



AGROMETEOROLOGICAL BULLETIN

March 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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Division of Climatology-Applications
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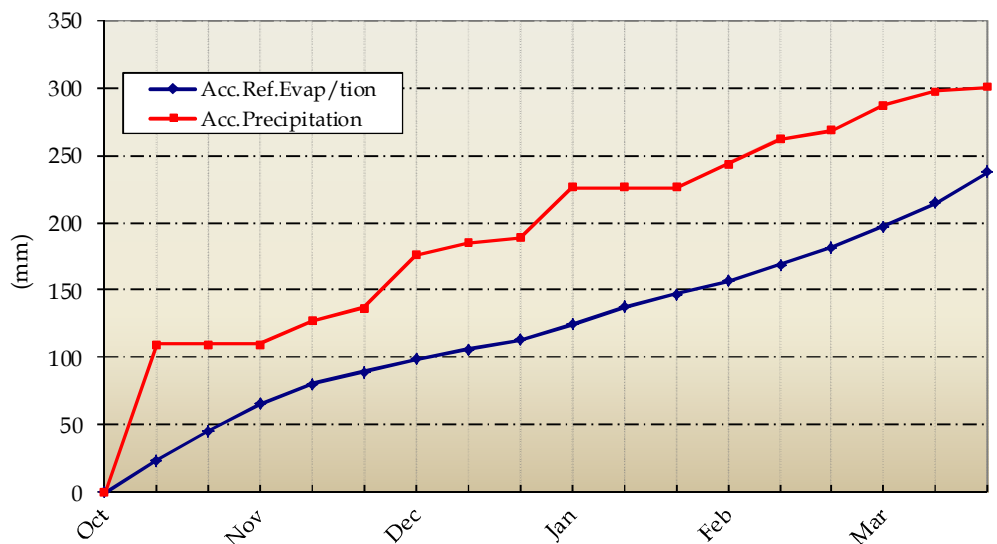
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www.hnms.gr
www.emy.gov.gr
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www.meteohellas.gr

Alexandroupoli

2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.6	20.0	21.2	21.4	13.0	12.0	13.6	13.8	13.4	16.0	16.0	15.6	11.6
	Min	7.2	3.4	5.2	5.0	5.2	4.0	-2.2	-2.0	3.0	0.2	2.9	4.5	2.9
Relative Humidity	Max	94	93	94	91	85	61	80	92	74	88	85	92	-
	Min	66	51	43	46	72	34	31	38	30	34	44	55	-
Soil Temperature at 10 cm	06 UTC	10.4	10.0	10.2	11.4	11.6	7.4	6.4	6.4	6.8	7.6	8.8	9.5	6.6
	12 UTC	14.0	14.6	15.0	15.6	10.6	9.0	11.6	11.8	12.2	13.4	12.8	13.4	8.9
Sunshine Duration		8.3	10.2	10.1	9.3	0.0	9.7	10.6	9.2	10.6	9.6	8.8	6.7	4.9
Precipitation						3.3						3.3	9.5	14.4
Evaporation		2.5	1.1	3.8	1.4	3.8	0.0	0.0	0.0	4.4	1.7	18.7	25.3	21.8
Growing Degrees	5	6.4	6.7	8.2	8.2	4.1	3.0	0.7	0.9	3.2	3.1	44.5	50.6	27.0
	10	1.4	1.7	3.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0	9.5	12.6	3.4

2nd 10-day period (11-20/03/2020)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	23.7	19.5	18.1
Precipitation - Reference Evapotranspiration	-20.4	-10.0	-3.7
Number of Rainy Days	1.0	2.0	2.2
Number of Dry Days	4.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

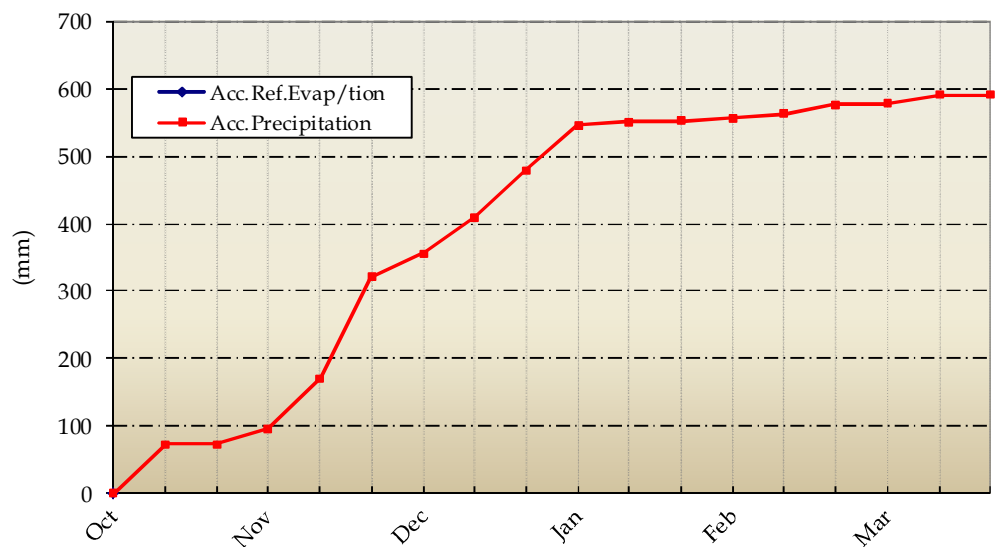


2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.1	19.8	20.8	21.6	19.4	15.9	17.2	17.5	17.2	18.9	18.5	17.1	15.7
	Min	6.1	2.9	4.9	8.6	7.1	9.1	-0.5	1.7	4.6	4.5	4.9	7.1	6.3
Relative Humidity	Max	93	95	94	97	96	91	87	93	96	96	94	94	-
	Min	42	40	48	53	61	31	24	47	28	47	42	53	-
Soil Temperature at 10 cm	06 UTC	12.4	12.2	12.5	13.8	14.4	15.2	10.6	12.0	13.0	12.8	12.9	12.4	10.6
	12 UTC	13.4	13.4	14.0	15.4	16.0	16.2	13.6	13.8	14.2	14.4	14.4	14.0	12.8
Sunshine Duration		10.0	10.3	10.4	8.9	7.9	9.8	10.7	10.9	9.2	9.1	9.7	6.1	6.4
Precipitation							0.4					0.4	16.3	25.8
Evaporation		2.4	5.0	4.0	2.2	4.0	3.1	2.1	4.2	3.5	3.1	33.6	43.2	26.9
Growing Degrees	5	6.6	6.4	7.9	10.1	8.3	7.5	3.4	4.6	5.9	6.7	67.2	70.7	60.4
	10	1.6	1.4	2.9	5.1	3.3	2.5	0.0	0.0	0.9	1.7	19.3	21.0	15.6

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	20.7	21.0
Precipitation - Reference Evapotranspiration	-	-4.4	4.8
Number of Rainy Days	1.0	3.0	3.7
Number of Dry Days	6.0	9.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

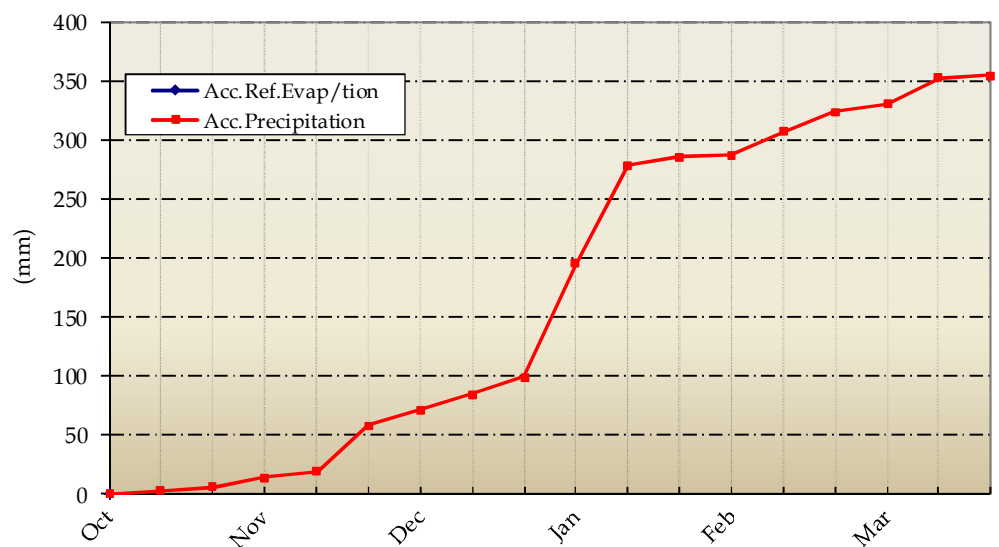


2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	16.8	18.6	19.4	20.0	14.4	13.6	15.8	13.6	16.2	16.5	17.6	15.9
	Min	9.0	9.0	14.0	12.0	11.0	14.4	11.0	11.6	11.0	11.6	11.5	10.9	9.4
Relative Humidity	Max	92	87	86	86	89	91	60	65	58	64	78	87	-
	Min	66	66	52	62	51	58	44	46	44	44	53	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		4.2	8.6	9.3	10.2	10.8	0.0	9.5	10.6	6.9	7.7	7.8	6.8	5.5
Precipitation							2.2					2.2	16.5	23.2
Evaporation		0.0	2.9	5.2	1.8	2.9	4.3	4.8	3.4	8.2	6.0	39.5	21.0	33.8
Growing Degrees	5	7.6	7.9	11.3	10.7	10.5	9.4	7.3	8.7	7.3	8.9	89.6	92.4	76.5
	10	2.6	2.9	6.3	5.7	5.5	4.4	2.3	3.7	2.3	3.9	39.6	42.4	28.0

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	26.3	-
Precipitation - Reference Evapotranspiration	-	-9.8	23.2
Number of Rainy Days	1.0	4.0	3.5
Number of Dry Days	6.0	9.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

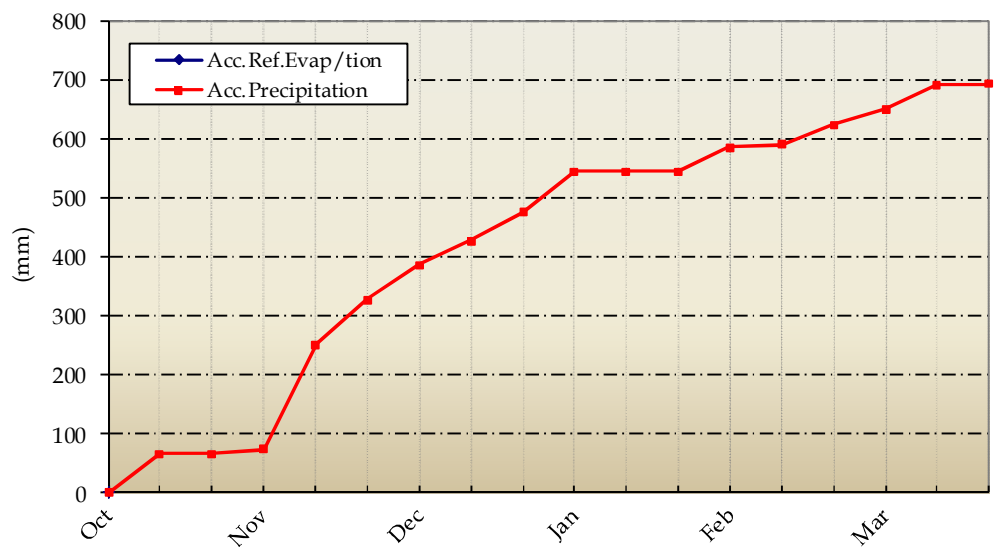


2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.2	21.5	24.0	24.5	20.2	12.8	17.5	21.0	18.0	19.0	19.3	15.8	12.6
	Min	0.2	1.0	2.5	3.4	4.2	8.0	-5.0	-2.0	3.4	-1.0	1.5	3.2	2.7
Relative Humidity	Max	100	100	100	100	100	55	70	89	100	100	91	92	-
	Min	44	40	37	35	51	25	19	31	20	31	33	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.8
Sunshine Duration		6.2	8.5	8.6	7.8	5.7	10.2	9.0	8.9	8.8	7.8	8.2	5.6	4.5
Precipitation						1.3						1.3	15.6	29.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	18.6
Growing Degrees	5	2.2	6.3	8.3	9.0	7.2	5.4	1.3	4.5	5.7	4.0	53.7	44.7	28.8
	10	0.0	1.3	3.3	4.0	2.2	0.4	0.0	0.0	0.7	0.0	11.8	3.3	3.0

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	16.8
Precipitation - Reference Evapotranspiration	-	-	12.7
Number of Rainy Days	1.0	3.0	3.4
Number of Dry Days	5.0	38.0	-

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

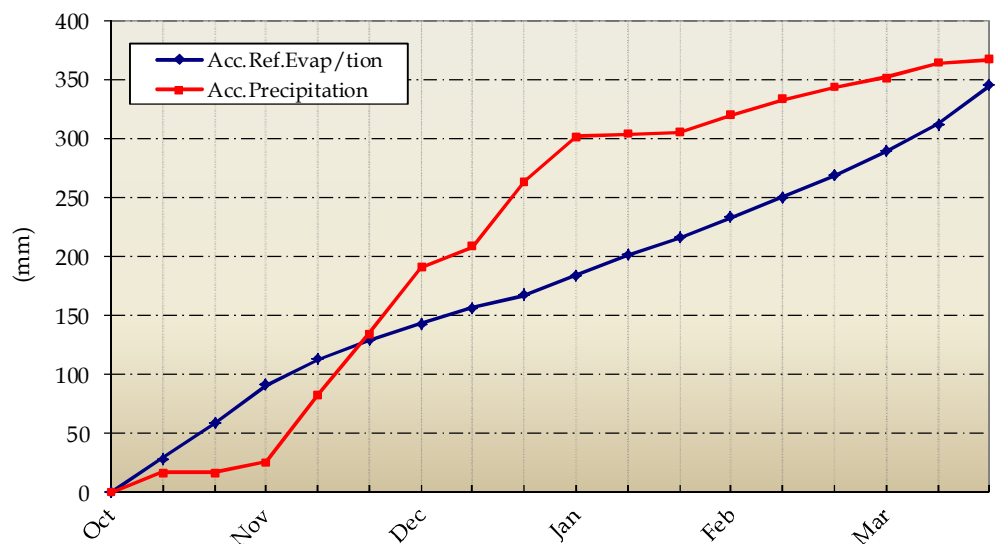
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.1	20.3	25.2	21.0	20.0	17.2	17.3	17.6	18.1	18.6	19.2	18.4	16.3
	Min	4.9	7.8	10.0	7.4	6.0	9.0	6.5	1.7	6.5	3.3	6.3	6.4	5.8
Relative Humidity	Max	92	81	79	91	98	82	83	85	89	90	87	91	-
	Min	40	31	24	50	47	23	16	31	27	35	32	45	-
Soil Temperature at 10 cm	06 UTC	11.4	12.4	12.4	13.0	9.0	14.8	10.8	12.4	11.2	11.6	11.9	12.2	10.9
	12 UTC	12.4	14.4	15.5	16.6	16.5	15.0	14.5	14.2	14.4	15.8	14.9	13.3	13.0
Sunshine Duration		9.9	10.7	10.6	9.2	9.8	6.8	10.0	9.7	9.0	9.9	9.6	7.1	6.1
Precipitation							3.0					3.0	10.6	22.7
Evaporation		2.6	3.4	6.0	2.0	4.6	5.0	4.9	3.1	2.9	5.9	40.4	24.6	33.5
Growing Degrees	5	6.0	9.1	12.6	9.2	8.0	8.1	6.9	4.7	7.3	6.0	77.8	74.1	60.5
	10	1.0	4.1	7.6	4.2	3.0	3.1	1.9	0.0	2.3	1.0	28.1	24.1	15.1

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.9	26.3	21.7
Precipitation - Reference Evapotranspiration	-29.9	-15.7	1.0
Number of Rainy Days	1.0	4.0	3.8
Number of Dry Days	6.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



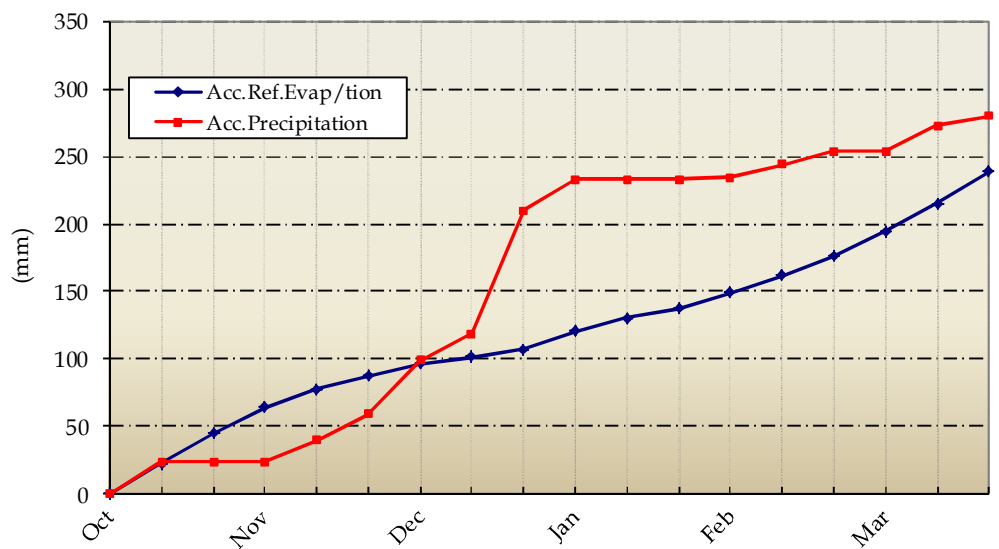
Larisa

2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	20.2	22.8	21.6	13.8	11.0	14.8	18.0	16.2	20.0	17.5	18.6	14.0
	Min	6.4	2.0	3.4	5.8	6.8	4.2	-3.0	-1.6	0.2	0.6	2.5	4.5	2.8
Relative Humidity	Max	93	97	95	95	96	84	93	90	95	93	93	93	-
	Min	45	39	41	41	71	36	34	35	38	32	41	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	9.5
Sunshine Duration		9.3	9.5	9.8	9.6	0.0	6.4	9.3	10.0	9.5	10.2	8.4	6.2	5.1
Precipitation						4.8	2.4					7.2	18.6	13.9
Evaporation		2.4	4.4	3.4	6.1	0.3	3.5	2.7	4.6	3.8	3.4	34.6	38.4	20.7
Growing Degrees	5	6.7	6.1	8.1	8.7	5.3	2.6	0.9	3.2	3.2	5.3	50.1	65.6	36.4
	10	1.7	1.1	3.1	3.7	0.3	0.0	0.0	0.0	0.0	0.3	10.2	20.3	5.5

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.6	24.4	18.5
Precipitation - Reference Evapotranspiration	-16.4	-5.8	-4.6
Number of Rainy Days	2.0	3.0	3.1
Number of Dry Days	5.0	16.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



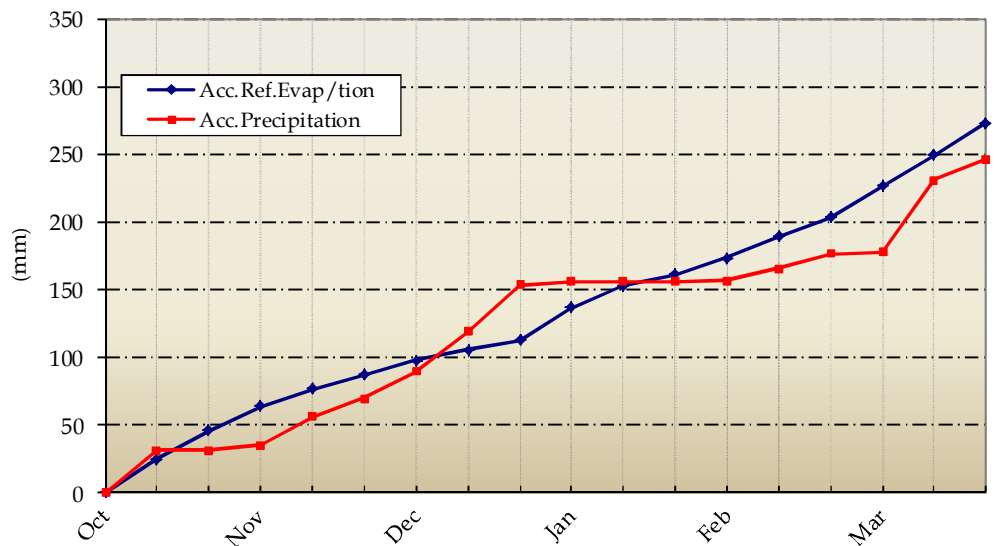
Mikra

2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	20.4	21.4	21.4	14.8	12.1	13.2	17.4	16.1	20.1	17.3	18.4	13.4
	Min	7.6	4.2	5.4	6.9	8.0	5.7	1.6	2.3	2.5	2.9	4.7	6.8	4.2
Relative Humidity	Max	89	90	91	94	95	89	85	88	87	91	90	90	-
	Min	46	40	43	45	69	37	40	34	37	35	43	40	-
Soil Temperature at 10 cm	06 UTC	9.4	10.0	11.2	12.2	12.8	10.4	9.2	9.6	9.0	10.2	10.4	10.6	8.1
	12 UTC	11.0	11.6	13.6	14.1	12.4	12.0	11.0	11.6	11.8	13.0	12.2	13.2	10.7
Sunshine Duration		9.9	10.0	10.2	9.8	0.0	10.2	10.3	7.9	10.5	11.0	9.0	6.9	4.9
Precipitation						13.7	1.5					15.2	11.2	13.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	27.0
Growing Degrees	5	6.9	7.3	8.4	9.2	6.4	3.9	2.4	4.9	4.3	6.5	60.1	76.1	38.9
	10	1.9	2.3	3.4	4.2	1.4	0.0	0.0	0.0	0.0	1.5	14.7	29.5	5.9

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.7	26.1	20.0
Precipitation - Reference Evapotranspiration	-8.5	-14.9	-6.5
Number of Rainy Days	2.0	2.0	3.0
Number of Dry Days	4.0	16.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

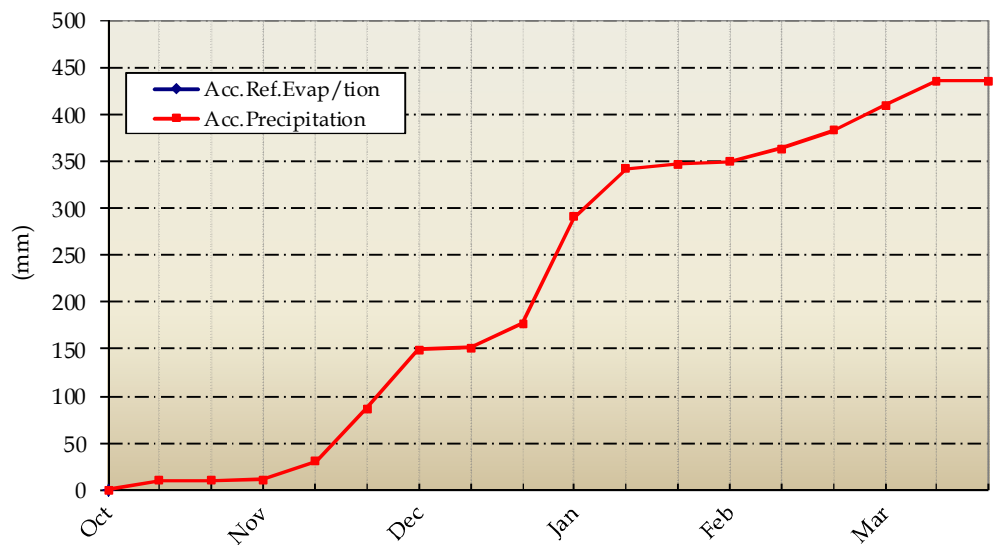


2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.6	17.7	21.8	22.2	15.4	8.6	12.7	15.5	13.6	17.4	16.2	17.3	14.3
	Min	5.9	4.4	7.5	5.8	7.2	7.2	4.2	0.0	3.3	-1.0	4.4	5.8	4.4
Relative Humidity	Max	98	100	82	92	97	72	82	83	80	70	86	93	-
	Min	49	43	31	37	67	48	38	41	28	32	41	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.5	9.6	10.4	9.0	1.3	4.1	10.9	10.2	10.5	9.9	8.1	5.8	
Precipitation							0.3					0.3	29.0	16.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	6.3	6.1	9.7	9.0	6.3	2.9	3.5	2.8	3.5	3.2	53.0	65.3	
	10	1.3	1.1	4.7	4.0	1.3	0.0	0.0	0.0	0.0	0.0	12.3	20.4	

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	20.2	
Precipitation - Reference Evapotranspiration	-	8.8	16.7
Number of Rainy Days	1.0	4.0	3.8
Number of Dry Days	5.0	8.0	-

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

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

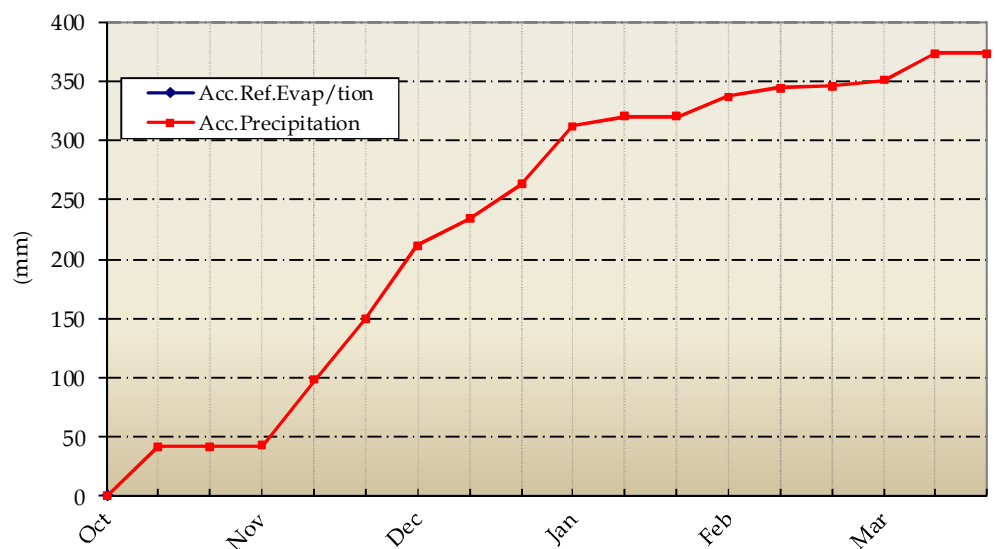


2nd 10-day period (11-20/03/2020)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.1	16.5	21.8	22.0	-	-	-	16.6	19.5	16.0	18.2	15.5	12.2
	Min	-0.4	-1.1	1.8	2.8	-	-	-	-	2.3	-2.7	0.4	1.8	1.7
Relative Humidity	Max	94	98	71	-	-	-	-	90	68	91	85	95	-
	Min	33	28	24	-	-	-	-	21	28	27	27	42	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	7.4	6.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	11.5	8.1
Sunshine Duration		0.0	10.1	9.7	9.1	8.9	5.6	10.3	9.8	10.1	10.2	8.4	7.1	5.7
Precipitation													20.0	22.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	20.1
Growing Degrees	5	2.4	2.7	6.8	7.4	-	-	-	-	5.9	1.7	-	36.9	24.1
	10	0.0	0.0	1.8	2.4	-	-	-	-	0.9	0.0	-	3.5	2.5

2nd 10-day period (11-20/03/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	22.1	19.5
Precipitation - Reference Evapotranspiration	-	-2.1	2.8
Number of Rainy Days	0.0	4.0	4.1
Number of Dry Days	11.0	9.0	-

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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