



AGROMETEOROLOGICAL BULLETIN

March 2017
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



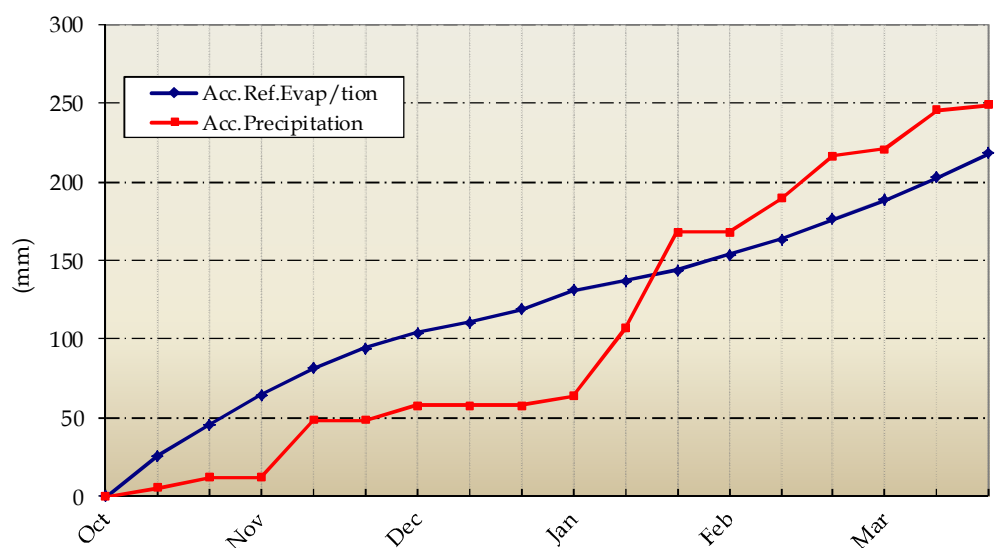
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2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	13.4	9.4	10.0	13.0	13.6	12.4	13.6	16.8	16.8	13.2	13.3	11.6
	Min	9.0	8.8	5.0	5.0	6.4	6.8	4.8	-0.8	10.0	8.0	6.3	4.9	2.9
Relative Humidity	Max	72	97	91	94	91	91	89	90	90	90	90	85	-
	Min	50	48	76	65	52	52	34	52	61	39	53	50	-
Soil Temperature at 10 cm	06 UTC	10.2	10.0	9.0	8.4	8.6	9.0	9.0	5.6	9.6	10.0	8.9	8.5	6.6
	12 UTC	11.8	12.0	10.4	10.0	11.6	11.6	10.2	9.4	13.8	16.0	11.7	12.1	8.9
Sunshine Duration		0.5	1.3	0.0	0.0	1.5	1.3	3.6	3.5	5.4	9.3	2.6	5.8	4.9
Precipitation			1.1	0.8	0.5	0.4	0.8			0.0		3.6	10.9	14.4
Evaporation		3.3	1.4	0.3	0.2	2.4	0.8	1.8	2.0	2.6	3.4	18.2	28.2	21.8
Growing Degrees	5	6.0	6.1	2.2	2.5	4.7	5.2	3.6	1.4	8.4	7.4	47.5	41.0	27.0
	10	1.0	1.1	0.0	0.0	0.0	0.2	0.0	0.0	3.4	2.4	8.1	4.9	3.4

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.2	20.5	18.1
Precipitation - Reference Evapotranspiration	-11.6	-9.6	-3.7
Number of Rainy Days	5.0	3.0	2.2
Number of Dry Days	1.0	1.0	-

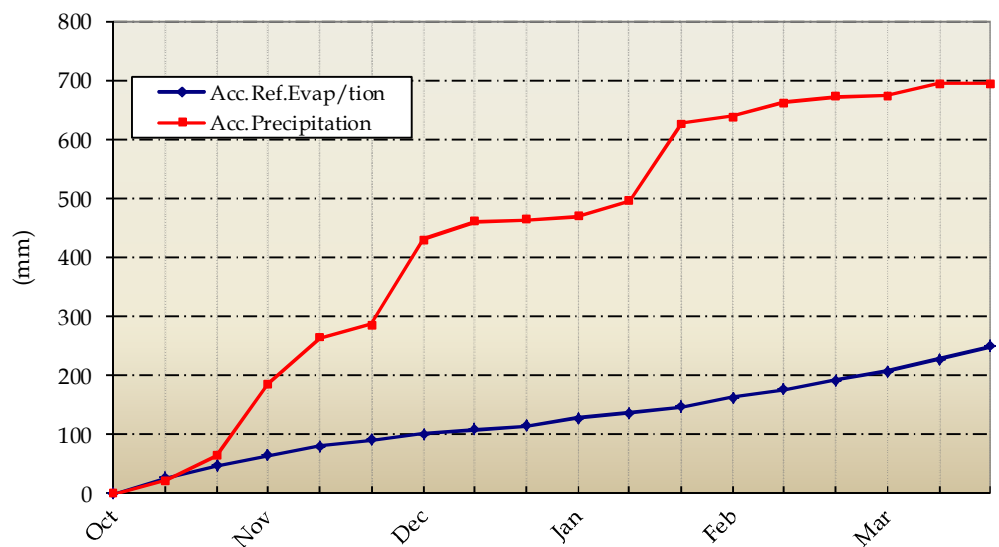
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2017)		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	17.0	15.4	15.6	17.0	15.9	16.8	18.3	18.4	20.5	16.8	16.1	15.7
	Min	8.7	6.0	10.1	4.0	2.9	5.7	2.7	4.6	8.8	9.1	6.3	7.8	6.3
Relative Humidity	Max	90	83	82	85	88	88	86	89	90	92	87	90	-
	Min	56	41	48	36	43	50	24	49	60	46	45	58	-
Soil Temperature at 10 cm	06 UTC	11.8	10.8	12.2	7.8	11.5	12.4	11.4	8.4	13.0	10.4	11.0	-	10.6
	12 UTC	12.4	13.0	13.5	15.0	14.0	14.8	17.2	14.5	15.0	20.4	15.0	-	12.8
Sunshine Duration		0.0	10.2	8.2	10.3	10.0	7.2	9.8	9.8	7.5	9.1	8.2	3.7	6.4
Precipitation												0.0	47.9	25.8
Evaporation		2.0	4.5	0.5	3.0	9.0	1.5	1.5	10.0	3.0	2.0	37.0	37.9	26.9
Growing Degrees	5	6.0	6.5	7.8	4.8	5.0	5.8	4.8	6.5	8.6	9.8	65.4	69.9	60.4
	10	1.0	1.5	2.8	0.0	0.0	0.8	0.0	1.5	3.6	4.8	15.9	20.0	15.6

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.4	17.8	21.0
Precipitation - Reference Evapotranspiration	-23.4	30.1	4.8
Number of Rainy Days	0.0	7.0	3.7
Number of Dry Days	10.0	0.0	-

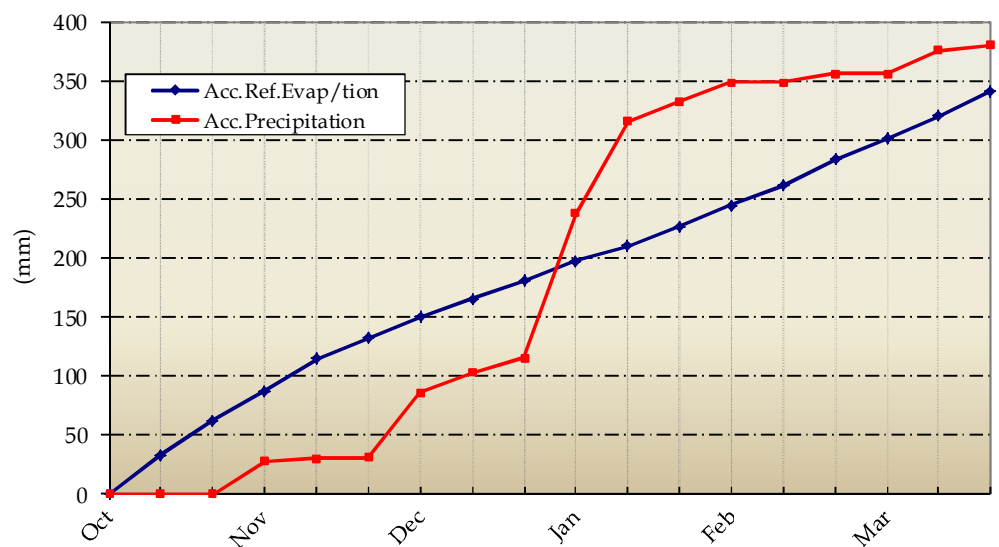
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.8	13.4	17.4	13.4	14.0	15.2	16.0	15.0	19.0	19.0	15.7	17.8	15.9
	Min	8.6	9.0	9.6	10.6	10.6	8.8	8.2	10.6	8.0	10.6	9.5	11.0	9.4
Relative Humidity	Max	97	95	94	88	86	91	92	90	90	95	92	83	-
	Min	76	77	66	78	76	71	73	64	65	62	71	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.5	0.4	8.6	0.1	5.2	7.6	7.1	10.0	8.8	9.2	5.8	5.1	5.5
Precipitation		16.5	23.9		4.1	1.5						46.0	11.7	23.2
Evaporation		11.4	6.4	3.1	1.4	3.3	2.9	1.8	2.9	2.5	3.5	39.2	23.7	33.8
Growing Degrees	5	6.7	6.2	8.5	7.0	7.3	7.0	7.1	7.8	8.5	9.8	75.9	93.9	76.5
	10	1.7	1.2	3.5	2.0	2.3	2.0	2.1	2.8	3.5	4.8	25.9	43.9	28.0

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.0	28.2	-
Precipitation - Reference Evapotranspiration	25.0	-16.5	23.2
Number of Rainy Days	4.0	4.0	3.5
Number of Dry Days	0.0	8.0	-

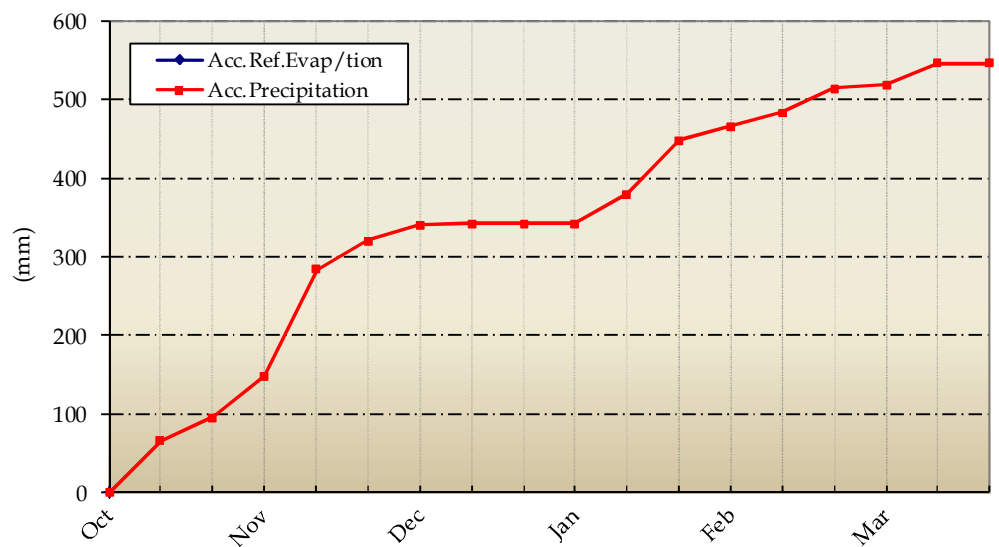
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.7	15.9	13.8	15.4	15.0	14.0	18.4	-	18.0	21.6	16.1	12.8	12.6
	Min	8.6	0.2	-1.3	-1.0	5.0	0.0	-	-0.8	1.4	6.0	2.0	4.0	2.7
Relative Humidity	Max	-	-	97	88	97	-	100	100	85	100	95	98	-
	Min	43	33	33	35	37	-	23	-	40	37	35	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.8
Sunshine Duration		-	-	7.8	4.3	1.6	-	-	-	0.0	6.2	4.0	2.0	4.5
Precipitation		0.0		0.0		0.0				0.0		0.0	35.5	29.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	18.6
Growing Degrees	5	5.7	3.1	1.3	2.2	5.0	2.0	-	-	4.7	8.8	-	33.8	28.8
	10	0.7	0.0	0.0	0.0	0.0	0.0	-	-	0.0	3.8	-	0.1	3.0

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	16.8
Precipitation - Reference Evapotranspiration	-	-	12.7
Number of Rainy Days	0.0	7.0	3.4
Number of Dry Days	12.0	0.0	-

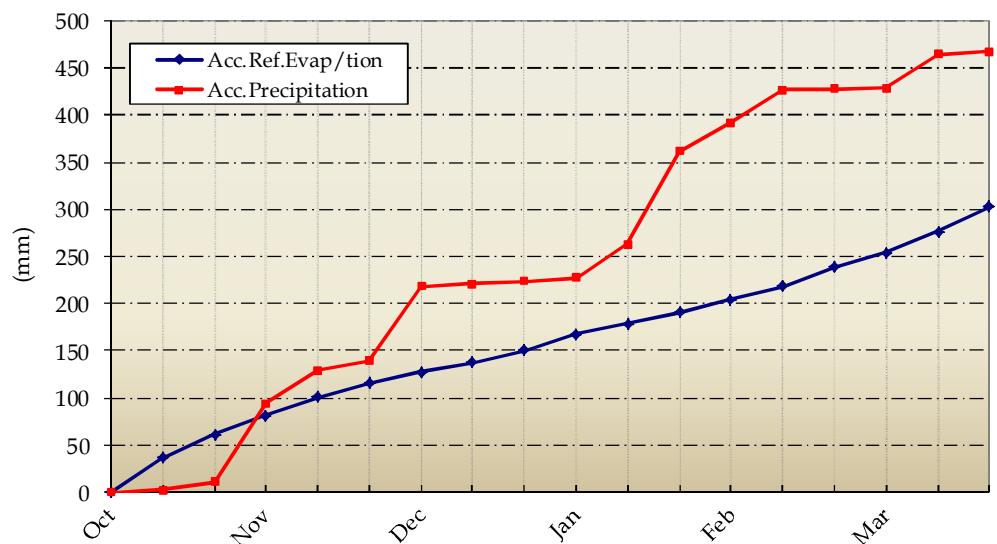
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	18.4	18.2	16.2	16.3	17.1	17.2	17.8	21.2	21.9	18.1	17.0	16.3
	Min	8.4	8.2	5.7	3.5	4.1	5.6	3.6	4.2	4.8	8.2	5.6	7.4	5.8
Relative Humidity	Max	93	79	88	91	91	93	92	92	93	92	90	92	-
	Min	48	46	33	28	47	46	33	50	43	43	42	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	12.8	10.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	13.7	13.0
Sunshine Duration		3.8	9.4	10.0	9.0	6.2	5.4	10.0	9.3	7.5	10.5	8.1	4.5	6.1
Precipitation		2.2				0.1	0.7					3.0	27.9	22.7
Evaporation		3.0	4.5	2.7	4.8	3.2	3.4	3.4	4.5	2.3	4.6	36.4	18.7	33.5
Growing Degrees	5	7.4	8.3	7.0	4.9	5.2	6.4	5.4	6.0	8.0	10.1	68.5	72.3	60.5
	10	2.4	3.3	2.0	0.0	0.2	1.4	0.4	1.0	3.0	5.1	18.7	22.3	15.1

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.6	21.2	21.7
Precipitation - Reference Evapotranspiration	-23.6	6.7	1.0
Number of Rainy Days	3.0	7.0	3.8
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

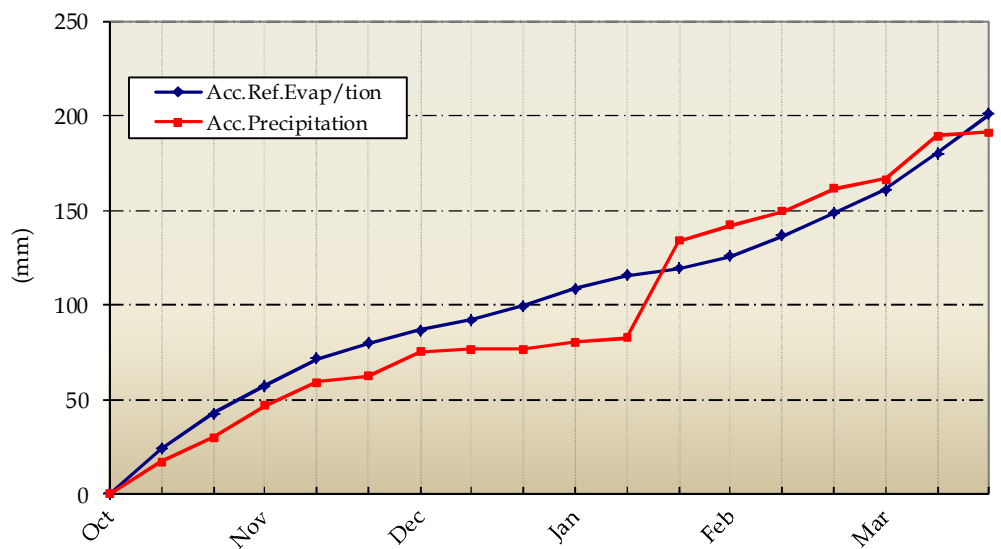


Larisa

2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.8	14.8	14.6	15.4	15.2	14.0	18.4	19.4	23.0	22.5	16.9	14.3	14.0
	Min	8.0	7.0	3.3	0.7	7.4	1.4	-0.7	1.2	7.6	7.0	4.3	7.2	2.8
Relative Humidity	Max	94	95	100	100	95	100	100	100	81	94	96	99	-
	Min	57	43	31	41	43	41	32	48	27	35	40	61	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	11.1	8.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	11.2	9.5
Sunshine Duration		0.0	0.0	7.3	3.1	5.8	2.1	9.1	9.0	7.0	10.0	5.3	3.5	5.1
Precipitation		0.9		0.7								1.6	53.5	13.9
Evaporation		0.6	0.4	3.1	2.7	2.3	1.9	2.6	2.0	7.3	3.6	26.5	17.1	20.7
Growing Degrees	5	4.9	5.9	4.0	3.1	6.3	2.7	3.9	5.3	10.3	9.8	56.0	57.3	36.4
	10	0.0	0.9	0.0	0.0	1.3	0.0	0.0	0.3	5.3	4.8	12.6	16.2	5.5

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.3	16.7	18.5
Precipitation - Reference Evapotranspiration	-18.7	36.8	-4.6
Number of Rainy Days	2.0	7.0	3.1
Number of Dry Days	0.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

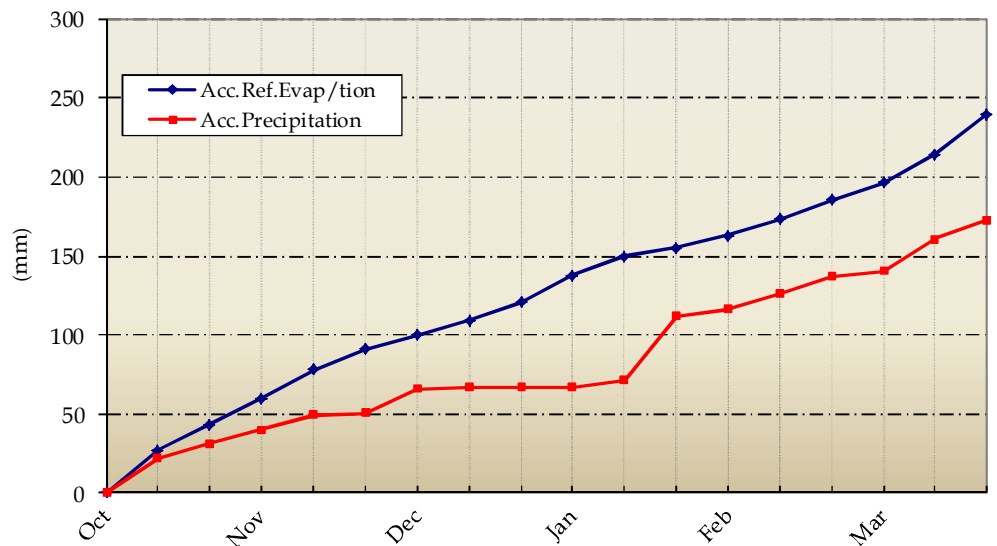


Mikra

2nd 10-day period (11-20/03/2017)		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	14.4	13.7	15.2	16.2	15.5	17.2	17.1	20.5	22.8	16.6	13.3	13.4
	Min	8.4	8.7	6.1	5.2	6.2	4.8	3.0	3.6	7.2	5.8	5.9	6.5	4.2
Relative Humidity	Max	90	91	65	77	93	93	93	86	89	89	87	91	-
	Min	55	46	39	43	30	41	29	44	30	28	38	53	-
Soil Temperature at 10 cm	06 UTC	9.8	8.6	8.9	9.0	9.5	9.8	9.2	9.2	11.0	11.2	9.6	10.3	8.1
	12 UTC	10.6	11.0	11.1	10.8	12.0	12.2	11.8	12.4	13.6	14.6	12.0	11.5	10.7
Sunshine Duration		1.0	4.6	10.2	1.1	7.2	4.5	9.7	8.9	7.8	10.9	6.6	3.7	4.9
Precipitation		8.6	0.0	3.3			0.0					11.9	51.1	13.5
Evaporation		3.3	0.1	3.6	2.1	4.3	4.2	5.1	1.2	3.8	2.2	29.9	20.2	27.0
Growing Degrees	5	5.8	6.6	4.9	5.2	6.2	5.2	5.1	5.4	8.9	9.3	62.4	48.7	38.9
	10	0.8	1.6	0.0	0.2	1.2	0.2	0.1	0.4	3.9	4.3	12.5	7.1	5.9

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.3	18.0	20.0
Precipitation - Reference Evapotranspiration	-13.4	33.1	-6.5
Number of Rainy Days	2.0	5.0	3.0
Number of Dry Days	0.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

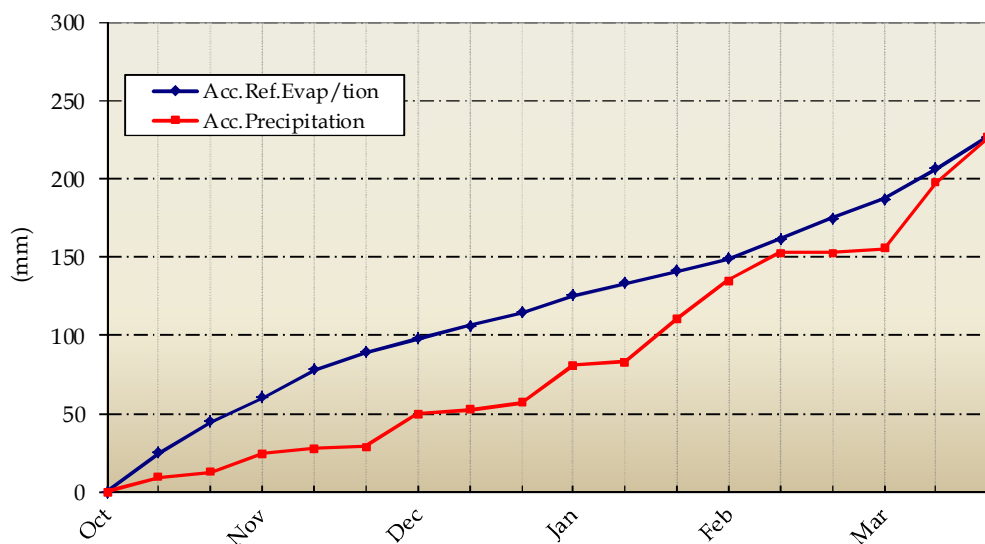


Tanagra

2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.8	12.7	15.3	13.5	13.0	13.6	16.2	18.8	22.0	22.2	15.8	13.7	14.3
	Min	7.2	8.4	4.0	3.9	7.7	3.0	2.2	1.4	8.3	8.8	5.5	6.4	4.4
Relative Humidity	Max	100	99	100	98	100	100	100	98	74	86	96	97	-
	Min	83	56	45	42	54	43	32	33	26	32	45	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	3.2	5.6	8.8	1.8	4.6	9.9	9.9	6.0	8.5	5.8	3.2	
Precipitation		27.1	1.7	0.1		0.1						29.0	43.5	16.7
Evaporation		1.5	1.5	2.0	3.5	1.0	2.0	4.0	5.0	4.0	5.6	30.1	19.3	
Growing Degrees	5	4.0	5.6	4.7	3.7	5.4	3.3	4.2	5.1	10.2	10.5	56.5	50.8	
	10	0.0	0.6	0.0	0.0	0.4	0.0	0.0	0.1	5.2	5.5	11.7	9.2	

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.1	16.1	
Precipitation - Reference Evapotranspiration	8.9	27.4	16.7
Number of Rainy Days	4.0	6.0	3.8
Number of Dry Days	0.0	1.0	-

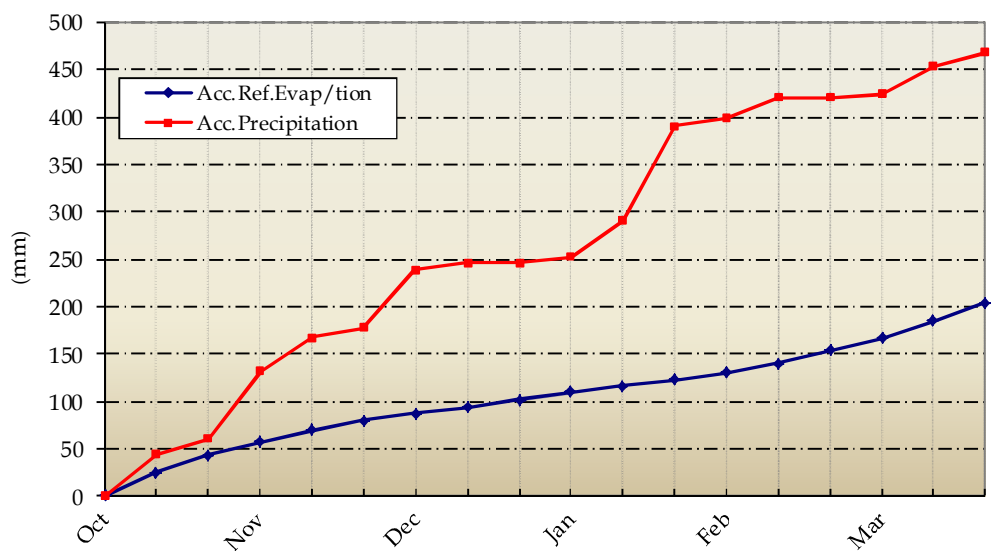
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2017)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.7	14.0	13.0	12.9	12.0	12.8	15.5	16.8	18.8	21.5	14.4	11.5	12.2
	Min	2.9	5.9	-0.8	-2.5	-2.2	0.6	-2.1	0.7	2.0	2.8	0.7	3.7	1.7
Relative Humidity	Max	100	85	97	100	100	100	100	100	100	100	98	99	-
	Min	76	51	33	37	50	37	30	38	21	26	40	60	-
Soil Temperature at 10 cm	06 UTC	8.2	7.0	5.8	5.6	5.4	6.4	5.4	7.2	7.2	8.4	6.7	8.2	6.6
	12 UTC	-	-	10.2	11.2	10.2	11.2	11.8	-	-	15.6	11.7	10.0	8.1
Sunshine Duration		0.0	5.6	10.4	5.6	2.1	4.6	8.3	8.2	7.1	9.8	6.2	3.5	5.7
Precipitation		12.9	0.0		0.0		2.3					15.2	37.2	22.3
Evaporation		0.2	1.0	2.4	2.1	1.3	1.1	2.2	3.3	3.1	3.2	19.9	9.3	20.1
Growing Degrees	5	0.0	5.0	1.1	0.2	0.0	1.7	1.7	3.8	5.4	7.2	26.0	26.0	24.1
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.2	2.6	0.6	2.5

2nd 10-day period (11-20/03/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.5	15.3	19.5
Precipitation - Reference Evapotranspiration	-4.3	21.9	2.8
Number of Rainy Days	2.0	7.0	4.1
Number of Dry Days	0.0	1.0	-

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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Division of Climatology-Applications

Issue Editors :

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The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens