



AGROMETEOROLOGICAL BULLETIN

*January 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



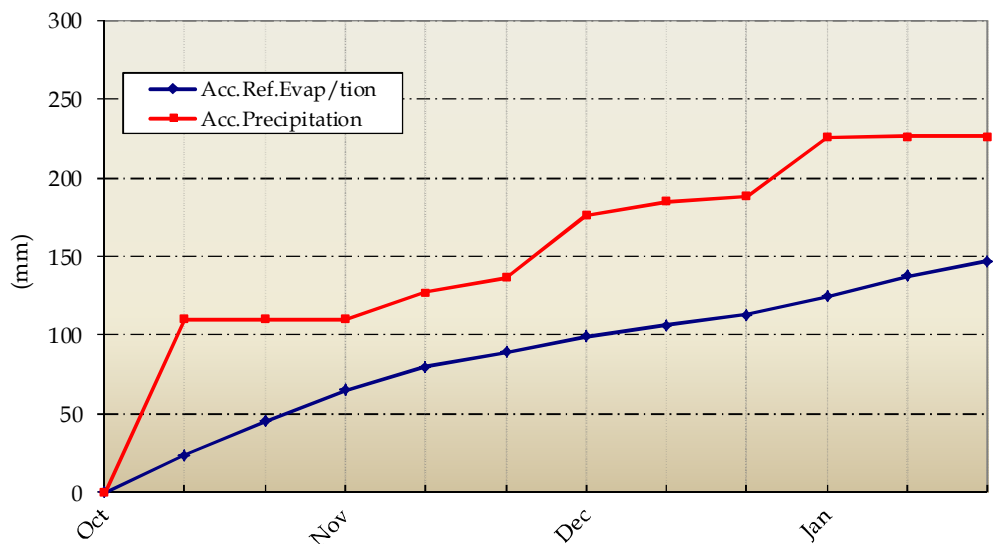
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2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.4	9.8	10.2	10.6	11.0	11.2	9.4	7.8	8.8	9.2	9.9	10.3	8.0
	Min	-4.0	5.0	-2.0	-3.8	-3.2	1.8	5.4	4.6	5.2	1.6	1.1	1.3	0.2
Relative Humidity	Max	92	83	92	91	92	85	85	69	69	65	82	90	-
	Min	61	68	52	58	54	52	46	57	48	37	53	58	-
Soil Temperature at 10 cm	06 UTC	3.0	6.2	4.6	4.0	3.8	4.6	6.2	6.4	6.0	5.4	5.0	4.6	4.2
	12 UTC	6.2	7.4	7.0	6.6	6.6	7.0	7.6	7.0	6.8	7.0	6.9	6.3	5.1
Sunshine Duration		6.1	0.0	7.2	6.9	6.1	6.4	1.6	0.2	0.0	2.5	3.7	4.1	3.1
Precipitation			0.0									0.0	12.3	11.4
Evaporation		0.0	0.0	0.0	0.0	0.0	0.7	2.5	2.0	1.4	0.0	6.6	6.1	6.6
Growing Degrees	5	0.0	2.4	0.0	0.0	0.0	1.5	2.4	1.2	2.0	0.4	9.9	14.7	9.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.4	7.4	8.8
Precipitation - Reference Evapotranspiration	-9.4	4.9	2.6
Number of Rainy Days	0.0	5.0	2.2
Number of Dry Days	19.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

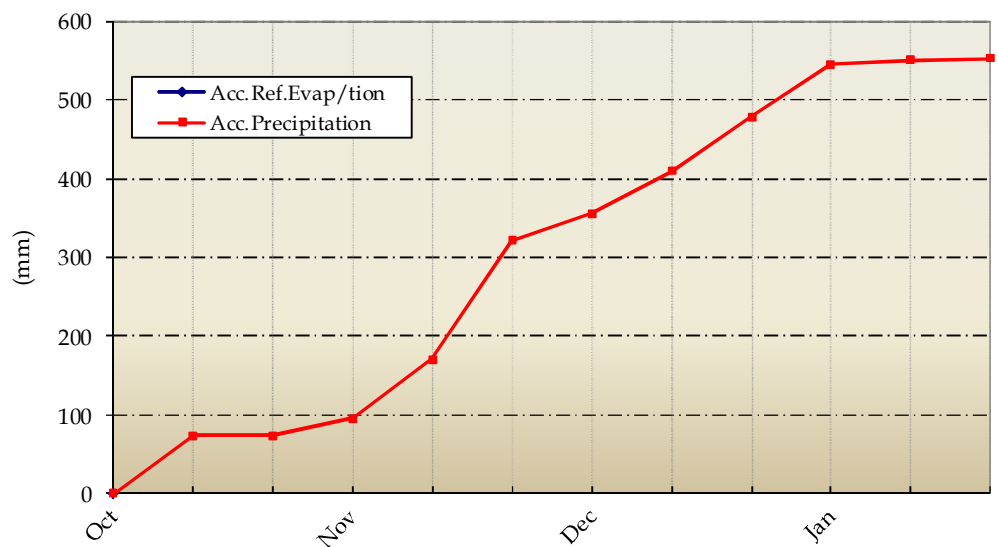


2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	14.6	16.2	16.0	16.4	16.7	17.7	14.4	15.4	14.9	15.8	12.8	13.6
	Min	1.4	5.4	5.2	7.0	3.8	0.9	-0.4	-1.4	3.0	-0.2	2.5	5.3	4.8
Relative Humidity	Max	93	95	94	99	96	91	90	89	91	94	93	92	-
	Min	62	61	46	62	40	40	32	39	45	40	47	52	-
Soil Temperature at 10 cm	06 UTC	7.4	8.2	9.0	9.0	9.4	8.8	8.0	5.8	8.2	7.0	8.1	7.8	8.3
	12 UTC	8.0	10.6	11.0	12.0	10.4	9.6	10.2	8.4	9.0	9.0	9.8	9.5	9.8
Sunshine Duration		2.5	0.2	2.4	4.4	5.7	7.8	7.2	7.1	3.0	6.9	4.7	3.4	4.4
Precipitation					1.8							1.8	39.9	33.0
Evaporation		1.2	0.6	2.0	1.4	1.5	1.0	1.5	1.5	1.6	1.2	13.5	19.4	18.1
Growing Degrees	5	3.3	5.0	5.7	6.5	5.1	3.8	3.7	1.5	4.2	2.4	41.1	40.9	42.4
	10	0.0	0.0	0.7	1.5	0.1	0.0	0.0	0.0	0.0	0.0	2.3	2.9	7.2

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	9.8	9.4
Precipitation - Reference Evapotranspiration	-	30.1	23.6
Number of Rainy Days	1.0	7.0	3.7
Number of Dry Days	7.0	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



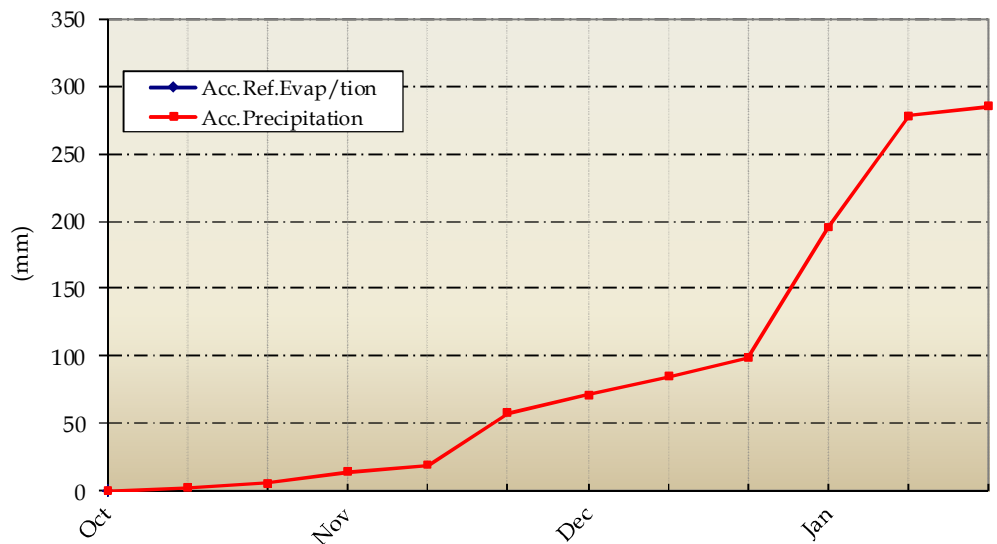
Iraklio

2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.0	16.0	14.4	15.4	15.2	14.6	13.0	12.2	14.0	11.8	14.1	14.6	14.7
	Min	7.0	8.6	8.6	8.8	8.8	13.6	12.8	10.4	11.2	11.6	10.1	9.1	9.1
Relative Humidity	Max	94	92	95	92	87	91	78	90	81	78	88	90	-
	Min	67	66	74	66	65	66	57	61	54	61	64	66	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		4.7	6.5	1.4	5.9	0.5	0.0	0.0	0.0	3.9	0.7	2.4	3.5	3.7
Precipitation				0.4			0.5	0.1	5.5	0.3	0.7	7.5	44.0	28.7
Evaporation		1.0	0.4	0.2	0.0	0.3	4.7	4.6	1.4	0.6	1.9	15.1	13.6	24.1
Growing Degrees	5	5.5	7.3	6.5	7.1	7.0	9.1	7.9	6.3	7.6	6.7	71.0	68.9	68.9
	10	0.5	2.3	1.5	2.1	2.0	4.1	2.9	1.3	2.6	1.7	21.0	22.0	21.0

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	14.6	-
Precipitation - Reference Evapotranspiration	-	29.4	28.7
Number of Rainy Days	6.0	4.0	4.2
Number of Dry Days	4.0	2.0	-

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Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



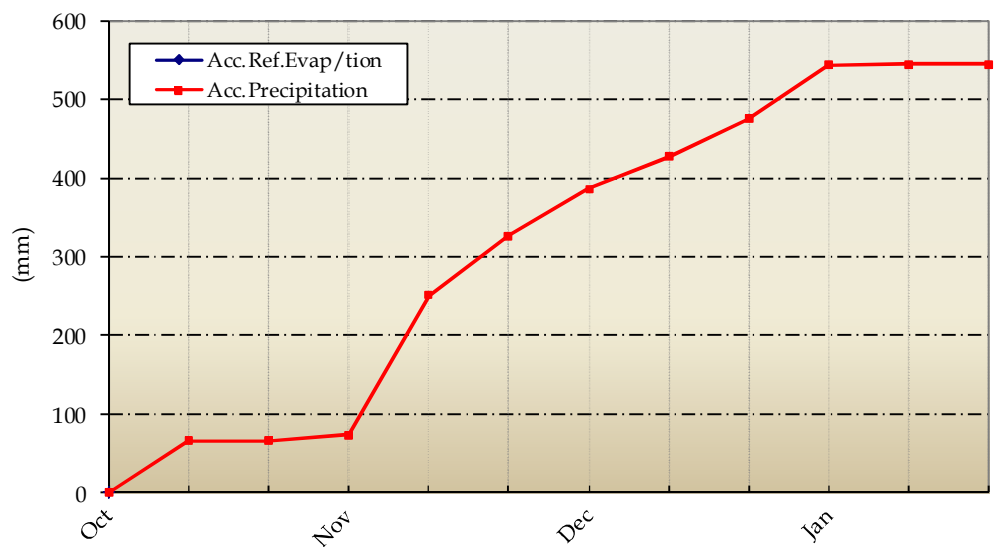
Ioannina

2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.0	9.0	11.5	13.6	11.2	14.2	14.0	12.5	12.0	10.0	11.5	6.5	8.7
	Min	-3.0	-2.0	-3.8	-3.0	-3.0	-5.0	-3.4	-6.8	-2.5	-6.0	-3.8	-1.6	-0.4
Relative Humidity	Max	96	100	100	100	100	92	79	85	96	100	95	93	-
	Min	58	65	56	52	60	36	28	45	61	50	51	59	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.8
Sunshine Duration		0.0	1.3	4.9	5.7	4.7	5.8	6.8	6.4	2.5	5.5	4.4	3.2	3.0
Precipitation		0.0	0.0						0.0			0.0	26.2	26.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	4.4
Growing Degrees	5	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.6	2.7	9.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.6
Precipitation - Reference Evapotranspiration	-	-	20.3
Number of Rainy Days	0.0	4.0	2.9
Number of Dry Days	15.0	0.0	-

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

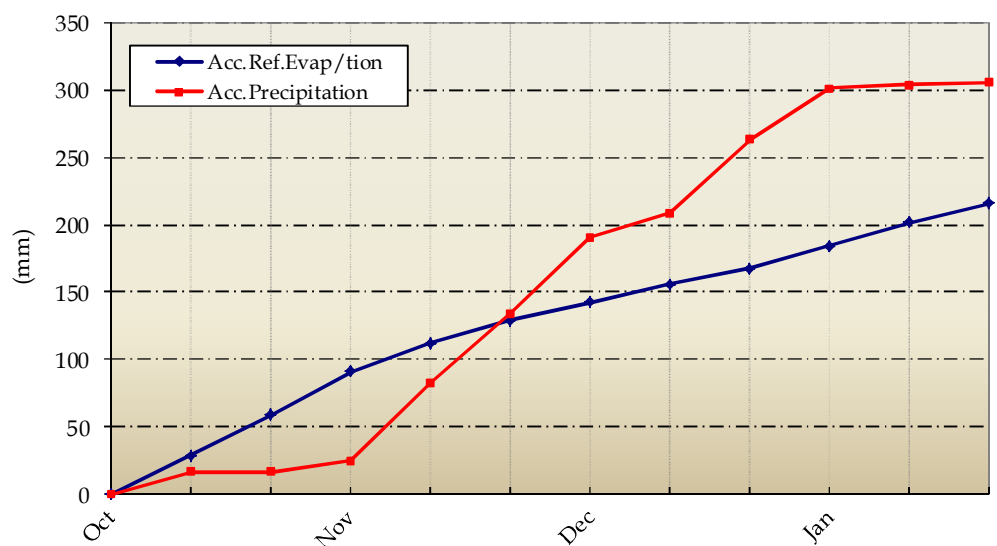
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	15.2	18.8	16.3	18.6	16.0	17.6	15.4	15.3	15.9	16.4	13.2	14.6
	Min	1.2	6.5	6.1	4.8	4.4	3.6	2.8	4.8	4.0	4.6	4.3	4.8	4.9
Relative Humidity	Max	91	91	89	87	90	82	88	72	81	84	86	86	-
	Min	47	55	33	51	37	43	27	48	47	33	42	49	-
Soil Temperature at 10 cm	06 UTC	6.0	9.2	9.6	10.0	9.4	9.4	9.2	10.2	9.6	9.2	9.2	8.7	9.0
	12 UTC	10.6	10.4	11.0	10.6	11.0	10.2	11.8	10.6	10.4	11.0	10.8	9.0	10.1
Sunshine Duration		7.5	0.6	6.7	6.5	7.6	8.2	8.1	11.0	2.3	4.0	6.2	3.8	4.2
Precipitation			2.0							0.0		2.0	79.7	33.9
Evaporation		-	4.1	2.7	3.6	1.2	1.8	0.3	0.4	4.9	1.5	-	10.4	23.4
Growing Degrees	5	3.2	5.9	7.5	5.6	6.5	4.8	5.2	5.1	4.7	5.3	53.6	39.7	47.5
	10	0.0	0.9	2.5	0.6	1.5	0.0	0.2	0.1	0.0	0.3	5.9	2.2	8.1

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.6	13.1	11.1
Precipitation - Reference Evapotranspiration	-12.6	66.6	22.8
Number of Rainy Days	1.0	7.0	3.8
Number of Dry Days	6.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



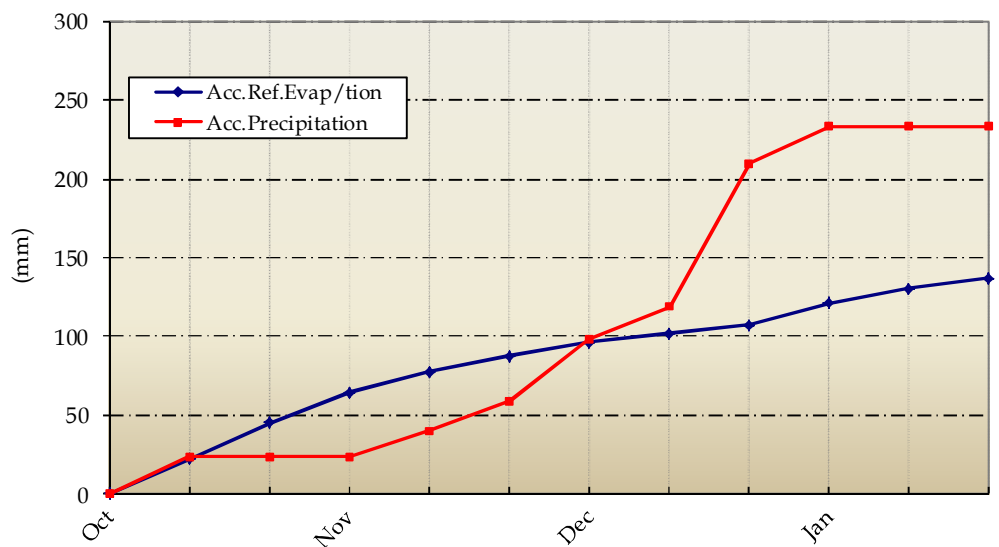
Larisa

2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.2	7.4	11.6	7.7	10.6	12.4	11.2	9.4	11.0	8.0	10.0	9.5	9.3
	Min	-3.0	-1.8	3.0	-2.2	-1.4	-4.4	-3.0	3.4	3.0	3.0	-0.3	-1.6	0.0
Relative Humidity	Max	88	97	99	100	100	99	97	91	83	73	93	96	-
	Min	41	74	69	65	69	55	41	61	50	49	57	49	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.5
Sunshine Duration		4.8	0.0	1.6	1.5	4.4	6.8	5.6	0.2	4.1	0.0	2.9	4.8	3.6
Precipitation			0.0									0.0	2.4	8.6
Evaporation		0.0	0.8	0.3	0.9	0.0	0.0	0.0	0.0	0.6	0.1	2.7	1.5	5.9
Growing Degrees	5	0.0	0.0	2.3	0.0	0.0	0.0	0.0	1.4	2.0	0.5	6.2	6.0	9.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.8	7.5	6.4
Precipitation - Reference Evapotranspiration	-6.8	-5.1	2.2
Number of Rainy Days	0.0	2.0	2.6
Number of Dry Days	28.0	0.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



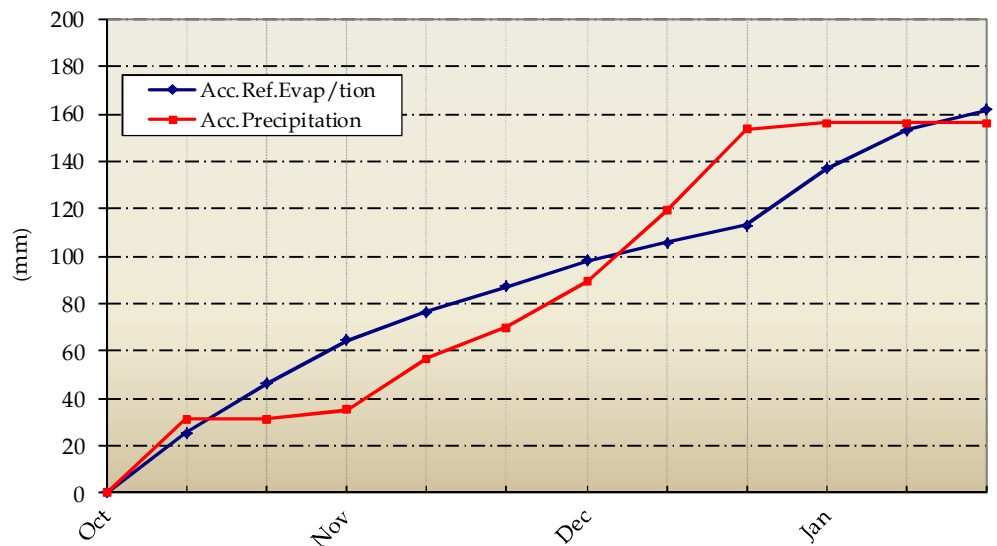
Mikra

2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	12.0	11.6	11.2	12.1	11.0	10.4	9.2	10.0	8.6	10.9	7.9	8.8
	Min	-1.2	6.9	5.8	-0.2	-1.1	-1.1	-2.0	5.0	6.0	4.8	2.3	-0.2	1.1
Relative Humidity	Max	88	93	93	98	96	99	98	85	63	59	87	80	-
	Min	49	67	65	64	58	58	62	54	46	44	57	53	-
Soil Temperature at 10 cm	06 UTC	4.0	7.4	7.6	6.8	5.4	6.0	5.8	7.2	7.6	7.4	6.5	3.1	4.3
	12 UTC	6.0	7.6	8.6	9.6	10.2	6.8	7.2	7.8	8.4	7.8	8.0	4.4	5.7
Sunshine Duration		4.6	0.0	4.5	5.5	7.2	4.6	6.9	0.0	1.0	4.8	3.9	5.3	3.6
Precipitation			0.1									0.1	0.0	6.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	7.4	10.5
Growing Degrees	5	0.9	4.5	3.7	0.5	0.5	0.0	0.0	2.1	3.0	1.7	16.9	4.0	11.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.3	12.4	8.8
Precipitation - Reference Evapotranspiration	-8.2	-12.4	-2.2
Number of Rainy Days	1.0	0.0	2.2
Number of Dry Days	19.0	10.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

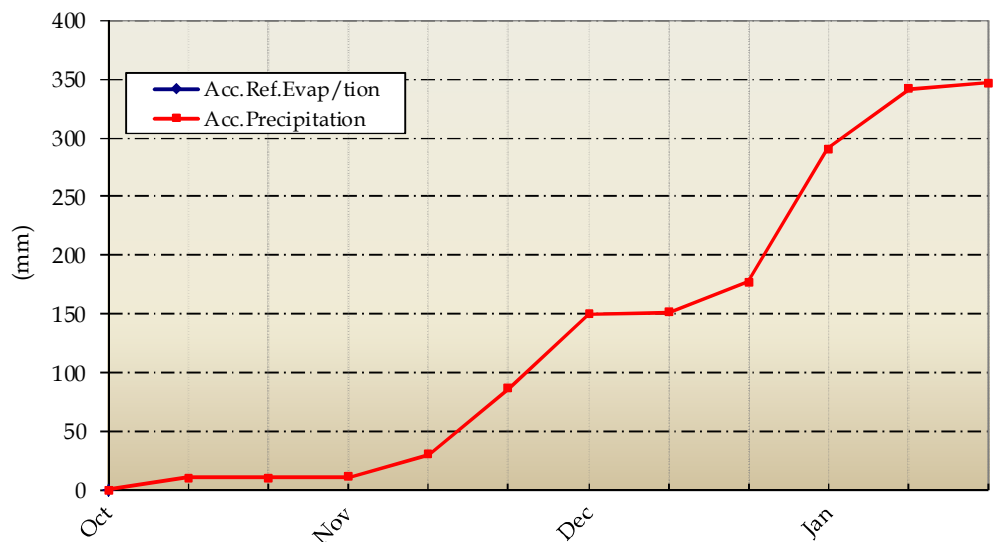


2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.6	12.2	13.0	13.8	10.8	12.4	10.6	9.6	8.6	7.8	11.2	11.5	11.4
	Min	0.0	1.5	7.2	0.8	1.8	4.4	7.8	6.9	5.8	5.6	4.2	2.2	3.0
Relative Humidity	Max	89	95	100	100	99	94	82	74	96	80	91	96	-
	Min	44	53	55	59	75	53	46	56	71	58	57	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.2	1.4	0.0	6.2	0.8	4.2	5.0	1.7	0.0	0.0	2.6	4.3	
Precipitation			0.6	2.3					0.8	1.4	0.0	5.1	38.0	26.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	1.8	1.9	5.1	2.3	1.3	3.4	4.2	3.3	2.2	1.7	27.1	19.9	
	10	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	

2nd 10-day period (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	9.4	
Precipitation - Reference Evapotranspiration	-	28.6	26.0
Number of Rainy Days	4.0	4.0	4.7
Number of Dry Days	4.0	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

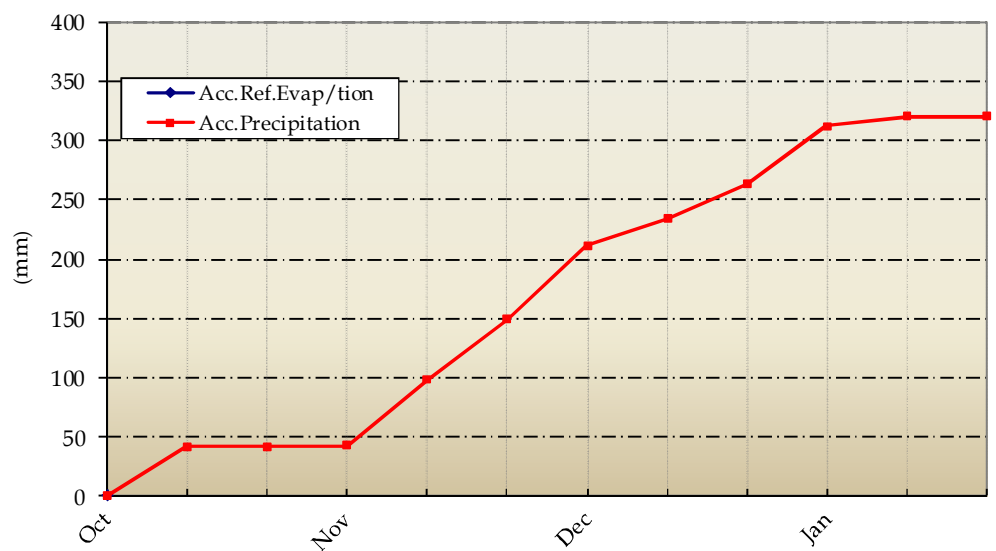


2nd 10-day period (11-20/01/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.2	9.1	11.8	13.5	10.3	13.3	10.0	9.0	9.1	7.3	10.7	8.2	9.4
	Min	-5.2	-2.0	-1.1	-2.2	-0.6	-2.7	-3.7	-5.1	-2.9	0.4	-2.5	-0.7	0.1
Relative Humidity	Max	-	100	-	100	100	98	97	-	99	95	98	99	-
	Min	30	58	49	45	56	32	51	50	52	59	48	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	4.2	2.8	2.4	-	-	3.2	3.2	2.5	4.3
	12 UTC	-	-	-	-	5.8	5.4	-	-	-	5.2	5.5	4.4	5.0
Sunshine Duration		6.4	0.0	6.7	5.3	3.0	7.3	7.8	6.8	2.6	6.2	5.2	3.3	4.1
Precipitation					0.0							0.0	102.0	31.6
Evaporation		-	-	-	0.0	0.0	0.0	-	-	0.0	0.7	-	-	5.6
Growing Degrees	5	0.0	0.0	0.4	0.7	0.0	0.3	0.0	0.0	0.0	0.0	1.3	3.1	10.8
	10	0.0	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 (11-20/01/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	6.7	8.5
Precipitation - Reference Evapotranspiration	-	95.3	23.1
Number of Rainy Days	0.0	6.0	3.7
Number of Dry Days	14.0	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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