



AGROMETEOROLOGICAL BULLETIN

September 2015
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



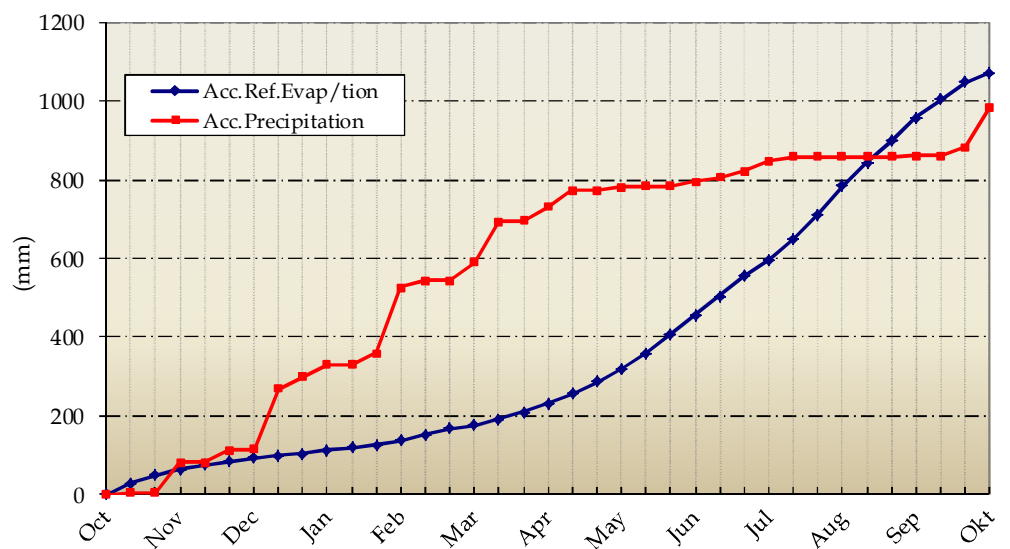
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Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	26.2	26.0	23.8	26.6	29.0	29.4	23.4	19.4	19.0	25.2	23.0	24.9
	Min	16.4	18.4	19.0	18.6	21.4	18.4	18.8	18.2	14.4	13.4	17.7	12.9	13.0
Relative Humidity	Max	83	90	96	98	96	94	88	92	84	69	89	85	-
	Min	43	51	54	75	62	38	51	77	68	41	56	42	-
Soil Temperature at 10 cm	06 UTC	22.8	23.2	22.0	21.4	22.2	21.6	22.2	23.4	19.6	16.6	21.5	19.3	19.0
	12 UTC	28.2	23.8	25.2	23.4	26.0	25.8	25.6	22.0	19.0	19.4	23.8	22.0	22.4
Sunshine Duration		8.1	0.0	1.6	2.6	10.0	5.3	9.2	0.0	0.0	9.8	4.7	7.0	7.5
Precipitation			2.9	72.0	0.2				23.9	1.0	0.2	100.2	8.1	12.3
Evaporation		5.3	5.2	3.7	4.2	4.1	3.4	6.5	1.0	4.3	3.9	41.6	43.3	59.3
Growing Degrees	5	18.0	17.3	17.5	16.2	19.0	18.7	19.1	15.8	11.9	11.2	164.7	129.1	139.4
	10	13.0	12.3	12.5	11.2	14.0	13.7	14.1	10.8	6.9	6.2	114.7	79.1	89.4

3rd 10-day period (21-30/09/2015)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	26.1	28.2	31.9
Precipitation - Reference Evapotranspiration	74.1	-20.1	-19.6
Number of Rainy Days	6.0	4.0	1.1
Number of Dry Days	9.0	13.0	-

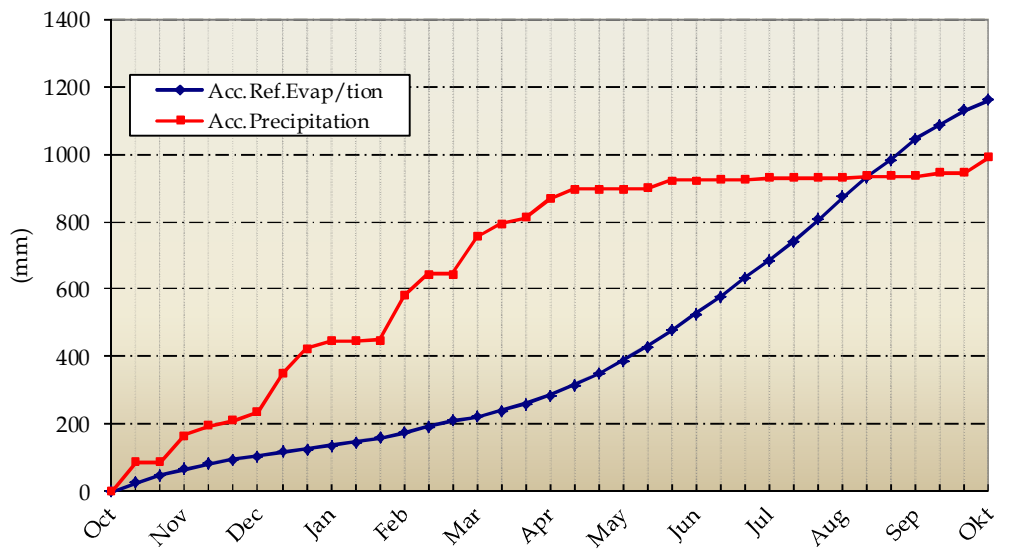
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2015)		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	27.8	28.4	27.8	28.6	26.2	25.5	26.4	26.4	27.4	27.1	26.5	27.0
	Min	16.5	15.5	16.8	18.5	19.4	18.2	16.8	16.3	17.4	15.7	17.1	15.8	15.6
Relative Humidity	Max	91	90	89	87	91	92	90	90	86	90	90	87	-
	Min	57	42	38	48	47	48	50	42	45	38	46	40	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	22.9	22.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	26.0	25.5
Sunshine Duration		0.2	8.4	9.0	9.2	7.0	4.7	5.2	9.4	9.2	9.2	7.2	8.8	8.1
Precipitation		13.1				5.7	27.0					45.8	18.2	16.0
Evaporation		4.0	4.2	3.0	3.0	1.0	1.0	1.0	5.0	3.0	2.5	27.7	-	48.4
Growing Degrees	5	16.3	16.7	17.6	18.2	19.0	17.2	16.2	16.4	16.9	16.6	170.9	161.5	162.7
	10	11.3	11.7	12.6	13.2	14.0	12.2	11.2	11.4	11.9	11.6	120.9	111.5	112.7

3rd 10-day period (21-30/09/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.4	34.1	30.8
Precipitation - Reference Evapotranspiration	15.4	-15.9	-14.8
Number of Rainy Days	3.0	2.0	1.5
Number of Dry Days	9.0	12.0	-

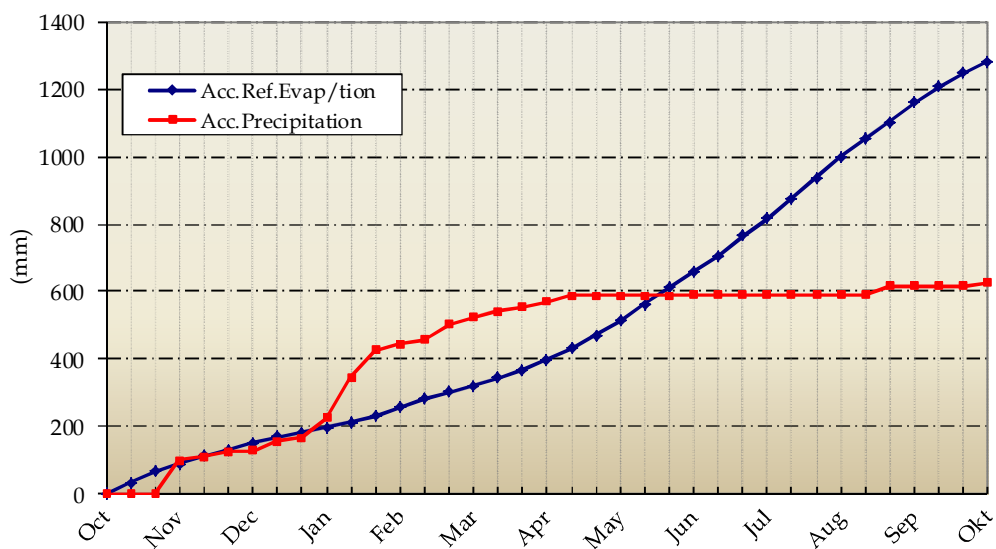
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	25.4	27.6	28.4	28.2	29.4	26.4	26.0	26.6	24.6	27.2	27.1	25.7
	Min	22.0	20.0	19.8	20.2	20.0	22.0	20.0	21.6	19.0	22.0	20.7	20.5	18.8
Relative Humidity	Max	85	90	87	90	86	86	90	90	90	75	87	82	-
	Min	45	69	56	47	62	52	58	59	65	60	57	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		3.2	2.0	8.4	9.2	9.8	4.2	7.2	4.8	8.8	6.8	6.4	7.2	8.3
Precipitation		3.2	8.5						0.5		0.1	12.3	17.5	4.1
Evaporation		7.1	2.4	3.7	3.0	4.5	1.2	4.2	2.0	3.7	3.1	34.9	43.1	61.7
Growing Degrees	5	20.8	17.7	18.7	19.3	19.1	20.7	18.2	18.8	17.8	18.3	189.4	188.1	172.5
	10	15.8	12.7	13.7	14.3	14.1	15.7	13.2	13.8	12.8	13.3	139.4	138.1	122.5

3rd 10-day period (21-30/09/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	34.2	39.6	-
Precipitation - Reference Evapotranspiration	-21.9	-22.1	4.1
Number of Rainy Days	4.0	2.0	0.6
Number of Dry Days	36.0	7.0	-

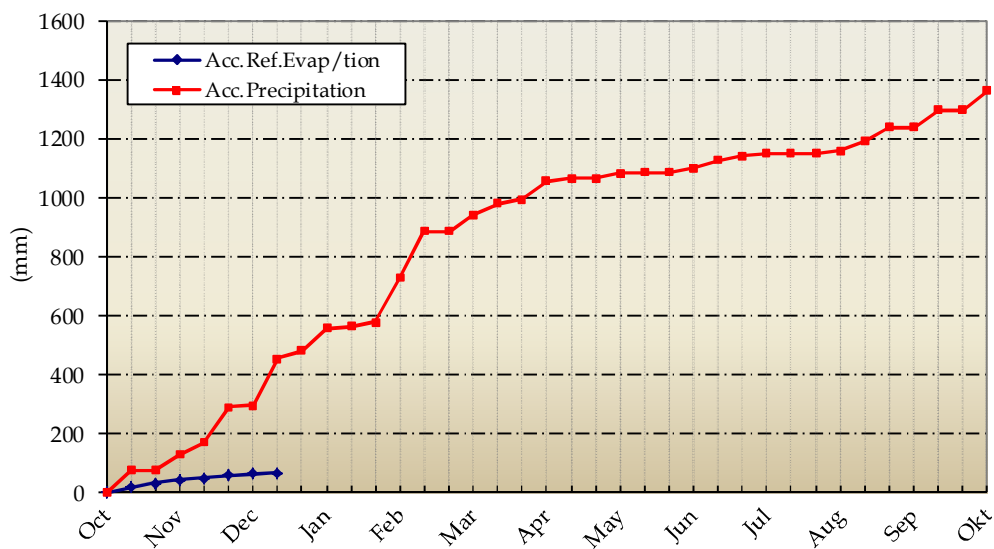
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.8	25.2	25.0	24.2	21.3	18.4	22.4	24.9	24.2	23.6	23.4	23.6	24.8
	Min	14.3	17.7	13.9	15.6	14.0	14.4	13.0	12.3	11.5	10.8	13.8	11.3	11.3
Relative Humidity	Max	100	92	94	100	100	100	100	100	100	100	99	83	-
	Min	47	35	48	50	77	93	59	41	48	50	55	45	-
Soil Temperature at 10 cm	06 UTC	31.5	31.4	31.4	31.0	31.5	31.5	31.0	31.2	31.5	31.2	31.3	-	16.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.5
Sunshine Duration		3.0	8.0	6.8	5.2	0.8	0.0	4.4	8.1	5.1	6.5	4.8	6.3	6.4
Precipitation		29.9		1.3	4.2	21.0	6.8			0.0		63.2	7.5	24.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	40.6
Growing Degrees	5	14.6	16.5	14.5	14.9	12.7	11.4	12.7	13.6	12.9	12.2	135.8	124.7	130.3
	10	9.6	11.5	9.5	9.9	7.7	6.4	7.7	8.6	7.9	7.2	85.8	74.7	80.3

3rd 10-day period (21-30/09/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	19.9	25.1
Precipitation - Reference Evapotranspiration	-	-12.4	-0.6
Number of Rainy Days	5.0	3.0	2.5
Number of Dry Days	10.0	8.0	-

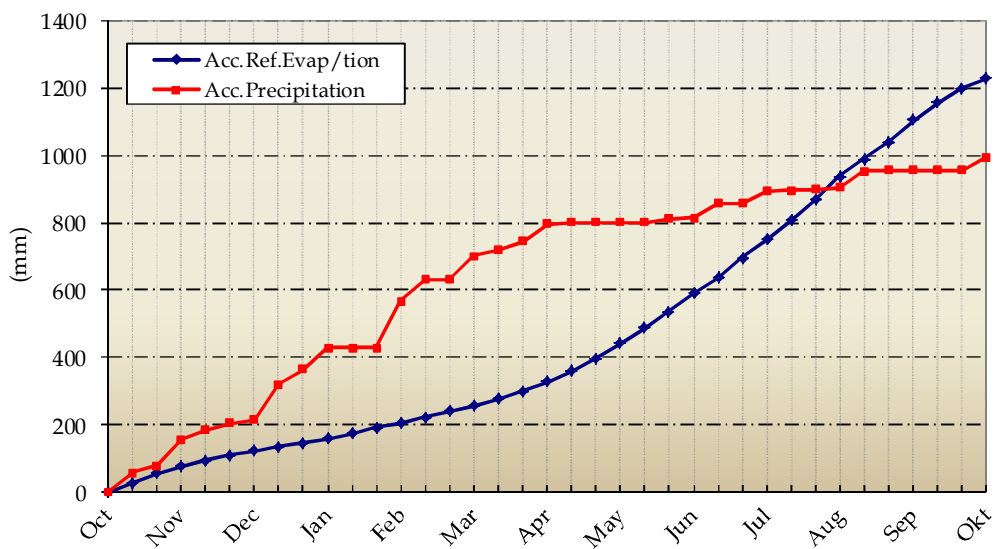
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2015)		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	28.3	27.1	28.0	27.4	25.4	27.0	29.5	27.4	26.8	27.2	28.3	27.6
	Min	18.3	16.7	15.8	16.7	17.6	18.8	15.3	15.7	14.9	15.4	16.5	16.0	15.0
Relative Humidity	Max	93	93	94	94	94	94	93	90	93	91	93	85	-
	Min	57	35	45	44	58	66	39	33	38	50	46	34	-
Soil Temperature at 10 cm	06 UTC	25.0	23.4	23.2	23.2	23.2	23.2	22.4	22.4	22.4	22.2	23.1	22.8	21.4
	12 UTC	25.4	24.8	24.6	24.6	25.6	23.8	23.6	24.4	23.9	23.4	24.4	23.9	24.4
Sunshine Duration		2.0	5.0	6.3	5.8	7.1	3.5	6.1	10.6	8.8	7.5	6.3	9.3	7.7
Precipitation		6.9	5.7	0.0	5.8		18.5			0.9		37.8	3.2	12.3
Evaporation		1.3	2.7	1.1	4.3	11.3	6.9	7.8	7.8	1.5	2.7	47.4	-	51.4
Growing Degrees	5	17.0	17.5	16.5	17.4	17.5	17.1	16.2	17.6	16.2	16.1	168.9	171.5	162.8
	10	12.0	12.5	11.5	12.4	12.5	12.1	11.2	12.6	11.2	11.1	118.9	121.5	112.8

3rd 10-day period (21-30/09/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.3	38.0	32.9
Precipitation - Reference Evapotranspiration	7.5	-34.8	-20.6
Number of Rainy Days	5.0	2.0	1.7
Number of Dry Days	11.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

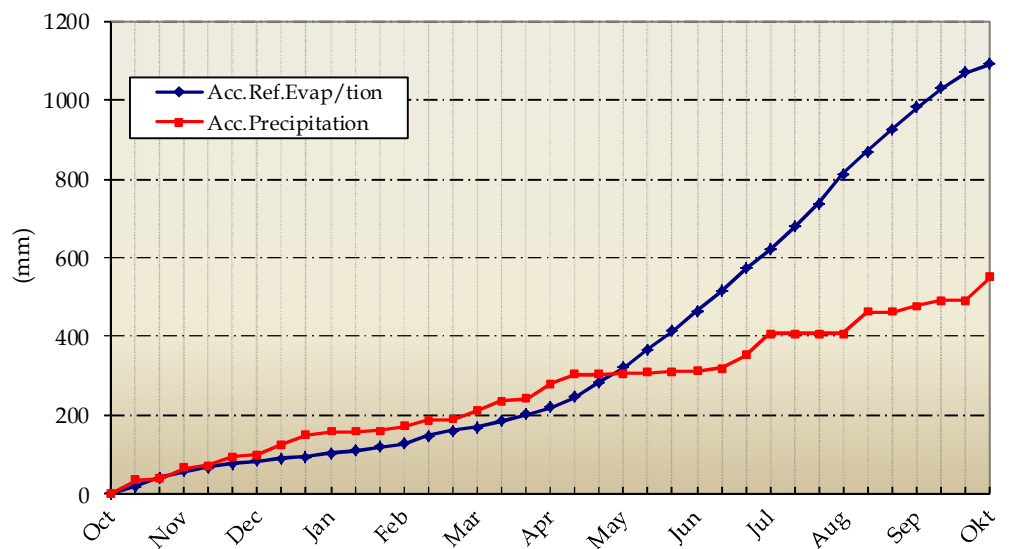


Larisa

3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	20.8	26.6	30.0	27.4	22.2	26.1	26.6	25.2	19.8	24.9	26.8	27.3
	Min	16.4	17.2	18.1	16.4	17.3	18.8	17.2	16.6	17.5	15.6	17.1	13.1	13.0
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	84	-
	Min	59	92	45	30	47	82	48	42	42	66	55	30	-
Soil Temperature at 10 cm	06 UTC	26.2	24.0	23.6	23.8	23.6	23.8	23.2	23.4	23.2	23.2	23.8	-	20.9
	12 UTC	25.4	23.8	23.8	23.8	23.8	22.8	23.2	23.4	23.4	22.6	23.6	-	22.7
Sunshine Duration		0.4	0.0	6.5	7.5	3.0	0.0	6.0	7.6	4.9	0.0	3.6	6.5	7.0
Precipitation		29.3	18.9	0.1		0.1	10.2				2.3	60.9	3.2	7.0
Evaporation		1.2	0.2	4.7	3.4	4.0	0.2	3.0	5.7	0.4	4.8	27.6	50.8	51.2
Growing Degrees	5	15.4	14.0	17.4	18.2	17.4	15.5	16.7	16.6	16.4	12.7	160.1	149.6	151.5
	10	10.4	9.0	12.4	13.2	12.4	10.5	11.7	11.6	11.4	7.7	110.1	99.6	101.5

3rd 10-day period (21-30/09/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.0	31.5
Precipitation - Reference Evapotranspiration	38.9	-28.3
Number of Rainy Days	6.0	2.0
Number of Dry Days	10.0	11.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

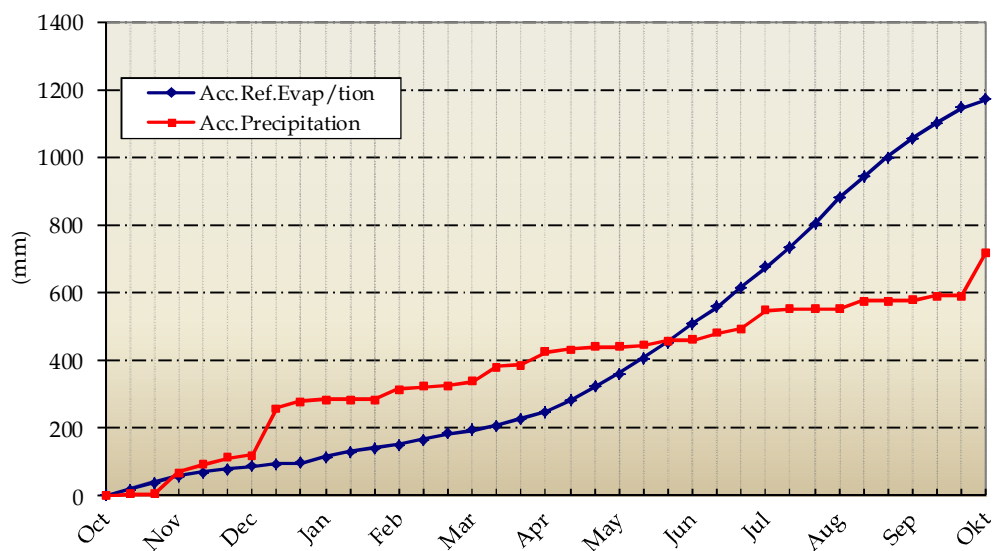


Mikra

3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.8	23.2	27.8	27.3	25.6	25.2	24.2	22.2	23.0	20.4	24.5	24.2	25.8
	Min	17.8	18.1	18.9	17.4	19.3	18.2	16.1	17.5	16.8	16.2	17.6	14.7	14.1
Relative Humidity	Max	95	93	91	92	89	95	90	74	76	90	88	83	-
	Min	51	65	37	50	58	55	46	58	52	66	54	42	-
Soil Temperature at 10 cm	06 UTC	23.4	23.0	22.2	22.4	22.6	23.0	21.3	20.6	19.2	20.0	21.8	19.4	19.9
	12 UTC	25.6	23.2	25.6	24.6	24.7	23.0	23.2	21.4	21.0	20.2	23.2	22.5	23.6
Sunshine Duration		5.3	0.0	9.2	5.4	1.5	0.6	8.8	2.0	3.9	0.0	3.7	8.0	6.9
Precipitation		52.4	4.6		0.0	0.0	63.0	8.0	0.0		0.7	128.7	10.6	10.7
Evaporation		14.8	6.6	5.2	2.8	1.8	1.6	5.0	4.4	4.6	1.3	48.1	47.6	49.1
Growing Degrees	5	16.8	15.7	18.4	17.4	17.5	16.7	15.2	14.9	14.9	13.3	160.5	144.6	149.6
	10	11.8	10.7	13.4	12.4	12.5	11.7	10.2	9.9	9.9	8.3	110.5	94.6	99.6

3rd 10-day period (21-30/09/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.1	35.1	29.8
Precipitation - Reference Evapotranspiration	101.6	-24.5	-19.1
Number of Rainy Days	5.0	1.0	1.5
Number of Dry Days	10.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

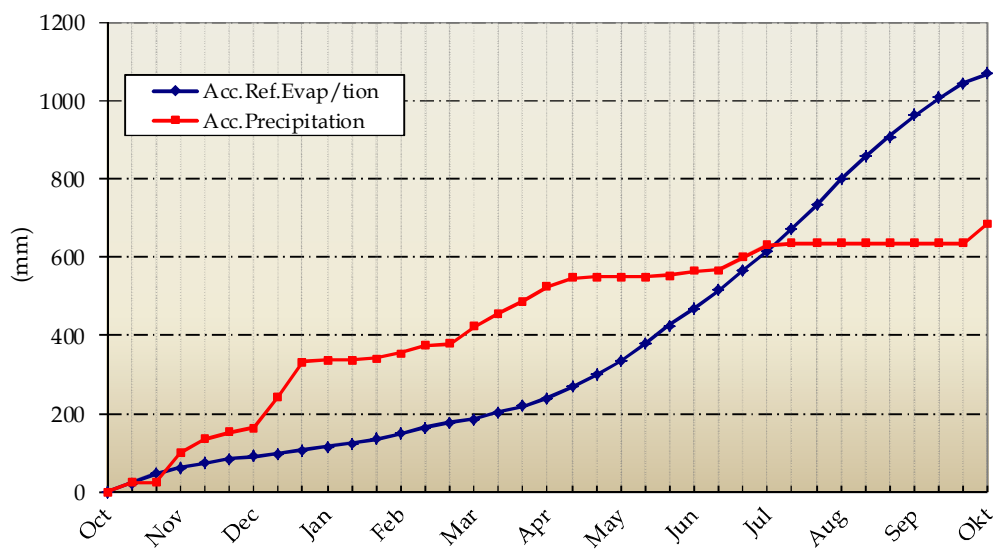


Tanagra

3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.4	23.4	24.8	28.0	29.5	23.8	26.8	26.4	24.0	21.7	25.0	26.2	26.5
	Min	18.8	16.0	17.9	16.9	16.1	20.3	17.2	17.6	16.3	16.8	17.4	16.2	13.9
Relative Humidity	Max	100	100	100	99	98	98	100	98	96	90	98	-	-
	Min	74	61	51	39	35	67	40	45	54	50	52	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.4	2.3	1.5	7.2	9.1	0.0	6.4	8.8	7.0	7.5	5.0	-	-
Precipitation		28.1	4.4	14.7			4.3				0.0	51.5	19.7	7.7
Evaporation		1.0	1.0	2.0	4.0	4.4	1.1	3.0	2.7	2.8	4.0	26.0	-	-
Growing Degrees	5	15.1	14.7	16.4	17.5	17.8	17.1	17.0	17.0	15.2	14.3	161.9	-	-
	10	10.1	9.7	11.4	12.5	12.8	12.1	12.0	12.0	10.2	9.3	111.9	-	-

3rd 10-day period (21-30/09/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.0	-
Precipitation - Reference Evapotranspiration	27.5	0.0
Number of Rainy Days	4.0	-
Number of Dry Days	28.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

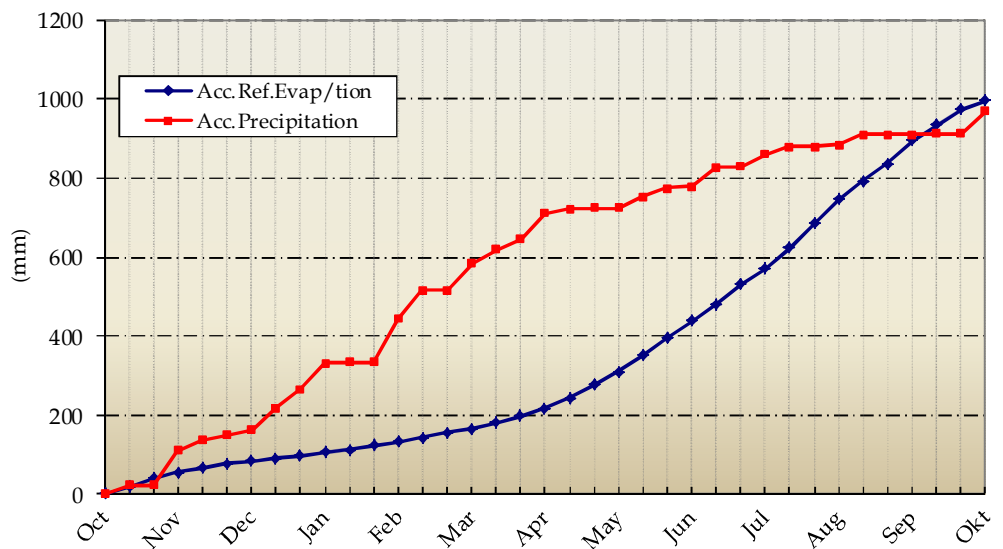


Tripoli

3rd 10-day period (21-30/09/2015)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.0	22.3	24.2	24.7	25.8	22.4	23.9	25.3	24.0	20.9	23.6	25.4	25.0
	Min	13.4	14.3	12.0	12.8	12.4	15.8	9.2	11.3	11.2	11.1	12.4	12.1	10.2
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	85	-
	Min	52	50	44	37	46	63	37	35	48	58	47	29	-
Soil Temperature at 10 cm	06 UTC	24.4	20.4	19.6	19.4	19.2	20.8	17.8	18.6	18.8	18.2	19.7	20.0	18.9
	12 UTC	-	22.6	23.2	23.4	-	-	-	23.0	22.0	20.6	22.5	24.9	21.1
Sunshine Duration		2.0	3.7	5.2	6.1	7.8	2.6	6.0	9.8	5.6	2.7	5.2	6.8	7.8
Precipitation		20.1	1.4	16.2		0.2	6.6			12.7		57.2	6.9	11.6
Evaporation		1.0	2.5	2.7	2.7	2.5	1.4	1.9	3.8	3.0	2.0	23.5	-	36.1
Growing Degrees	5	13.2	13.3	13.1	13.8	14.1	14.1	11.6	13.3	12.6	11.0	130.0	137.9	126.3
	10	8.2	8.3	8.1	8.8	9.1	9.1	6.6	8.3	7.6	6.0	80.0	87.9	76.4

3rd 10-day period (21-30/09/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.0	31.7	29.5
Precipitation - Reference Evapotranspiration	34.2	-24.8	-17.9
Number of Rainy Days	6.0	1.0	1.5
Number of Dry Days	10.0	7.0	-

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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