



AGROMETEOROLOGICAL BULLETIN

April 2019
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



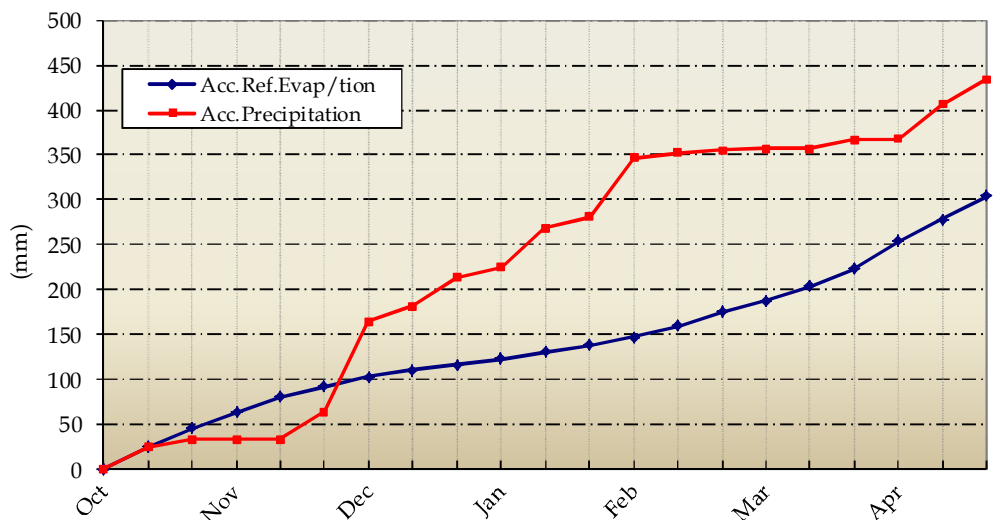
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2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.0	16.6	15.8	15.0	14.6	16.0	17.4	15.4	14.6	15.0	15.8	22.4	16.6
	Min	10.8	9.0	12.2	9.4	7.8	4.4	4.0	6.8	5.0	3.6	7.3	9.9	7.0
Relative Humidity	Max	98	93	97	90	94	90	94	95	90	94	94	85	-
	Min	64	71	65	62	57	27	41	37	49	34	51	42	-
Soil Temperature at 10 cm	06 UTC	12.8	13.4	13.2	13.0	11.2	9.2	10.0	11.4	11.2	10.4	11.6	15.2	11.5
	12 UTC	15.2	14.8	15.4	15.2	12.8	13.6	15.0	15.4	14.0	14.0	14.5	19.3	14.7
Sunshine Duration		9.6	1.0	3.2	1.3	3.6	11.2	9.2	7.1	7.3	9.5	6.3	7.5	5.9
Precipitation		0.5	0.0	6.5	13.5					5.3	2.6	28.4	0.0	15.2
Evaporation		2.3	0.5	3.6	1.8	2.6	4.0	4.1	2.9	3.6	4.5	29.9	47.4	38.8
Growing Degrees	5	9.4	7.8	9.0	7.2	6.2	5.2	5.7	6.1	4.8	4.3	65.7	111.3	67.9
	10	4.4	2.8	4.0	2.2	1.2	0.2	0.7	1.1	0.0	0.0	16.6	61.3	22.8

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.6	33.5	26.7
Precipitation - Reference Evapotranspiration	2.8	-33.5	-11.5
Number of Rainy Days	5.0	0.0	2.8
Number of Dry Days	0.0	13.0	-

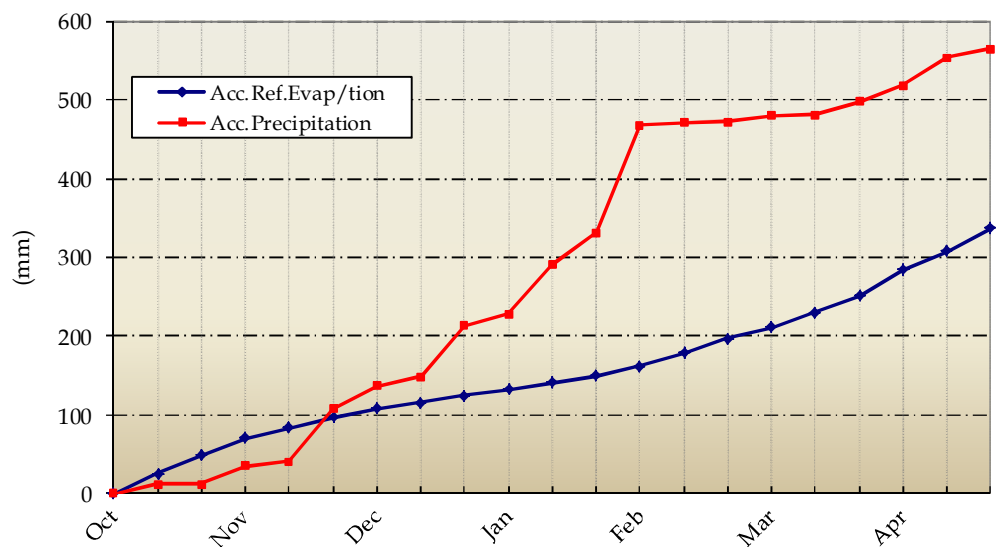
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.2	18.0	19.6	19.6	15.6	18.4	19.0	19.8	18.6	21.0	18.9	24.4	18.4
	Min	10.0	13.0	6.6	10.0	9.0	8.6	7.8	6.7	5.3	7.9	8.5	11.6	9.1
Relative Humidity	Max	100	86	100	100	100	100	100	100	100	100	99	89	-
	Min	59	60	50	59	52	47	63	54	46	41	53	39	-
Soil Temperature at 10 cm	06 UTC	15.2	15.6	14.0	15.4	13.4	14.4	14.6	13.6	15.2	15.6	14.7	17.9	13.7
	12 UTC	17.6	16.6	18.0	16.8	16.6	16.2	16.0	16.4	17.0	18.8	17.0	20.0	16.7
Sunshine Duration		7.1	2.1	11.3	5.6	1.1	12.5	11.9	11.3	11.9	11.6	8.6	6.8	7.2
Precipitation		1.3	1.7		4.4	3.6						11.0	0.0	25.7
Evaporation		2.9	2.7	2.9	4.5	2.2	3.4	6.3	8.0	4.6	6.2	43.7	47.0	37.7
Growing Degrees	5	9.6	10.5	8.1	9.8	7.3	8.5	8.4	8.3	7.0	9.5	86.9	130.4	87.1
	10	4.6	5.5	3.1	4.8	2.3	3.5	3.4	3.3	2.0	4.5	36.9	80.4	37.4

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.4	31.5	28.0
Precipitation - Reference Evapotranspiration	-18.4	-31.5	-2.3
Number of Rainy Days	4.0	0.0	3.3
Number of Dry Days	0.0	23.0	-

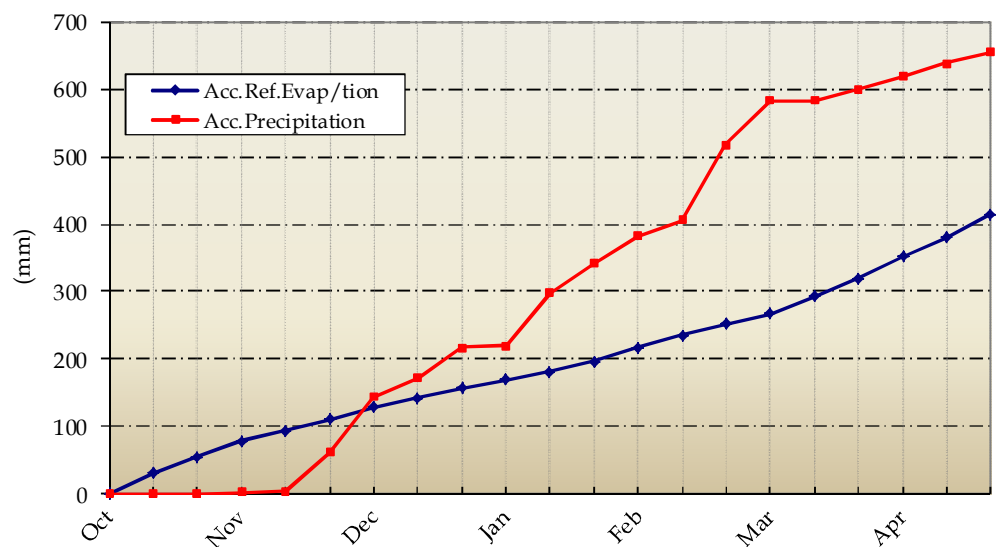
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.6	23.6	22.4	18.6	18.2	16.0	18.0	17.4	16.0	17.4	18.7	21.8	19.9
	Min	12.0	14.4	16.0	12.6	11.6	9.6	11.2	9.6	14.4	13.2	12.5	14.2	12.0
Relative Humidity	Max	87	59	79	84	92	94	92	92	70	70	82	92	-
	Min	57	37	37	60	63	67	63	54	50	53	54	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.9	5.8	7.4	8.5	6.8	3.2	11.9	8.2	8.8	10.3	8.2	6.8	7.4
Precipitation						12.0	4.5					16.5		11.4
Evaporation		2.4	4.3	5.1	5.3	0.9	1.6	2.8	6.8	1.9	7.0	38.1	40.4	52.7
Growing Degrees	5	10.8	14.0	14.2	10.6	9.9	7.8	9.6	8.5	10.2	10.3	105.9	130.1	109.6
	10	5.8	9.0	9.2	5.6	4.9	2.8	4.6	3.5	5.2	5.3	55.9	80.1	59.7

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.5	33.1	-
Precipitation - Reference Evapotranspiration	-19.0	-33.1	11.4
Number of Rainy Days	2.0	0.0	2.0
Number of Dry Days	6.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

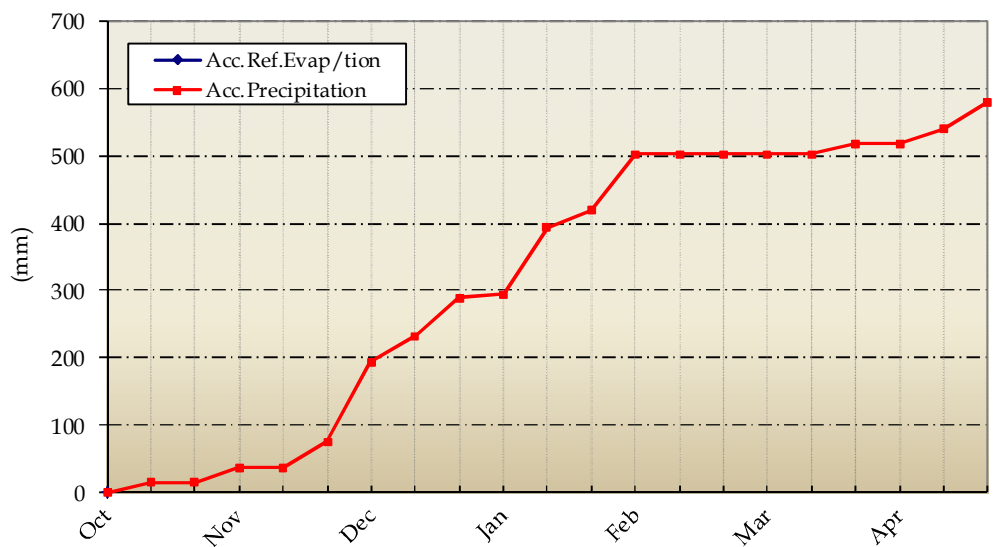


Ioannina

2nd 10-day period (11-20/04/2019)		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	17.0	16.4	13.2	14.6	18.2	16.4	16.6	19.6	21.4	16.8	25.0	16.1
	Min	7.2	8.0	7.6	8.2	7.4	7.4	5.0	4.5	5.2	3.2	6.4	10.3	5.7
Relative Humidity	Max	100	100	95	94	100	100	100	100	100	100	99	89	-
	Min	55	49	45	73	54	37	46	43	32	30	46	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	12.9
Sunshine Duration		6.1	4.6	3.5	2.0	2.7	5.9	5.0	5.6	10.3	8.8	5.4	6.4	4.9
Precipitation		0.2	16.3	1.1	11.3	1.7	8.6	0.7	0.2			40.1	0.0	35.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	28.5
Growing Degrees	5	5.8	7.5	7.0	5.7	6.0	7.8	5.7	5.6	7.4	7.3	65.8	126.3	58.8
	10	0.8	2.5	2.0	0.7	1.0	2.8	0.7	0.6	2.4	2.3	15.8	76.3	15.8

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	24.2
Precipitation - Reference Evapotranspiration	-	-	10.9
Number of Rainy Days	8.0	0.0	4.7
Number of Dry Days	0.0	14.0	-

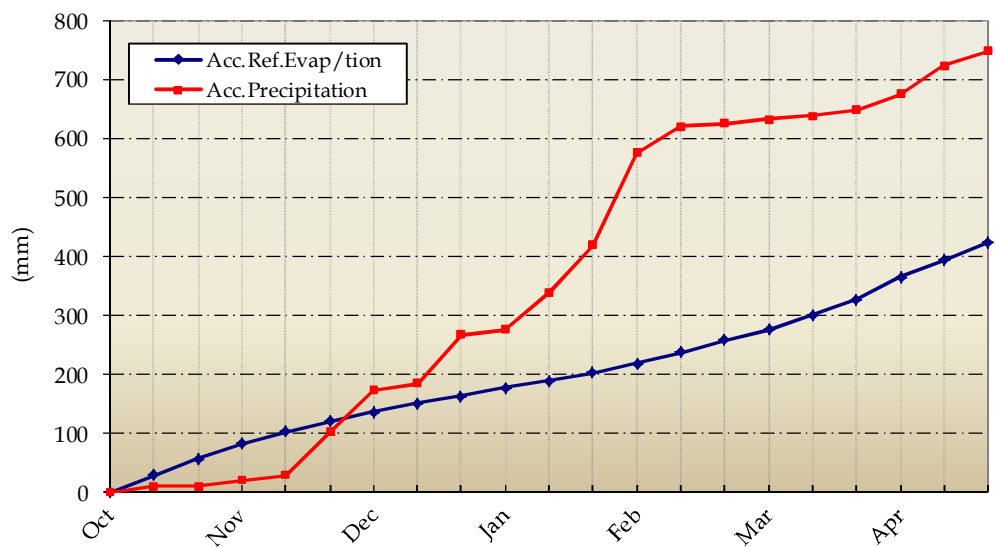
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.2	18.2	20.6	18.4	16.6	19.2	20.4	19.2	18.8	19.1	18.9	25.2	19.2
	Min	6.4	13.0	11.8	9.6	8.6	10.1	6.9	7.8	9.6	7.8	9.2	11.8	8.4
Relative Humidity	Max	93	93	91	93	93	89	91	89	90	92	91	86	-
	Min	57	61	34	54	61	43	42	47	37	45	48	37	-
Soil Temperature at 10 cm	06 UTC	14.2	15.4	14.6	14.8	14.6	14.4	14.6	14.0	14.2	15.0	14.6	19.2	13.9
	12 UTC	15.0	15.6	15.6	15.6	15.6	16.2	17.0	18.0	18.0	18.5	16.5	21.3	16.9
Sunshine Duration		1.7	0.0	7.9	7.1	5.0	11.8	12.6	6.6	10.7	10.4	7.4	7.6	7.1
Precipitation		0.4	7.6	1.0	7.3	5.0	3.4					24.7	0.0	25.5
Evaporation		1.1	0.5	0.3	4.2	3.1	6.0	3.4	3.3	6.5	3.7	32.1	53.4	41.0
Growing Degrees	5	7.3	10.6	11.2	9.0	7.6	9.7	8.7	8.5	9.2	8.5	90.2	135.0	88.0
	10	2.3	5.6	6.2	4.0	2.6	4.7	3.7	3.5	4.2	3.5	40.2	85.0	38.2

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.9	38.1	28.5
Precipitation - Reference Evapotranspiration	-7.2	-38.1	-3.0
Number of Rainy Days	6.0	0.0	4.1
Number of Dry Days	0.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

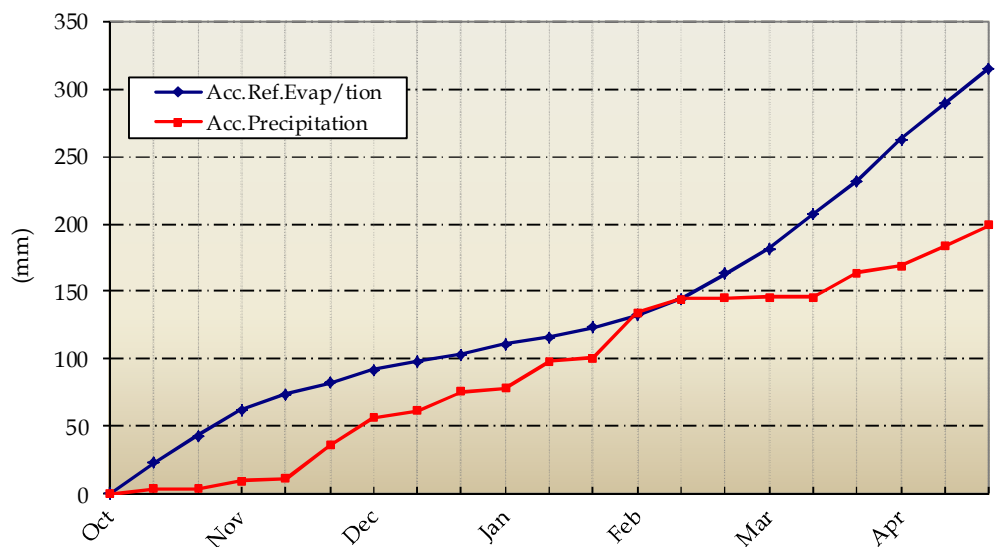


Larisa

2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.8	13.6	19.3	17.2	14.2	17.8	19.0	16.4	19.2	15.8	17.4	23.5	19.0
	Min	5.2	9.0	6.3	5.7	10.0	7.9	6.0	5.0	4.2	6.6	6.6	8.8	6.4
Relative Humidity	Max	87	98	99	99	98	96	98	98	98	94	96	92	-
	Min	30	77	53	61	71	51	49	57	46	60	56	44	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	12.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.4
Sunshine Duration		9.4	0.5	6.0	7.1	2.2	5.4	7.3	7.1	11.0	5.9	6.2	7.0	6.4
Precipitation			2.6	0.9	0.1	5.0	0.1	4.8	1.8		0.0	15.3	1.3	13.6
Evaporation		-	0.0	3.4	1.8	2.7	3.7	1.9	1.3	5.8	1.2	-	46.9	36.9
Growing Degrees	5	8.5	6.3	7.8	6.5	7.1	7.9	7.5	5.7	6.7	6.2	70.1	111.3	77.0
	10	3.5	1.3	2.8	1.5	2.1	2.9	2.5	0.7	1.7	1.2	20.1	61.3	28.8

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.1	33.1	28.6
Precipitation - Reference Evapotranspiration	-10.8	-31.8	-15.0
Number of Rainy Days	7.0	1.0	3.4
Number of Dry Days	1.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

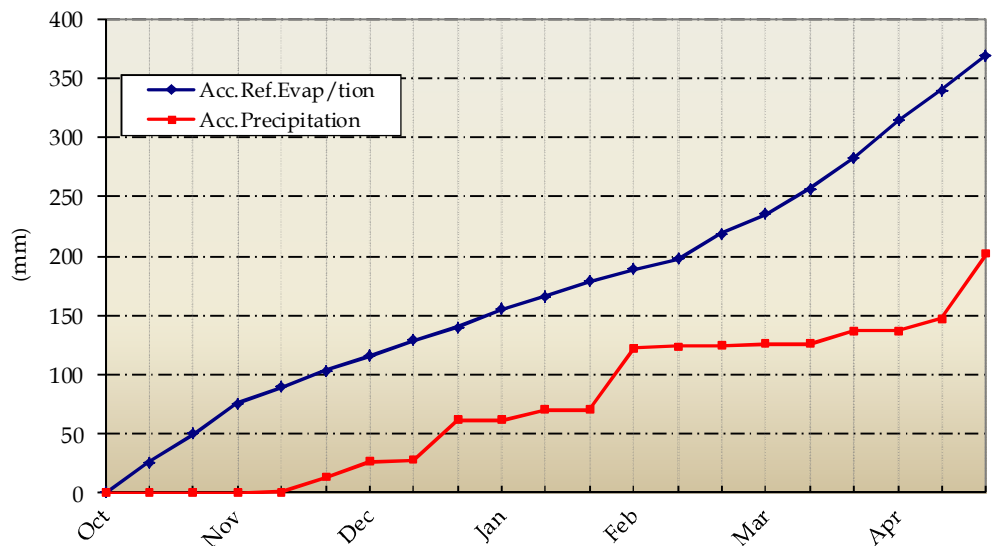


Mikra

2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.0	18.2	19.6	18.0	14.2	17.0	19.8	16.2	20.0	15.2	18.0	23.0	18.2
	Min	9.0	12.4	11.0	10.8	11.0	11.2	6.6	9.4	7.0	11.2	10.0	10.9	7.7
Relative Humidity	Max	95	91	93	95	95	88	91	97	91	87	92	87	-
	Min	29	53	49	53	79	53	30	47	33	62	49	38	-
Soil Temperature at 10 cm	06 UTC	13.6	15.0	14.0	15.0	14.0	14.0	13.2	14.0	12.5	14.4	14.0	15.8	12.6
	12 UTC	17.6	15.6	17.0	17.0	15.0	16.4	15.5	15.0	16.4	15.2	16.1	17.7	16.4
Sunshine Duration		11.1	2.9	10.9	5.3	1.1	8.6	11.4	7.4	10.5	3.5	7.3	6.8	6.1
Precipitation		1.6	5.9		22.1	16.4			6.4		1.9	54.3	0.7	14.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	41.1	39.8
Growing Degrees	5	10.5	10.3	10.3	9.4	7.6	9.1	8.2	7.8	8.5	8.2	89.9	119.4	79.5
	10	5.5	5.3	5.3	4.4	2.6	4.1	3.2	2.8	3.5	3.2	39.9	69.4	31.0

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.5	32.4	29.0
Precipitation - Reference Evapotranspiration	24.8	-31.7	-14.5
Number of Rainy Days	6.0	2.0	3.4
Number of Dry Days	0.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

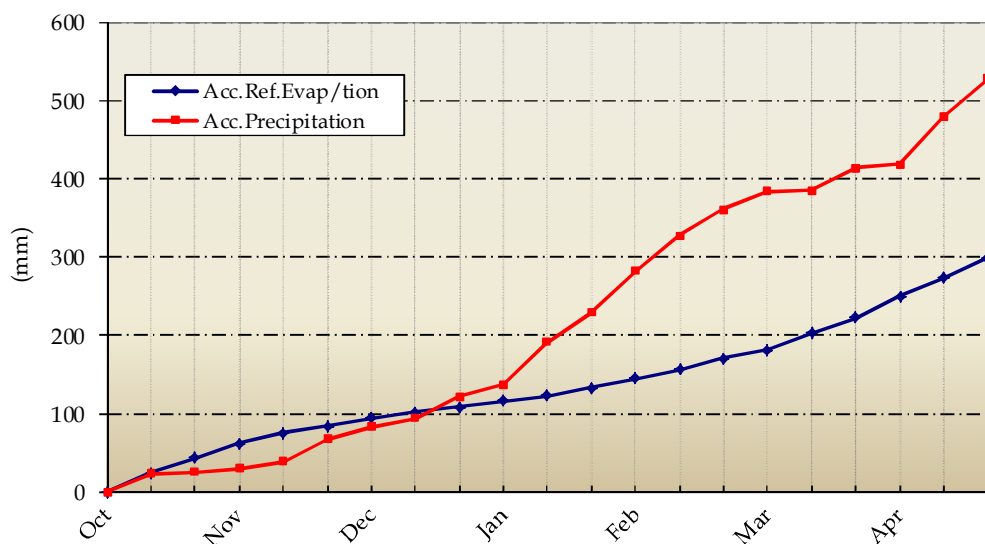


Tanagra

2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.1	15.9	15.5	16.5	15.1	15.6	18.9	15.7	16.4	14.6	16.6	23.2	18.6
	Min	7.1	12.4	9.7	5.7	8.4	7.7	4.6	4.4	6.6	5.5	7.2	9.4	7.2
Relative Humidity	Max	87	97	100	100	100	98	98	99	99	98	98	90	-
	Min	32	62	61	63	64	46	41	48	37	49	50	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.0	0.0	4.3	8.6	0.7	11.9	9.4	7.9	5.9	2.0	6.0	7.2	
Precipitation		0.1	6.6	0.2	0.0	23.0	16.3		0.3	2.0	0.5	49.0		10.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	9.6	9.2	7.6	6.1	6.8	6.7	6.8	5.1	6.5	5.1	69.2	112.9	
	10	4.6	4.2	2.6	1.1	1.8	1.7	1.8	0.1	1.5	0.1	19.2	62.9	

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.5	30.6	
Precipitation - Reference Evapotranspiration	24.5	-30.6	10.8
Number of Rainy Days	8.0	0.0	3.9
Number of Dry Days	0.0	23.0	-

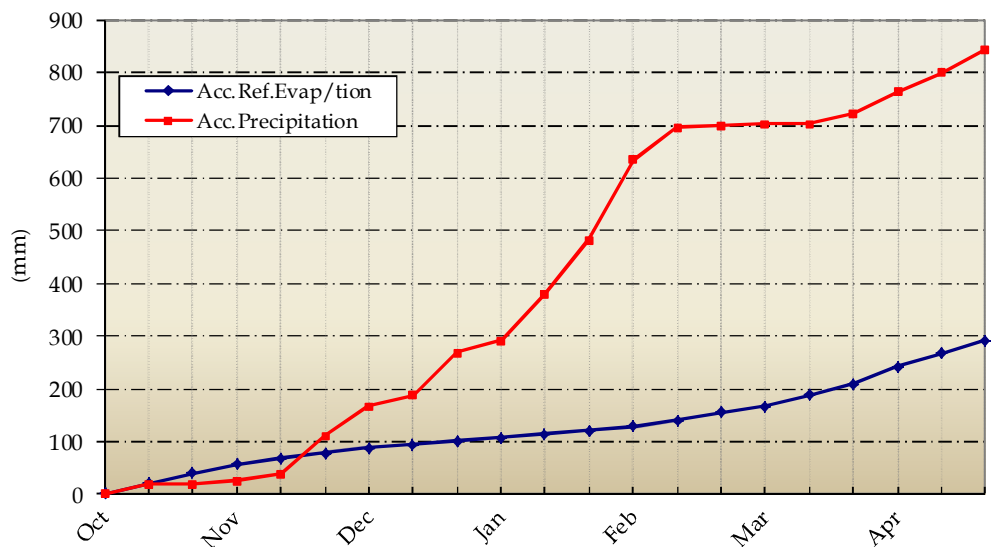
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/04/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.0	12.9	16.5	14.5	14.2	14.9	15.8	14.7	13.7	14.7	15.0	22.7	16.3
	Min	3.7	8.7	6.8	4.3	5.6	6.9	2.8	3.5	1.3	1.4	4.5	7.0	4.8
Relative Humidity	Max	99	99	97	96	97	100	100	100	100	100	99	94	-
	Min	37	72	34	51	46	39	38	40	46	44	45	30	-
Soil Temperature at 10 cm	06 UTC	10.0	11.8	11.0	10.6	11.2	11.2	11.0	10.6	10.2	10.0	10.8	15.1	10.9
	12 UTC	-	-	-	-	14.2	15.0	14.4	-	13.2	12.8	13.9	18.2	12.7
Sunshine Duration		6.9	0.0	5.7	6.9	4.5	8.7	4.7	5.8	7.8	6.2	5.7	7.1	6.7
Precipitation		3.5	19.5	5.0	2.3	3.4	3.1	4.2	0.5		3.1	44.6	0.3	30.8
Evaporation		1.8	0.2	2.6	-	0.2	14.5	0.4	2.2	2.9	0.7	-	-	29.8
Growing Degrees	5	5.9	5.8	6.7	4.4	4.9	5.9	4.3	4.1	2.5	3.1	47.5	98.6	55.6
	10	0.9	0.8	1.7	0.0	0.0	0.9	0.0	0.0	0.0	0.0	4.2	48.6	14.5

2nd 10-day period (11-20/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.2	31.1	28.5
Precipitation - Reference Evapotranspiration	20.4	-30.8	2.3
Number of Rainy Days	9.0	1.0	4.5
Number of Dry Days	0.0	8.0	-

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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