



AGROMETEOROLOGICAL BULLETIN

April 2016
3rd 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



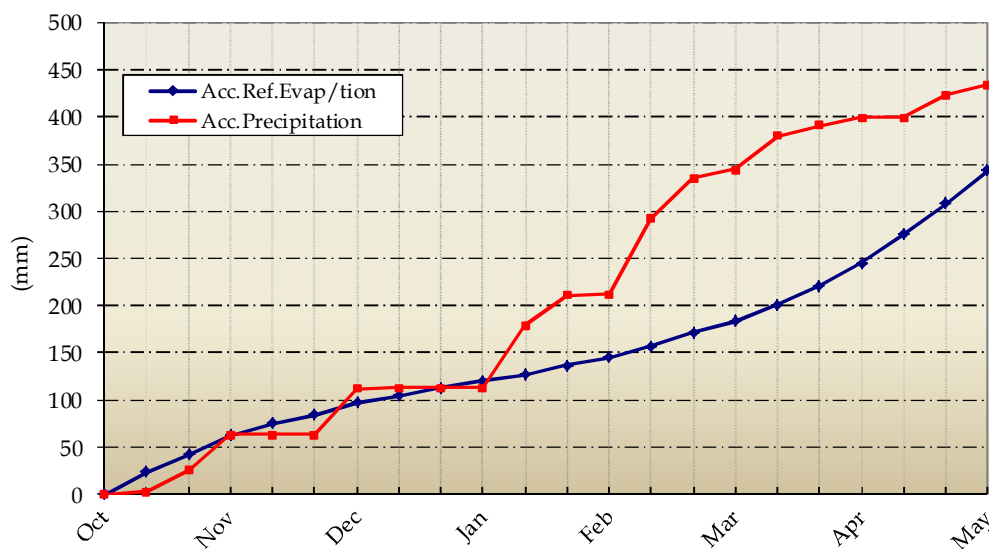
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www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.2	20.0	20.8	21.2	21.2	18.4	18.2	20.0	19.4	22.4	20.2	18.4	18.4
	Min	7.0	4.8	9.6	11.0	9.6	11.2	6.8	6.6	9.4	11.2	8.7	8.5	7.8
Relative Humidity	Max	83	82	90	89	95	88	92	89	88	86	88	93	-
	Min	27	23	38	61	48	59	38	53	52	38	44	51	-
Soil Temperature at 10 cm	06 UTC	17.2	15.4	17.4	17.6	17.4	17.6	13.8	14.2	15.8	15.6	16.2	13.9	12.7
	12 UTC	22.5	22.0	20.4	21.8	23.4	18.0	20.0	21.6	18.8	22.2	21.1	19.3	16.6
Sunshine Duration		12.5	12.1	4.9	7.5	12.0	5.2	12.2	11.6	0.0	12.7	9.1	9.2	7.4
Precipitation					0.2		10.8			0.0		11.0	8.7	11.6
Evaporation		3.0	5.7	5.9	3.5	7.6	4.9	5.7	5.3	2.5	6.5	50.6	41.4	46.0
Growing Degrees	5	8.6	7.4	10.2	11.1	10.4	9.8	7.5	8.3	9.4	11.8	94.5	84.6	80.8
	10	3.6	2.4	5.2	6.1	5.4	4.8	2.5	3.3	4.4	6.8	44.5	36.2	32.3

3rd 10-day period (21-30/04/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	34.4	31.9
Precipitation - Reference Evapotranspiration	-23.4	-23.2
Number of Rainy Days	2.0	4.0
Number of Dry Days	11.0	1.0

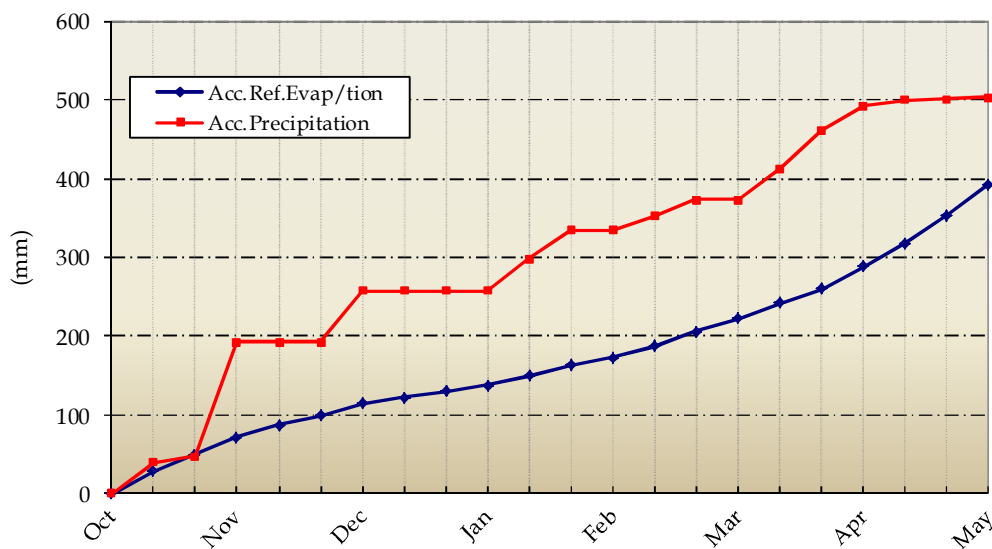
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.6	22.4	22.4	22.2	20.8	17.5	20.4	22.4	25.4	24.2	22.2	21.1	20.2
	Min	10.8	10.2	14.0	13.0	12.8	12.6	7.8	10.8	12.1	13.9	11.8	10.8	9.8
Relative Humidity	Max	91	83	86	88	85	79	83	84	84	87	85	88	-
	Min	33	32	41	37	49	42	37	24	11	42	35	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	15.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.4
Sunshine Duration		10.8	11.2	11.2	11.3	8.2	8.7	10.2	8.0	4.3	12.1	9.6	10.3	8.8
Precipitation						1.4	0.9					2.3		8.8
Evaporation		8.6	2.0	3.0	13.5	2.4	1.4	6.4	8.2	4.2	1.8	51.5	54.0	43.9
Growing Degrees	5	12.7	11.3	13.2	12.6	11.8	10.1	9.1	11.6	13.8	14.1	120.2	109.2	100.1
	10	7.7	6.3	8.2	7.6	6.8	5.1	4.1	6.6	8.8	9.1	70.2	59.2	50.1

3rd 10-day period (21-30/04/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.5	37.0
Precipitation - Reference Evapotranspiration	-37.2	-37.0
Number of Rainy Days	2.0	0.0
Number of Dry Days	13.0	23.0

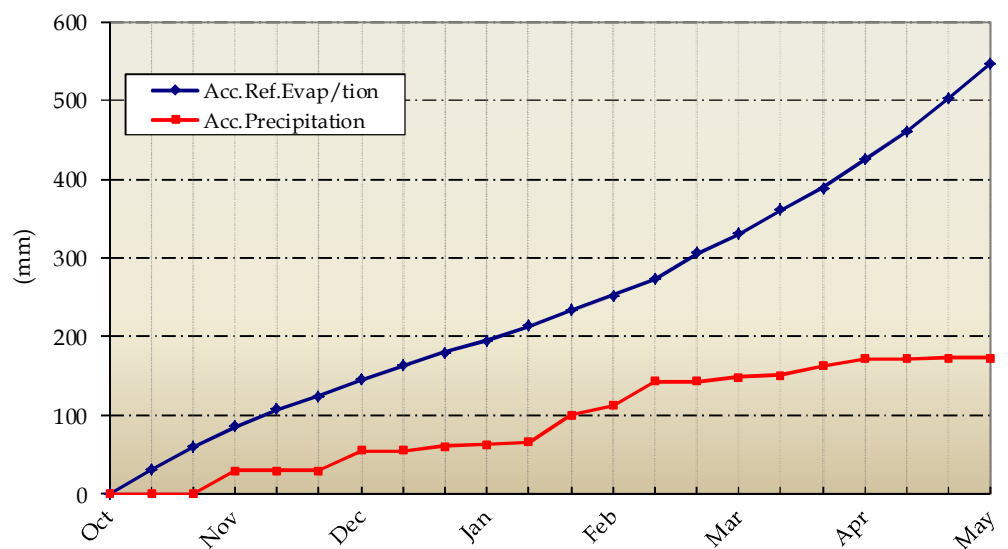
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.6	20.0	22.0	23.0	22.6	19.8	20.0	22.2	30.2	24.0	22.5	20.6	20.6
	Min	17.8	15.4	12.8	14.2	15.0	15.0	12.2	19.2	15.0	20.0	15.7	12.7	12.6
Relative Humidity	Max	88	86	85	89	88	93	81	83	66	87	85	80	-
	Min	43	52	43	39	59	50	56	39	19	34	43	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.9	10.5	8.0	11.5	9.0	11.6	12.0	11.7	8.9	7.6	10.2	10.4	8.9
Precipitation														5.6
Evaporation		2.9	4.5	3.2	6.0	3.9	4.4	5.6	4.2	8.1	5.4	48.2	45.1	52.8
Growing Degrees	5	14.7	12.7	12.4	13.6	13.8	12.4	11.1	15.7	17.6	17.0	141.0	116.7	115.8
	10	9.7	7.7	7.4	8.6	8.8	7.4	6.1	10.7	12.6	12.0	91.0	66.7	65.8

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.3	42.4	-
Precipitation - Reference Evapotranspiration	-44.3	-42.4	5.6
Number of Rainy Days	0.0	0.0	1.3
Number of Dry Days	19.0	20.0	-

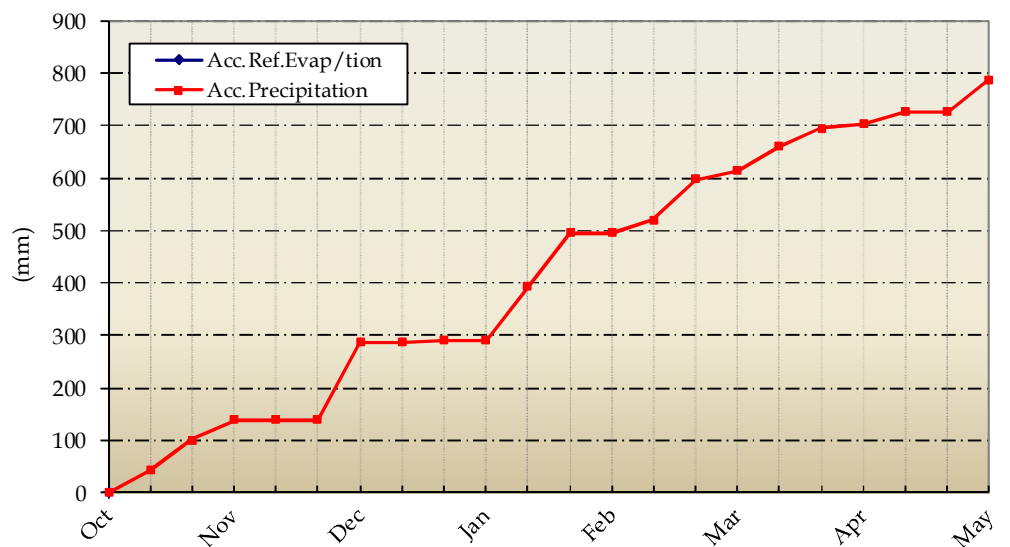
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.0	21.4	20.6	15.6	15.6	14.7	17.7	21.7	20.6	24.6	19.6	20.3	18.6
	Min	13.6	6.6	10.3	9.2	7.6	5.4	0.4	5.8	10.1	6.5	7.6	5.8	6.5
Relative Humidity	Max	100	93	100	100	100	100	100	100	100	100	99	100	-
	Min	14	36	41	79	61	45	39	41	52	26	43	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.9
Sunshine Duration		11.6	8.9	6.1	1.8	1.6	5.1	8.1	8.2	2.6	10.8	6.5	6.8	6.6
Precipitation					31.2	10.6	10.1			8.4		60.3	16.6	15.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	36.5
Growing Degrees	5	13.8	9.0	10.5	7.4	6.6	5.1	4.1	8.8	10.4	10.6	86.0	80.2	75.1
	10	8.8	4.0	5.5	2.4	1.6	0.1	0.0	3.8	5.4	5.6	37.0	30.2	27.7

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	29.4
Precipitation - Reference Evapotranspiration	-	-	-14.2
Number of Rainy Days	4.0	2.0	3.6
Number of Dry Days	13.0	21.0	-

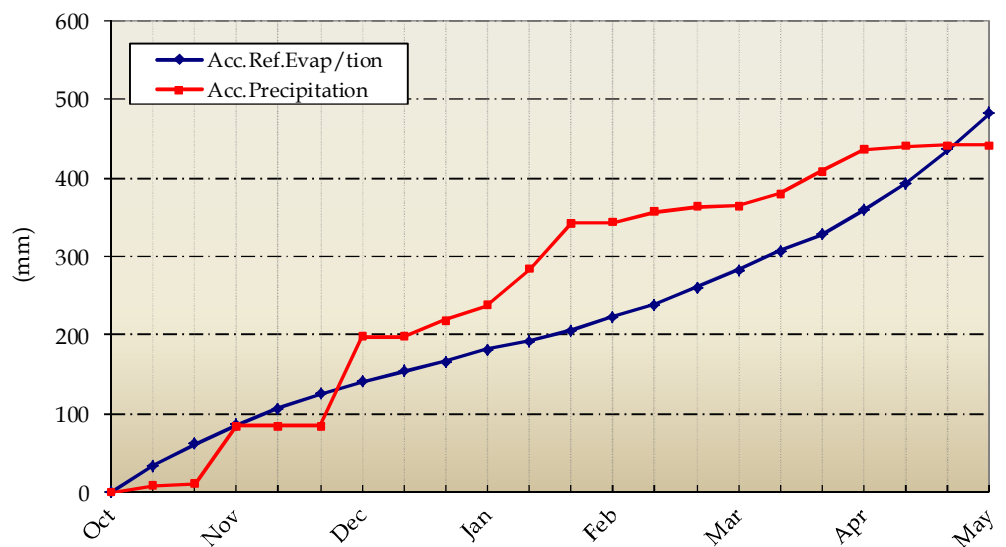
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.2	22.0	23.8	24.1	23.0	18.8	22.8	22.9	26.8	25.3	23.5	22.0	20.8
	Min	11.7	9.2	12.2	10.0	8.6	10.2	7.1	7.7	11.2	15.7	10.4	9.4	9.1
Relative Humidity	Max	93	85	88	91	92	83	83	88	83	89	88	92	-
	Min	29	30	43	37	34	41	22	20	17	25	30	40	-
Soil Temperature at 10 cm	06 UTC	18.0	18.0	18.2	18.2	17.8	18.0	16.5	17.2	17.6	18.0	17.8	16.1	15.1
	12 UTC	19.8	19.0	20.0	19.8	20.2	19.0	18.2	18.6	18.6	19.2	19.2	18.4	18.5
Sunshine Duration		11.3	11.3	10.9	9.7	11.0	11.2	12.1	11.9	5.1	11.9	10.6	11.0	8.3
Precipitation													1.6	12.2
Evaporation		5.5	5.8	5.0	8.8	3.2	10.0	2.0	6.0	4.6	8.4	59.3	-	46.5
Growing Degrees	5	13.5	10.6	13.0	12.1	10.8	9.5	10.0	10.3	14.0	15.5	119.2	107.2	99.4
	10	8.5	5.6	8.0	7.1	5.8	4.5	5.0	5.3	9.0	10.5	69.2	57.2	49.4

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.9	41.9	34.1
Precipitation - Reference Evapotranspiration	-45.9	-40.3	-21.9
Number of Rainy Days	0.0	1.0	2.6
Number of Dry Days	19.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

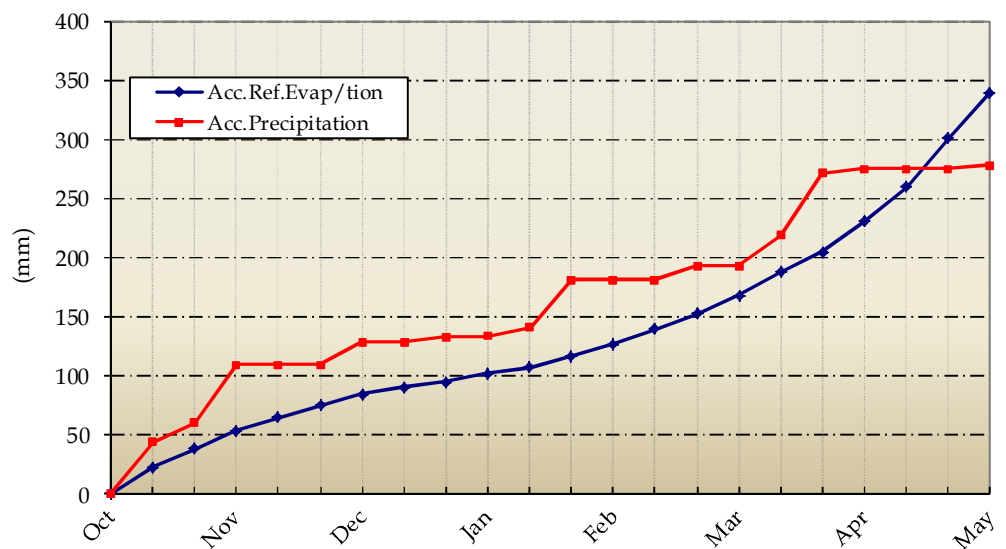


Larisa

3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.6	22.4	26.6	23.4	23.2	21.2	23.0	24.5	17.8	22.8	22.6	22.8	21.1
	Min	12.7	4.8	11.7	12.8	6.6	10.0	2.6	4.6	13.5	13.8	9.3	7.2	7.3
Relative Humidity	Max	88	100	92	92	99	77	100	100	100	100	95	98	-
	Min	25	27	23	29	26	26	13	27	74	40	31	31	-
Soil Temperature at 10 cm	06 UTC	19.2	18.2	18.4	19.2	18.0	18.2	17.8	15.0	18.2	18.0	18.0	-	14.2
	12 UTC	18.8	18.2	18.8	19.2	18.4	18.2	18.2	17.8	18.4	18.0	18.4	-	16.2
Sunshine Duration		11.8	8.5	7.6	8.2	9.2	11.2	10.3	10.9	0.0	10.8	8.8	9.1	7.9
Precipitation										2.7		2.7	1.8	10.7
Evaporation		3.7	5.5	5.0	7.1	6.9	4.3	8.5	6.5	3.7	5.7	56.9	57.2	43.9
Growing Degrees	5	11.7	8.6	14.2	13.1	9.9	10.6	7.8	9.6	10.7	13.3	109.3	100.0	91.9
	10	6.7	3.6	9.2	8.1	4.9	5.6	2.8	4.6	5.7	8.3	59.3	50.0	42.7

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.0	38.6	34.0
Precipitation - Reference Evapotranspiration	-36.3	-36.8	-23.3
Number of Rainy Days	1.0	1.0	2.7
Number of Dry Days	18.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

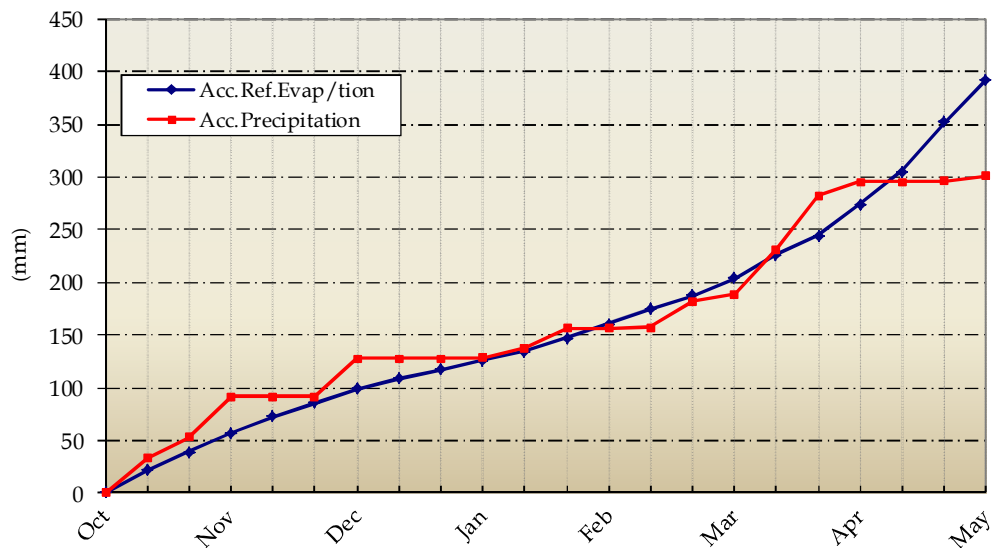


Mikra

3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	21.0	23.3	22.2	23.0	17.2	20.6	22.9	16.8	22.0	20.8	20.7	20.2
	Min	8.6	6.2	12.2	10.6	8.6	8.4	4.4	6.2	12.8	11.0	8.9	9.1	8.4
Relative Humidity	Max	81	88	91	89	85	81	80	84	94	95	87	87	-
	Min	27	27	35	43	26	30	22	30	74	43	36	41	-
Soil Temperature at 10 cm	06 UTC	16.2	5.4	18.0	18.0	16.6	15.4	13.8	15.2	18.0	16.2	15.3	15.6	14.2
	12 UTC	21.4	26.4	22.2	22.6	22.2	22.0	20.2	21.0	18.0	22.2	21.8	20.1	18.8
Sunshine Duration		11.9	10.2	6.7	7.4	11.1	11.7	11.8	9.8	0.4	10.6	9.2	9.2	7.6
Precipitation					2.0					3.3		5.3	0.0	11.2
Evaporation		5.6	5.8	7.0	4.4	7.2	6.4	6.0	7.8	0.5	7.9	58.6	50.2	45.8
Growing Degrees	5	9.0	8.6	12.8	11.4	10.8	7.8	7.5	9.6	9.8	11.5	98.7	99.1	93.3
	10	4.0	3.6	7.8	6.4	5.8	2.8	2.5	4.6	4.8	6.5	48.7	49.1	43.8

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.4	38.6	33.7
Precipitation - Reference Evapotranspiration	-35.1	-38.6	-22.5
Number of Rainy Days	2.0	0.0	3.0
Number of Dry Days	12.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

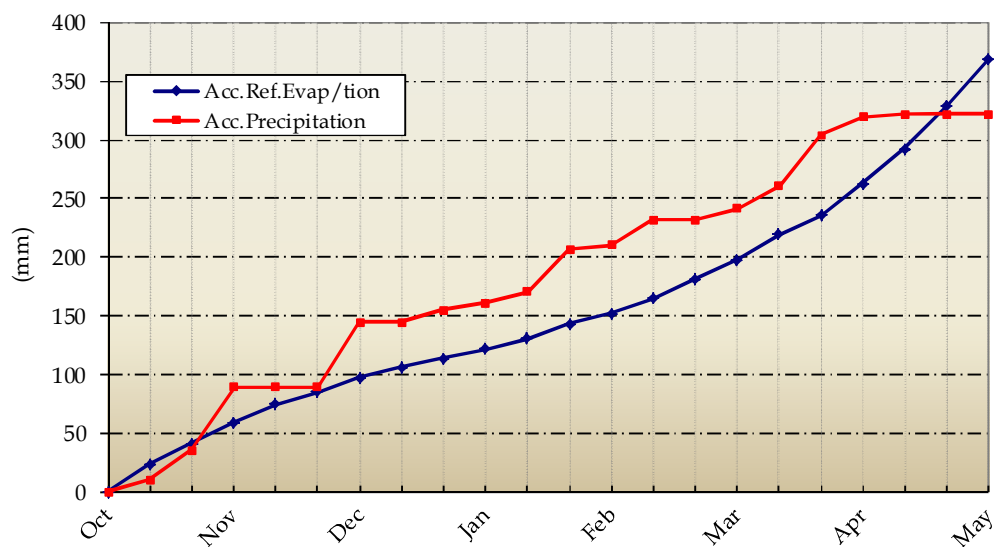


Tanagra

3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.4	21.6	24.5	24.0	23.7	20.1	23.0	24.2	22.2	21.2	22.3	20.8	20.7
	Min	14.0	5.4	11.3	16.0	11.1	12.5	6.2	8.7	12.7	9.6	10.8	7.8	7.9
Relative Humidity	Max	74	84	74	57	61	80	85	80	85	97	78	96	-
	Min	35	29	32	25	27	29	14	26	36	43	30	39	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.9	10.4	9.3	10.9	12.3	11.6	10.2	11.2	1.9	7.4	9.3	8.6	
Precipitation													1.6	7.9
Evaporation		4.0	5.3	6.5	7.6	0.0	7.5	5.0	6.5	7.0	3.5	52.9	35.6	
Growing Degrees	5	11.2	8.5	12.9	15.0	12.4	11.3	9.6	11.5	12.5	10.4	115.2	93.1	
	10	6.2	3.5	7.9	10.0	7.4	6.3	4.6	6.5	7.5	5.4	65.2	43.1	

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.0	33.5	
Precipitation - Reference Evapotranspiration	-40.0	-31.9	7.9
Number of Rainy Days	0.0	1.0	2.8
Number of Dry Days	20.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

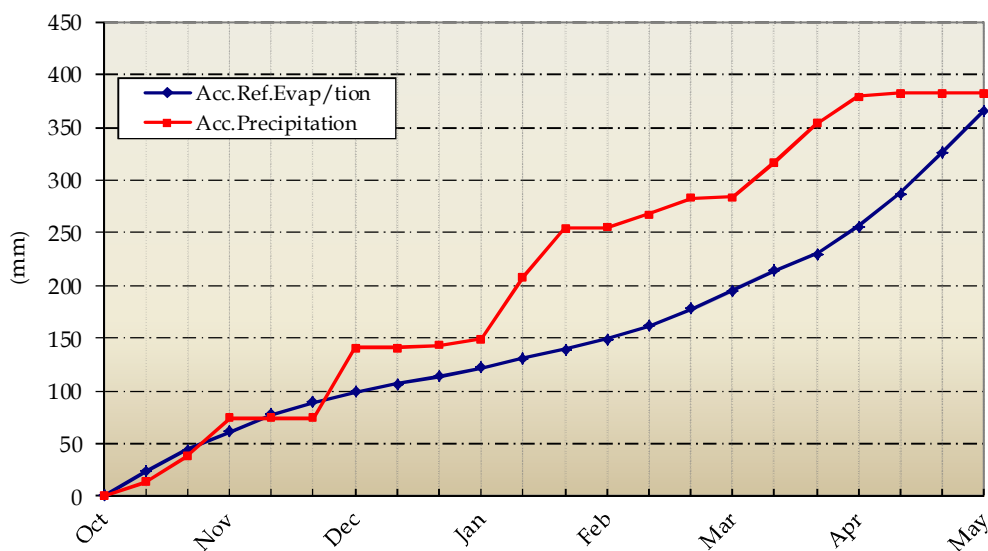


Tripoli

3rd 10-day period (21-30/04/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.5	22.9	23.0	18.8	18.9	15.2	21.2	25.2	21.9	22.3	20.8	19.4	18.7
	Min	10.4	1.9	9.8	8.5	9.8	7.7	-0.5	3.3	7.7	4.5	6.3	4.5	5.4
Relative Humidity	Max	84	95	88	86	84	87	91	90	85	92	88	98	-
	Min	34	12	19	38	27	37	18	23	29	34	27	36	-
Soil Temperature at 10 cm	06 UTC	18.6	15.4	18.4	17.8	17.0	16.4	14.6	16.2	18.4	17.2	17.0	13.6	12.1
	12 UTC	19.4	22.8	-	-	-	21.8	22.4	24.0	-	-	22.1	18.8	14.3
Sunshine Duration		7.5	10.9	9.2	10.0	11.0	11.9	12.2	11.5	7.8	10.6	10.3	9.3	8.0
Precipitation							0.0					0.0	1.9	14.5
Evaporation		3.5	5.3	5.4	6.0	5.8	5.9	5.2	6.3	5.1	6.6	55.1	-	35.0
Growing Degrees	5	9.5	7.4	11.4	8.7	9.4	6.5	5.4	9.3	9.8	8.4	85.5	69.6	70.7
	10	4.5	2.4	6.4	3.7	4.4	1.5	0.4	4.3	4.8	3.4	35.5	20.3	24.2

3rd 10-day period (21-30/04/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.6	33.8	32.9
Precipitation - Reference Evapotranspiration	-39.6	-31.9	-18.4
Number of Rainy Days	0.0	2.0	2.7
Number of Dry Days	20.0	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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