2	9.6	9.6	7.9	7.2
Sunshine Duration		6.6	7.1	7.6	7.1	6.8	7.3	8.0	2.5	8.0	6.5	6.4	6.7	3.9	3.5
Precipitation														77.2	30.2
Evaporation		1.2	0.8	0.0	0.0	1.0	1.6	1.0	1.2	2.0	0.8	2.3	11.9	9.5	15.3
Growing Degrees	5	2.2	0.2	0.7	1.2	6.2	2.5	7.4	4.0	3.5	3.9	3.4	35.2	37.2	24.5
	10	0.0	0.0	0.0	0.0	1.2	0.0	2.4	0.0	0.0	0.0	0.0	3.6	7.7	6.4

3rd 10-day period (21-31/12/2022)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.9	7.9	6.3
Precipitation - Reference Evapotranspiration	-5.9	69.3	23.9
Number of Rainy Days	0.0	3.0	2.9
Number of Dry Days	16.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

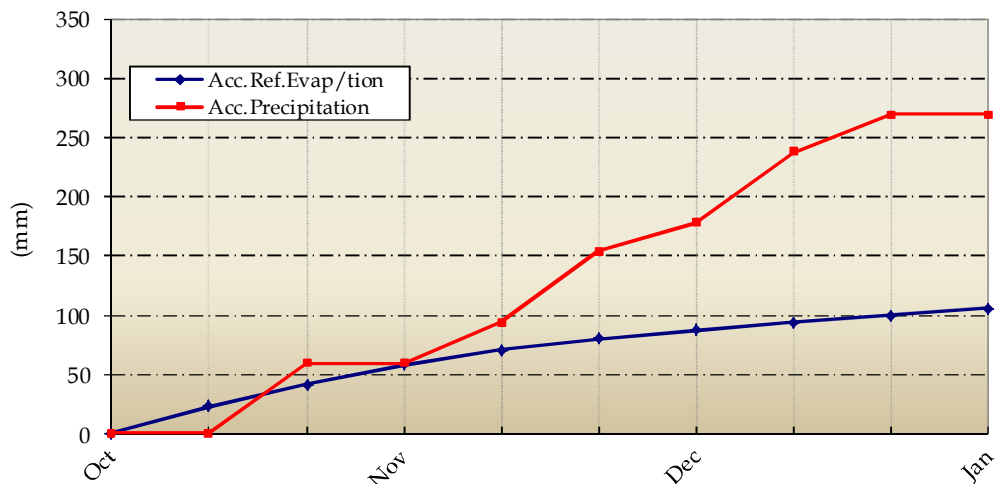


3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.8	14.2	16.0	17.2	17.0	19.0	18.6	17.0	17.6	18.2	17.7	16.9	15.8	14.6
	Min	-0.2	4.7	9.6	6.1	4.0	5.0	10.0	9.2	5.8	7.7	7.7	6.3	6.4	6.4
Relative Humidity	Max	97	92	92	95	98	98	97	98	99	97	96	96	95	91
	Min	48	61	64	69	69	65	70	71	64	63	67	65	62	54
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.7	9.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.3	11.4
Sunshine Duration		5.6	0.3	4.7	3.5	5.4	5.1	6.0	4.5	5.5	3.3	3.3	4.3	3.4	4.4
Precipitation											0.0	0.0	0.0	47.4	41.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	19.3	39.2
Growing Degrees	5	1.8	4.5	7.8	6.7	5.5	7.0	9.3	8.1	6.7	8.0	7.7	73.0	67.1	52.0
	10	0.0	0.0	2.8	1.7	0.5	2.0	4.3	3.1	1.7	3.0	2.7	21.7	20.5	14.6

3rd 10-day period (21-31/12/2022)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	5.9	6.3	9.8
Precipitation - Reference Evapotranspiration	-5.9	41.1	31.6
Number of Rainy Days	0.0	5.0	4.3
Number of Dry Days	17.0	6.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



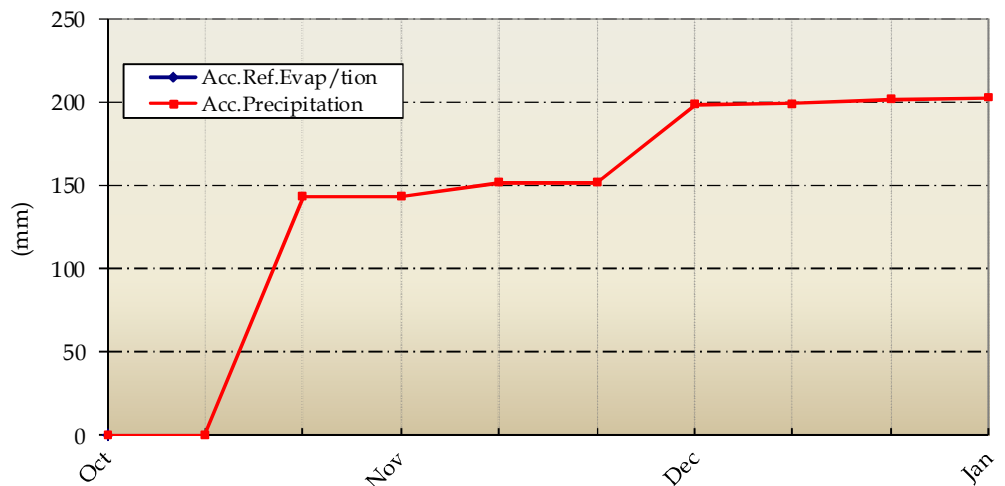
Iraklio

3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.2	14.6	16.6	16.6	16.8	17.2	18.8	19.0	18.0	17.2	17.0	16.9	16.5	16.4
	Min	12.6	12.0	7.6	11.6	9.6	15.0	9.2	10.0	11.8	10.2	9.6	10.8	9.8	10.5
Relative Humidity	Max	71	87	89	87	90	87	95	97	95	97	97	90	89	85
	Min	59	70	63	64	68	59	72	71	71	76	76	68	60	60
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	0.0	4.7	4.7	4.7	8.0	8.0	5.5	5.2	7.4	6.9	5.0	4.0	3.3
Precipitation		0.0				0.9							0.9	26.1	31.7
Evaporation		2.3	0.9	1.5	0.5	2.0	2.0	1.0	0.4	1.1	1.7	1.8	15.2	15.7	36.5
Growing Degrees	5	8.4	8.3	7.1	9.1	8.2	11.1	9.0	9.5	9.9	8.7	8.3	97.6	89.8	87.7
	10	3.4	3.3	2.1	4.1	3.2	6.1	4.0	4.5	4.9	3.7	3.3	42.6	35.5	37.3

3rd 10-day period (21-31/12/2022)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	1.0	5.0	4.7
Number of Dry Days	4.0	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

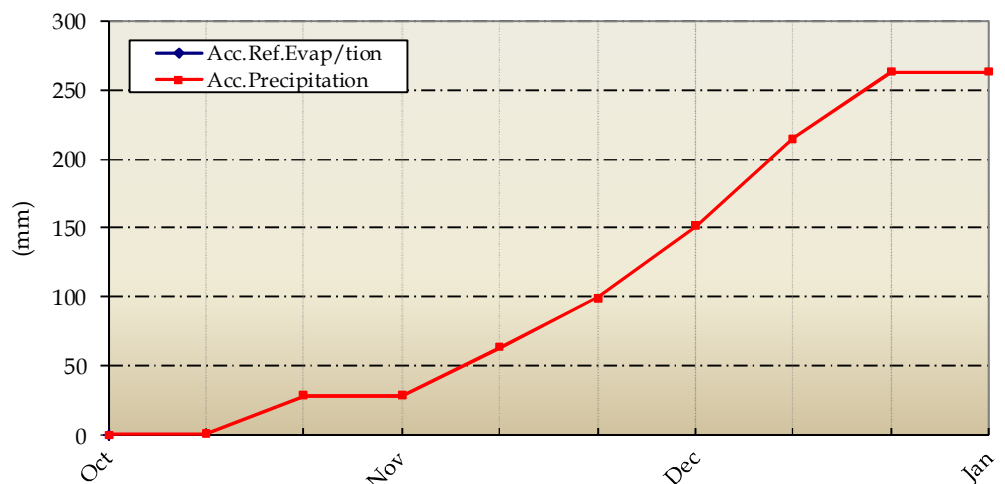


3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.9	12.3	8.5	8.4	13.9	16.4	10.0	6.9	12.3	13.1	9.6	11.3	10.7	9.0
	Min	-3.9	-2.6	0.1	-1.0	-0.2	-0.8	0.0	0.9	3.3	3.2	1.0	0.0	1.1	0.7
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	97	94
	Min	42	62	80	69	64	50	85	99	87	69	68	70	60	60
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7
Sunshine Duration		6.8	4.4	1.7	1.6	3.6	5.7	0.8	0.0	3.0	2.0	2.8	2.9	2.9	2.8
Precipitation						0.0			0.0				0.0	83.2	55.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	0.0	0.0	0.0	0.0	1.9	2.8	0.0	0.0	2.8	3.2	0.3	10.9	24.6	12.9
	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	1.0	1.5

3rd 10-day period (21-31/12/2022)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	4.2
Precipitation - Reference Evapotranspiration	-	51.4
Number of Rainy Days	0.0	4.1
Number of Dry Days	16.0	-

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

## December 2022

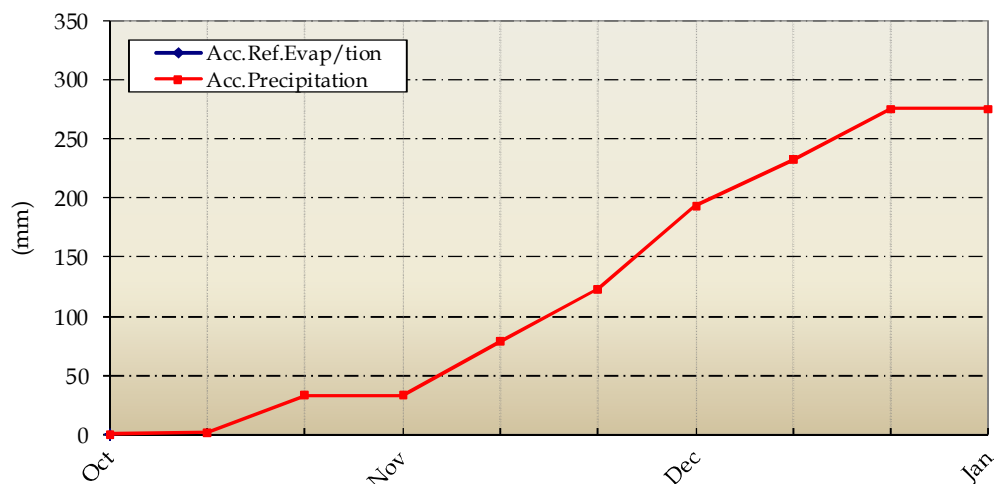
Kalamata

3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	17.6	18.0	19.0	19.1	19.1	19.9	18.9	20.0	19.4	18.6	18.8	16.7	15.4
	Min	4.4	4.3	5.4	4.6	8.1	5.2	8.4	6.8	9.0	6.0	6.1	6.2	7.2	6.1
Relative Humidity	Max	94	96	97	96	97	96	97	96	97	96	97	96	94	90
	Min	48	47	49	46	50	60	56	65	52	47	56	52	59	52
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.5	10.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	12.0	11.4
Sunshine Duration		6.0	5.2	3.8	7.2	7.3	6.9	7.3	6.9	6.2	10.0	4.9	6.5	4.2	4.8
Precipitation														16.4	41.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	20.9
Growing Degrees	5	5.8	6.0	6.7	6.8	8.6	7.2	9.2	7.9	9.5	7.7	7.4	82.6	76.4	55.3
	10	0.8	1.0	1.7	1.8	3.6	2.2	4.2	2.9	4.5	2.7	2.4	27.6	24.5	13.7

3rd 10-day period (21-31/12/2022)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	11.3
Precipitation - Reference Evapotranspiration	-	30.0
Number of Rainy Days	0.0	4.7
Number of Dry Days	17.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

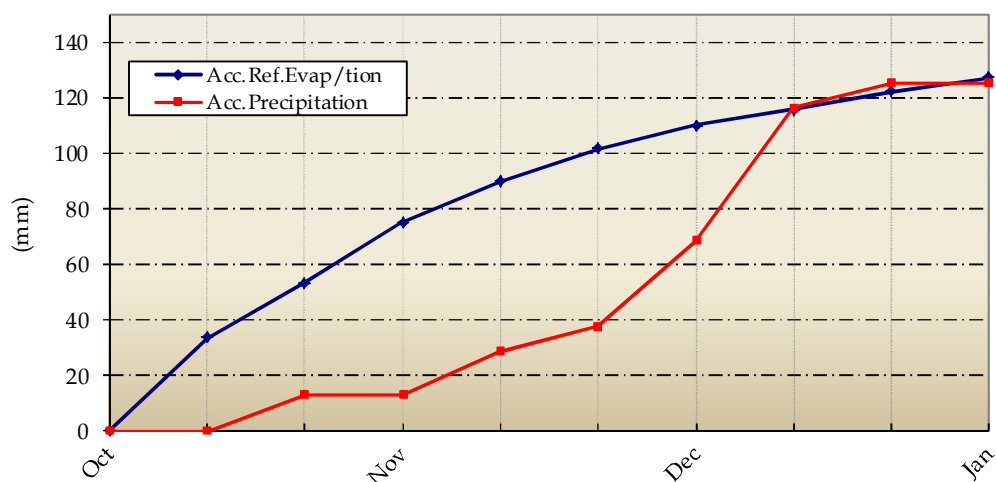


Larisa

3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.4	9.6	9.6	12.2	14.8	15.8	14.0	13.6	14.4	12.7	6.4	12.1	11.7	10.2
	Min	0.0	-2.0	-1.8	-1.2	0.0	0.0	-0.6	0.2	2.0	1.0	2.2	0.0	2.0	1.1
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	95	95
	Min	49	63	70	62	64	55	64	75	65	77	100	68	57	58
Soil Temperature at 10 cm	06 UTC	12.2	8.0	8.0	7.6	8.4	8.4	8.4	8.4	8.8	9.0	9.0	8.7	6.5	6.4
	12 UTC	13.6	9.0	9.0	9.2	8.6	8.8	8.8	8.6	8.8	8.8	8.6	9.3	7.1	7.1
Sunshine Duration		7.0	7.0	6.6	5.0	6.2	6.0	6.5	3.9	5.2	3.3	0.0	5.2	3.5	3.5
Precipitation														5.0	13.4
Evaporation		0.0	0.0	0.0	0.0	0.2	0.5	1.4	0.6	1.0	0.3	0.1	4.1	8.0	13.4
Growing Degrees	5	0.2	0.0	0.0	0.5	2.4	2.9	1.7	1.9	3.2	1.9	0.0	14.7	28.8	18.1
	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	2.1	2.6

3rd 10-day period (21-31/12/2022)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	4.8	7.1	7.5
Precipitation - Reference Evapotranspiration	-4.8	-2.1	5.9
Number of Rainy Days	0.0	4.0	3.0
Number of Dry Days	12.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





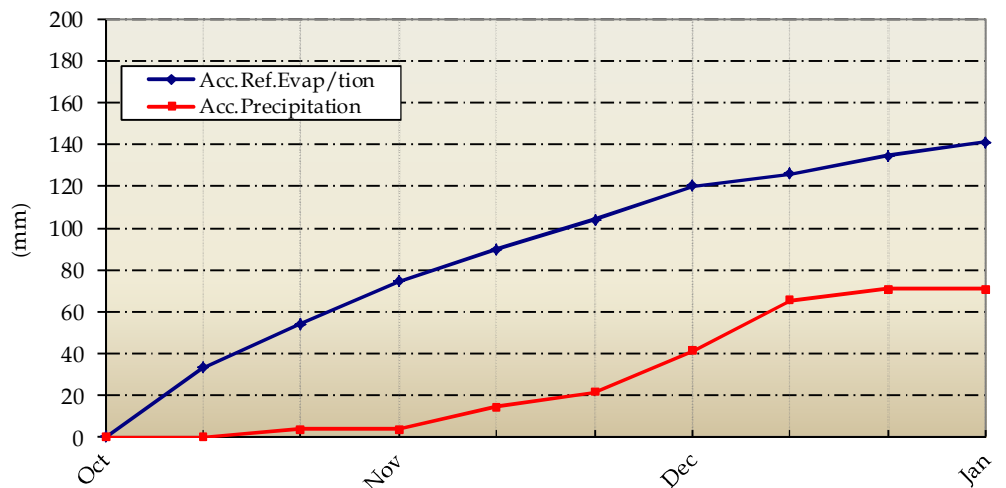
Mikra

3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.9	10.4	11.5	12.6	17.2	14.4	14.6	15.6	14.0	13.8	12.6	13.3	10.5	10.1
	Min	-0.6	-0.2	0.9	1.2	2.4	4.0	6.9	3.6	3.6	7.8	4.6	3.1	2.9	2.6
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	89	87
	Min	54	62	61	63	47	66	70	68	80	80	78	66	61	56
Soil Temperature at 10 cm	06 UTC	8.8	8.0	7.8	8.0	8.2	8.8	10.0	9.2	10.8	11.0	10.6	9.2	6.5	5.8
	12 UTC	9.6	9.0	8.8	9.0	11.8	10.0	10.6	10.2	11.4	11.8	9.2	10.1	7.2	7.5
Sunshine Duration		8.4	7.7	4.9	6.4	8.2	7.7	3.5	4.2	1.4	3.6	3.4	5.4	4.6	4.3
Precipitation														9.3	13.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	17.5
Growing Degrees	5	0.0	0.1	1.2	1.9	4.8	4.2	5.8	4.6	3.8	5.8	3.6	35.8	30.7	23.1
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.8	0.0	1.6	4.6	4.1

3rd 10-day period (21-31/12/2022)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.7	8.8	5.3
Precipitation - Reference Evapotranspiration	-6.7	0.5	7.9
Number of Rainy Days	0.0	4.0	2.6
Number of Dry Days	11.0	10.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





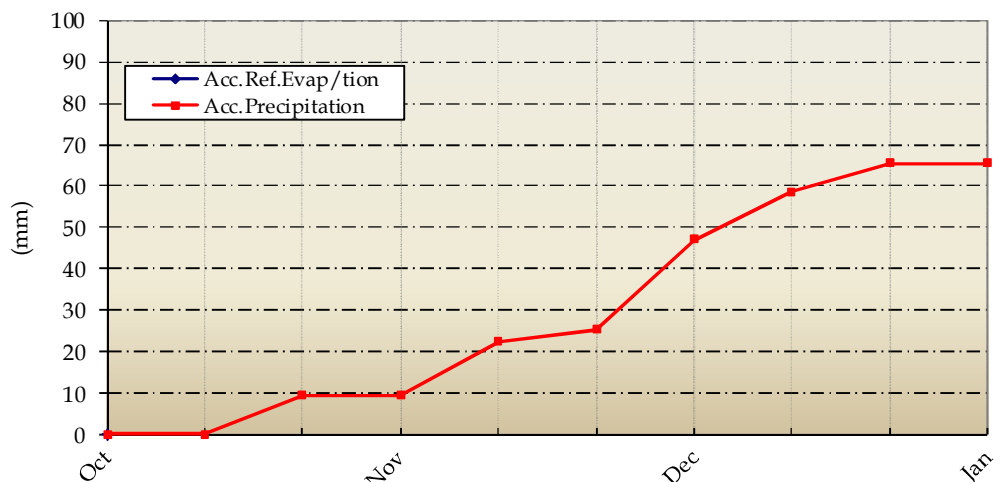
Tanagra

3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.1	12.0	14.8	15.1	16.8	16.4	19.0	15.2	16.6	15.6	15.0	15.1	13.3	12.4
	Min	6.6	0.1	2.4	1.6	2.4	2.5	2.4	3.8	6.5	3.0	3.2	3.1	5.1	4.5
Relative Humidity	Max	84	96	96	96	98	98	99	98	98	99	100	97	95	94
	Min	59	53	44	50	41	47	51	63	56	62	63	54	56	54
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.3	7.2	6.9	5.5	7.4	7.4	7.4	3.2	4.3	6.6	3.9	5.6	3.0	3.5
Precipitation														7.2	31.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	20.7
Growing Degrees	5	3.4	1.1	3.6	3.4	4.6	4.5	5.7	4.5	6.6	4.3	4.1	45.6	47.2	37.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	1.6	0.0	0.0	2.3	12.9	8.6

3rd 10-day period (21-31/12/2022)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	-
Number of Rainy Days	0.0	4.0	3.6
Number of Dry Days	17.0	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



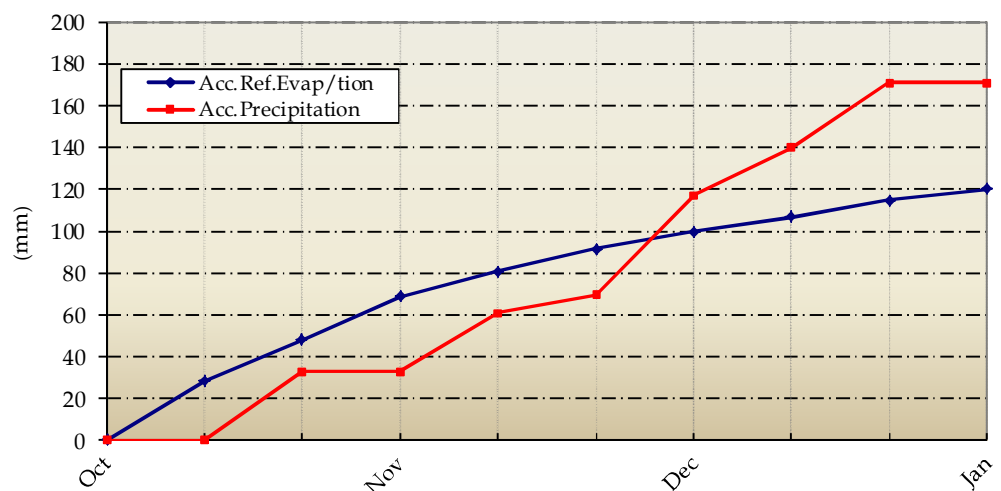
Tripoli

3rd 10-day period (21-31/12/2022)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.3	12.5	11.4	14.3	15.9	16.9	17.8	16.8	13.2	14.2	13.1	14.3	11.2	10.0
	Min	-5.0	-5.0	-2.5	-2.8	-1.4	-2.2	-1.9	-1.7	4.9	-1.2	-1.4	-1.8	3.0	0.8
Relative Humidity	Max	99	100	100	100	100	100	100	100	100	100	100	100	98	96
	Min	40	45	59	47	38	43	50	44	61	49	63	49	62	56
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1
Sunshine Duration		6.4	6.4	2.6	6.4	6.8	6.8	6.7	6.8	2.6	6.2	3.0	5.5	2.8	4.0
Precipitation				0.0	0.0	0.0	0.0	0.0	0.0				0.0	24.7	31.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	77.0
Growing Degrees	5	0.0	0.0	0.0	0.8	2.3	2.4	3.0	2.6	4.1	1.5	0.9	17.3	25.9	14.3
	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	0.2	1.8

3rd 10-day period (21-31/12/2022)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.3	-	6.5
Precipitation - Reference Evapotranspiration	-5.3	-	25.4
Number of Rainy Days	0.0	5.0	3.8
Number of Dry Days	13.0	5.0	-

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<sub>n</sub> 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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Issue Editors :

Papakrivou Anastasia

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