



# AGROMETEOROLOGICAL BULLETIN

*November 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



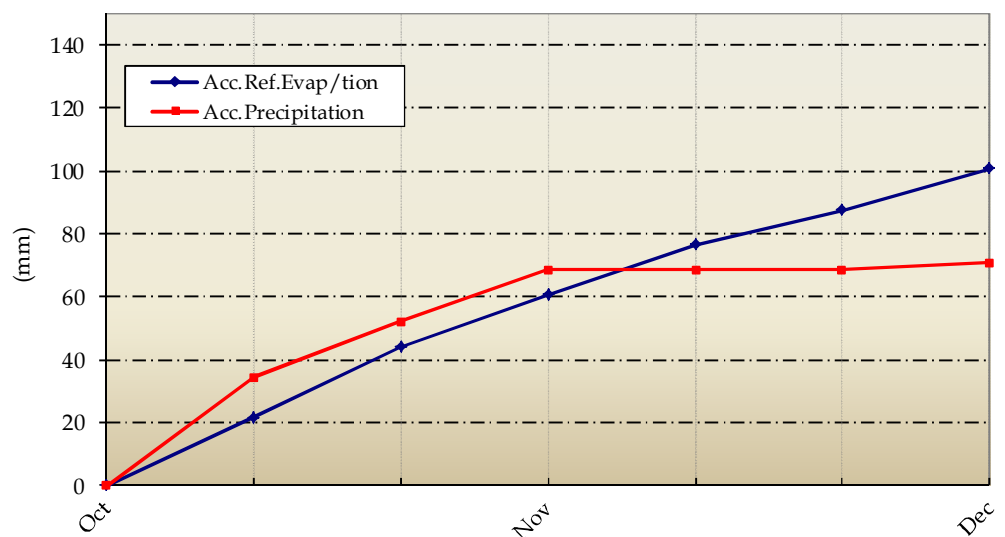
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3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	13.4	14.4	13.4	13.8	15.4	16.8	16.0	16.4	14.4	14.7	16.8	12.8
	Min	8.2	7.6	-1.2	-1.4	7.8	0.6	0.4	-2.0	5.8	6.2	3.2	10.9	5.0
Relative Humidity	Max	59	59	88	92	57	86	86	91	90	90	80	94	-
	Min	42	32	45	39	41	38	40	47	69	53	45	69	-
Soil Temperature at 10 cm	06 UTC	11.2	10.4	8.8	8.6	9.2	9.0	8.4	7.4	9.6	11.4	9.4	13.7	8.6
	12 UTC	12.2	12.4	11.0	10.2	11.0	10.6	10.8	10.2	11.2	12.4	11.2	15.0	10.3
Sunshine Duration		0.9	7.8	8.5	6.7	8.4	8.6	8.3	8.4	1.3	2.6	6.2	2.8	3.2
Precipitation											0.2	0.2	39.3	32.9
Evaporation		3.6	0.0	0.0	0.0	4.6	3.6	0.0	0.0	2.2	2.4	16.4	14.6	16.3
Growing Degrees	5	5.6	5.5	1.6	1.0	5.8	3.0	3.6	2.0	6.1	5.3	39.5	88.8	42.5
	10	0.6	0.5	0.0	0.0	0.8	0.0	0.0	0.0	1.1	0.3	3.3	38.8	11.5

3rd 10-day period (21-30/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.0	9.6	9.6
Precipitation - Reference Evapotranspiration	-12.8	29.7	23.3
Number of Rainy Days	1.0	6.0	3.3
Number of Dry Days	11.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

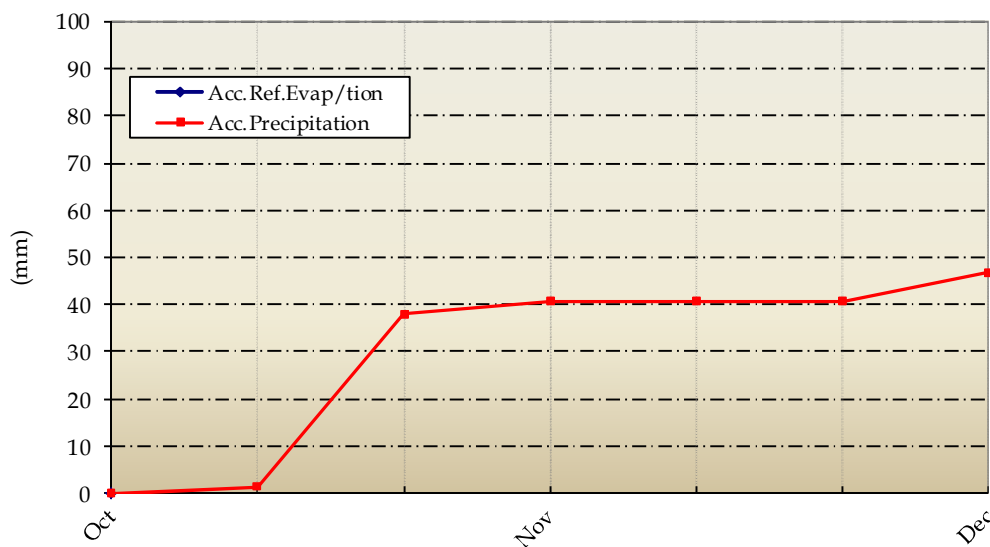


3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	18.2	18.8	20.6	18.0	19.3	19.6	19.2	19.4	19.5	19.0	20.2	17.0
	Min	8.2	7.7	4.2	4.5	7.0	-0.7	2.5	6.7	11.3	7.3	5.9	11.8	8.6
Relative Humidity	Max	88	-	95	95	88	90	87	83	92	98	91	94	-
	Min	40	-	42	44	37	31	35	46	60	54	43	54	-
Soil Temperature at 10 cm	06 UTC	16.6	13.6	-	12.8	12.6	11.2	10.8	11.0	13.0	12.6	12.7	15.8	11.7
	12 UTC	13.8	14.8	15.2	14.0	15.4	12.6	14.8	13.0	13.8	17.0	14.4	16.6	13.4
Sunshine Duration		0.0	0.4	6.8	5.4	7.3	7.1	6.3	4.9	1.5	5.7	4.5	4.0	4.6
Precipitation										5.9		5.9	34.5	62.9
Evaporation		1.0	-	2.2	1.2	3.4	2.2	3.0	0.7	6.1	1.2	-	17.0	20.2
Growing Degrees	5	7.7	8.0	6.5	7.6	7.5	4.3	6.1	8.0	10.4	8.4	74.3	110.0	78.3
	10	2.7	3.0	1.5	2.6	2.5	0.0	1.1	3.0	5.4	3.4	25.0	60.0	31.1

3rd 10-day period (21-30/11/2020)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	10.9
Precipitation - Reference Evapotranspiration	-	52.0
Number of Rainy Days	1.0	5.0
Number of Dry Days	31.0	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



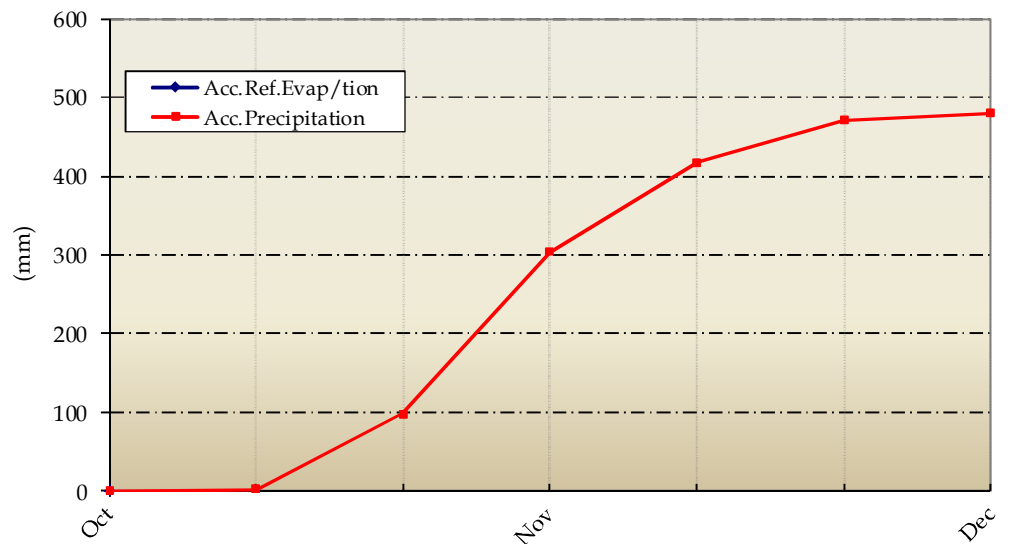
Iraklio

3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	16.6	17.0	17.2	16.0	16.4	19.0	18.2	20.0	19.6	17.7	21.7	18.8
	Min	14.4	13.0	16.2	14.6	14.8	15.0	15.2	10.4	10.8	13.6	13.8	15.0	12.7
Relative Humidity	Max	91	89	85	87	75	79	88	93	89	91	87	86	-
	Min	70	74	72	75	60	66	66	76	63	62	68	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	0.0	0.2	0.0	0.0	4.4	6.4	7.7	4.5	5.5	2.9	5.8	4.6
Precipitation		5.3	0.3	0.3	0.4					0.4	1.3	8.0	13.6	25.7
Evaporation		0.6	6.6	0.8	1.8	3.0	3.0	2.0	2.0	2.4	1.2	23.4	16.8	32.4
Growing Degrees	5	10.6	9.8	11.6	10.9	10.4	10.7	12.1	9.3	10.4	11.6	107.4	133.7	107.2
	10	5.6	4.8	6.6	5.9	5.4	5.7	7.1	4.3	5.4	6.6	57.4	83.7	57.3

3rd 10-day period (21-30/11/2020)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-
Precipitation - Reference Evapotranspiration	-	25.7
Number of Rainy Days	6.0	3.0
Number of Dry Days	0.0	6.0

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



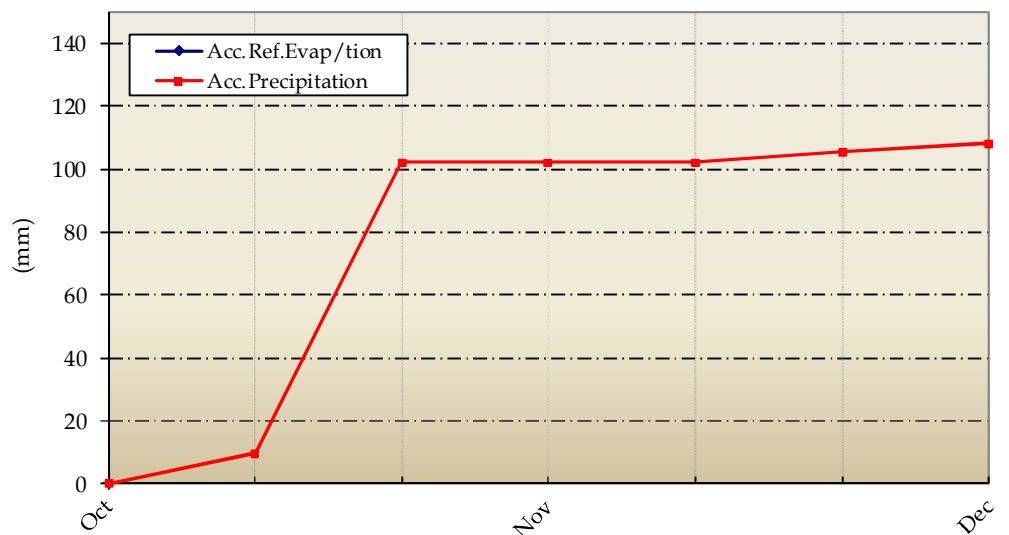
Ioannina

3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	15.3	15.2	15.9	15.5	17.4	16.7	13.4	11.1	16.0	15.0	14.2	12.0
	Min	-1.1	2.4	-2.1	-1.6	4.4	-3.6	-3.9	-4.8	-2.0	3.9	-0.8	5.9	3.6
Relative Humidity	Max	94	98	99	100	100	100	87	95	96	99	97	100	-
	Min	39	45	47	63	36	32	30	47	84	63	49	72	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.3
Sunshine Duration		3.1	4.2	5.7	4.1	8.2	8.2	8.3	4.7	0.0	3.3	5.0	1.7	2.6
Precipitation		0.2	0.7							1.6	0.3	2.8	59.0	57.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	9.5
Growing Degrees	5	1.2	3.9	1.6	2.2	5.0	1.9	1.4	0.0	0.0	5.0	21.9	50.7	31.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	4.7

3rd 10-day period (21-30/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.7
Precipitation - Reference Evapotranspiration	-	-	50.3
Number of Rainy Days	4.0	4.0	5.1
Number of Dry Days	2.0	4.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

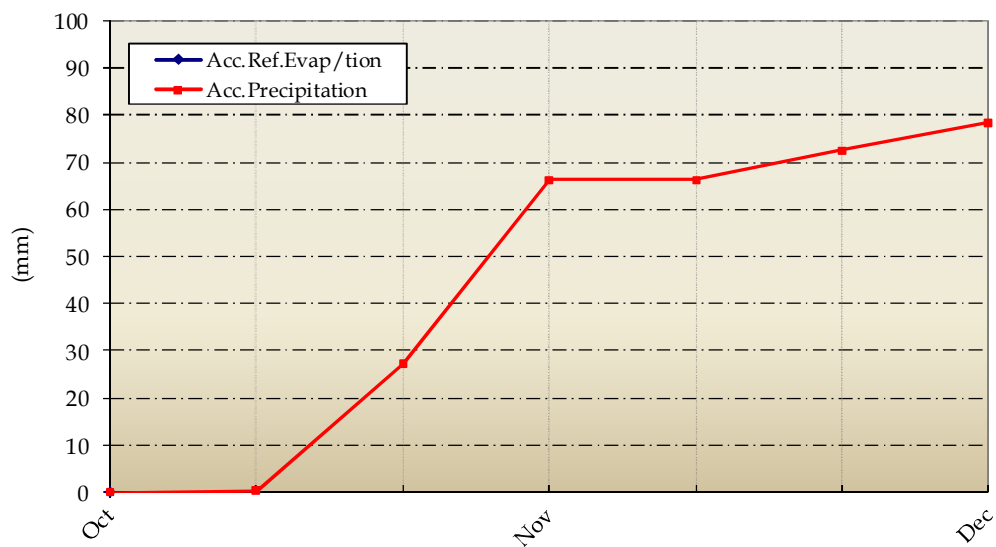


3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.2	20.6	20.6	19.6	19.5	18.8	19.1	20.4	19.0	19.4	19.6	20.5	18.0
	Min	8.4	12.2	9.5	7.6	9.4	6.6	4.4	5.4	9.5	8.6	8.2	10.6	8.3
Relative Humidity	Max	65	64	87	87	62	83	84	94	97	100	82	92	-
	Min	31	35	43	44	30	31	35	46	55	60	41	57	-
Soil Temperature at 10 cm	06 UTC	13.0	14.0	13.6	13.4	13.5	12.4	11.6	12.0	13.4	12.6	13.0	15.5	12.7
	12 UTC	15.4	15.4	16.0	15.8	15.0	14.8	18.2	14.2	14.5	14.0	15.3	16.0	13.9
Sunshine Duration		7.8	2.9	8.5	8.4	8.5	8.8	8.3	8.2	0.0	2.6	6.4	4.4	4.3
Precipitation										1.5	4.4	5.9	56.9	54.0
Evaporation		1.8	5.0	2.2	1.8	3.8	1.0	3.0	1.4	0.8	1.2	22.0	16.4	26.0
Growing Degrees	5	8.8	11.4	10.1	8.6	9.5	7.7	6.8	7.9	9.3	9.0	88.9	105.7	81.4
	10	3.8	6.4	5.1	3.6	4.5	2.7	1.8	2.9	4.3	4.0	38.9	55.7	33.0

3rd 10-day period (21-30/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	13.5	12.1
Precipitation - Reference Evapotranspiration	-	43.4	41.9
Number of Rainy Days	2.0	7.0	4.8
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



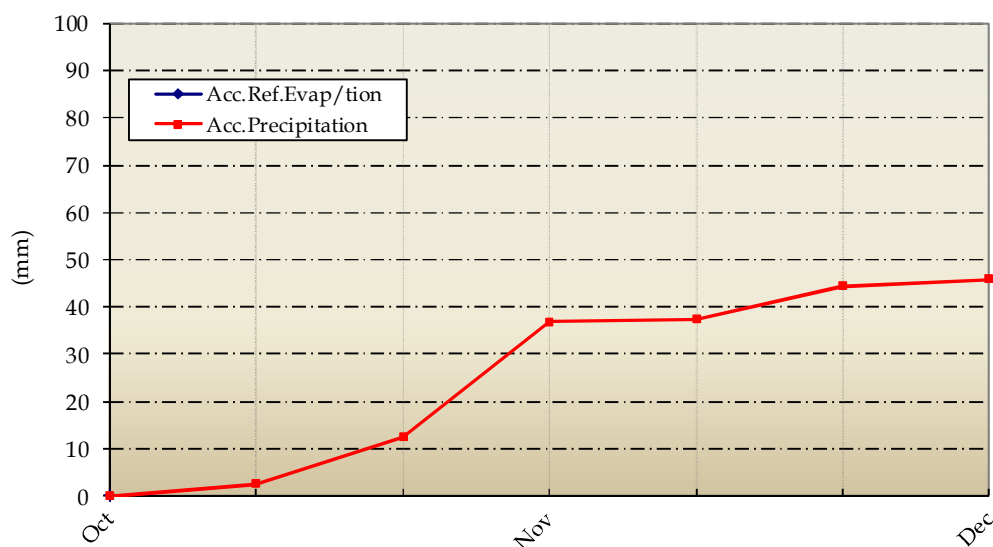
Larisa

3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.8	12.8	15.5	13.9	13.2	14.4	14.8	14.6	13.6	12.4	13.7	17.5	13.6
	Min	6.8	9.0	4.2	1.4	4.0	-0.6	-1.2	-2.6	1.0	8.6	3.1	9.4	4.1
Relative Humidity	Max	68	88	98	98	96	97	94	96	94	98	93	98	-
	Min	52	56	50	62	57	48	42	45	58	68	54	68	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	9.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.2
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	2.8	3.5
Precipitation											1.6	1.6	40.0	21.8
Evaporation		1.7	0.8	1.0	0.5	1.8	1.6	1.5	0.6	0.8	0.2	10.5	12.9	10.2
Growing Degrees	5	4.3	5.9	4.9	2.7	3.6	1.9	1.8	1.0	2.3	5.5	33.8	84.6	40.6
	10	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.4	34.6	8.0

3rd 10-day period (21-30/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	8.8	7.3
Precipitation - Reference Evapotranspiration	-	31.2	14.5
Number of Rainy Days	1.0	5.0	3.5
Number of Dry Days	10.0	0.0	-

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Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



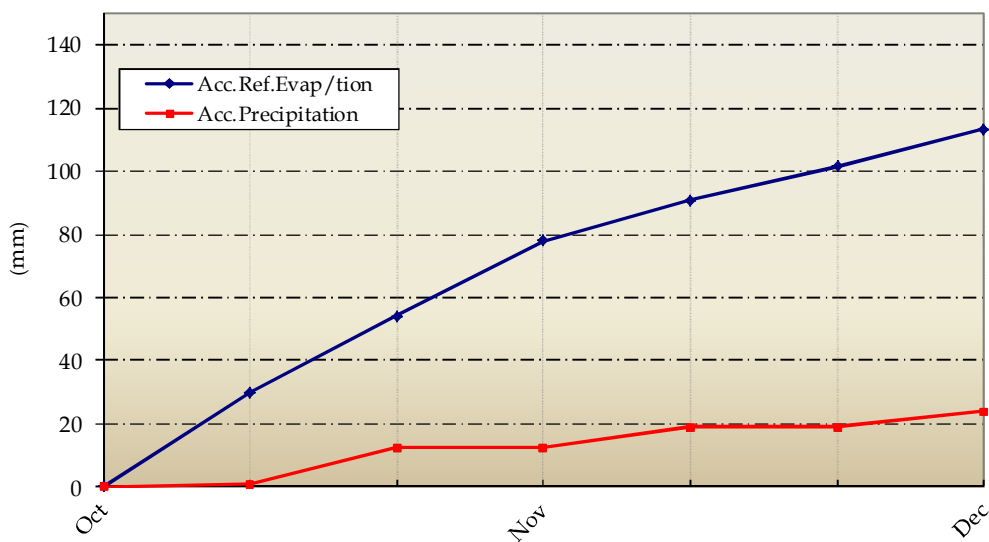
Mikra

3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.3	15.2	14.8	16.6	14.2	15.4	15.8	14.2	14.3	12.1	14.7	17.6	13.2
	Min	2.8	6.6	3.0	2.1	3.4	0.0	0.2	0.4	5.3	7.3	3.1	11.0	5.2
Relative Humidity	Max	87	81	86	90	88	86	77	90	97	96	88	95	-
	Min	19	42	48	41	45	40	39	47	62	64	45	64	-
Soil Temperature at 10 cm	06 UTC	12.0	12.2	11.2	10.7	11.4	10.2	9.2	9.0	10.4	12.0	10.8	14.8	8.8
	12 UTC	13.0	13.0	13.4	12.5	12.8	11.8	11.2	11.5	11.4	11.2	12.2	15.5	10.6
Sunshine Duration		1.7	4.1	8.8	7.6	8.3	8.2	6.6	7.3	2.4	0.0	5.5	3.5	3.5
Precipitation											4.9	4.9	19.4	21.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	15.7
Growing Degrees	5	3.6	5.9	3.9	4.4	3.8	2.7	3.0	2.3	4.8	4.7	39.0	93.0	43.9
	10	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	43.0	10.2

3rd 10-day period (21-30/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.6	10.9	9.9
Precipitation - Reference Evapotranspiration	-6.7	8.5	11.1
Number of Rainy Days	1.0	5.0	3.6
Number of Dry Days	11.0	0.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



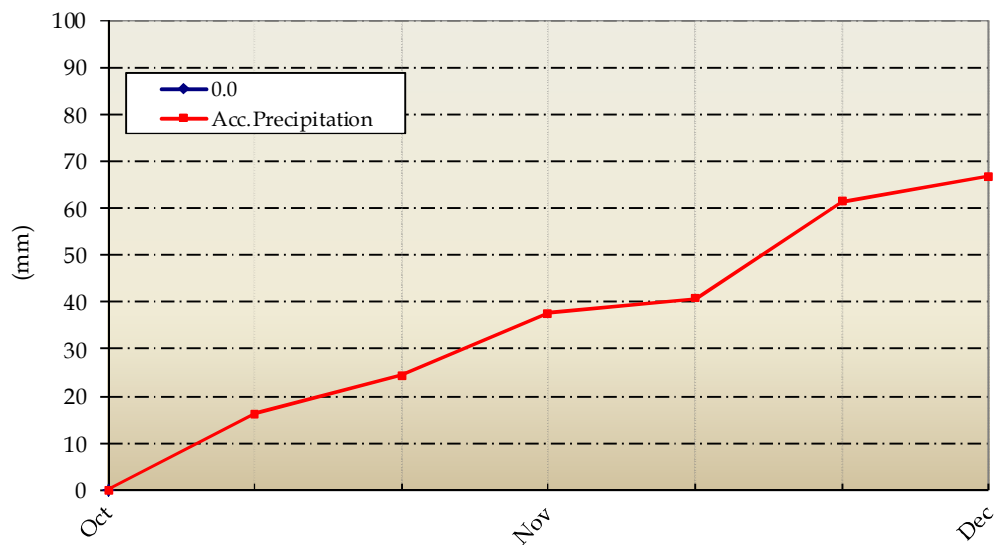


3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.6	13.7	14.8	14.1	13.2	14.8	16.6	17.7	15.0	14.5	14.8	19.3	15.7
	Min	9.1	10.6	6.7	5.2	10.6	10.3	4.8	0.8	5.0	9.9	7.3	10.8	6.7
Relative Humidity	Max	79	91	97	97	75	75	83	99	99	100	90	93	-
	Min	57	57	54	25	49	47	43	34	75	76	52	47	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.3	1.4	4.4	3.1	0.6	7.5	7.9	6.9	1.0	0.6	3.5	4.6	
Precipitation					0.0	0.3				4.7	0.4	5.4	63.2	23.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	6.4	7.2	5.8	4.7	6.9	7.6	5.7	4.3	5.0	7.2	60.5	100.3	
	10	1.4	2.2	0.8	0.0	1.9	2.6	0.7	0.0	0.0	2.2	11.6	50.3	

3rd 10-day period (21-30/11/2020)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-
Precipitation - Reference Evapotranspiration	-	23.8
Number of Rainy Days	3.0	4.0
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



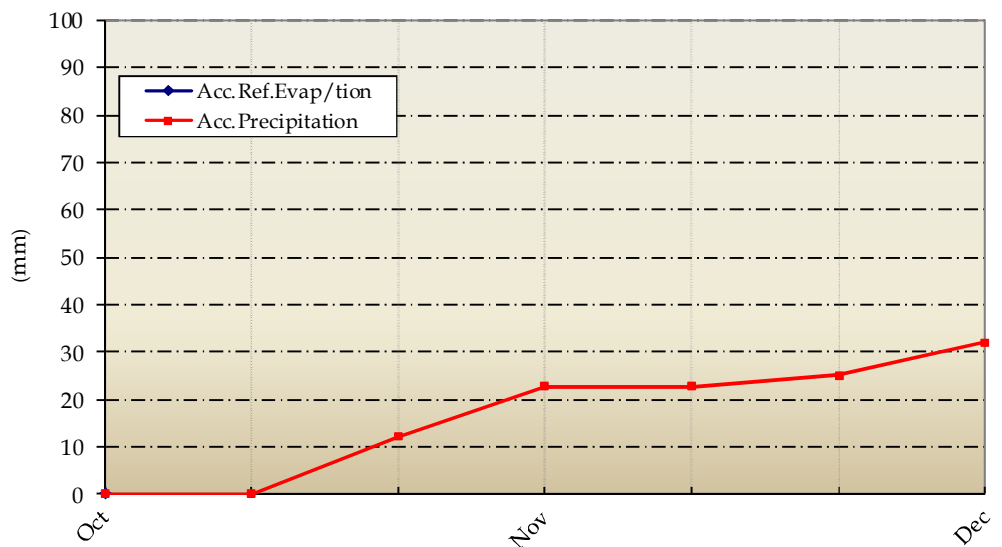
Tripoli

3rd 10-day period (21-30/11/2020)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.9	8.9	14.3	14.8	11.2	14.0	16.1	15.8	11.0	14.0	13.2	15.6	12.9
	Min	-1.1	8.0	7.9	-0.7	6.7	1.7	-3.6	-4.7	2.0	3.3	2.0	6.3	3.6
Relative Humidity	Max	94	77	96	100	73	92	-	97	98	100	92	98	-
	Min	50	57	48	40	48	37	28	33	80	60	48	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	10.3	8.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	12.2	9.4
Sunshine Duration		2.6	2.3	6.5	6.5	4.9	7.8	7.2	7.0	0.0	2.7	4.8	3.8	4.2
Precipitation					0.0	0.0			0.0	7.0	0.0	7.0	61.7	45.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	13.0
Growing Degrees	5	0.4	3.5	6.1	2.1	4.0	2.9	1.3	0.6	1.5	3.7	25.8	59.3	35.8
	10	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	13.4	5.3

3rd 10-day period (21-30/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.6	-	9.3
Precipitation - Reference Evapotranspiration	-2.6	-	35.8
Number of Rainy Days	1.0	7.0	4.7
Number of Dry Days	9.0	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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