



# AGROMETEOROLOGICAL BULLETIN

*December 2020*  
*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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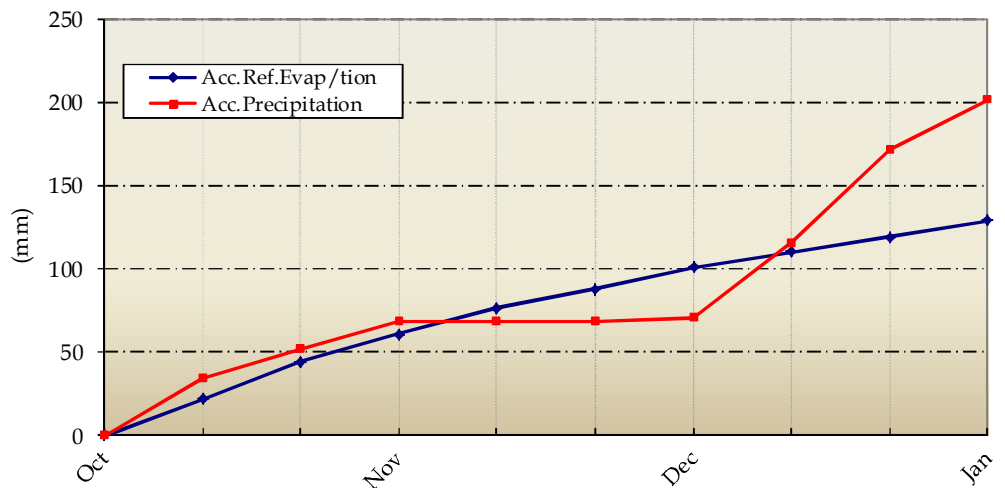
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[www.hnms.gr](http://www.hnms.gr)  
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[www.meteo.gov.gr](http://www.meteo.gov.gr)  
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Alexandroupoli

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.6	10.0	13.0	15.4	16.4	16.4	15.4	17.4	18.4	16.6	17.0	15.1	11.8	9.8
	Min	5.6	2.6	3.2	7.2	10.0	12.4	12.6	12.6	12.0	14.8	14.4	9.8	5.9	2.4
Relative Humidity	Max	80	88	91	98	95	91	93	91	90	95	83	90	87	-
	Min	54	58	67	80	75	82	83	68	59	77	70	70	56	-
Soil Temperature at 10 cm	06 UTC	7.4	7.2	7.2	8.4	10.2	11.6	12.6	12.7	12.2	13.2	13.2	10.5	9.2	6.0
	12 UTC	8.4	8.2	8.0	10.2	11.4	12.4	13.0	13.2	13.4	13.6	13.6	11.4	10.3	7.2
Sunshine Duration		0.5	1.2	2.4	3.2	0.8	0.4	0.2	4.0	5.6	1.9	3.3	2.1	3.2	2.6
Precipitation								2.2	27.2		1.0	0.0	30.4	37.4	24.7
Evaporation		2.2	2.1	0.3	0.6	0.1	0.2	1.5	2.4	2.9	1.5	1.1	14.9	13.6	12.0
Growing Degrees	5	3.1	1.3	3.1	6.3	8.2	9.4	9.0	10.0	10.2	10.7	10.7	82.0	42.9	24.9
	10	0.0	0.0	0.0	1.3	3.2	4.4	4.0	5.0	5.2	5.7	5.7	34.5	16.2	4.2

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.2	11.7	8.4
Precipitation - Reference Evapotranspiration	20.2	25.7	16.3
Number of Rainy Days	3.0	4.0	2.9
Number of Dry Days	12.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



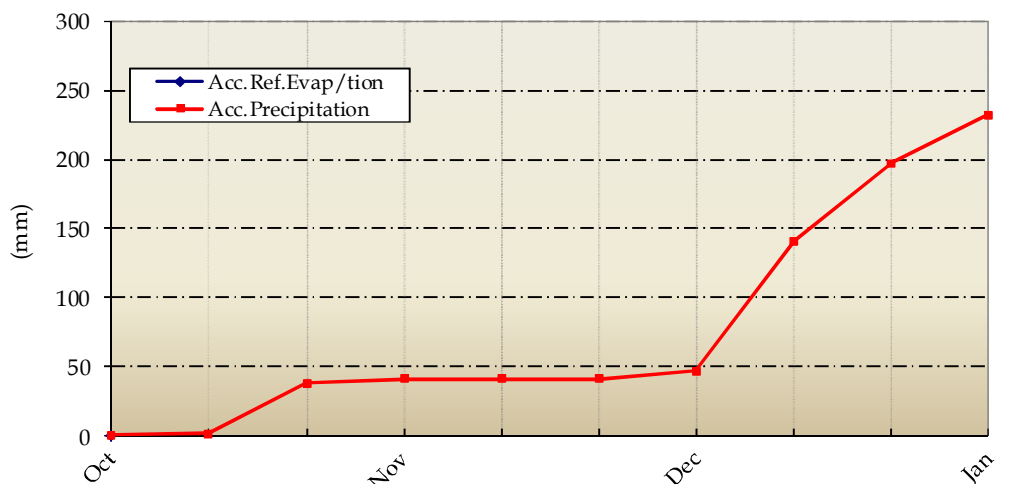
Andravida

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.0	17.2	17.5	18.2	19.0	18.4	17.4	16.8	18.0	18.8	18.0	17.9	15.1	14.4
	Min	9.6	4.3	9.0	8.6	10.2	14.2	11.2	8.1	12.3	12.1	10.4	10.0	6.4	6.0
Relative Humidity	Max	94	97	95	94	94	93	97	92	86	91	97	94	86	-
	Min	51	57	60	57	68	72	62	63	49	53	51	58	45	-
Soil Temperature at 10 cm	06 UTC	12.0	11.2	11.4	11.8	12.6	13.6	14.0	12.2	12.6	13.6	13.2	12.6	11.5	9.0
	12 UTC	13.0	12.0	12.6	13.0	13.0	14.4	14.2	12.4	14.6	15.8	13.8	13.5	12.4	10.5
Sunshine Duration		5.4	3.2	4.7	5.3	0.8	0.8	0.1	3.8	3.7	5.5	5.4	3.5	4.0	4.0
Precipitation				0.3			5.3	11.2	3.2	1.1	1.0	13.0	35.1	66.2	44.5
Evaporation		1.8	1.8	1.8	2.1	2.9	5.1	0.2	2.1	0.7	0.2	-	-	20.8	21.9
Growing Degrees	5	8.8	5.8	8.3	8.4	9.6	11.3	9.3	7.5	10.2	10.5	9.2	98.7	63.2	57.7
	10	3.8	0.8	3.3	3.4	4.6	6.3	4.3	2.5	5.2	5.5	4.2	43.7	18.5	13.8

3rd 10-day period (21-31/12/2020)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	9.5
Precipitation - Reference Evapotranspiration	-	35.0
Number of Rainy Days	7.0	5.0
Number of Dry Days	8.0	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



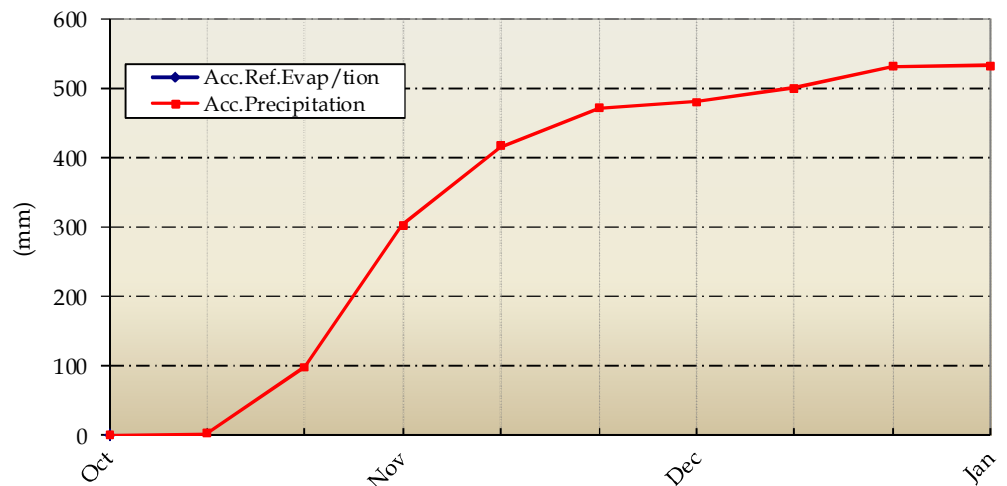
Iraklio

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.0	15.0	16.2	17.0	20.0	20.8	19.4	19.0	19.8	19.2	20.2	18.3	15.5	15.9
	Min	13.0	14.2	13.8	9.0	9.2	14.0	15.0	13.8	11.0	11.8	12.2	12.5	11.3	10.0
Relative Humidity	Max	89	83	92	95	92	89	83	91	86	83	82	88	89	-
	Min	70	69	71	64	62	58	60	66	53	53	51	62	60	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.1	0.4	3.9	8.2	6.1	8.1	5.0	6.1	8.0	8.2	8.4	5.7	2.5	3.8
Precipitation		0.3							0.1				0.4	96.3	34.5
Evaporation		2.5	2.6	2.6	0.4	1.0	2.1	2.6	2.9	1.3	2.4	2.4	22.8	36.3	28.1
Growing Degrees	5	9.0	9.6	10.0	8.0	9.6	12.4	12.2	11.4	10.4	10.5	11.2	114.3	92.6	87.3
	10	4.0	4.6	5.0	3.0	4.6	7.4	7.2	6.4	5.4	5.5	6.2	59.3	38.8	33.4

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	34.5
Number of Rainy Days	2.0	8.0	4.5
Number of Dry Days	0.0	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



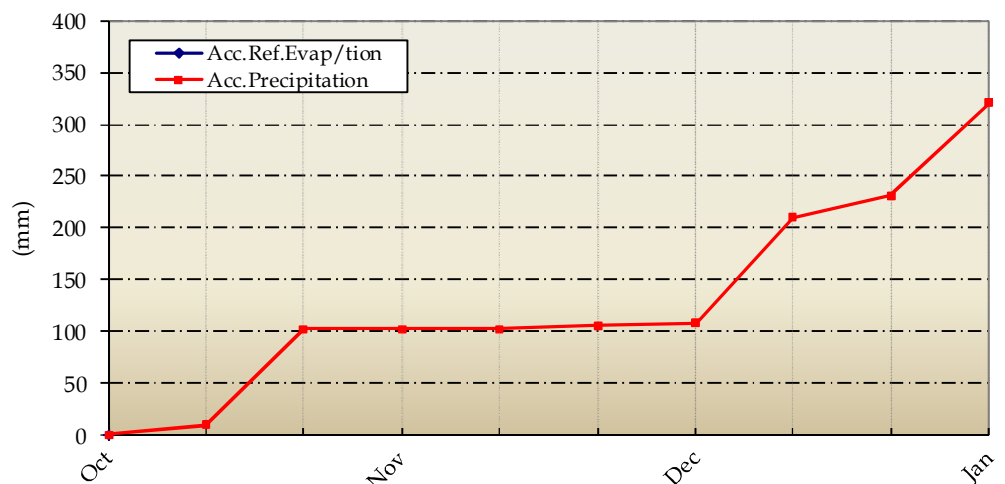
Ioannina

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.8	14.9	13.3	12.1	13.8	13.5	12.5	10.2	10.8	14.1	13.3	12.8	10.6	8.8
	Min	2.6	3.8	2.5	0.4	7.9	9.5	7.1	5.0	8.1	9.0	7.6	5.8	2.6	0.9
Relative Humidity	Max	100	100	100	100	97	94	97	94	100	100	100	98	86	-
	Min	77	60	66	74	81	79	74	78	90	70	64	74	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7
Sunshine Duration		4.0	4.3	4.2	-	0.5	0.0	0.0	0.8	0.0	2.7	4.1	2.1	3.3	2.4
Precipitation						0.0	6.5	32.9	21.9	15.7	1.2	10.9	89.1	68.2	50.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	9.0
Growing Degrees	5	2.2	4.4	2.9	1.3	5.9	6.5	4.8	2.6	4.5	6.6	5.5	46.9	-	14.1
	10	0.0	0.0	0.0	0.0	0.9	1.5	0.0	0.0	0.0	1.6	0.5	4.4	-	0.9

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.2
Precipitation - Reference Evapotranspiration	-	-	44.4
Number of Rainy Days	6.0	3.0	4.3
Number of Dry Days	12.0	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



# Agrometeorological Data

## December 2020

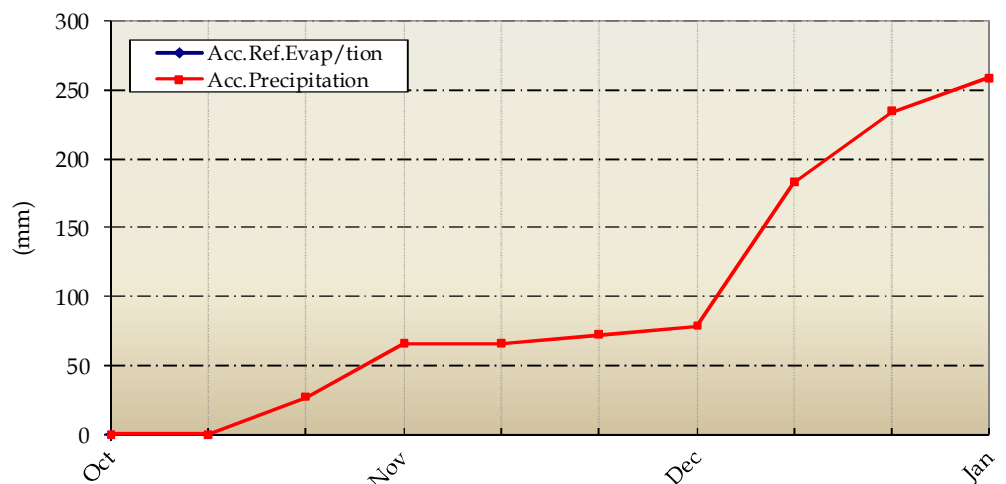
Kalamata

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	18.1	18.9	19.4	18.8	19.6	18.2	16.4	18.0	17.7	16.9	18.3	15.4	15.2
	Min	9.1	5.8	5.5	6.2	10.4	9.3	11.5	8.4	8.0	7.9	9.2	8.3	6.6	6.1
Relative Humidity	Max	90	91	100	94	96	100	90	99	100	100	100	96	81	-
	Min	41	46	58	52	68	57	64	61	59	67	70	58	44	-
Soil Temperature at 10 cm	06 UTC	11.8	10.5	11.0	11.0	12.2	13.0	13.8	12.0	12.2	12.4	12.8	12.1	10.9	10.0
	12 UTC	13.0	12.0	12.0	12.0	13.0	13.8	14.2	13.0	13.0	12.8	16.0	13.2	11.6	10.9
Sunshine Duration		7.6	5.3	6.7	8.0	2.0	3.8	1.2	4.5	3.5	2.4	3.9	4.4	4.4	3.9
Precipitation						0.0	1.5	10.5	3.0	0.4	1.5	7.7	24.6	38.1	41.5
Evaporation		2.4	0.8	0.4	1.2	1.7	0.1	0.1	3.7	0.7	0.2	1.7	13.0	19.4	22.7
Growing Degrees	5	9.1	7.0	7.2	7.8	9.6	9.5	9.9	7.4	8.0	7.8	8.1	91.2	65.9	62.1
	10	4.1	2.0	2.2	2.8	4.6	4.5	4.9	2.4	3.0	2.8	3.1	36.2	17.3	14.5

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	16.7	11.8
Precipitation - Reference Evapotranspiration	-	21.4	29.7
Number of Rainy Days	6.0	2.0	4.8
Number of Dry Days	11.0	7.0	-

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Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



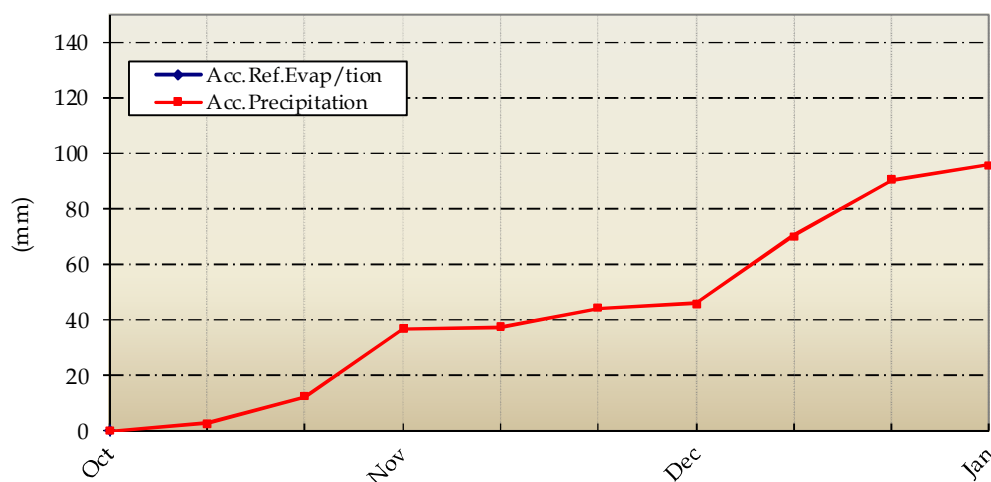
Larisa

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.3	13.8	12.6	13.2	14.8	14.4	15.9	15.4	18.2	18.2	16.2	15.0	11.5	10.0
	Min	9.0	7.4	1.8	1.8	1.8	4.2	7.6	3.4	3.0	7.2	6.0	4.8	4.2	1.1
Relative Humidity	Max	98	98	100	100	100	97	97	97	95	90	94	97	84	-
	Min	77	66	75	72	72	79	64	53	45	50	54	64	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	-	2.9	3.0
Precipitation		1.7						2.0				1.6	5.3	23.5	14.0
Evaporation		1.7	1.0	0.1	0.1	0.2	0.5	0.1	0.5	1.7	3.7	0.5	10.1	15.5	7.2
Growing Degrees	5	5.7	5.6	2.2	2.5	3.3	4.3	6.8	4.4	5.6	7.7	6.1	54.1	31.8	18.9
	10	0.7	0.6	0.0	0.0	0.0	0.0	1.8	0.0	0.6	2.7	1.1	7.4	3.4	2.2

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	13.8	6.4
Precipitation - Reference Evapotranspiration	-	9.7	7.6
Number of Rainy Days	3.0	2.0	3.0
Number of Dry Days	5.0	3.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



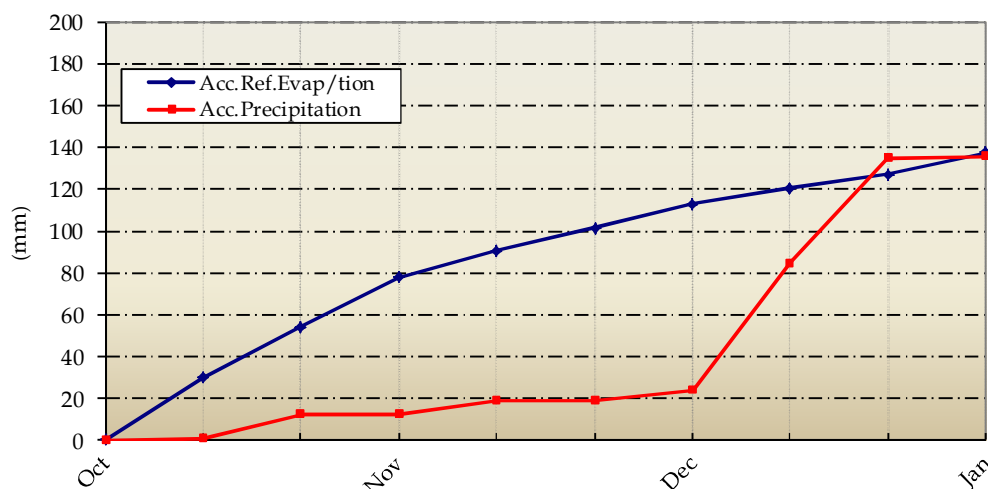
Mikra

3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.0	12.2	13.7	13.9	13.0	10.8	17.8	16.4	18.2	18.4	17.7	14.9	12.2	10.2
	Min	9.4	7.2	7.0	3.4	5.2	7.0	7.8	8.0	11.0	11.1	11.6	8.1	6.9	2.2
Relative Humidity	Max	91	97	96	96	100	100	100	93	81	84	90	93	72	-
	Min	75	61	66	77	86	93	67	48	47	45	43	64	49	-
Soil Temperature at 10 cm	06 UTC	11.8	11.0	11.0	9.4	9.8	10.4	10.2	10.8	11.6	11.2	11.9	10.8	9.0	5.3
	12 UTC	12.2	11.6	11.8	10.8	11.0	10.6	11.4	12.0	13.2	12.4	12.4	11.8	10.1	6.8
Sunshine Duration		0.1	0.8	7.9	5.2	0.5	0.0	0.0	8.1	5.5	7.4	5.5	3.7	3.6	3.0
Precipitation								0.9				0.2	1.1	2.6	14.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	13.5
Growing Degrees	5	5.7	4.7	5.4	3.7	4.1	3.9	7.8	7.2	9.6	9.8	9.7	71.4	50.5	22.3
	10	0.7	0.0	0.4	0.0	0.0	0.0	2.8	2.2	4.6	4.8	4.7	20.1	14.1	3.0

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.2	23.9	8.7
Precipitation - Reference Evapotranspiration	-9.1	-21.3	6.2
Number of Rainy Days	2.0	2.0	3.0
Number of Dry Days	9.0	7.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



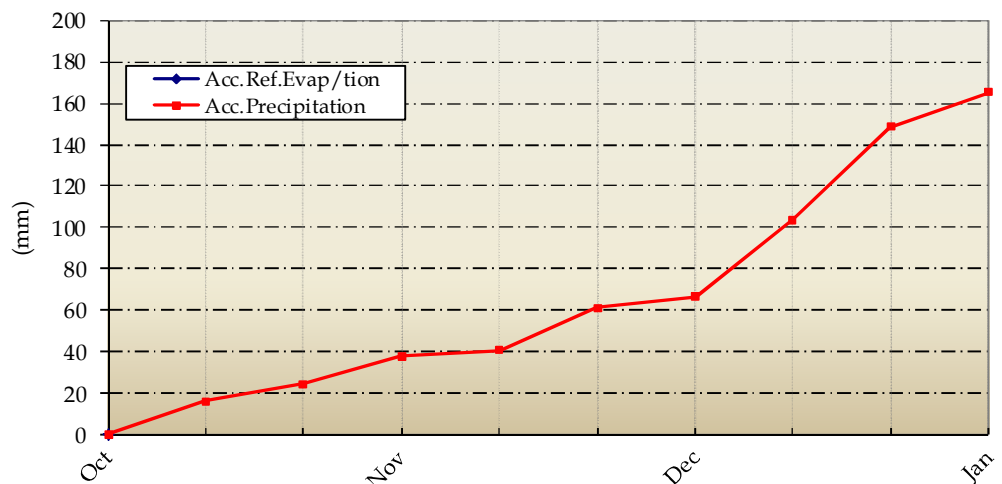


3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.2	11.1	15.3	19.2	19.6	19.4	17.3	17.0	18.4	18.3	17.5	16.8	11.6	13.1
	Min	9.0	8.4	2.4	1.7	7.2	6.9	14.9	6.4	6.2	13.8	8.5	7.8	6.2	4.6
Relative Humidity	Max	99	100	100	100	97	97	99	94	71	74	95	93	88	-
	Min	68	90	55	46	42	50	55	37	35	45	48	52	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	0.0	6.3	6.9	6.7	4.8	2.1	7.0	7.7	8.2	3.8	4.9	1.9	
Precipitation			0.2					16.8					17.0	113.2	24.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	4.8
Growing Degrees	5	5.6	4.8	3.9	5.5	8.4	8.2	11.1	6.7	7.3	11.1	8.0	80.4	45.8	
	10	0.6	0.0	0.0	0.5	3.4	3.2	6.1	1.7	2.3	6.1	3.0	26.8	14.3	

3rd 10-day period (21-31/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	24.3
Number of Rainy Days	2.0	6.0	
Number of Dry Days	1.0	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

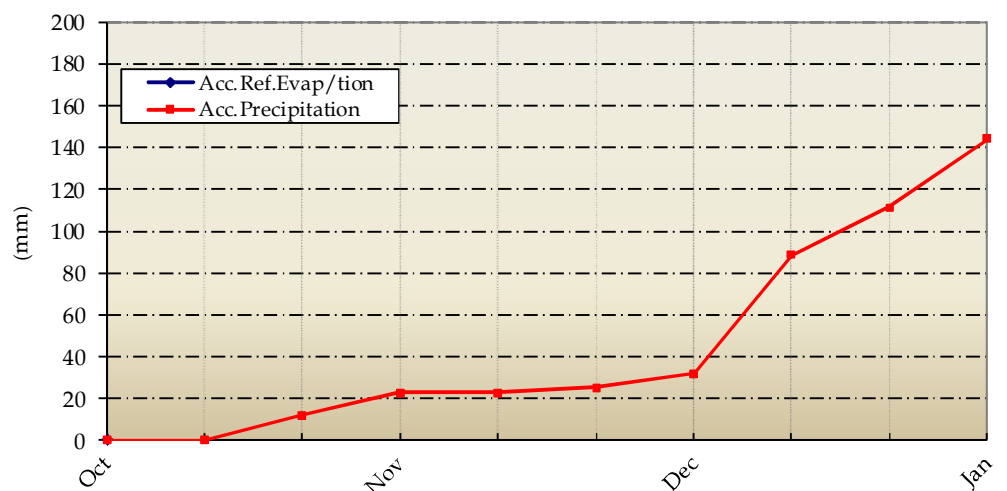


3rd 10-day period (21-31/12/2020)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.9	12.3	14.5	16.0	13.7	14.7	12.7	10.7	12.9	12.2	12.1	13.0	9.6	9.8
	Min	4.4	-0.5	-0.7	-1.8	4.3	9.5	8.6	5.4	7.6	5.8	6.4	4.5	1.8	1.5
Relative Humidity	Max	99	100	100	100	94	96	99	93	96	97	98	97	96	-
	Min	69	58	56	55	64	62	71	67	61	71	59	63	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	5.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0
Sunshine Duration		1.0	2.4	4.5	6.5	1.7	2.7	1.1	4.4	3.0	2.7	4.6	3.1	3.2	3.7
Precipitation			0.0	0.0	0.0	0.0	1.0	15.8	6.2	0.2	2.4	7.3	32.9	48.6	36.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	9.0
Growing Degrees	5	2.7	0.9	1.9	2.1	4.0	7.1	5.7	3.1	5.3	4.0	4.3	40.9	20.8	18.6
	10	0.0	0.0	0.0	0.0	0.0	2.1	0.7	0.0	0.3	0.0	0.0	3.0	5.1	1.8

3rd 10-day period (21-31/12/2020)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	8.4
Precipitation - Reference Evapotranspiration	-	28.4
Number of Rainy Days	6.0	4.5
Number of Dry Days	11.0	-

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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ΥΠΗΡΕΣΙΑ

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