



AGROMETEOROLOGICAL BULLETIN

December 2020
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



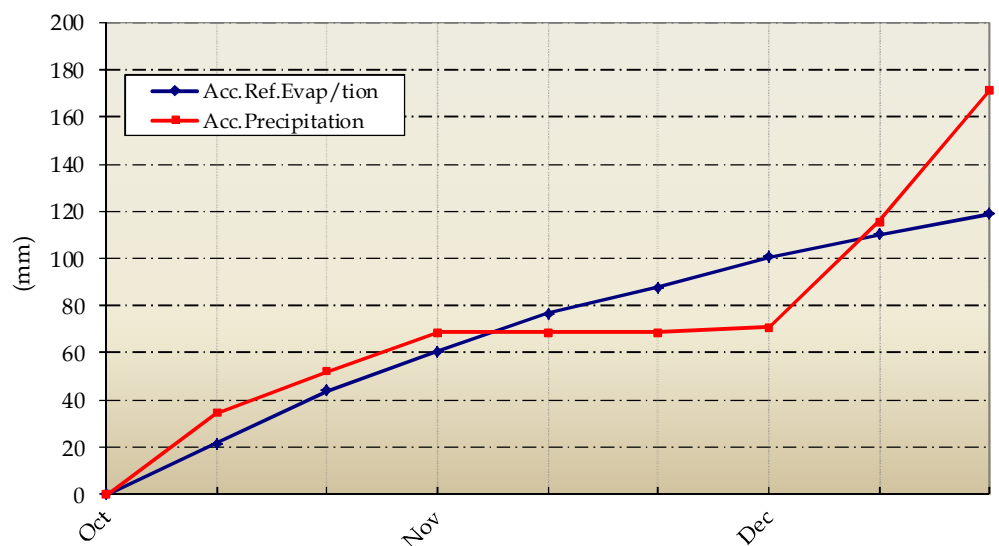
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El. Venizelou Street 14, 16777
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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.8	15.4	14.4	12.0	13.6	10.4	13.2	12.2	10.8	10.6	12.8	15.9	10.6
	Min	10.0	9.0	9.2	9.0	8.2	4.4	4.8	3.4	2.6	-0.2	6.0	7.7	3.1
Relative Humidity	Max	93	97	97	87	83	87	91	93	93	93	91	96	-
	Min	66	73	74	67	52	64	57	63	62	64	64	69	-
Soil Temperature at 10 cm	06 UTC	12.0	12.0	12.4	11.0	10.4	8.6	9.0	8.6	7.4	6.2	9.8	10.4	6.3
	12 UTC	13.2	12.4	12.4	10.8	11.0	9.6	11.0	10.0	8.6	8.0	10.7	12.1	7.5
Sunshine Duration		4.8	2.1	1.0	0.0	3.6	6.1	6.4	7.4	4.4	4.5	4.0	2.9	2.5
Precipitation		15.7	22.3	7.4	10.5	0.0						55.9	3.6	23.7
Evaporation		1.1	1.7	1.8	3.8	2.6	2.0	1.2	2.8	0.0	0.0	17.0	8.2	11.7
Growing Degrees	5	7.9	7.2	6.8	5.5	5.9	2.4	4.0	2.8	1.7	0.2	44.4	67.9	26.7
	10	2.9	2.2	1.8	0.5	0.9	0.0	0.0	0.0	0.0	0.0	8.3	18.8	5.3

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.7	6.8	8.1
Precipitation - Reference Evapotranspiration	47.2	-3.2	15.6
Number of Rainy Days	4.0	4.0	2.9
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

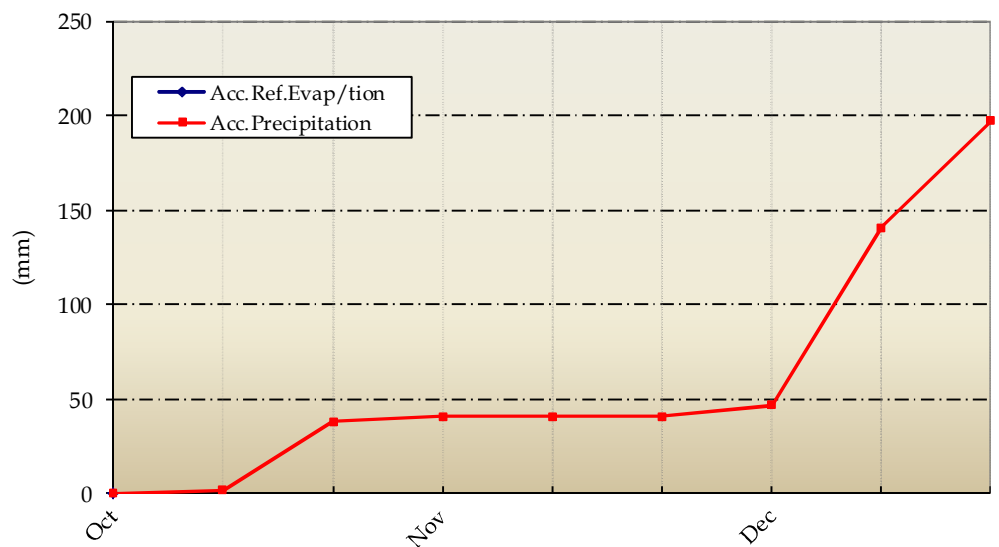


2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.7	17.4	16.1	17.6	18.6	19.0	18.1	18.2	17.8	17.4	17.2	18.5	15.1
	Min	8.2	9.1	8.6	9.6	6.8	4.4	5.1	5.5	4.9	5.1	6.7	8.4	6.8
Relative Humidity	Max	98	98	99	86	98	98	99	97	98	98	97	92	-
	Min	89	71	72	58	50	52	62	54	57	60	62	59	-
Soil Temperature at 10 cm	06 UTC	12.8	11.6	12.6	12.8	12.4	12.2	11.6	12.4	11.2	11.0	12.1	13.4	9.7
	12 UTC	13.4	12.6	12.8	13.2	14.0	12.2	12.4	12.4	12.6	11.6	12.7	14.0	11.2
Sunshine Duration		0.0	1.2	0.3	5.8	6.5	6.4	5.3	5.9	6.3	2.5	4.0	3.8	4.1
Precipitation		21.9	12.1	14.7	7.5							56.2	69.5	43.9
Evaporation		0.8	0.2	1.0	3.2	3.4	2.3	1.8	2.0	2.2	1.0	17.9	18.4	19.6
Growing Degrees	5	5.0	8.3	7.4	8.6	7.7	6.7	6.6	6.9	6.4	6.3	69.6	84.5	59.8
	10	0.0	3.3	2.4	3.6	2.7	1.7	1.6	1.9	1.4	1.3	19.7	34.5	16.6

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	9.0
Precipitation - Reference Evapotranspiration	-	-	34.9
Number of Rainy Days	4.0	4.0	4.7
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



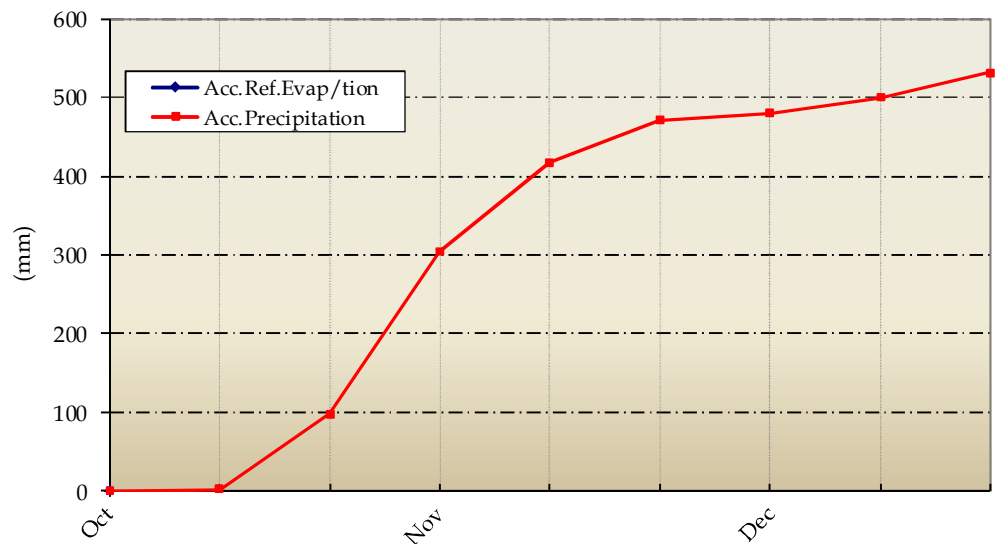
Iraklio

2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.6	18.8	19.8	17.4	16.2	15.6	16.2	17.0	16.6	14.6	17.1	19.2	16.6
	Min	10.8	14.8	15.0	12.6	13.4	14.4	14.6	14.4	12.6	12.4	13.5	11.3	10.5
Relative Humidity	Max	83	87	98	93	91	89	85	83	91	88	89	92	-
	Min	59	56	70	78	79	71	73	72	73	79	71	63	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		3.3	3.1	3.5	4.8	0.0	0.0	0.2	0.1	3.2	0.0	1.8	5.4	3.8
Precipitation			1.5	15.6	6.4	7.4	0.8				0.1	31.8	14.5	23.4
Evaporation		1.0	1.8	0.2	3.5	1.2	3.1	0.7	1.1	1.4	0.3	14.3	11.8	25.9
Growing Degrees	5	9.7	11.8	12.4	10.0	9.8	10.0	10.4	10.7	9.6	8.5	102.9	102.4	85.7
	10	4.7	6.8	7.4	5.0	4.8	5.0	5.4	5.7	4.6	3.5	52.9	52.4	36.5

2nd 10-day period (11-20/12/2020)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-
Precipitation - Reference Evapotranspiration	-	23.4
Number of Rainy Days	6.0	5.0
Number of Dry Days	1.0	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



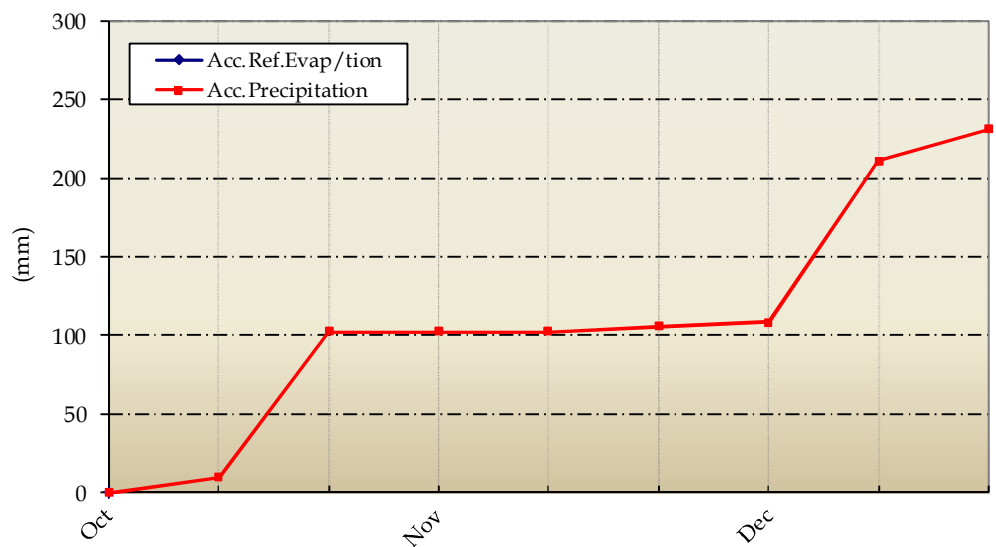
Ioannina

2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.8	9.0	11.8	14.8	18.3	14.6	10.8	5.6	11.7	13.1	11.8	11.5	9.6
	Min	1.6	4.6	0.8	7.2	3.2	-0.9	0.8	2.0	3.0	2.0	2.4	2.7	1.6
Relative Humidity	Max	100	100	100	100	99	99	100	100	100	100	100	100	-
	Min	79	90	55	47	40	58	79	99	78	65	69	76	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.7
Sunshine Duration		0.0	0.0	0.0	7.3	7.9	4.4	2.8	0.0	2.2	1.9	2.6	1.6	2.5
Precipitation		4.6	15.7	0.2								20.5	48.8	54.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	5.5
Growing Degrees	5	0.2	1.8	1.3	6.0	5.8	1.9	0.8	0.0	2.4	2.6	22.6	21.1	16.0
	10	0.0	0.0	0.0	1.0	0.8	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.8

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	5.7
Precipitation - Reference Evapotranspiration	-	-	48.8
Number of Rainy Days	3.0	5.0	4.4
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

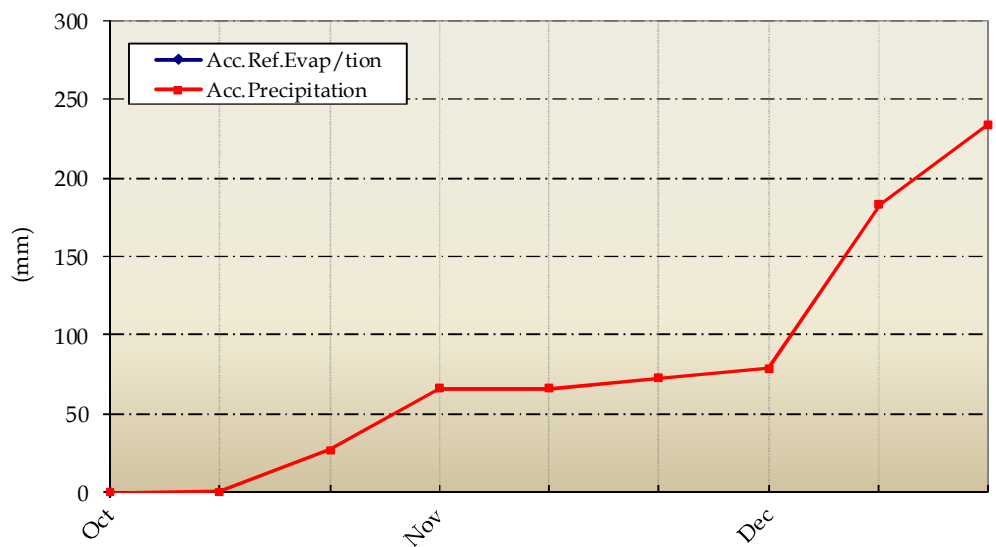


2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.8	14.6	15.0	17.3	20.1	20.0	19.0	19.9	19.8	18.7	17.7	18.4	15.9
	Min	6.6	6.6	8.6	8.8	8.4	6.4	5.7	5.9	6.6	7.4	7.1	8.5	6.6
Relative Humidity	Max	100	100	100	100	100	100	100	100	99	98	100	92	-
	Min	88	92	86	70	58	53	65	56	55	62	68	56	-
Soil Temperature at 10 cm	06 UTC	11.6	11.8	13.0	12.0	11.5	11.2	11.0	10.6	11.0	11.0	11.5	12.7	10.6
	12 UTC	12.0	13.8	12.5	12.4	13.0	12.8	12.4	12.2	16.2	12.0	12.9	13.7	11.5
Sunshine Duration		0.0	0.0	0.0	2.6	8.4	7.9	7.1	7.6	7.9	3.9	4.5	5.1	3.9
Precipitation		35.0	9.2	6.9	0.1							51.2	54.9	53.6
Evaporation		0.2	0.5	0.0	0.1	1.8	3.4	1.2	1.2	2.7	2.3	13.4	29.2	23.9
Growing Degrees	5	4.7	5.6	6.8	8.1	9.3	8.2	7.4	7.9	8.2	8.1	74.1	84.4	62.3
	10	0.0	0.6	1.8	3.1	4.3	3.2	2.4	2.9	3.2	3.1	24.4	34.4	17.2

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	11.3	10.5
Precipitation - Reference Evapotranspiration	-	43.6	43.1
Number of Rainy Days	4.0	4.0	4.7
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



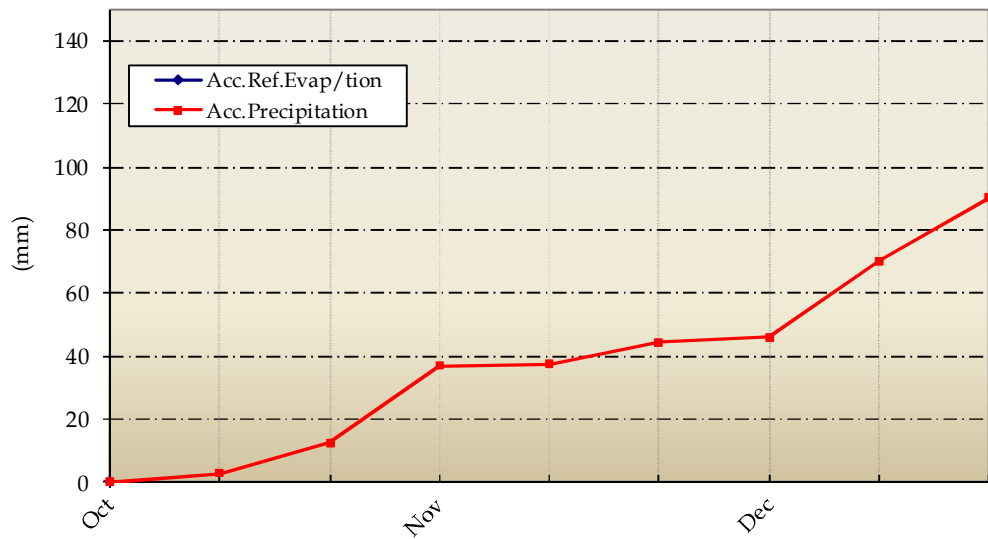
Larisa

2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.4	12.2	13.0	12.6	14.2	13.6	15.1	13.4	13.0	13.0	13.2	12.6	11.0
	Min	2.4	7.0	7.5	9.7	6.8	1.6	7.5	2.0	5.0	7.0	5.6	6.6	1.7
Relative Humidity	Max	98	99	98	93	98	99	98	100	97	98	98	99	-
	Min	75	81	68	69	62	72	65	69	69	72	70	76	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.3
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	2.1	3.1
Precipitation		2.3	9.5	1.2	5.4	1.8						20.2	91.2	14.0
Evaporation		0.0	0.0	0.1	2.6	1.7	1.1	0.8	1.6	0.3	0.6	8.8	-	6.0
Growing Degrees	5	1.9	4.6	5.3	6.2	5.5	2.6	6.3	2.7	4.0	5.0	44.0	46.2	20.8
	10	0.0	0.0	0.3	1.2	0.5	0.0	1.3	0.0	0.0	0.0	3.2	4.1	2.1

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	5.5	5.8
Precipitation - Reference Evapotranspiration	-	85.7	8.2
Number of Rainy Days	5.0	4.0	3.3
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



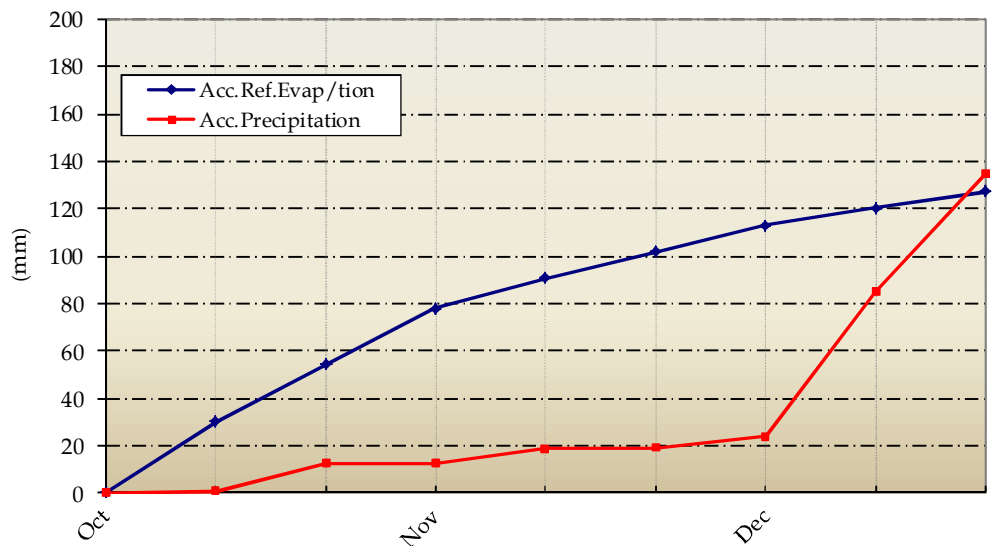
Mikra

2nd 10-day period (11-20/12/2020)		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	13.1	14.4	13.2	12.9	10.8	13.7	13.2	11.7	12.0	12.9	13.5	10.6
	Min	6.1	10.3	8.5	8.8	7.7	4.6	9.2	4.0	4.0	8.7	7.2	8.6	3.0
Relative Humidity	Max	99	98	95	85	95	99	99	100	99	96	96	94	-
	Min	64	72	70	69	67	90	80	63	75	75	72	74	-
Soil Temperature at 10 cm	06 UTC	11.2	12.0	12.2	11.6	10.0	9.2	11.0	10.0	9.6	12.0	10.9	11.3	6.2
	12 UTC	12.2	12.8	12.8	12.2	10.6	10.2	11.2	12.6	10.6	11.2	11.6	11.9	7.7
Sunshine Duration		3.5	5.4	0.0	0.0	2.4	0.0	0.1	5.0	4.8	0.0	2.1	1.9	2.8
Precipitation		0.7	12.5		28.6	4.4	0.0	3.9		0.0		50.1	34.4	12.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	10.6
Growing Degrees	5	5.3	6.7	6.5	6.0	5.3	2.7	6.5	3.6	2.9	5.4	50.7	60.3	24.9
	10	0.3	1.7	1.5	1.0	0.3	0.0	1.5	0.0	0.0	0.4	6.5	11.4	2.8

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.8	7.2	8.4
Precipitation - Reference Evapotranspiration	43.3	27.2	4.1
Number of Rainy Days	5.0	3.0	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



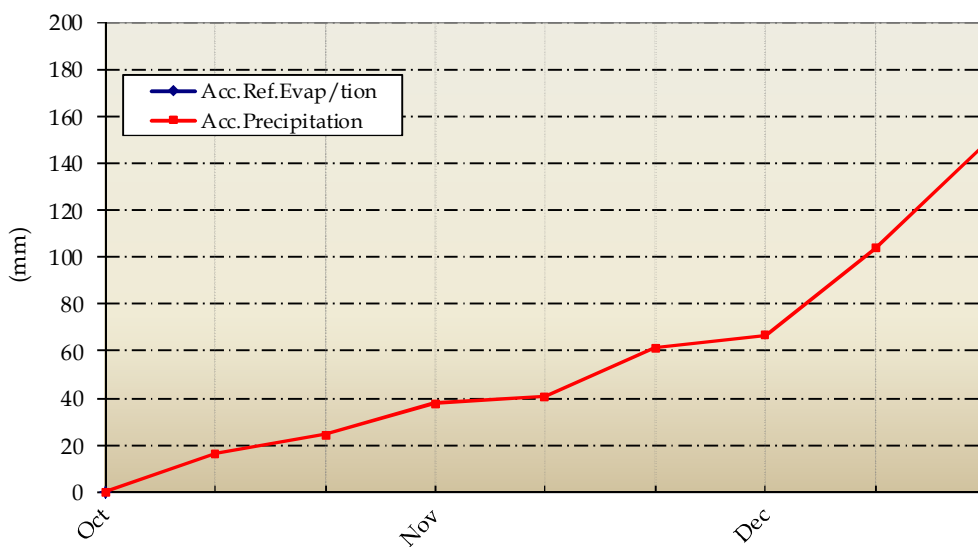
Tanagra

2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	16.4	14.4	11.4	12.8	14.0	13.6	13.0	12.7	11.8	13.4	16.0	13.4
	Min	5.0	6.7	9.6	10.6	10.0	7.4	7.6	9.0	5.6	9.8	8.1	7.3	5.0
Relative Humidity	Max	100	100	100	100	95	97	98	100	100	99	99	100	-
	Min	63	59	83	87	76	72	64	72	86	82	74	67	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	2.1	0.4	0.0	0.6	2.3	0.0	0.4	0.0	0.0	0.6	3.4	
Precipitation		0.6	3.4	6.0	34.4	0.0					0.3	44.7	26.4	25.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	4.2	6.6	7.0	6.0	6.4	5.7	5.6	6.0	4.2	5.8	57.4	66.7	
	10	0.0	1.6	2.0	1.0	1.4	0.7	0.6	1.0	0.0	0.8	9.1	16.8	

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	25.9
Number of Rainy Days	5.0	4.0	4.3
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



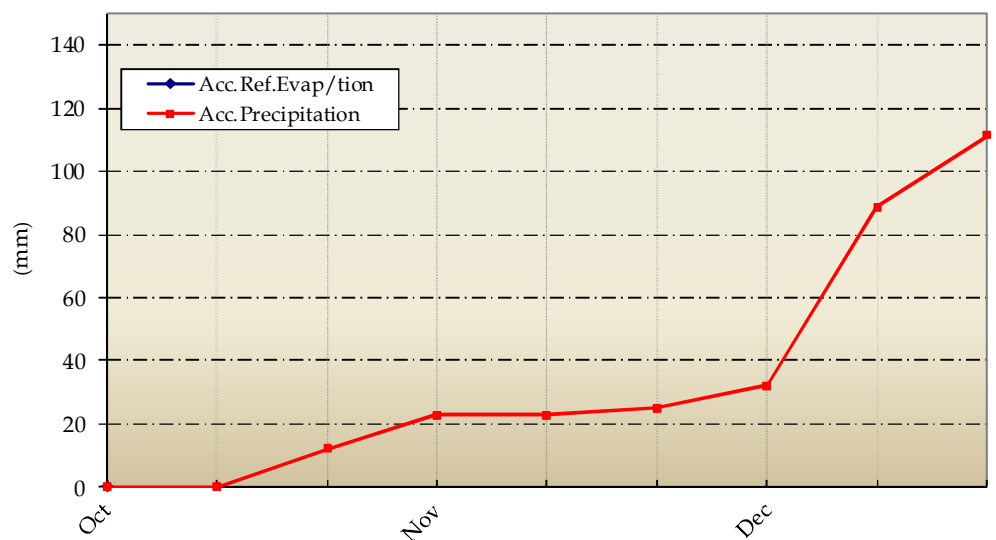
Tripoli

2nd 10-day period (11-20/12/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.7	-	-	12.5	14.3	16.4	14.2	14.8	13.7	12.5	13.4	14.1	10.8
	Min	3.6	5.3	-	8.0	3.2	1.0	1.5	1.9	1.4	1.0	3.0	3.2	1.8
Relative Humidity	Max	-	-	100	94	99	100	100	100	100	100	99	100	-
	Min	86	-	83	63	52	44	62	53	57	56	62	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	8.2	6.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	9.8	6.7
Sunshine Duration		0.0	0.0	0.0	0.7	7.6	4.4	2.2	4.1	5.7	2.7	2.7	3.4	3.6
Precipitation		6.5	12.5	-	3.7	-	0.0	0.0	0.0	-	0.0	22.7	29.5	40.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	10.0
Growing Degrees	5	1.2	-	-	5.3	3.8	3.7	2.9	3.4	2.6	1.8	-	36.5	19.6
	10	0.0	-	-	0.3	0.0	0.0	0.0	0.0	0.0	0.0	-	0.7	1.5

2nd 10-day period (11-20/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	7.6
Precipitation - Reference Evapotranspiration	-	-	33.3
Number of Rainy Days	3.0	4.0	4.3
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_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.

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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