



# AGROMETEOROLOGICAL BULLETIN

*December 2021*  
*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



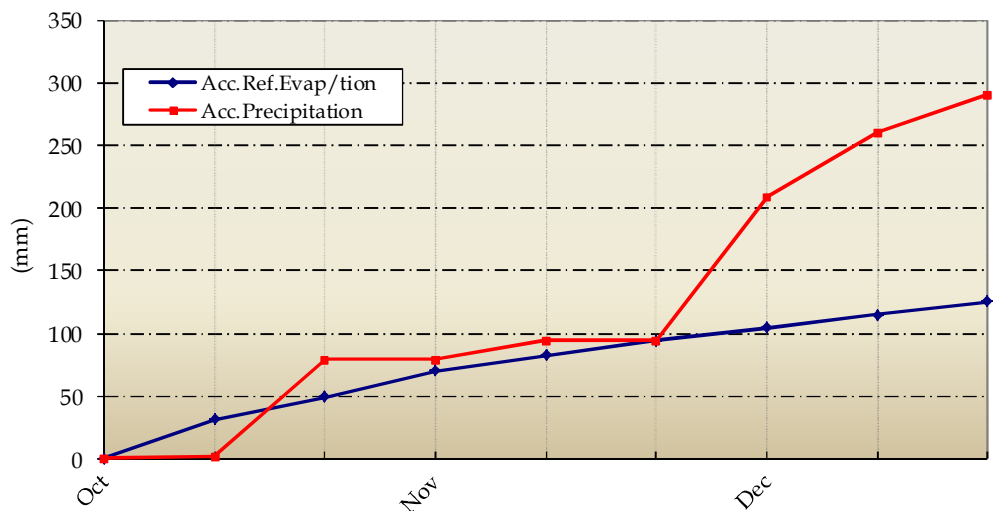
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2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.4	15.0	11.4	7.4	10.6	8.4	7.0	7.8	9.0	12.0	10.4	12.8	9.9
	Min	12.0	11.4	7.4	5.6	3.0	4.2	3.4	2.4	1.0	-2.0	4.8	6.0	2.4
Relative Humidity	Max	93	93	92	91	80	90	93	87	82	89	89	91	91
	Min	61	83	78	65	45	53	71	51	36	41	58	64	64
Soil Temperature at 10 cm	06 UTC	11.6	12.6	11.2	8.6	6.6	7.4	6.6	6.0	4.0	4.2	7.9	9.8	6.9
	12 UTC	12.6	12.6	11.2	8.6	8.0	7.6	7.4	6.6	5.8	6.8	8.7	10.7	7.9
Sunshine Duration		0.0	0.0	0.0	0.0	4.5	0.0	0.0	5.6	8.1	7.1	2.5	4.0	2.9
Precipitation		0.2	7.6	10.8	9.4		0.0	0.3	2.1			30.4	55.9	18.5
Evaporation		1.5	0.9	5.6	0.5	1.1	1.5	0.1	0.4	0.0	0.0	11.6	17.0	19.7
Growing Degrees	5	8.7	8.2	4.4	1.5	1.8	1.3	0.2	0.1	0.0	0.0	26.2	44.4	20.8
	10	3.7	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	8.3	3.5

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.8	8.7	6.6
Precipitation - Reference Evapotranspiration	20.6	47.2	11.9
Number of Rainy Days	6.0	4.0	2.5
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

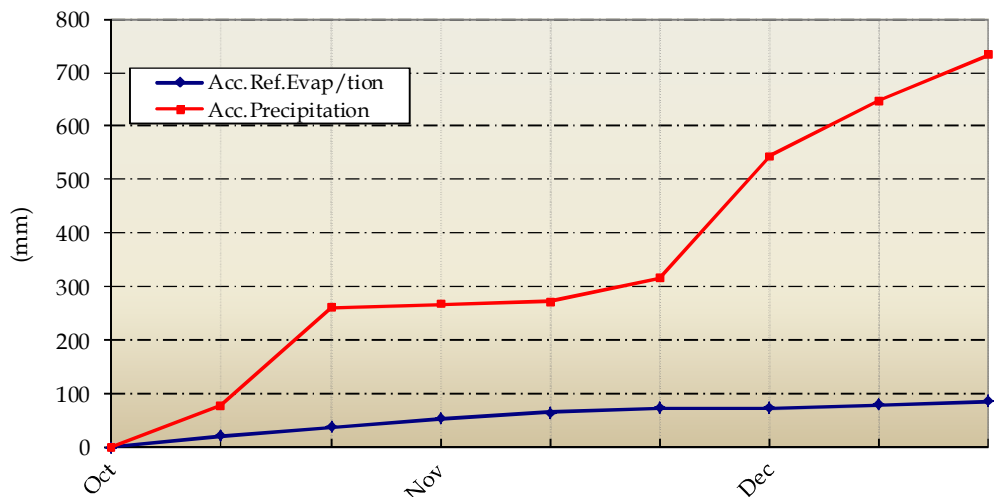


2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.3	15.6	12.7	12.4	15.0	14.3	14.9	9.9	10.3	14.6	13.5	17.2	15.1
	Min	9.2	9.6	8.6	3.3	4.3	2.0	3.5	4.1	1.7	1.7	4.8	6.7	6.6
Relative Humidity	Max	99	94	96	98	96	97	97	84	81	93	94	97	92
	Min	60	55	61	54	46	55	51	48	42	58	53	62	56
Soil Temperature at 10 cm	06 UTC	14.4	12.6	12.4	10.4	10.0	9.6	10.0	10.0	9.8	7.6	10.7	12.1	10.4
	12 UTC	13.0	15.2	13.8	13.0	14.0	10.6	11.5	9.7	8.6	8.5	11.8	12.7	12.4
Sunshine Duration		0.0	3.5	2.7	6.6	6.5	3.6	7.2	1.0	6.9	5.2	4.3	4.0	4.0
Precipitation		69.2	8.6	4.0					4.5			86.3	56.2	33.8
Evaporation		0.0	0.3	1.2	0.8	0.6	1.0	0.8	2.0	1.0	5.0	12.7	17.9	35.4
Growing Degrees	5	7.3	7.6	5.7	2.9	4.7	3.2	4.2	2.0	1.0	3.2	41.5	69.6	49.9
	10	2.3	2.6	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	19.7	14.2

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.3	-	8.9
Precipitation - Reference Evapotranspiration	81.0	-	24.9
Number of Rainy Days	4.0	4.0	4.0
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



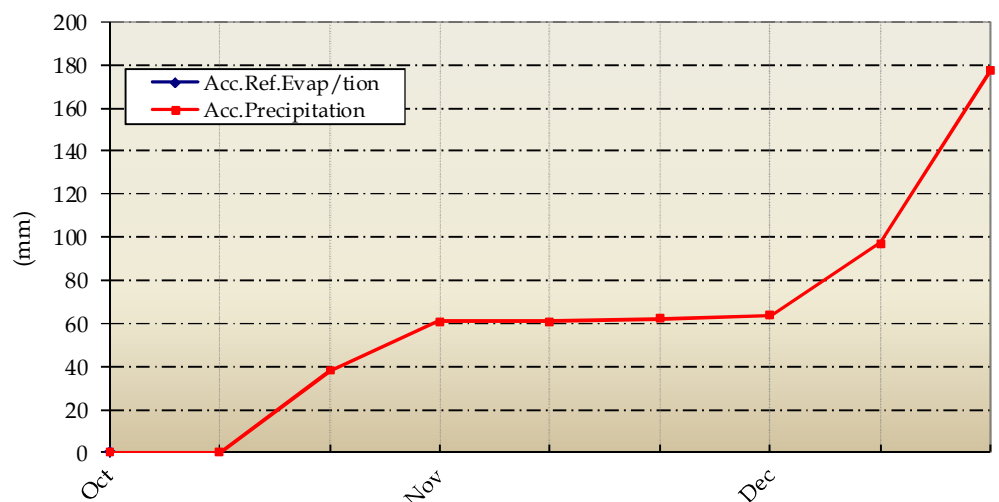
Iraklio

2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	19.8	17.6	15.4	13.8	12.8	11.2	11.8	12.0	14.8	14.9	17.1	16.8
	Min	13.6	15.0	11.2	10.0	9.4	11.6	9.4	7.0	8.8	7.8	10.4	13.5	10.7
Relative Humidity	Max	76	83	85	95	95	83	95	95	86	84	88	89	86
	Min	45	59	59	57	63	65	77	73	58	52	61	71	61
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		2.1	4.9	4.6	4.7	1.6	0.0	0.0	1.2	1.8	8.2	2.9	1.8	3.6
Precipitation			0.9	0.4	14.0	15.3	4.7	15.9	5.7	21.6	1.7	80.2	31.8	29.7
Evaporation		1.3	1.3	3.2	0.0	0.4	2.7	0.2	1.2	1.2	0.7	12.2	14.3	30.0
Growing Degrees	5	11.5	12.4	9.4	7.7	6.6	7.2	5.3	4.4	5.4	6.3	76.2	102.9	81.5
	10	6.5	7.4	4.4	2.7	1.6	2.2	0.3	0.0	0.4	1.3	26.8	52.9	35.7

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	9.0	6.0	4.3
Number of Dry Days	1.0	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

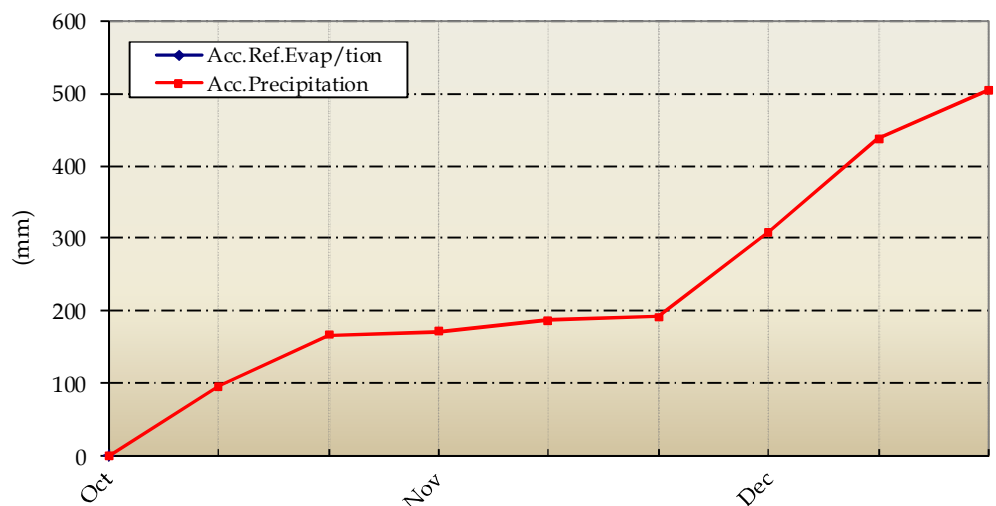


2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.1	9.3	8.0	10.8	13.1	9.9	9.2	6.3	8.6	11.9	9.7	11.8	9.6
	Min	3.2	5.3	0.9	-1.4	2.7	-2.1	-4.8	1.3	0.8	-6.5	-0.1	2.4	1.0
Relative Humidity	Max	100	100	96	96	98	98	98	45	90	97	92	100	98
	Min	93	78	51	44	47	47	39	38	26	49	51	69	65
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.0
Sunshine Duration		0.0	0.0	5.5	6.3	6.5	6.9	6.6	7.0	7.3	7.5	5.4	2.6	1.9
Precipitation		55.7	10.6	1.0								67.3	20.5	41.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	
Growing Degrees	5	1.7	2.3	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	6.9	22.6	12.6
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.8

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	4.0
Precipitation - Reference Evapotranspiration	-	-	37.2
Number of Rainy Days	3.0	3.0	3.6
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

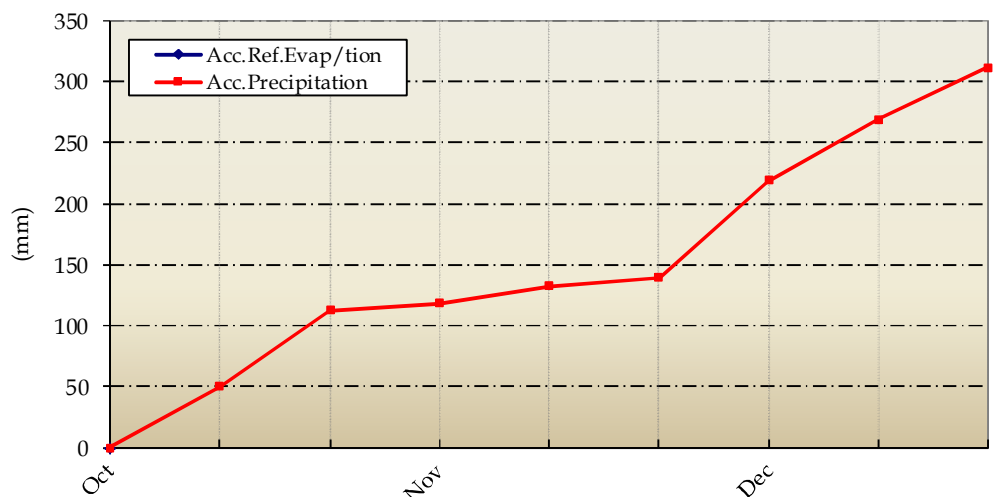


2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	15.7	13.9	14.7	16.9	15.3	15.5	10.3	12.6	15.9	14.8	17.7	16.0
	Min	9.2	10.7	7.8	3.8	3.4	4.1	6.9	3.0	5.2	-0.4	5.4	7.1	6.4
Relative Humidity	Max	98	97	98	96	90	89	94	95	86	86	93	100	92
	Min	66	90	61	48	40	57	44	43	71	57	58	68	56
Soil Temperature at 10 cm	06 UTC	-	-	12.2	12.0	11.6	11.0	11.4	-	-	7.0	10.9	11.5	11.2
	12 UTC	-	-	12.6	11.8	10.8	11.4	11.6	10.6	-	8.2	11.0	12.9	12.0
Sunshine Duration		0.0	1.3	2.6	0.0	6.1	3.7	7.0	7.0	8.6	7.0	4.3	4.5	4.3
Precipitation		29.5	6.1	4.0			0.0	0.0	3.0			42.6	51.2	40.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	13.4	22.0
Growing Degrees	5	8.2	8.2	5.9	4.3	5.2	4.7	6.2	1.7	3.9	2.8	50.9	74.1	54.5
	10	3.2	3.2	0.9	0.0	0.2	0.0	1.2	0.0	0.0	0.0	8.6	24.4	15.6

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.1
Precipitation - Reference Evapotranspiration	-	-	34.2
Number of Rainy Days	4.0	4.0	4.1
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



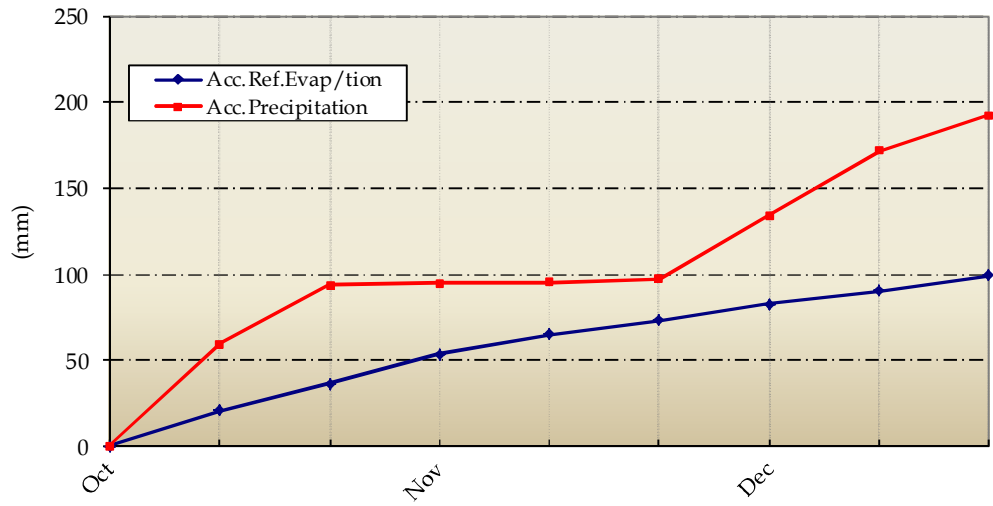
Larisa

2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	14.4	9.8	9.6	10.8	11.0	10.6	9.1	8.6	12.0	11.0	13.2	10.4
	Min	3.8	4.8	5.0	4.8	5.4	3.0	-0.2	3.4	-0.2	-3.4	2.6	5.6	2.0
Relative Humidity	Max	100	100	98	91	85	80	93	87	91	96	92	98	96
	Min	73	64	50	56	54	45	51	40	33	44	51	70	64
Soil Temperature at 10 cm	06 UTC	9.2	9.0	9.6	8.4	8.4	8.0	6.8	6.6	5.2	5.0	7.6	-	7.8
	12 UTC	9.8	10.2	9.8	9.0	9.2	10.4	7.4	7.0	6.6	5.6	8.5	-	8.1
Sunshine Duration		0.0	5.0	4.4	1.7	3.9	7.6	7.4	3.3	7.2	6.9	4.7		2.7
Precipitation		15.3	1.8	2.8					0.9			20.8	20.2	18.0
Evaporation		-	0.0	0.2	1.6	2.6	2.2	2.3	2.3	0.1	3.4	-	8.8	16.3
Growing Degrees	5	4.1	4.6	2.4	2.2	3.1	2.0	0.2	1.3	0.0	0.0	19.9	44.0	19.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	1.5

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.1	-	7.0
Precipitation - Reference Evapotranspiration	11.7	-	11.0
Number of Rainy Days	4.0	5.0	3.4
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





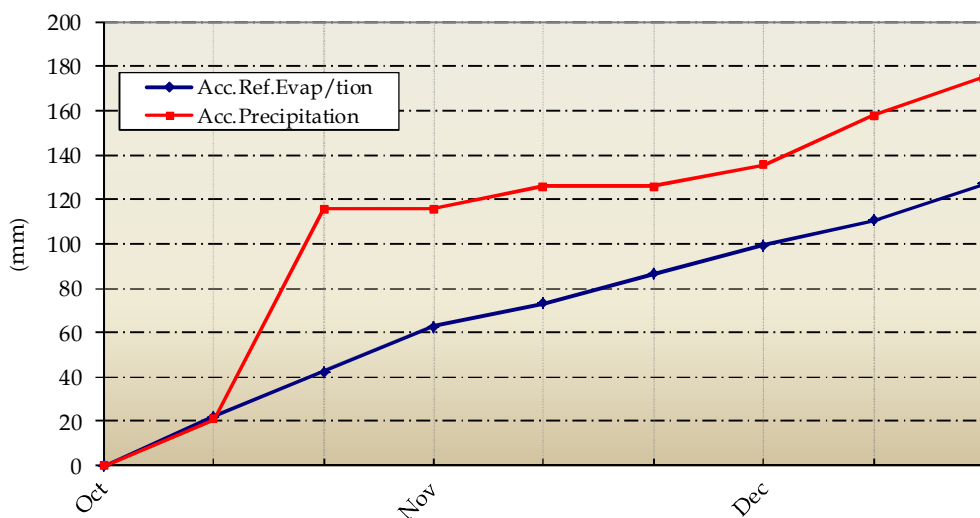
Mikra

2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	12.7	10.2	8.6	9.6	9.8	11.3	10.2	8.2	11.6	10.9	12.9	10.4
	Min	6.0	8.4	4.4	4.8	5.6	1.7	6.4	5.7	3.1	1.8	4.8	7.2	3.5
Relative Humidity	Max	96	91	87	85	72	81	74	59	75	81	80	96	91
	Min	65	63	74	68	56	56	53	41	46	42	56	72	61
Soil Temperature at 10 cm	06 UTC	10.4	11.0	9.0	8.0	7.8	7.4	7.4	7.4	6.4	6.4	8.1	10.9	7.0
	12 UTC	11.2	11.2	8.8	8.4	8.2	8.0	8.0	7.8	6.6	8.8	8.7	11.6	8.4
Sunshine Duration		0.0	4.8	0.0	0.6	7.3	8.0	5.6	5.0	6.4	7.8	4.6	2.1	3.3
Precipitation		4.7	1.9	6.2	3.3	1.1						17.2	50.1	17.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	15.9
Growing Degrees	5	6.4	5.6	2.3	1.7	2.6	0.8	3.9	3.0	0.7	1.7	28.5	50.7	24.3
	10	1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	6.5	2.9

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.2	6.8	4.2
Precipitation - Reference Evapotranspiration	1.0	43.3	13.2
Number of Rainy Days	5.0	5.0	2.9
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





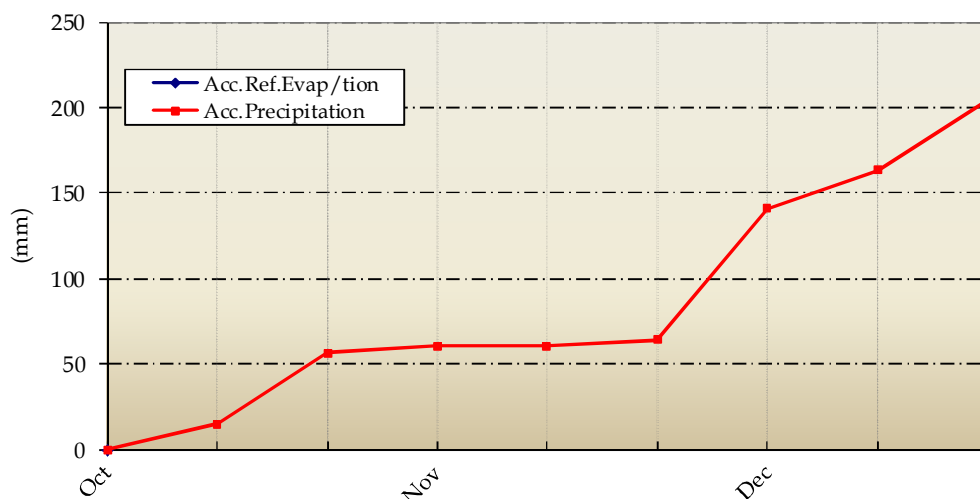
Tanagra

2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	17.8	10.4	7.6	8.5	9.9	10.8	5.6	7.4	12.2	10.7	13.4	12.4
	Min	6.1	12.7	6.8	5.4	7.1	7.0	1.6	3.4	2.6	-2.8	5.0	8.1	4.7
Relative Humidity	Max	98	91	90	95	95	86	79	98	83	96	91	99	95
	Min	51	49	65	69	69	51	43	52	53	41	54	74	59
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	5.2	4.3	0.0	0.0	1.4	6.4	0.0	2.6	7.4	2.7	0.6	2.9
Precipitation		2.2	8.7	0.0	8.6	6.3	1.1		13.7	1.4		42.0	44.7	22.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	19.1
Growing Degrees	5	6.5	10.3	3.6	1.5	2.8	3.5	1.2	0.0	0.0	0.0	29.3	57.4	32.8
	10	1.5	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	9.1	6.3

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	7.0	5.0	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



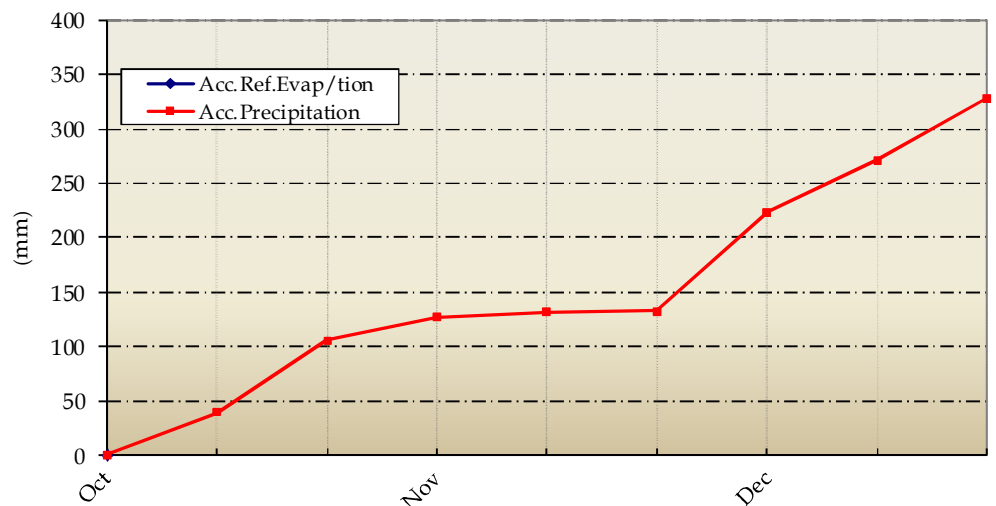
Tripoli

2nd 10-day period (11-20/12/2021)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.4	11.0	8.9	9.4	9.6	9.8	9.6	2.7	4.5	12.3	8.6	13.4	10.2
	Min	5.3	6.7	5.6	-2.6	-1.9	-1.0	-0.4	-0.5	-1.0	-5.6	0.5	3.0	1.0
Relative Humidity	Max	98	93	98	100	99	99	99	100	98	96	98	99	96
	Min	77	73	52	48	53	58	53	76	51	37	58	62	59
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.9
Sunshine Duration		0.0	2.3	4.3	6.7	5.6	2.7	5.2	1.0	7.0	6.3	4.1	2.7	3.5
Precipitation		37.5	12.1	0.3					5.7	1.1	0.0	56.7	22.7	25.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	44.5
Growing Degrees	5	1.9	3.9	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	-	12.1
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.5

2nd 10-day period (11-20/12/2021)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.5	-	4.2
Precipitation - Reference Evapotranspiration	51.2	-	21.6
Number of Rainy Days	5.0	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





◆ **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.

**Measurements 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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