



AGROMETEOROLOGICAL BULLETIN

September 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



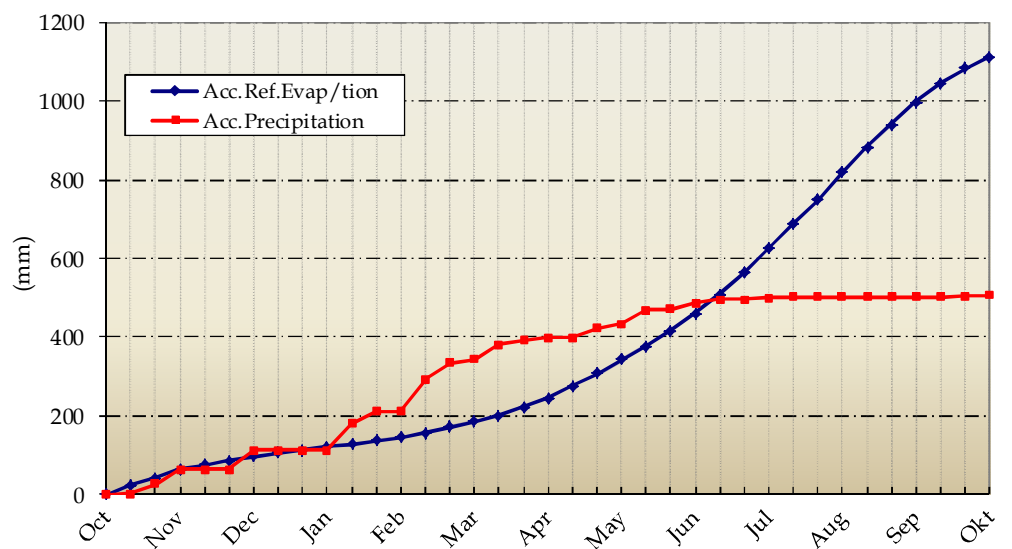
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3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.0	20.4	23.4	23.6	24.4	24.4	24.0	25.0	24.6	27.4	23.9	25.2	24.9
	Min	14.4	12.8	8.4	7.8	8.8	11.8	10.2	7.4	8.2	9.6	9.9	17.7	13.0
Relative Humidity	Max	70	87	84	78	87	81	82	95	89	96	85	89	-
	Min	43	45	35	23	30	33	34	30	39	33	34	56	-
Soil Temperature at 10 cm	06 UTC	22.0	20.6	17.4	17.8	18.4	19.0	18.4	17.6	18.0	18.4	18.8	21.5	19.0
	12 UTC	23.2	22.4	23.0	23.6	27.6	24.6	24.0	29.0	24.2	24.5	24.6	23.8	22.4
Sunshine Duration		2.1	1.0	9.8	10.9	9.3	7.3	10.5	10.9	10.6	10.6	8.3	4.7	7.5
Precipitation		0.5	1.5									2.0	100.2	12.3
Evaporation		2.6	3.5	4.7	6.0	5.5	3.1	7.7	4.0	4.9	4.6	46.6	41.6	59.3
Growing Degrees	5	13.2	11.6	10.9	10.7	11.6	13.1	12.1	11.2	11.4	13.5	119.3	164.7	139.4
	10	8.2	6.6	5.9	5.7	6.6	8.1	7.1	6.2	6.4	8.5	69.3	114.7	89.4

3rd 10-day period (21-30/09/2016)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	27.9	26.1	31.9
Precipitation - Reference Evapotranspiration	-25.9	74.1	-19.6
Number of Rainy Days	2.0	6.0	1.1
Number of Dry Days	0.0	9.0	-

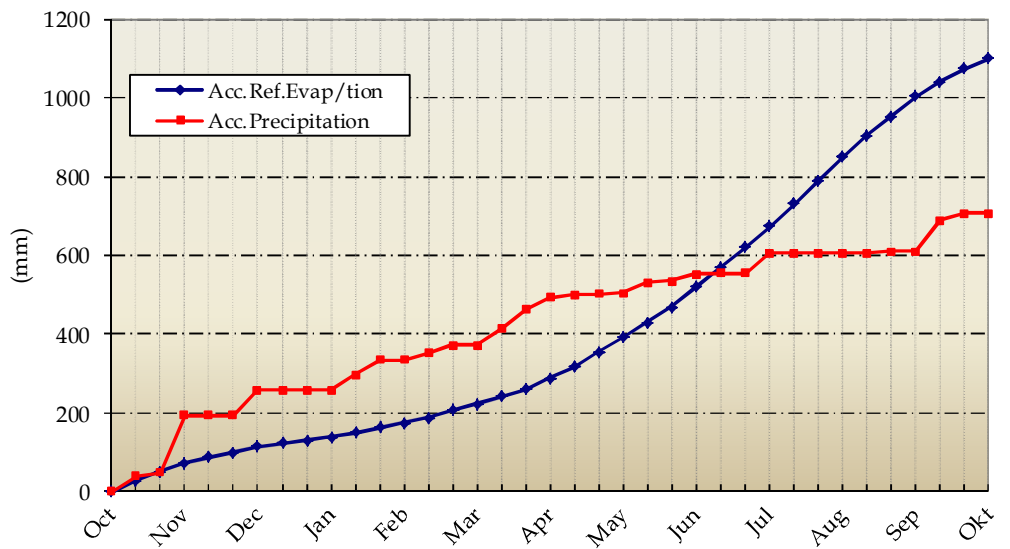
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.3	25.6	27.2	25.8	25.6	25.4	26.2	26.6	25.7	25.4	26.0	27.1	27.0
	Min	17.4	17.5	14.6	13.7	11.9	14.0	14.6	12.3	12.3	12.6	14.1	17.1	15.6
Relative Humidity	Max	87	85	91	86	81	85	84	88	84	90	86	90	-
	Min	42	55	34	36	33	37	37	29	32	44	38	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.5
Sunshine Duration		5.0	8.6	8.8	8.9	8.9	9.4	7.6	9.2	9.3	7.6	8.3	7.2	8.1
Precipitation													45.8	16.0
Evaporation		0.4	2.0	8.6	2.0	3.0	3.0	2.0	7.0	1.0	0.8	29.8	27.7	48.4
Growing Degrees	5	16.9	16.6	15.9	14.8	13.8	14.7	15.4	14.5	14.0	14.0	150.4	170.9	162.7
	10	11.9	11.6	10.9	9.8	8.8	9.7	10.4	9.5	9.0	9.0	100.4	120.9	112.7

3rd 10-day period (21-30/09/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.1	30.4	30.8
Precipitation - Reference Evapotranspiration	-28.1	15.4	-14.8
Number of Rainy Days	0.0	3.0	1.5
Number of Dry Days	11.0	9.0	-

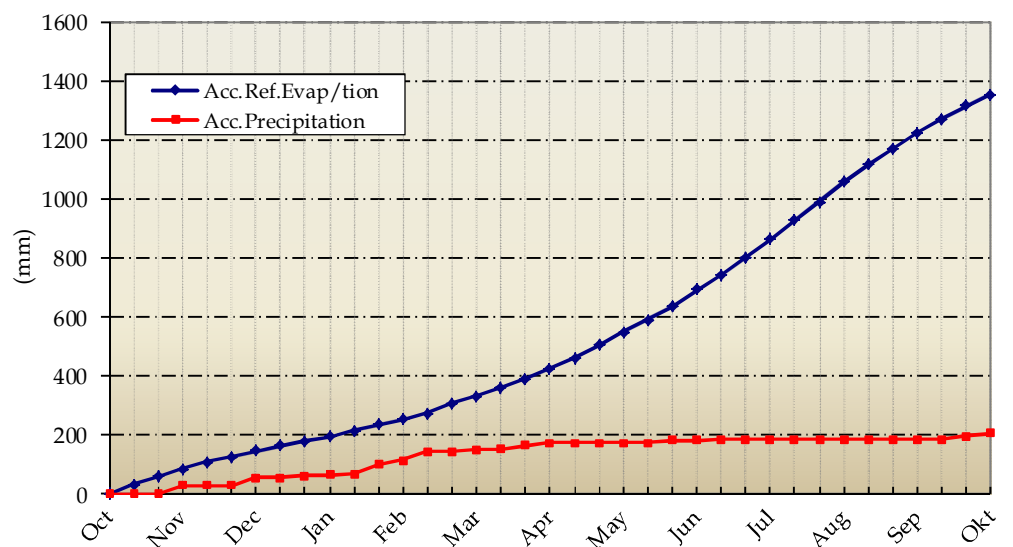
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	26.6	24.8	23.8	24.0	24.0	24.2	23.4	24.6	25.0	24.7	27.2	25.7
	Min	20.4	19.2	20.4	20.4	20.8	20.8	18.4	20.2	20.8	16.8	19.8	20.7	18.8
Relative Humidity	Max	84	92	92	64	60	68	84	73	82	89	79	87	-
	Min	61	59	56	48	50	51	55	57	59	53	55	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.3	8.0	6.7	9.7	8.7	8.8	9.7	8.9	9.6	9.5	8.8	6.4	8.3
Precipitation				9.0								9.0	12.3	4.1
Evaporation		4.4	3.1	6.3	9.6	6.0	5.4	8.0	4.3	4.0	6.2	57.3	34.9	61.7
Growing Degrees	5	18.7	17.9	17.6	17.1	17.4	17.4	16.3	16.8	17.7	15.9	172.8	189.4	172.5
	10	13.7	12.9	12.6	12.1	12.4	12.4	11.3	11.8	12.7	10.9	122.8	139.4	122.5

3rd 10-day period (21-30/09/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.6	34.2	-
Precipitation - Reference Evapotranspiration	-29.6	-21.9	4.1
Number of Rainy Days	1.0	4.0	0.6
Number of Dry Days	2.0	36.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

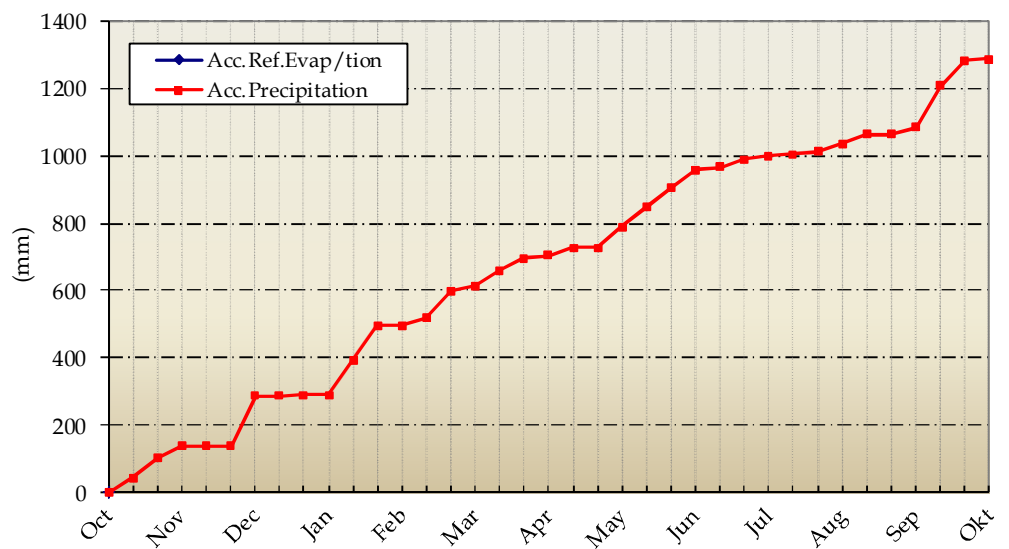


Ioannina

3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.6	23.9	22.8	23.5	23.0	22.7	22.8	24.3	24.4	24.8	23.6	23.4	24.8
	Min	11.6	14.2	7.1	7.0	5.9	9.0	6.5	8.2	5.4	4.6	8.0	13.8	11.3
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	99	-
	Min	59	47	37	32	37	41	44	28	36	32	39	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	31.3	16.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.5
Sunshine Duration		6.2	4.4	8.6	7.8	8.3	5.8	6.5	8.1	8.1	7.3	7.1	4.8	6.4
Precipitation		0.5	4.7				0.0	0.5				5.7	63.2	24.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	40.6
Growing Degrees	5	12.6	14.1	10.0	10.3	9.5	10.9	9.7	11.3	9.9	9.7	107.7	135.8	130.3
	10	7.6	9.1	5.0	5.3	4.5	5.9	4.7	6.3	4.9	4.7	57.7	85.8	80.3

3rd 10-day period (21-30/09/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	25.1
Precipitation - Reference Evapotranspiration	-	-	-0.6
Number of Rainy Days	3.0	5.0	2.5
Number of Dry Days	0.0	10.0	-

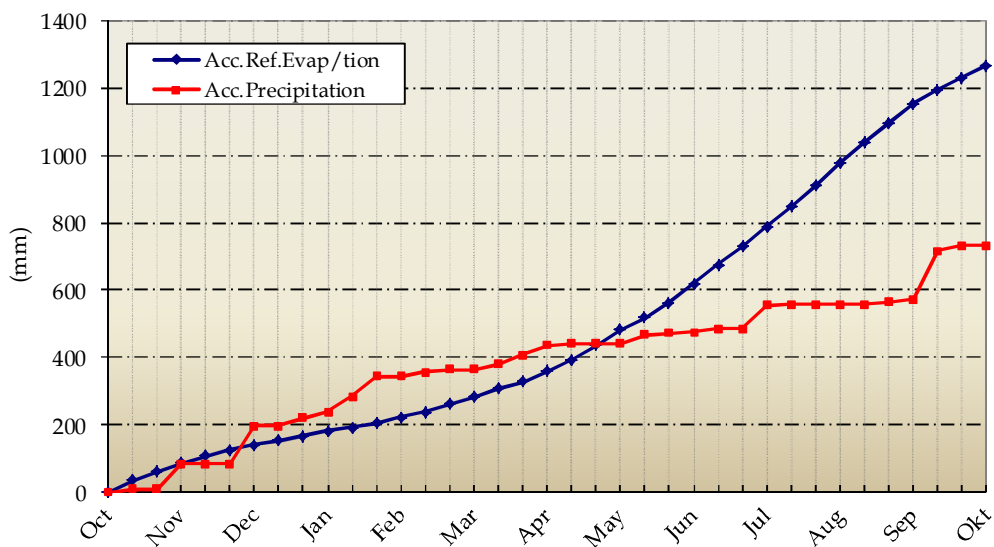
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	28.6	25.8	27.5	26.6	25.6	25.8	28.0	26.4	26.4	26.9	27.2	27.6
	Min	15.7	16.5	15.5	15.2	15.6	16.2	15.3	16.0	12.9	12.1	15.1	16.5	15.0
Relative Humidity	Max	91	91	89	90	90	89	82	73	81	87	86	93	-
	Min	39	37	53	28	31	39	38	27	38	37	37	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	23.1	21.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	24.4	24.4
Sunshine Duration		9.7	10.8	8.4	9.1	8.0	6.8	5.7	10.1	10.4	10.6	9.0	6.3	7.7
Precipitation						0.1	0.0	0.0				0.1	37.8	12.3
Evaporation		4.0	5.6	4.4	4.8	4.1	3.0	3.0	5.0	5.2	7.2	46.3	47.4	51.4
Growing Degrees	5	17.2	17.6	15.7	16.4	16.1	15.9	15.6	17.0	14.7	14.3	160.2	168.9	162.8
	10	12.2	12.6	10.7	11.4	11.1	10.9	10.6	12.0	9.7	9.3	110.2	118.9	112.8

3rd 10-day period (21-30/09/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	34.1	30.3	32.9
Precipitation - Reference Evapotranspiration	-34.0	7.5	-20.6
Number of Rainy Days	1.0	5.0	1.7
Number of Dry Days	4.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

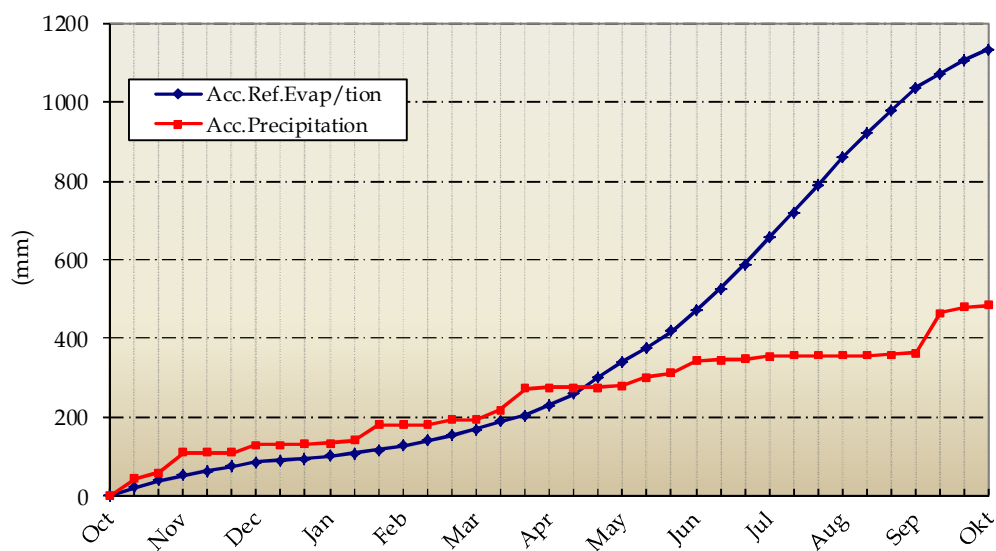


Larisa

3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	22.0	24.0	23.3	24.6	24.6	22.0	23.5	26.0	28.0	24.4	24.9	27.3
	Min	15.4	15.2	11.5	9.2	10.9	12.0	16.0	10.0	9.2	8.8	11.8	17.1	13.0
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	-
	Min	38	54	26	35	32	31	48	39	24	22	35	55	-
Soil Temperature at 10 cm	06 UTC	24.0	23.2	22.6	22.2	21.8	21.6	22.0	21.4	23.2	21.4	22.3	23.8	20.9
	12 UTC	23.5	23.0	22.6	21.8	21.8	22.6	22.0	21.0	21.0	22.0	22.1	23.6	22.7
Sunshine Duration		5.2	1.7	8.5	8.0	7.7	7.2	6.1	4.8	8.2	8.0	6.5	3.6	7.0
Precipitation			4.8									4.8	60.9	7.0
Evaporation		2.3	2.7	3.2	5.8	5.8	5.5	2.8	3.7	4.7	3.3	39.8	27.6	51.2
Growing Degrees	5	15.5	13.6	12.8	11.3	12.8	13.3	14.0	11.8	12.6	13.4	130.9	160.1	151.5
	10	10.5	8.6	7.8	6.3	7.8	8.3	9.0	6.8	7.6	8.4	80.9	110.1	101.5

3rd 10-day period (21-30/09/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.1	31.7
Precipitation - Reference Evapotranspiration	-21.3	-24.7
Number of Rainy Days	1.0	1.7
Number of Dry Days	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

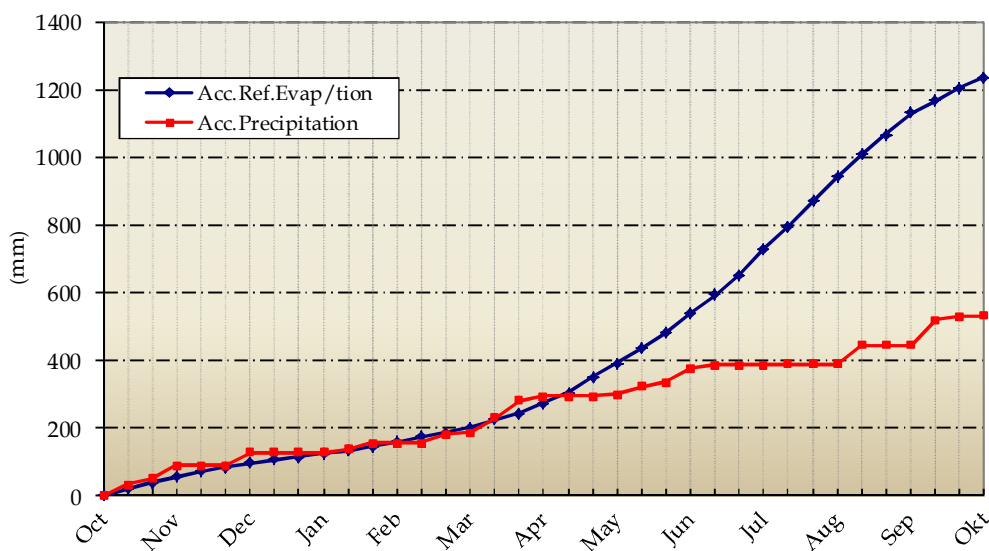


Mikra

3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.8	22.0	23.6	23.2	23.9	22.7	23.5	23.7	25.8	26.2	23.8	24.5	25.8
	Min	18.7	16.8	9.2	12.0	13.8	12.5	14.6	13.6	11.6	10.6	13.3	17.6	14.1
Relative Humidity	Max	88	85	85	87	89	92	85	84	90	89	87	88	-
	Min	40	34	24	40	31	37	37	41	29	33	35	54	-
Soil Temperature at 10 cm	06 UTC	20.8	21.4	18.2	18.8	19.2	19.4	19.8	19.6	17.0	19.2	19.3	21.8	19.9
	12 UTC	23.0	23.0	24.0	22.2	21.8	21.6	21.8	22.2	22.5	22.4	22.4	23.2	23.6
Sunshine Duration		1.5	3.7	10.3	9.5	7.1	7.1	10.0	10.1	10.3	9.9	8.0	3.7	6.9
Precipitation		0.0	1.2					0.1				1.3	128.7	10.7
Evaporation		0.2	3.2	5.7	4.1	4.2	7.8	4.4	3.8	1.7	10.0	45.1	48.1	49.1
Growing Degrees	5	16.3	14.4	11.4	12.6	13.9	12.6	14.1	13.7	13.7	13.4	135.9	160.5	149.6
	10	11.3	9.4	6.4	7.6	8.9	7.6	9.1	8.7	8.7	8.4	85.9	110.5	99.6

3rd 10-day period (21-30/09/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.6	27.1	29.8
Precipitation - Reference Evapotranspiration	-29.3	101.6	-19.1
Number of Rainy Days	2.0	5.0	1.5
Number of Dry Days	1.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

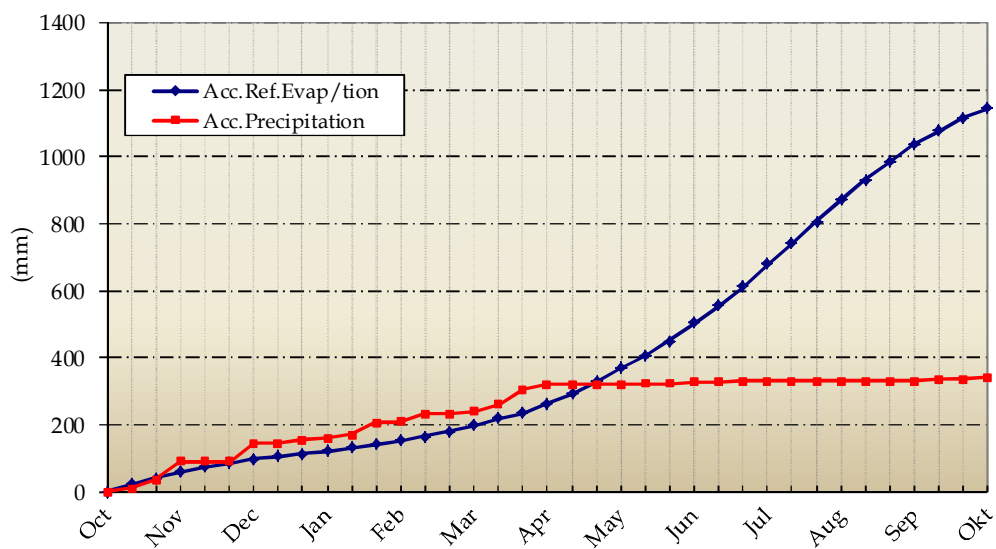


Tanagra

3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.1	22.1	23.0	23.7	23.5	23.6	22.4	23.8	25.8	27.4	24.1	25.0	26.5
	Min	15.8	16.4	16.4	11.4	11.6	10.6	12.2	11.7	11.2	11.5	12.9	17.4	13.9
Relative Humidity	Max	95	95	88	84	80	80	76	83	81	76	84	98	-
	Min	38	59	36	27	19	35	32	29	24	24	32	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		3.0	1.6	10.1	9.5	9.4	8.7	7.0	9.8	11.3	9.3	8.0	5.0	
Precipitation		0.3	4.8	0.4								5.5	51.5	7.7
Evaporation		3.5	2.0	4.0	5.5	5.0	4.5	4.0	5.0	5.0	6.2	44.7	26.0	
Growing Degrees	5	16.0	14.3	14.7	12.6	12.6	12.1	12.3	12.8	13.5	14.5	135.1	161.9	
	10	11.0	9.3	9.7	7.6	7.6	7.1	7.3	7.8	8.5	9.5	85.1	111.9	

3rd 10-day period (21-30/09/2016)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.6	24.0
Precipitation - Reference Evapotranspiration	-22.1	27.5
Number of Rainy Days	3.0	4.0
Number of Dry Days	1.0	28.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

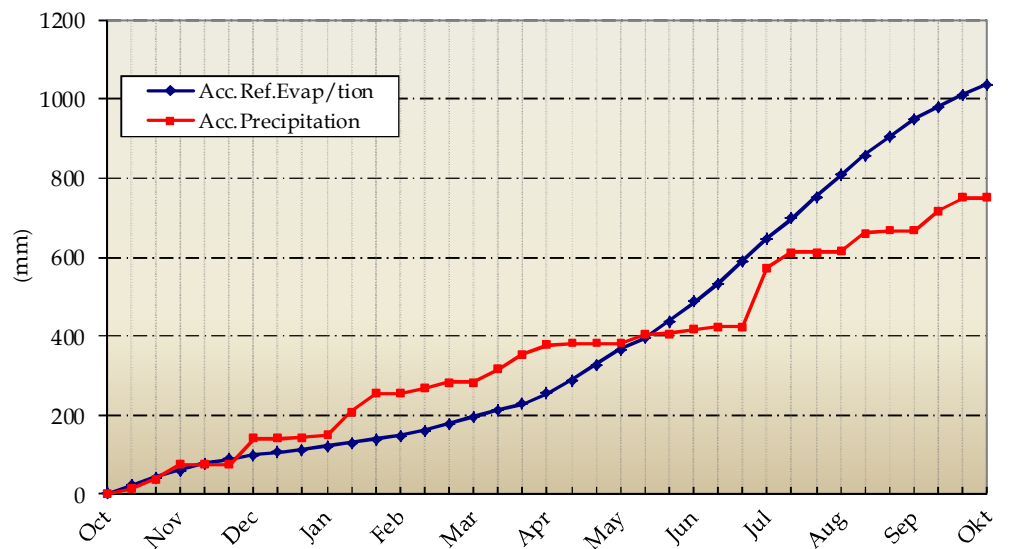


Tripoli

3rd 10-day period (21-30/09/2016)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.9	25.0	22.6	20.3	22.0	22.4	20.7	22.4	24.8	26.4	23.2	23.6	25.0
	Min	10.4	12.5	12.6	12.3	6.1	9.0	7.3	10.0	5.7	4.0	9.0	12.4	10.2
Relative Humidity	Max	100	100	100	100	100	98	100	86	100	100	98	100	-
	Min	36	41	42	37	31	30	42	34	18	15	33	47	-
Soil Temperature at 10 cm	06 UTC	18.4	19.2	19.4	-	-	18.2	17.6	17.4	16.8	16.8	18.0	19.7	18.9
	12 UTC	23.0	22.8	23.2	-	-	21.4	21.2	21.4	21.6	21.6	22.0	22.5	21.1
Sunshine Duration		8.9	9.2	7.5	8.6	8.8	6.8	6.6	8.6	9.8	10.0	8.5	5.2	7.8
Precipitation													57.2	11.6
Evaporation		4.0	2.9	-	-	-	1.7	6.8	0.9	2.8	1.8	-	23.5	36.1
Growing Degrees	5	12.7	13.8	12.6	11.3	9.1	10.7	9.0	11.2	10.3	10.2	110.7	130.0	126.3
	10	7.7	8.8	7.6	6.3	4.1	5.7	4.0	6.2	5.3	5.2	60.7	80.0	76.4

3rd 10-day period (21-30/09/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.7	23.0	29.5
Precipitation - Reference Evapotranspiration	-26.7	34.2	-17.9
Number of Rainy Days	0.0	6.0	1.5
Number of Dry Days	10.0	10.0	-

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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