



# AGROMETEOROLOGICAL BULLETIN

*December 2020*  
*1st 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  
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Helliniko, Athens

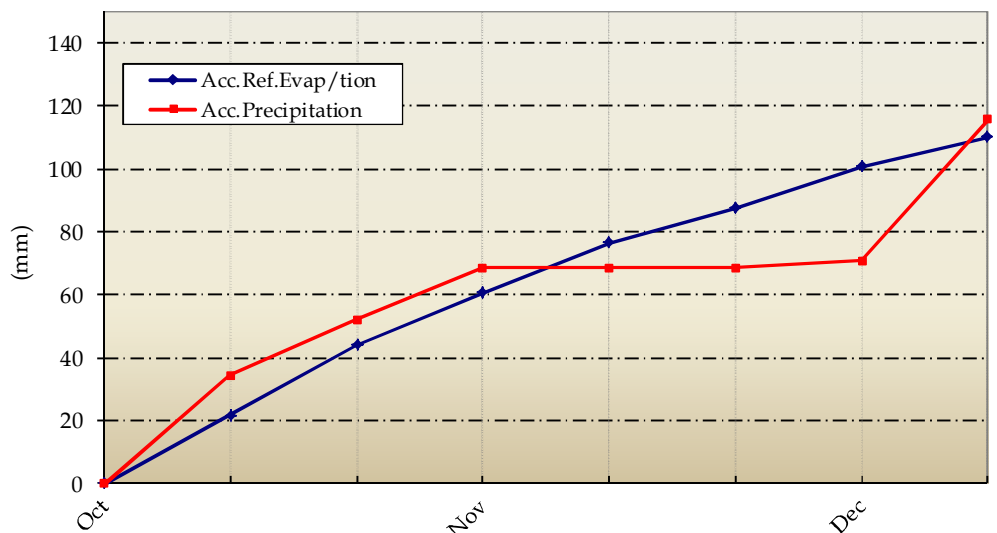
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[www.hnms.gr](http://www.hnms.gr)  
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[www.meteo.gov.gr](http://www.meteo.gov.gr)  
[www.meteohellas.gr](http://www.meteohellas.gr)

Alexandroupoli

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.6	8.4	10.2	13.6	16.6	14.2	12.2	14.6	14.0	17.2	12.9	11.2	11.0
	Min	3.0	-3.2	-4.4	6.0	6.8	11.0	9.8	5.8	4.4	10.6	5.0	1.4	3.3
Relative Humidity	Max	68	87	96	89	91	85	95	97	94	95	90	95	-
	Min	46	42	64	62	56	69	75	68	81	77	64	55	-
Soil Temperature at 10 cm	06 UTC	8.4	5.4	5.6	8.2	9.6	11.2	11.2	9.6	9.6	12.2	9.1	8.4	7.1
	12 UTC	9.4	8.0	8.0	10.0	11.6	12.0	11.4	11.6	10.6	13.0	10.6	10.0	8.4
Sunshine Duration		4.6	8.3	4.9	2.3	7.9	0.0	0.1	7.0	0.9	0.0	3.6	3.4	2.7
Precipitation		2.0						13.0	5.0	2.2	22.8	45.0	9.0	30.2
Evaporation		0.0	0.0	0.0	1.4	1.1	1.1	0.8	2.2	0.6	5.1	12.3	4.9	14.9
Growing Degrees	5	0.3	0.0	0.0	4.8	6.7	7.6	6.0	5.2	4.2	8.9	43.7	15.3	28.2
	10	0.0	0.0	0.0	0.0	1.7	2.6	1.0	0.2	0.0	3.9	9.4	0.0	5.3

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.6	7.2	9.7
Precipitation - Reference Evapotranspiration	35.4	1.8	20.5
Number of Rainy Days	5.0	3.0	3.2
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



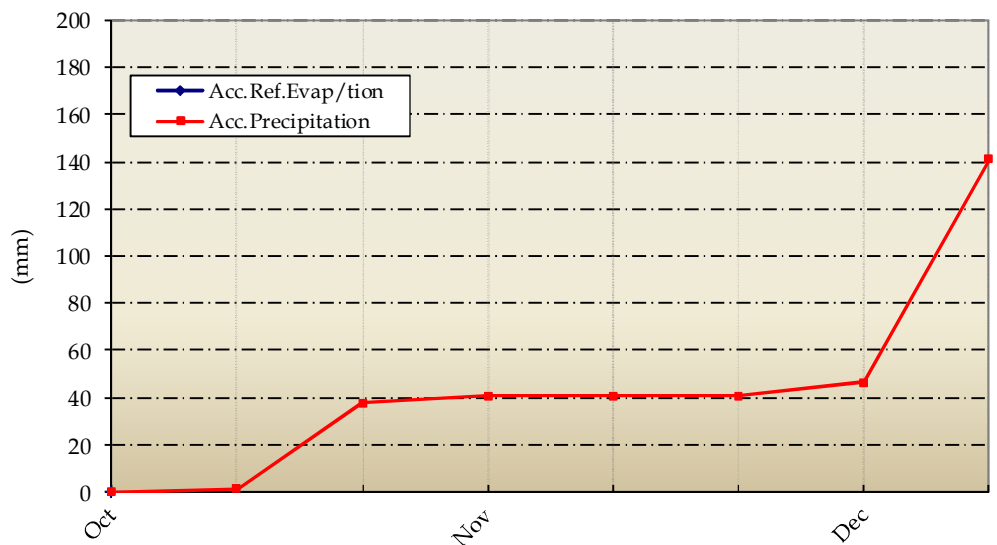
Andravida

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.6	18.2	19.8	18.8	20.3	22.1	18.1	17.1	20.0	14.5	18.8	17.7	15.9
	Min	3.7	4.9	12.2	11.0	10.4	10.6	10.4	7.8	11.8	9.9	9.3	9.4	7.3
Relative Humidity	Max	98	97	70	96	90	84	98	96	97	98	92	94	-
	Min	49	58	46	59	44	41	49	57	58	91	55	62	-
Soil Temperature at 10 cm	06 UTC	11.8	11.8	12.0	13.6	13.2	13.2	13.0	13.0	13.2	14.0	12.9	14.8	10.4
	12 UTC	13.0	12.8	13.6	14.6	14.0	14.6	15.2	13.6	14.2	13.6	13.9	15.2	12.0
Sunshine Duration		6.3	2.6	4.8	4.2	6.5	6.8	5.0	2.6	2.6	0.0	4.1	3.4	4.3
Precipitation			0.0		11.6	0.2		10.7	0.5	10.0	61.2	94.2	54.1	41.8
Evaporation		1.2	1.0	1.8	1.7	1.0	-	0.8	0.3	-	6.4	-	15.7	19.4
Growing Degrees	5	6.7	6.6	11.0	9.9	10.4	11.4	9.3	7.5	10.9	7.2	90.6	85.7	66.0
	10	1.7	1.6	6.0	4.9	5.4	6.4	4.3	2.5	5.9	2.2	40.6	35.7	20.7

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	9.1
Precipitation - Reference Evapotranspiration	-	-	32.7
Number of Rainy Days	6.0	5.0	4.6
Number of Dry Days	4.0	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



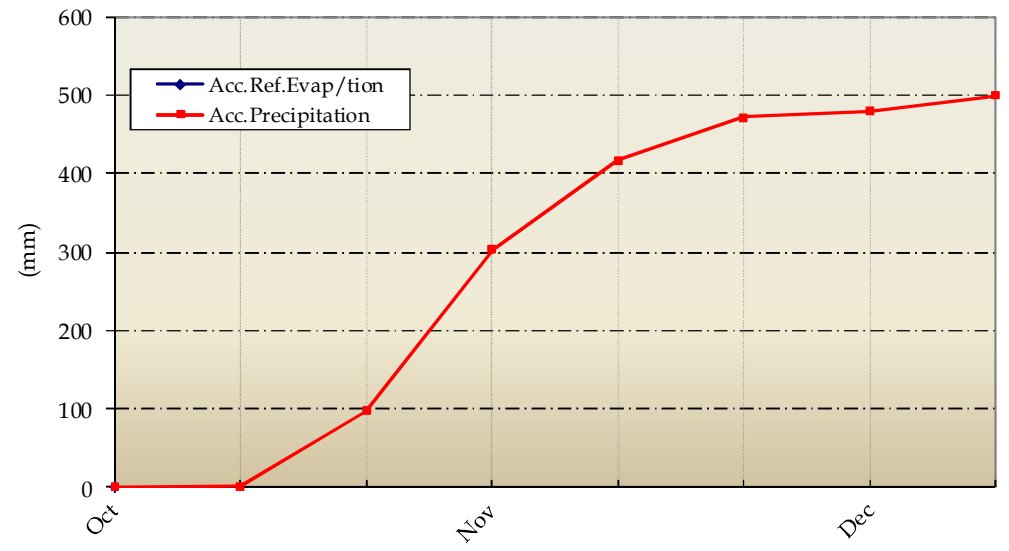
Iraklio

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	16.4	17.8	19.2	19.0	20.4	20.4	18.8	19.4	21.2	18.9	18.3	17.3
	Min	13.6	12.2	10.4	12.8	12.2	11.2	14.6	11.2	12.4	14.0	12.5	13.3	11.5
Relative Humidity	Max	91	93	95	91	93	90	86	86	84	90	90	83	-
	Min	83	77	70	70	69	55	69	65	59	54	67	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.5	1.9	3.7	2.7	8.0	8.2	5.6	6.4	8.5	4.4	5.1	4.8	3.5
Precipitation		10.0	0.1	0.0	0.6			1.4			8.2	20.3	13.1	24.2
Evaporation		2.1	2.4	0.5	0.0	0.2	1.1	0.8	2.5	1.7	3.8	15.1	19.2	28.3
Growing Degrees	5	10.2	9.3	9.1	11.0	10.6	10.8	12.5	10.0	10.9	12.6	107.0	108.1	94.2
	10	5.2	4.3	4.1	6.0	5.6	5.8	7.5	5.0	5.9	7.6	57.0	58.1	44.6

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	24.2
Number of Rainy Days	5.0	5.0	3.7
Number of Dry Days	0.0	3.0	-

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Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

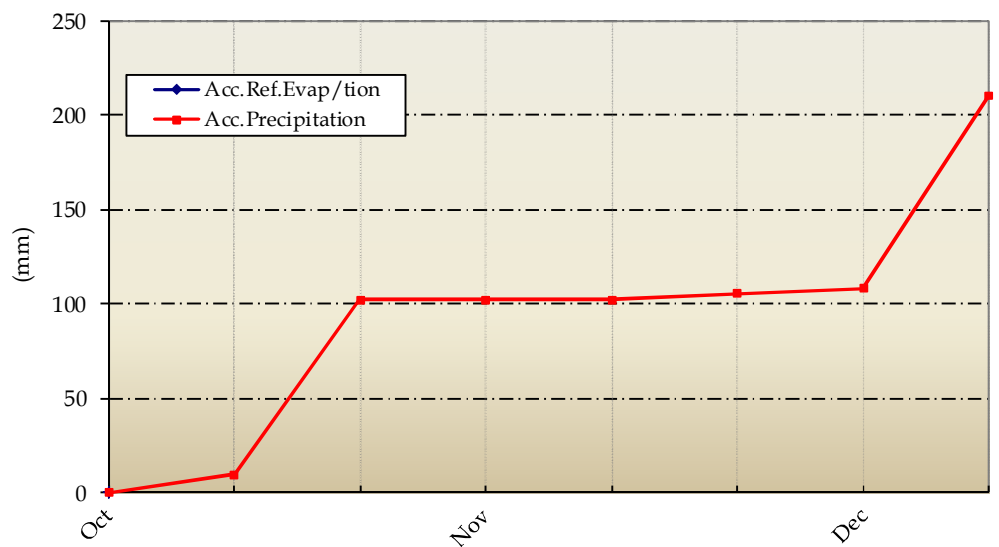


1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.2	14.4	13.0	13.3	14.9	17.5	14.7	12.6	11.7	11.3	13.8	11.4	10.3
	Min	0.9	0.3	8.8	8.7	3.0	0.7	5.8	3.3	8.6	5.6	4.6	3.5	1.9
Relative Humidity	Max	98	99	98	97	100	99	98	98	98	100	98	100	-
	Min	56	64	70	73	58	43	53	64	80	86	65	83	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.5
Sunshine Duration		6.4	1.1	0.0	0.6	5.0	5.1	1.1	2.4	0.0	0.0	2.2	1.0	2.5
Precipitation				2.2	20.5		0.0	17.5	0.2	48.1	13.9	102.4	41.2	51.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	10.5
Growing Degrees	5	2.6	2.4	5.9	6.0	4.0	4.1	5.3	3.0	5.2	3.5	41.7	26.1	17.8
	10	0.0	0.0	0.9	1.0	0.0	0.0	0.3	0.0	0.2	0.0	2.3	1.8	0.9

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.1
Precipitation - Reference Evapotranspiration	-	-	45.4
Number of Rainy Days	6.0	5.0	4.2
Number of Dry Days	2.0	2.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



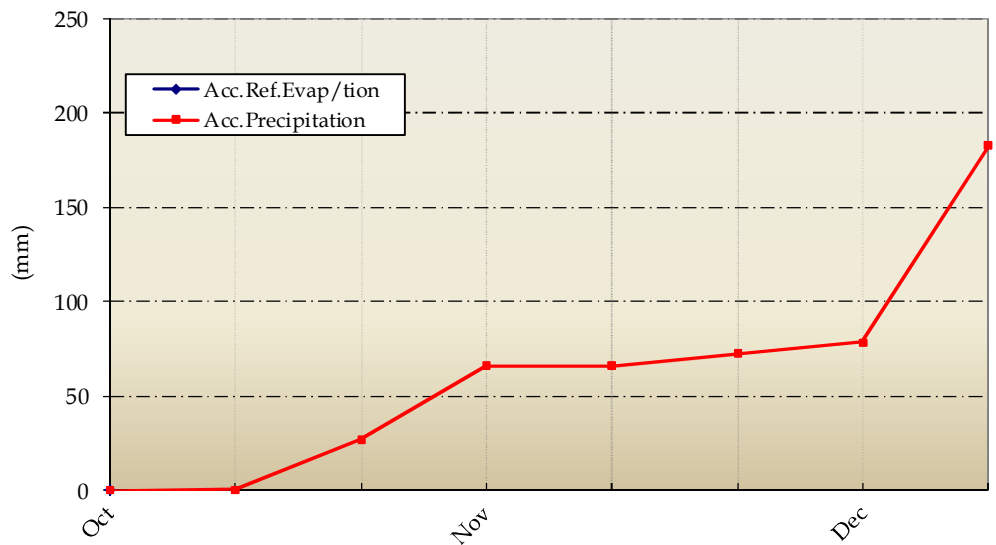
Kalamata

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	18.5	19.0	16.3	18.7	21.5	16.8	17.8	20.1	18.4	18.6	19.5	16.9
	Min	7.6	7.3	7.9	10.0	7.7	8.8	10.0	8.0	8.2	8.3	8.4	9.7	7.2
Relative Humidity	Max	100	100	100	100	99	91	100	100	100	100	99	88	-
	Min	52	67	61	78	62	45	75	64	64	73	64	51	-
Soil Temperature at 10 cm	06 UTC	12.0	13.0	12.5	13.6	12.5	12.2	12.6	12.0	13.0	14.0	12.7	14.4	11.5
	12 UTC	13.4	14.4	13.5	13.8	13.8	13.5	13.8	13.4	13.5	13.6	13.7	15.0	12.5
Sunshine Duration		5.2	5.3	3.2	2.6	5.2	7.7	3.3	6.8	1.8	0.2	4.1	5.7	4.0
Precipitation		5.3	6.1	0.7	18.3			31.3	2.1	7.4	33.2	104.4	17.6	45.8
Evaporation		0.8	6.0	0.2	0.4	2.8	0.0	2.0	0.1	1.0	2.3	15.6	14.0	26.7
Growing Degrees	5	8.5	7.9	8.5	8.2	8.2	10.2	8.4	7.9	9.2	8.4	85.2	96.4	70.4
	10	3.5	2.9	3.5	3.2	3.2	5.2	3.4	2.9	4.2	3.4	35.2	46.4	22.7

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	13.3	10.9
Precipitation - Reference Evapotranspiration	-	4.3	34.9
Number of Rainy Days	8.0	3.0	4.7
Number of Dry Days	0.0	4.0	-

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Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



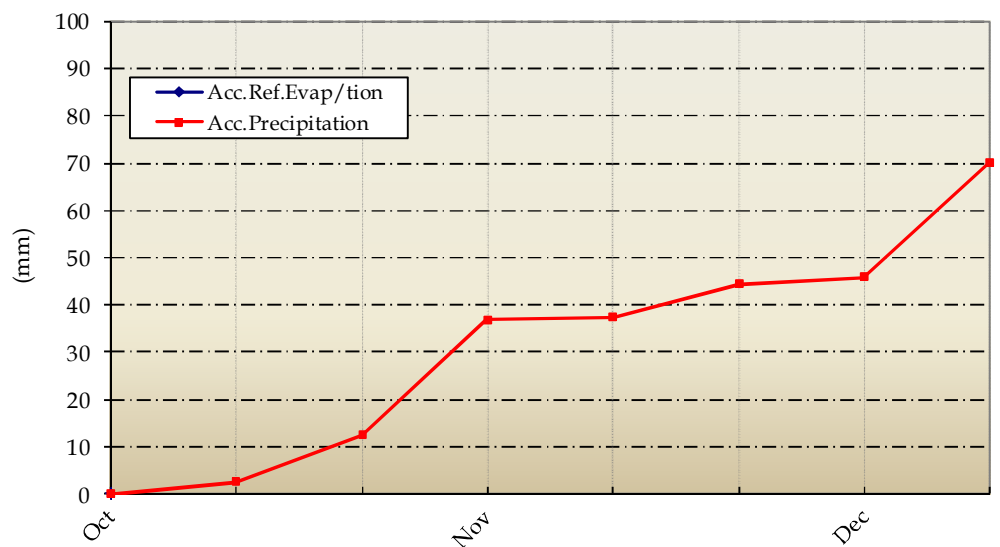
Larisa

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.6	10.0	12.9	15.8	13.6	16.6	15.8	16.2	13.4	12.2	13.5	10.3	11.5
	Min	5.4	6.2	8.6	10.8	6.0	7.4	9.0	2.4	7.6	10.0	7.3	4.2	2.7
Relative Humidity	Max	92	98	98	100	99	99	99	96	98	97	98	97	-
	Min	69	81	81	81	79	79	56	56	79	85	75	72	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.8
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	1.2	2.9
Precipitation		1.6		0.6	4.3			8.8		3.4	5.6	24.3	20.0	18.5
Evaporation		1.0	0.9	0.1	0.0	0.1	0.1	0.7	0.4	0.0	0.0	3.3	-	7.8
Growing Degrees	5	2.0	3.1	5.8	8.3	4.8	7.0	7.4	4.3	5.5	6.1	54.3	22.5	25.6
	10	0.0	0.0	0.8	3.3	0.0	2.0	2.4	0.0	0.5	1.1	10.1	0.0	2.3

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	5.5	6.7
Precipitation - Reference Evapotranspiration	-	14.5	11.8
Number of Rainy Days	6.0	3.0	3.6
Number of Dry Days	0.0	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



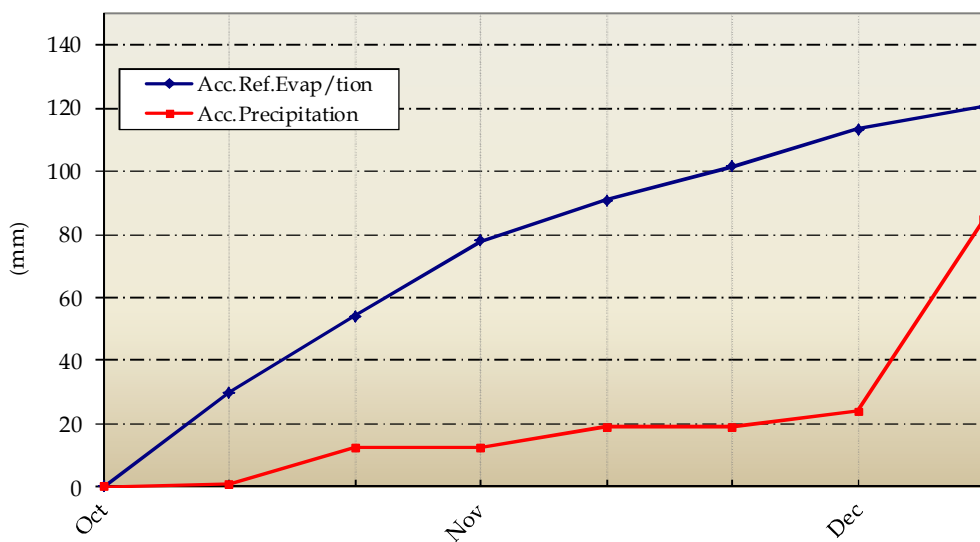
Mikra

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.3	9.8	10.7	14.3	14.6	14.4	14.6	12.6	16.6	15.5	13.1	12.0	11.5
	Min	4.7	6.1	8.2	8.7	10.4	10.3	11.0	5.3	7.0	11.3	8.3	4.3	3.4
Relative Humidity	Max	93	95	94	99	99	98	100	100	97	98	97	94	-
	Min	68	73	84	71	85	72	73	80	68	68	74	62	-
Soil Temperature at 10 cm	06 UTC	9.4	10.0	10.8	11.0	12.0	11.6	12.8	10.8	11.4	12.8	11.3	9.8	7.3
	12 UTC	11.0	10.4	11.2	11.8	12.6	12.6	13.6	12.0	12.4	12.2	12.0	10.5	8.9
Sunshine Duration		0.0	0.0	0.0	0.0	2.7	0.0	0.4	4.3	0.2	0.0	0.8	2.5	3.1
Precipitation		0.2			20.7		4.1	34.5		0.5	0.9	60.9	29.7	19.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	13.0
Growing Degrees	5	1.5	3.0	4.5	6.5	7.5	7.4	7.8	4.0	6.8	8.4	57.2	31.5	28.1
	10	0.0	0.0	0.0	1.5	2.5	2.4	2.8	0.0	1.8	3.4	14.4	0.0	3.2

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.2	7.6	8.7
Precipitation - Reference Evapotranspiration	53.7	22.1	10.3
Number of Rainy Days	6.0	3.0	3.0
Number of Dry Days	0.0	7.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





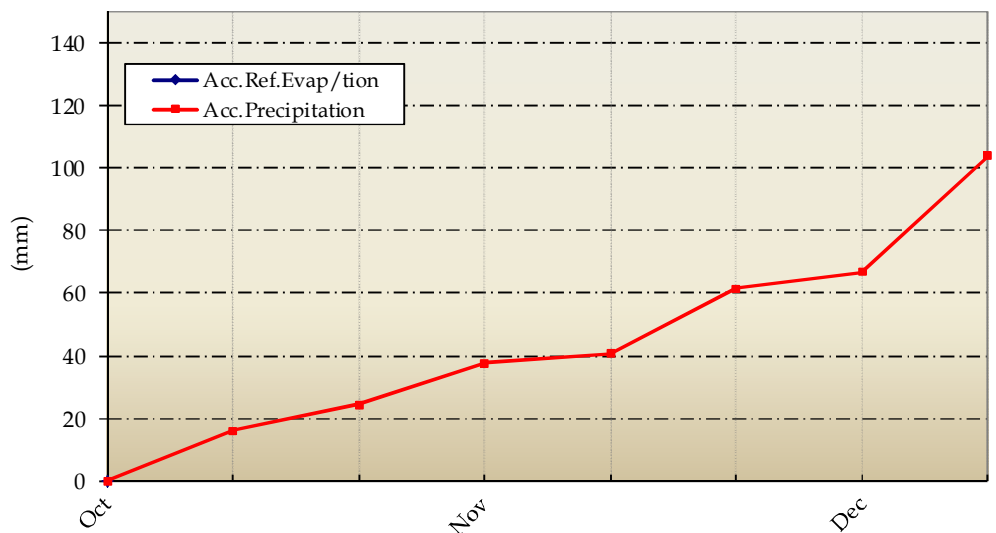
Tanagra

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.4	12.8	14.6	17.5	17.2	17.0	17.1	17.3	19.1	12.6	15.7	14.4	14.0
	Min	10.0	7.4	7.5	7.0	6.3	8.4	8.5	3.4	6.0	11.2	7.6	6.5	5.7
Relative Humidity	Max	97	97	98	100	100	100	100	98	100	100	99	97	-
	Min	67	65	60	66	66	67	46	40	46	62	58	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	0.8	2.5	2.1	7.2	4.3	4.8	7.2	5.7	0.0	3.5	4.0	
Precipitation		0.7			5.4			13.0			17.8	36.9	1.4	28.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	5.7	5.1	6.1	7.3	6.8	7.7	7.8	5.4	7.6	6.9	66.2	54.7	
	10	0.7	0.1	1.1	2.3	1.8	2.7	2.8	0.4	2.6	1.9	16.2	6.5	

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	28.6
Number of Rainy Days	4.0	2.0	4.4
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



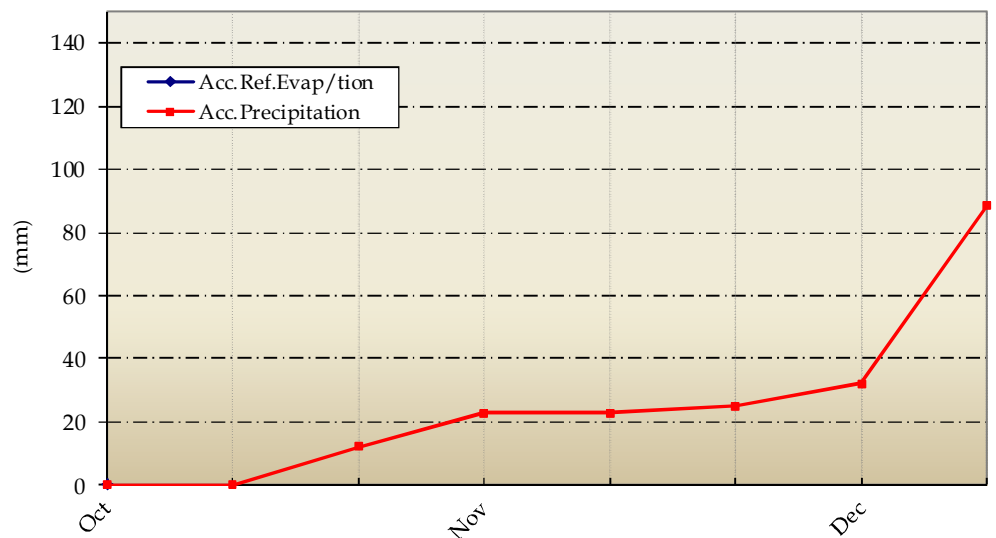
Tripoli

1st 10-day period (1-10/12/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.1	11.9	10.3	12.1	14.4	14.0	12.7	13.8	14.0	9.7	12.5	12.9	11.6
	Min	1.2	7.5	8.5	7.8	2.3	1.7	6.9	4.6	4.7	8.2	5.3	3.2	2.8
Relative Humidity	Max	100	97	93	100	100	100	100	98	98	99	98	99	-
	Min	66	69	83	69	61	70	54	59	61	74	67	59	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	8.5	7.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	10.3	7.9
Sunshine Duration		3.1	1.5	0.0	0.9	4.7	4.8	6.0	4.0	1.0	0.5	2.6	3.5	3.7
Precipitation		0.1	0.0	0.0	9.0	0.0	0.0	16.0	1.1	1.6	28.7	56.5	22.6	38.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	9.1
Growing Degrees	5	1.7	4.7	4.4	5.0	3.4	2.9	4.8	4.2	4.4	4.0	39.2	30.7	26.1
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.6

1st 10-day period (1-10/12/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.1	5.9	8.4
Precipitation - Reference Evapotranspiration	49.4	16.7	30.4
Number of Rainy Days	6.0	3.0	4.3
Number of Dry Days	1.0	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





◆ **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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